Our Ref: 156922

21st December 2020

David Stead
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Hope Valley
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S33 6RP

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Report Number: 20_11_156922_KC_1

Dear Mr Stead,

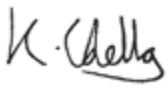
Environmental Noise Monitoring at Breedon Cement, Hope Cement Works

Please find enclosed the report relating to the recent Workplace Monitoring Survey carried out at Breedon Cement, Hope Cement Works, on 10th – 13th November 2020.

An account for this work will be forwarded to you under separate cover. The work was undertaken according to our General Conditions of Contract.

If we can be of any further assistance to you in this matter, please do not hesitate to contact me.

Yours sincerely
On behalf of **SOCOTEC UK**



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Breedon Cement Ltd

Environmental Noise Survey

Hope Cement Works

November 2020

Carried out for:
David Stead
H&S Manager
Breedon Cement Ltd
Hope Cement Works
Hope Valley
Derbyshire
S33 6RP

Issue date: - 21st December 2020

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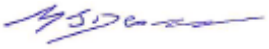
Approved for Issue by	Martyn Deacon MSc LFOH | Technical Manager | Bretby	

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EXECUTIVE SUMMARY

This report presents the findings of environmental noise monitoring carried out at Breedon Cement, Hope Cement Works. Monitoring was carried out on 10th – 13th November 2020, covering 5 locations for one hour periods on a rotational basis to cover 24 hours.

The aim of the survey was to monitor the levels of environmental noise generated at the works in order to determine the likely influence of site operations on specified nearby residential properties deemed sensitive receptors as per the Peak District National Park's Mineral Planning Authority noise conditions.

The limits were exceeded at Marsh Farm for three measurements and at Michlow Close for one. However, when the effects of road traffic and other non-site sources were removed, noise levels were significantly below the limits at Michlow Close, while at Marsh Farm they remained close to but below the night-time limits. The Meadows Farm measurements were taken between the site and the farm – the measured noise levels of 45 dB(A) would drop to around 42 dB(A) at the farm.

In summary, the noise contribution from the Cement Works would not be expected to exceed the limits at any of the five locations, based on the results of this survey.

Table 1. Summary of results

Ref #	Location	Start Time	Stop Time	$L_{Aeq,\ 1hr}$, dB	$L_{Aeq,1hr}$ Limit, dB
1	Meadows Farm	07:00	08:00	45.1	55
		13:18	14:18	44.6	55
		19:29	20:29	44.6	50
		01:37	02:37	44.5	45
2	Pindale	08:15	09:15	41.8	55
		14:30	15:30	44.4	55
		20:46	21:46	41.9	50
		02:50	03:50	40.9	45
3	Peveril Close	09:30	10:30	43.5	55
		15:42	16:27	41.6	55
		22:01	23:01	38.6	45
		04:03	05:03	39.4	45
4	Marsh Farm	10:56	11:56	47.9	55
		16:55	17:46	60.3	55
		23:17	00:17	48.3	45
		05:12	06:09	57.2	45
5	Michlow Close	12:10	13:10	46.3	55
		18:05	19:05	44.3	50
		00:32	01:32	36.1	45
		06:21	06:25	51.8	45

1 INTRODUCTION

1.1 This report presents the findings of environmental noise monitoring carried out at Breedon Cement, Hope Cement Works. Monitoring was carried out on 10th – 13th November 2020, covering 5 locations for one hour periods on a rotational basis to cover 24 hours. The site visits were carried out by Karl Colella, Rob Preston, Marc Cotton and Steven Mitchell of SOCOTEC UK. A log of relevant noise events was maintained throughout the attended period monitored.

2 SCOPE AND EXCLUSIONS

2.1 The survey was required to monitor the levels of environmental noise generated in order to determine the likely influence of site operations on specified nearby residential properties deemed sensitive receptors as per the Peak District National Park's Mineral Planning Authority noise conditions. The measurements were to cover a 24-hour period and to obtain $L_{eq, 1hr}$ results at five locations as shown below.

Table 2. Summary of locations and measurement times

Ref #	Location	Latitude, Longitude	Grid Reference	Monitoring Start Times
1	Meadows Farm	53.337557, -1.743300	SK 17190 82325	10th Nov 07:00 11th Nov 13:18 12th Nov 19:29 13th Nov 01:37
2	Pindale	53.340170, -1.756237	SK 16328 82613	10th Nov 08:15 11th Nov 14:30 12th Nov 20:46 13th Nov 02:50
3	Peveril Close	53.343194,-1.771106	SK 15337 82946	10th Nov 09:30 11th Nov 15:42 12th Nov 22:01 13th Nov 04:03
4	Marsh Farm	53.347935, -1.755953 / 53.347425,-1.754320	SK 16344 83477 SK 16453 83421	10th Nov 10:56 11th Nov 16:55 12th Nov 23:17 13th Nov 05:12
5	Michlow Close	53.332429, -1.742692	SK 17233 81755	10th Nov 12:10 11th Nov 18:05 13th Nov 00:32 13th Nov 06:21

3 PROCESS/HAZARD DESCRIPTION

3.1 Limestone is both excavated and imported at Hope Works. Stone is moved by excavator, loading shovels & dumper truck to the primary crusher, from which point it is moved to the secondary crushers and various screens by conveyors. Graded and imported stone is transferred to the pre-heater tower (PHT) and then the kilns and cement mills by conveyors. End product cement is stored in silos before being transferred to rail and road haulage whereby it is exported from site.

3.2 There are various sources of noise, the most prominent of which include mobile plant (impact noises, horns and reversing alarms), crushers, cement mills, motors, the kiln and air canons in the pre-heater tower.

4 EXPOSURE CONTROLS

4.1 Control measures were not identified during the survey.

5 BACKGROUND INFORMATION

5.1 Noise is generally considered as unwanted sound - it may be too loud, intrusive or simply occur at the wrong time. It can cause annoyance, interfere with work efficiency, induce stress, disturb concentration, adversely affect communication, mask warning signals, or damage hearing. However, it must be noted that some 'wanted' sound, such as loud music, may still cause damage to hearing.

5.2 Environmental Noise

Noise induced hearing loss is not an issue at the exposure levels likely to be experienced by neighbours of noise emitting activities. It can be a potential hazard above noise levels of 80 dB(A) and where exposure is over long periods of time. The nature of the response to noise can vary widely between individuals from no response at all to disturbance that can develop into annoyance or anger.

Some individuals may experience physical effects arising as a result of emotional stress, such as sleep disturbance or loss of appetite.

5.3 Unlike other environmental pollutants, the effects of noise are made up of two components - its energy (an objective component) and its tendency to annoy (a subjective component which differs according to the noise source). Thus noise has a plethora of measurement units, supported to varying degrees by social survey data establishing their subjective, annoyance factors. All this reflects the fact that, in general, noise affects people rather than the environment itself.

5.4 The Public Health Outcomes Framework (PHOF) published in January 2012 quoted that from noise mapping carried out in 2011 (and based on the 2011 census), the total number of people in England exposed to 65 dB, $L_{Aeq\ 16h}$ or more was 2.74 million (5.2% population) in daytime.

5.5 From noise mapping carried out in 2011 (and based on the 2011 census), the total number of people in England exposed to 55 dB, L_{night} or more was 4.25 million (8.0 % population) at night-time.

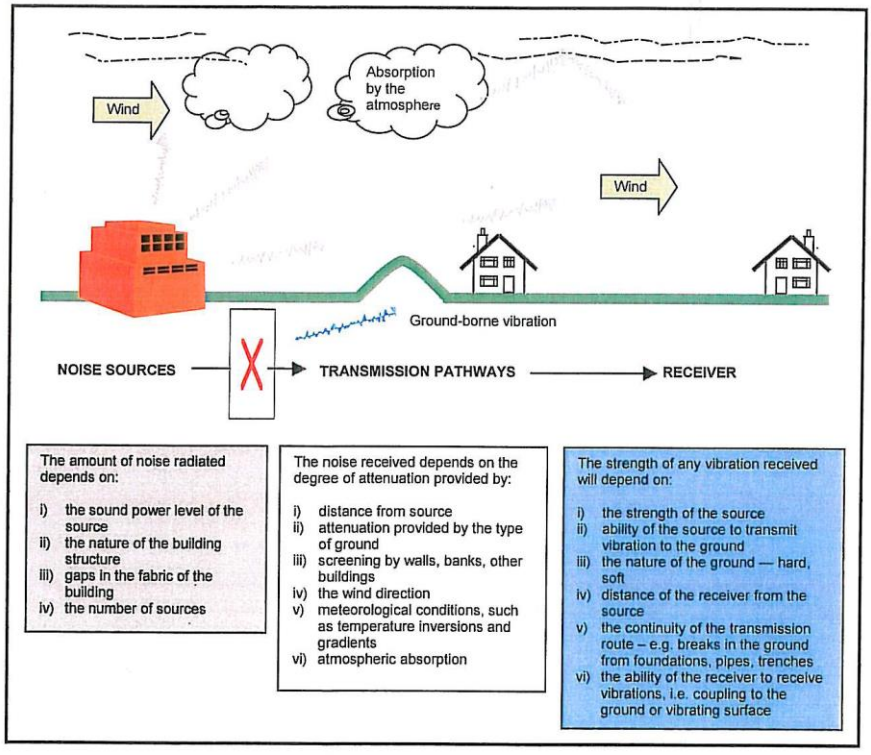
5.6 These noise sources are regulated by numerous legal measures, with an even larger variety of technical controls available.

5.7 World Health Organisation environmental noise criteria

The World health Organisation has recommended a number of environmental noise criteria that depend on the source of the noise, whether the measurement location (receptor) is indoors or outdoors, and whether it is daytime, night-time or evening.

Note: British courts have rejected these as the sole criteria of noise nuisance, preferring to take into account a wider range of subjective criteria.

5.8 Information on Legislation can be found in Appendix E



6 MONITORING METHODS

6.1 See Appendix A – Methods for the test method and equipment used.

6.2 The sound level meter microphone was equipped with a windshield at all times and representative one-hour measurements were taken at the specified locations.

Time weighting: Fast
Frequency weighting: A
Logging Intervals: 1 second
Parameters: L_{Aeq}; L_{AMax}; L_{A10}; L_{A90}

6.3 The sound level meter was field calibrated with an electronic calibrator prior to the readings being taken and again on completion of the monitoring.

6.4 All readings taken were “free field”, i.e. at least 3.5m away from any facade or reflecting surface other than the ground. The microphone was located 1.2 to 1.5m above ground level.

6.5 SOCOTEC UK personnel were present throughout the monitoring period, thereby ensuring that an accurate representation of the prevailing noise climate was recorded. The readings are only representative of the activities and equipment being used on the day of the survey.

6.6 As far as possible, monitoring was carried out when the weather conditions satisfied the meteorological constraints as defined BS 4142:2014+A1:2019, a “Method for rating and assessing industrial and commercial sound” i.e. mean wind speed less than 5 ms^{-1} and no significant rainfall. Where these conditions were not satisfied, this has been highlighted in the table below. Wind speeds were measured using an anemometer.

Table 3. Environmental conditions during the monitoring period

Ref #	Location ID	Start Time	Wind Direction	Wind Speed $m.s^{-1}$	Temp °C	Cloud Cover %	RH %	Rain etc.
10th November 2020								
1	Meadows Farm	07:00	SE	< 0.5	10	70	98	No
2	Pindale	08:15	SE	< 0.5	10	100	98	Light
3	Peveril Close	09:30	SE	1	11	50-100	98	Light
4	Marsh Farm	10:56	SSE	0.9->3.0	11	100	93	Light
5	Michlow Close	12:10	S	< 0.5	11	100	95	No
11th November 2020								
1	Meadows Farm	13:18	S	0.6	11	100	89	No
2	Pindale	14:30	S	0.9	11	100	87	No
3	Peveril Close	15:42	SSE	1	11	100	87	Light
4	Marsh Farm	16:55	S	1.9	10	100	91	Light
5	Michlow Close	18:05	SSE	1.4	10	100	91	Light

Table 3 continued. Environmental conditions during the monitoring period

Ref #	Location ID	Start Time	Wind Direction	Wind Speed m.s-1	Temp °C	Cloud Cover %	RH %	Rain etc.
12th – 13th November 2020								
1	Meadows Farm	19:29	S	0.5	9	90	90	No
2	Pindale	20:46	S	2 to 3	8	95	90	No
3	Peveril Close	22:01	S	1 to 2	8	95	90	No
4	Marsh Farm	23:17	S	3 to 5	8	70	90	Light/ brief
5	Michlow Close	00:32	S	0.5 to 1	8	70	90	No
13th November 2020								
1	Meadows Farm	01:37	SSW	< 0.5	9	90	90	Light
2	Pindale	02:50	S	< 0.5	10	90	86	Light
3	Peveril Close	04:03	SSW	2.5	10	70	89	Light
4	Marsh Farm	05:12	S	3.8	10	70	90	L to M
5	Michlow Close	06:21	SSW	1	10	100	91	M to H

7 RESULTS

7.1 The noise measurements recorded during the survey are shown in Appendix B.

7.2 The monitoring locations are annotated on a site map incorporated in Appendix C at the rear of this report. The Meadows Farm measurements were taken between the site and the farm due to work underway at the farm – calculations indicate that the results at Meadows Farm would be around 3 dB(A) lower than those shown in the tables.

7.3 Summary of daytime noise results (07:00 – 18:00), 10th & 11th November

Ref #	Location	Start Time	Stop Time	$L_{Aeq, 1hr}$ dB	$L_{Aeq,1hr}$ Limit dB
1	Meadows Farm	07:00	08:00	45.1	55
2	Pindale	08:15	09:15	41.8	55
3	Peveril Close	09:30	10:30	43.5	55
4	Marsh Farm	10:56	11:56	47.9	55
5	Michlow Close	12:10	13:10	46.3	55
1	Meadows Farm	13:18	14:18	44.6	55
2	Pindale	14:30	15:30	44.4	55
3	Peveril Close	15:42	16:27	41.6	55

7.4 Summary of evening noise results (18:00 – 22:00), 12th November

Ref #	Location	Start Time	Stop Time	$L_{Aeq, 1hr}$ dB	$L_{Aeq,1hr}$ Limit dB
4	Marsh Farm#*	16:55	17:46	60.3	55
5	Michlow Close	18:05	19:05	44.3	50
1	Meadows Farm	19:29	20:29	44.6	50
2	Pindale	20:46	21:46	41.9	50
3	Peveril Close*	22:01	23:01	38.6	50

#Results from either side of the 18:00-22:00 period used as being representative of this period
*Road noise completely dominant; site related noise will be significantly lower

7.5 Summary of night results (22:00 – 07:00). 12th - 13th November 2020

4	Marsh Farm	23:17	00:17	48.3	50
5	Michlow Close	00:32	01:32	36.1	50
1	Meadows Farm	01:37	02:37	44.5	45
2	Pindale	02:50	03:50	40.9	45
3	Peveril Close	04:03	05:03	39.4	45
4	Marsh Farm*	05:12	06:09	57.2	45
5	Michlow Close*2	06:21	06:25	51.8	45

*Road noise completely dominant; site related noise will be significantly lower
*2Road and rain noise dominant. Measurement cut short due to heavy rain

7.6 Summary of noise sources

10th November

Ref #	Location	Dominant Noise Source(s)	Other Noise Source(s)	Site Audible?
1	Meadows Farm	Works constant hum and intermittent clanging and air canons.	Fairly frequent road noise, wildlife.	Y
2	Pindale	Works constant hum and intermittent clanging and air canons.	Birds and occasional road noise	Y
3	Peveril Close	Crows and other birds. Works clearly audible but not loud, dominant when nothing else happening	Road traffic, jet aircraft	Y
4	Marsh Farm*	Works when road was quiet. Frequent road traffic noise. Train twice	Birds	Y
5	Michlow Close*2	Frequent main road noise, birds. Power tool use not too far away	Constant site noise just audible, bit clearer when traffic stops. Cows, dog and passersby. Playground	Y

11th November

Ref #	Location	Dominant Noise Source(s)	Other Noise Source(s)	Site Audible?
1	Meadows Farm	Works general noise and occasional clanging and air canon throughout	Road noise often significant. Occasional birds.	Y
2	Pindale	Works general noise and occasional clanging and air canon throughout	Occasional car passing (paused out as far as possible), birds chirping	Y
3	Peveril Close	Works general noise. Occasionally birds and local noise	Jet aircraft, road noise	Y
4	Marsh Farm*	Works general noise and frequent main road traffic having to stop at roadwork lights	Occasional passersby, runners etc	Y
5	Michlow Close*2	Frequent traffic on main road. Intermittent construction power tool use. Site just audible when road quiet. Gusts of wind in the trees	Local activities, construction work, passersby	Y

12th - 13th November

Ref #	Location	Dominant Noise Source(s)	Other Noise Source(s)	Site Audible?
1	Meadows Farm	Works noise, including running LEV fans, some occasional impacts/air canons	Road towards Bradwell faint on occasion. church bell at 20:00 in distance	Y
2	Pindale	Works noise, including running LEV fans, some occasional impacts/air canons	Road in direction of Bradwell occasionally audible at low level	Y
3	Peveril Close	Works noise in distance. constant noise from fan/motors	Road through Castleton occasionally audible. Bell in garden when wind picked up. Church bells tolling every 15 mins	Y
4	Marsh Farm*	Works noise audible as drone. Cars on road infrequent (mostly. paused out)	Wind in trees influenced result	Y
5	Michlow Close*2	Works noise audible as drone.	Road noise from Bradwell, infrequent. Wind in trees during gusts	Y

13th November

Ref #	Location	Dominant Noise Source(s)	Other Noise Source(s)	Site Audible?
1	Meadows Farm	Site dominant, with general broadband noise, clanging / air canons, reversing alarms	Noises from the lake	Y
2	Pindale	Site general broadband noise dominant.	Occasional scraping noise from site, perhaps mobile plant such as dozer	Y
3	Peveril Close	Site general broadband noise dominant. Occasional gust of wind in trees	Wind chime. Occasional traffic in main road	Y
4	Marsh Farm*	Site general broadband noise. Wind with occasional strong gust. Passing traffic every minute or two	Rain	Y
5	Michlow Close*[2]	Site broadband noise generally, passing traffic frequently. Rain	N/A	Y

8 DISCUSSION/OBSERVATIONS

8.1 *Location 1 - Meadows Farm*

Meadows Farm is located approximately 470 m to the East of the Works boundary, with a clear view of the top half of the pre-heater tower (PHT) above the trees. Due to the potential for interference from work underway at the usual monitoring location, the measurements were taken next to the lake between the site and Meadows Farm, around 340 m from the boundary.

The noise levels were consistent in this location at 45 dB(A), due to there being few significant noise sources other than the site. This would equate to a noise level of around 42 dB(A) at the farm, which is below the night-time limit of 45 dB(A).

The site was clearly audible during the day and night at the measurement location, with broadband noise coming from various parts of the plant and intermittent noises that were thought to be mobile plant and/or air canons in the PHT.

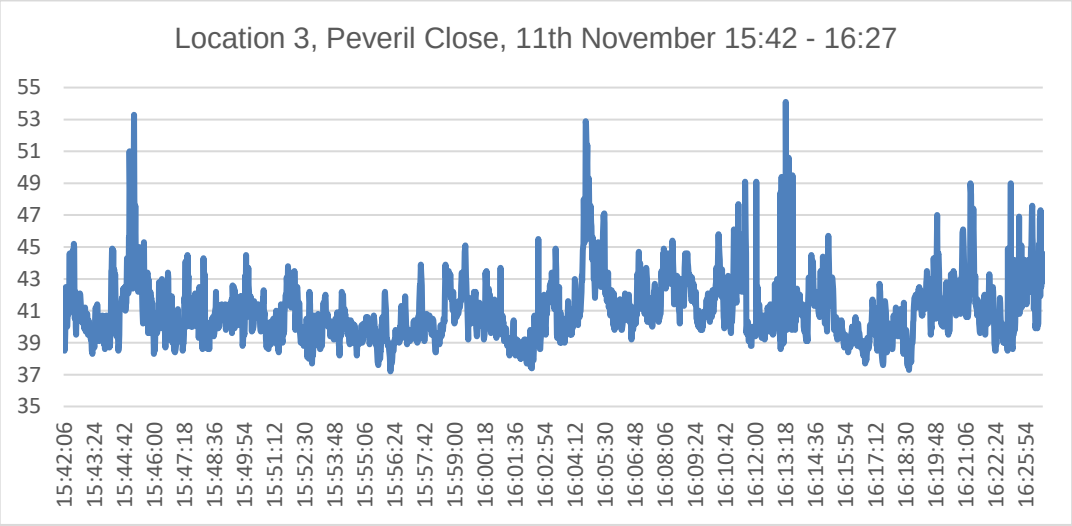
8.2 *Location 2 - Pindale*

Pindale consists of a few scattered buildings at little more than 100 m from the north and north west of the Works boundary, with a large hill obscuring the Works. The “average” noise levels at this location were between 41 and 44 dB(A), with the majority of the noise monitored being due to the Works (the measurements were paused when traffic was passing). This was just below the night-time limit of 45 dB(A). There was a Southerly wind, which might have helped carry the sounds from the Works to this location.

8.3 *Location 3 - Peveril Close*

Peveril Close is just over a kilometre to the West-North West of the Works, with the PHT visible from the houses overlooking the fields at the end of the cul-de-sac. A broadband noise from the site was the dominant sound source from this location when there were no local noises. There was a Southerly wind, which would have helped carry the sounds from the Works to this location.

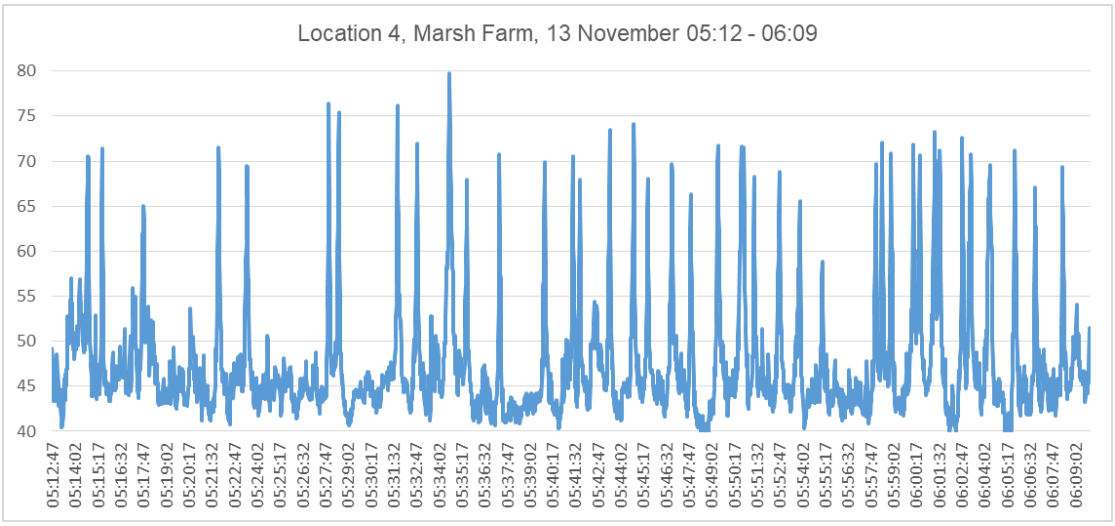
The noise levels due to the site were around 37 - 42 dB(A), which is below the night-time limit. Results above this were related to local activities that could not be paused out. The graph below was taken from one of the daytime measurements.



8.4 *Location 4 - Marsh Farm*

Marsh Farm is around 900 m to the North of the Works, with the PHT clearly visible and a constant broadband sound from the Works audible over the fields. The southerly wind would have helped carry the sounds from the Works to this location. However, by far the dominant noise source was the road traffic during the day, and during the night this was also a significant factor. The high variation in the results seen were mostly due to passing traffic being paused out in one measurement and another measurement being taken further from the road - the two results that were above the limits included the road traffic noise.

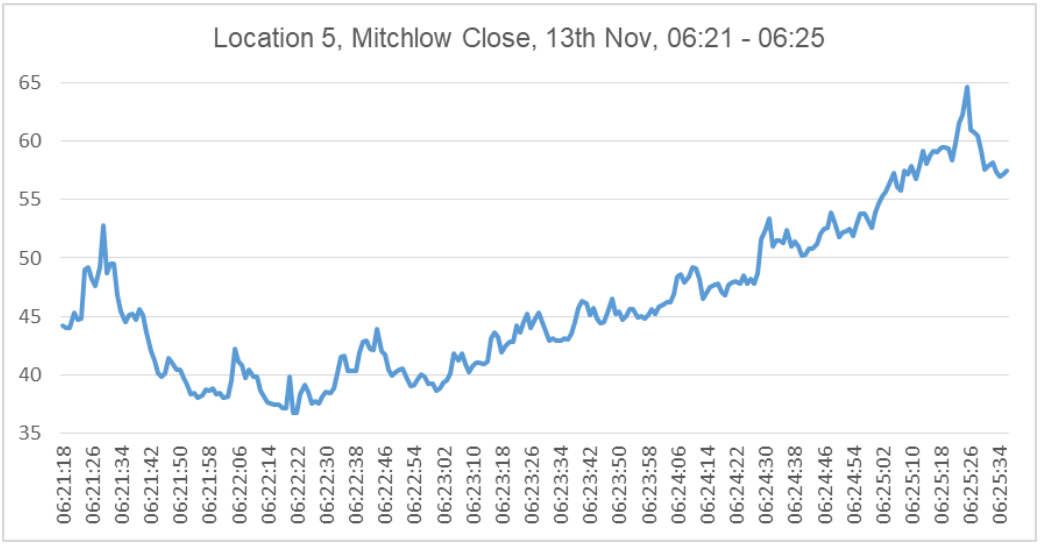
If all the road traffic noise is removed from the measurements, the results come out between 40 and 47 dB(A). The graph overleaf, taken from a night-time/early morning measurement, shows the multiple peaks from the passing traffic. The noise levels from the site seemed fairly constant at this location, whereas other noise sources were intermittent, so we can take the site to be providing the “background” (L_{90}) sound levels, giving us “averages” between 41 and 44 dB(A). This indicates that the site did not breach the limits but was likely to have been close to doing so.



8.5 *Location 5 - Michlow Close*

Michlow Close is located around 400 m to the Southeast of the Works, with one of the southernmost buildings visible up the hill but the rest of the Works obscured by trees. The Works was just audible at this location but the most significant noise contributions were from road traffic. The southerly wind would have masked some of the site noise. Contribution from the site averaged between 32 and 37 dB(A), significantly below the night-time limit.

It should be noted that the final measurement, showing a result of 52 dB(A) at night, was stopped after only 4 minutes because the rain quickly became too heavy to take a meaningful reading. However, as can be seen from the graph below, noise levels during the light rain when there was no traffic noise were generally below 40 dB(A), and this was the noise that was attributable to the Works.



9 RECOMMENDATIONS

9.1 The Peak District National Park's Mineral Planning Authority noise conditions state that noise from site operations, including vehicle movements, should not exceed specific limits at five sensitive receptors during daytime, evening and night-time hours.

The limits were exceeded at Marsh Farm for three measurements and at Michlow Close for one. However, when the effects of road traffic and other non-site sources were removed, noise levels were significantly below the limits at Michlow Close, while at Marsh Farm they remained close to but below the night-time limits. The Meadows Farm measurements were taken between the site and the farm – the measured noise levels of 45 dB(A) would drop to around 42 dB(A) at the farm.

9.2 In summary, the noise contribution from the Cement Works would not be expected to exceed the limits at any of the five locations, based on the results of this survey.

9.3 The following 'good housekeeping' measures should continue to be considered when operations are carried out on site, to ensure that noise levels emanating from site are kept to a minimum:

- Ensure that inspection plates and any acoustic panels on mobile and static plant are in place and fitted correctly.
- Repair or replace any defective exhaust systems on mobile plant (i.e. missing clamps or locating pins) as soon as possible after any defects are discovered.
- Ensure that mobile plant is driven and operated correctly, and that all site speed limits are properly observed.
- Ensure that mobile plant horns and reversing alarms are adjusted to a reasonable volume
- Inspect the equipment used on site including externally mounted equipment to ensure it is not damaged or requiring maintenance.

9.4 Due to the intermittency and impulsivity of what was thought to be the air canons in the pre-heater tower, these might be considered more disturbing for residents at night than the constant sounds associated with mills, motors, etc. Any noise mitigation work should consider whether creation or transmission of this sound can be reduced.

10 REFERENCES

1. ISO1996-1:2016 Acoustics -- Description, Measurement and Assessment of Environmental Noise -- Part 1: Basic Quantities and Assessment Procedures.

2. ISO1996-2:2017 Acoustics -- Description, Measurement and Assessment of Environmental Noise -- Part 2: Determination of Sound Pressure Levels

3. British Standard: BS 7445. Description and Measurement of Environmental Noise (2003/2008).

    - Part 1. Guide to Quantities and Procedures.
    - Part 2. Guide to the Acquisition of Data Pertinent to Land Use.
    - Part 3. Guide to Application to Noise limits.

4. British Standard: BS 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound.

5. British Standards Institution BS EN 5228-1:2009+A1:2014 Noise and vibration on construction and open sites. London, BSI.

6. Environment Agency; Horizontal Guidance Note IPPC H3, Part 2 – Noise Assessment and Control

7. World Health Organisation: 2018: Environmental Noise Guidelines for the European Region

8. British Standards Institution BS EN 61672-1:2013 Electroacoustics. Sound level meters. Specifications. London, BSI.

9. British Standards Institution BS EN IEC 60942:2018. Electroacoustics. Sound calibrators. London, BSI.

APPENDIX A – METHODS

Process	**Environmental Noise Measurements**
Reference Documentation	British Standard BS 7445, ISO 1996-1:2016, ISO-1996-2:2017, BS EN 5228-1:2009+A1:2014, BS EN 61672-1:2013, BS EN IEC 60942:2018 SOCOTEC in house procedure – Noise Surveys - SCI/ENV/04-7
Monitoring equipment / Serial Number / Calibration status	Cirrus CR:171A Precision Integrating/Logging Sound Level Meter, serial no.G080253, calibrated 10/10/2020, fitted with windshield and calibration checked before, during and after survey, used with Cirrus CR:515 calibrator, serial no. 83305 calibrated 22/06/2020. Cirrus CR:171B Precision Integrating/Logging Sound Level Meter, serial no. G071622, calibrated 03/09/2020, fitted with windshield and calibration checked before, during and after survey, used with Cirrus CR:515 calibrator, serial no. 77774 calibrated 03/09/2020.
Analysis/Reporting Laboratory	SOCOTEC UK Bretby
Accreditation Status	Not Accredited

APPENDIX B – RESULTS TABLES

Table 4: Field calibrations

Sound Level Meter	Serial Number	Date	Calibration Level [dB]	Calibration Drift [dB]
CR:171A	G080253	10/11/20	0.13 – 0.23	0.10
CR:171A	G080253	11/10/20	0.1 – 0.33	0.23
CR:171B	G071622	12/10/20	-0.22 - -0.26	0.04
CR:171A	G080253	13/10/20	0.18 – 0.33	0.15

Table 5: Full results table

Ref #	Location	Start Time	Stop Time	$L_{Aeq, 1hr}$ dB	L_{A10} dB	L_{A90} dB	L_{Amax} dB
10th November 2020							
1	Meadows Farm 07:00	07:00	08:00	45.1	46.2	42.9	66.3
2	Pindale 08:15	08:15	09:15	41.8	42.7	40.4	59.1
3	Peveril Close 9:30	09:30	10:30	43.5	47.7	37.1	72.8
4	Marsh Farm 10:45	10:56	11:56	47.9	50	43.1	63.1
5	Michlow Close 12:00	12:10	13:10	46.3	49.4	36.6	65
11th November 2020							
	Meadows Farm 13:15	13:18	14:18	44.6	45.9	42.9	62.3
	Pindale 14:30	14:30	15:30	44.4	46	42.1	56.3
	Peveril Close 15:45	15:42	16:27	41.6	43.3	38.9	59.8
	Marsh Farm 17:00	16:55	17:46	60.3	65.4	43.7	76.3
	Michlow Close 18:15	18:05	19:05	44.3	47.3	36.9	64.5
12th – 13th November 2020							
	Meadows Farm 19:30	19:29	20:29	44.6	45.7	43	61.8
	Pindale 20:45	20:46	21:46	41.9	42.7	40	74.7
	Peveril Close 22:00	22:01	23:01	38.6	40.3	35.7	54.7
	Marsh Farm 23:15	23:17	00:17	48.3	48.8	40.9	73.1
	Michlow Close 00:30	00:32	01:32	36.1	37.8	32.2	53.7
13th November 2020							
	Meadows Farm 19:30	01:37	02:37	44.5	45.8	42.7	59.5
	Pindale 20:45	02:50	03:50	40.9	41.6	39.4	63.3
	Peveril Close 22:00	04:03	05:03	39.4	41.4	35.5	55.2.
	Marsh Farm 23:15	05:12	06:09	57.2	55.8	42.3	80.9
	Michlow Close 00:30	06:21	06:25	51.8	57.3	38.6	70.2

APPENDIX C – MEASUREMENT LOCATIONS

Map from Gridreferencefinder.com

Ref #	Location	Latitude, Longitude	Grid Reference
1	Meadows Farm	53.337557, -1.743300	SK 17190 82325
2	Pindale	53.340170, -1.756237	SK 16328 82613
3	Peveril Close	53.343194,-1.771106	SK 15337 82946
4a 4b	Marsh Farm	53.347935, -1.755953 53.347425,-1.754320	SK 16344 83477 SK 16453 83421
5	Michlow Close	53.332429, -1.742692	SK 17233 81755

Location 1 - Meadows Farm

Location 2 - Pindale

Location 3 – Peveril Close

Location 4a – Marsh Farm, on the field

Location 4b – Marsh Farm, next to the road

Location 5 – Michlow Close

APPENDIX D – NOISE TERM GLOSSARY

Decibel (dB)	The unit of measure for sound pressure level, defined as the logarithm of the ratio between the actual sound pressure and a reference sound pressure (20μPa). Thus a wide set of values can be compressed into a small set of numbers.
L_{Aeq}	The equivalent continuous A-weighted noise level averaged over the measurement period.
'A' Weighting	The 'A' weighted acoustic energy scale corresponds closely with the response of the human ear.
L_{A90}	The noise level exceeded for 90% of the time.
Max L	The maximum root mean square level of weighted sound pressure level over the reference period.
Max P	The maximum level of un-weighted sound pressure level measured over the reference period.
$L_{EP,d}$	The daily personal noise exposure defined as total exposure to noise throughout the day, taking into account noise levels in work areas and time spent in them.
SEL (LEq)	The constant level which if maintained for a period of 1 second would have the same acoustic energy as the measured noise event.
Background Noise Level	The noise level exceeded for 90% of the time, which corresponds to the quieter periods. BS 4142:2014+A1:2019 defines a measure of background noise in terms of L_{A90} and a 1 hour day time reference period.
Rating Level	The specific noise level plus any adjustments for characteristic features of the noise.
Specific Noise Level	The equivalent continuous 'A' weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval.
Residual Noise	The equivalent continuous 'A' weighted sound pressure level at the assessment position, without the specific noise source present, over a given reference time interval.

APPENDIX E – ENVIRONMENTAL NOISE LEGISLATION

Legal duties and liabilities

Legal implications of environmental noise fall into three categories:

- Common law
- Criminal liabilities.
- Rights to compensation or sound insulation.

In addition, the European Union has much legislation fixing maximum sound power levels for vehicles, machines and aircraft – although this is created to aid development of the single market rather than as a specifically environmental measure.

Common Law Duties

A duty not to interfere with use or enjoyment of land and rights in connection with it, expanded by statute law to provide clearer remedies for complainants and local authorities. The noise standards applied to common law and statutory nuisances are entirely within the remit of the courts, but environmental health offices are employed by local authorities to deal with noise (and other public health) complaints from the public. This category of nuisance applies to all owners or occupiers of property, including vehicles in the street.

Reference should be made to:

- Noise and statutory nuisance Act 1993 – (England & Wales).
- Circular on the 'Noise and statutory nuisance Act 1993, DoE Circular 9/97– (England & Wales).
- Law of statutory nuisance – part 1 premises– (England & Wales).

Principles of Noise Nuisance

Some important points have to be satisfied before any noise nuisance action (or defence) can be successful. The principles apply whichever type of proceedings are taken:

- The nuisance must cause definite and substantial interference with personal comfort or enjoyment of property.
- The noise need not be injurious to health.
- There is no fixed standard of comfort, indicating that local conditions (such as background noise) will be taken into account.
- Complainants who newly occupy property already subject to noise have as many rights to redress as occupiers newly affected by noise ('coming to the nuisance').
- Temporary noise sources will not generally be accepted as nuisances. **Note** that 'temporary' is not the same as 'intermittent'.
- Buildings operations managed in a reasonable manner are unlikely to be successfully interfered with by the courts.
- Malice by a complainant or defendant will be taken into account.

- In civil proceedings it is not sufficient to show that all reasonable steps have been taken to prevent the noise occurring. By contrast in statutory proceedings, businesses have a defence that they used the best practicable means to deal with noise when legal action is taken by EHO's under the 'Environmental Protection Act 1990'.
- Noise resulting from an activity granted planning consent, and which causes a change in the character of a neighbourhood may not be a nuisance.
- Complainants have to show the defendant knew, or ought to have known of the nuisance.