

## Technical Note

Prepared by: **Rachel Canham** Date: **06 February 2023**  
 Project: **Proposed Quarry at Lea Castle Farm** Ref: **5342/DRAFT1**  
 For: **The Planning Inspectorate** Page: **1 of 11**  
 Subject: **Appeal APP/E1855/W/22/3310099 – NRS Aggregates Ltd, Lea Castle Farm**  
**Regulation 25 Response: Baseline Noise Levels**

### 1. Introduction

WBM has been requested by NRS to provide a response to a query relating to noise raised by The Planning Inspectorate with regard to the Environmental Statement prepared for the planning application for this site. NRS is required to supply the following further information:

*“A statement providing commentary on the likely future baseline scenario for noise and confirming why the current baseline data remains representative or the provision of updated survey data. Reason: The latest noise survey data is from July 2018 and maybe unrepresentative of the current baseline and the assessment also lacks consideration of the future baseline position”*

The response from WBM is set out in this Technical Note.

### 2. Change in Baseline Road Traffic Noise 2018-2023

Baseline noise surveys were undertaken in June / July 2018 to support the noise assessment prepared for the Environmental Statement and planning application that was submitted in 2019. The survey details and results are presented in the WBM noise assessment prepared in 2019.

The results of the 2018 surveys found that road traffic was the dominant noise source affecting the receptor locations.

Road traffic statistics for some roads are published by the Department for Transport (DfT). WBM has reviewed the published DfT road traffic flows for the main road in the vicinity of the site, the A449 Wolverhampton Road, for the link north of Wolverley Road. The published road traffic flows on this section of road are as follows:

Year	Count Method	DfT Published Data Annual Average Daily Flow (AADF) All Motor Vehicles	% Change Compared to Previous Year	% Change Compared to 2018
2017	Manual count	13129	-	-
2018	Estimated using previous year's AADF for this link	13173	+0.34%	-

<b>Table 1: Road Traffic Flows for A449 Wolverhampton Road, North of Wolverley Road</b>				
<b>Year</b>	<b>Count Method</b>	<b>DfT Published Data Annual Average Daily Flow (AADF) All Motor Vehicles</b>	<b>% Change Compared to Previous Year</b>	<b>% Change Compared to 2018</b>
2019	Estimated using previous year's AADF for this link	13203	+0.23%	+0.23%
2020	Estimated using previous year's AADF for this link	9980 (affected by pandemic)	-24.4%	-24.2%
2021	Manual count	11136	+11.6%	-15.5%

Table 1 shows that the road traffic flows were fairly similar from 2017 to 2019, increasing slightly year on year up to 2019. The traffic flows for 2020 drop due to the pandemic and increase again for 2021. There is no data published yet for 2022.

The DfT have published provisional road traffic estimates for October 2021 to September 2022, as shown at the following website:

<https://www.gov.uk/government/statistics/provisional-road-traffic-estimates-great-britain-october-2021-to-september-2022/provisional-road-traffic-estimates-great-britain-october-2021-to-september-2022>

From this website, comparing the year ending September 2021 to the year ending September 2022, 'A' road traffic is reported to increase by 12.4%. Based on the data presented in Table 1, this would result in a road traffic flow for 2022 of 12517 AADF. This would correspond to a change of -5.0% compared to the traffic flows in 2018 when WBM carried out the baseline noise measurements.

There is no published information about future road traffic flows in 2023 and beyond. However, assuming no further significant events such as the pandemic, it would be usual to expect a slight year on year increase in road traffic flows. The impact from substantial developments (such as the Lea Castle Village) could create a slightly larger increase in traffic flows.

Road traffic noise can be calculated from the road traffic flows, following the methodology set out in the Department of Transport document "Calculation of Road Traffic Noise" (1988). Daytime road traffic noise is calculated in terms of  $L_{A10,18h}$ . Other calculation procedures can be used to determine the  $L_{Aeq,16h}$ .

To put these changes in road traffic flow into context, a change in traffic flows of around 25% is required in order to correspond to a 1 dB  $L_{A10,18h}$  change in daytime road traffic noise. A change of 1 dB may just be perceptible under laboratory conditions however a change of 3 dB is usually considered to be the smallest change in noise level that is perceptible under most normal conditions.

Based on current available data, the expected change in road traffic flow from 2018 to 2022 is likely to be of the order of -5%, which would correspond to a change in road traffic noise levels of less than 0.3 dB  $L_{10,18h}$ . A change in noise level of this magnitude is usually considered insignificant and would not be perceptible.

As the road traffic flows are likely to increase in 2023 and beyond, the relative reduction in traffic flows compared to 2018 will diminish. Eventually there may be a % increase in road traffic flows with respect to 2018.

Therefore, just on the basis of considering changes on the road traffic network, there is a likely to be a negligible change in road traffic noise levels in 2023 compared to 2018 when the baseline noise surveys were completed.

### 3. Updated Baseline Noise Survey 2023

WBM completed some updated baseline noise samples on Thursday 02 February 2023, on a day when there were no rail or teaching staff strikes scheduled. The noise survey details, results and observations are presented in Appendix B. A summary of the background noise level results, compared to the 2018 data, is presented below in Table 2 along with suggested noise limits based on both the 2018 and 2023 baseline data.

Table 2: Comparison of 2018 and 2023 Data						
Survey Location	2018 Data	2018 Range (Average) dB LA90	Suggested Noise Limit from 2018 Results dB LAeq,1h	2023 Sample Results (Average) dB LA90	Potential Noise Limit from 2023 Results dB LAeq,1h	Comment
31. Broom Cottage	Samples	40-43 (41)	53	48, 48 (48)	55	2023 data within range of previous install results. Noise limit based on 2023 data would be 2 dB higher than current limit.
	Install	35-54 (43)		-		
2. South Lodge	Samples	46-48 (47)	55	49, 54* (49)	55	Excluding data affected by farm activity, 2023 sample is similar to previous results. Noise limit based on 2023 data would be the same as current limit.
3. Heathfield Knoll School	Samples	46-50 (48)	55	53, 55 (54)	55	2023 data around 6 dB higher than 2018 results. Noise limit based on 2023 data would be the same as current limit.
31. Brown Westhead Park	Samples	34-38 (36)	46	46, 47 (46)	55	2023 data around 10 dB higher than 2018 results. Noise limit based on 2023 data would be 9 dB higher than current limit.
5. McDonalds Bungalow	Samples	31-37 (35)	45	42, 44 (43)	53	2023 data around 8 dB higher than 2018 results. Noise limit based on 2023 data would be 8 dB higher than current limit.
6. Keepers Cottage	Samples	35-41 (39)	49	41 (see also 7')	51**	2023 samples (including 7') similar to previous results. Noise limit based on 2023 data would be 2 dB higher than current limit.
7. Castle Barns	Samples	33-43 (39)	51	40 (see also 7')	51**	2023 data (including 7') within range of previous results. Noise limit based on 2023 data would be the same as current limit.
	Install	31-47 (41)		-		
7'. North Lodge	Samples	-	-	41, 42		See locations 6 & 7 above
* affected by local farm activity, excluded from average ** Location 7' is near to both locations 6 & 7, therefore the average results for these locations also include the results from Location 7'						

The baseline noise measurements in 2018 were undertaken on days with low winds / calm conditions. The measurements on 02 February 2023 were undertaken with a moderate westerly breeze, which although was within acceptable ranges of wind speeds for external noise measurements, meant that there was more noise from wind / rustling leaves and road traffic from the west. The prevailing wind direction in the UK is from the south-west.

Overall, road traffic remains a significant noise source affecting all survey locations. The measured background noise levels in 2023 are similar to or higher than the 2018 results at all locations.

Due to the limited number of samples, it is not suggested by WBM that the 2023 data should be used as the basis on which to change the noise limits. However, for information, WBM has considered the impact if noise limits were derived from the 2023 results.

The potential site noise limits have been derived from the 2023 data following current advice from the government contained in paragraph 021 of the web document "Planning Practice Guidance" for Minerals, dated March 2014, i.e. background noise  $L_{A90,T} + 10$  dB, with an upper limit of 55 dB.

The potential site noise limits would be the same for Location 2 (South Lodge), Location 3 (Heathfield Knoll School) and Location 7 (Castle Barns).

The potential noise limits would be slightly higher (by 2 dB) for Location 1 (Broom Cottage) and Location 6 (Keepers Cottage)

The potential noise limits would be considerably higher (by 8-9 dB) for Location 4 (Brown Westhead Park) and Location 5 (McDonalds Bungalow)

This results from the 2023 survey confirm the following:

- The 2018 baseline noise measurements appear to have been undertaken under 'worst case conditions' resulting in lower background noise levels than could occur under different / stronger wind conditions.
- The suggested noise limits set out in the noise assessment for Lea Castle Farm, derived from the 2018 baseline, are therefore a 'worst case', resulting in more stringent / conservative noise limits than might occur based on 2023 survey data.

#### **4. Future Baseline Noise Levels**

In this context, it is assumed that "future baseline noise levels" would be the baseline noise levels that would occur when the quarry starts to be operational. At this time in the future, there would be additional road traffic due to the various permitted residential schemes including Lea Castle Village.

This would mean that the future traffic flows should be marginally higher than at present and as such, it is expected that environmental noise levels in the area would also increase slightly due to the additional road traffic. This may result in higher background noise levels, leading to higher site noise limits for normal quarry operations.

Therefore, using the 2018 background noise levels should indicate a reasonable worst case for the quarry, as they were measured prior to the commencement of the large allocated residential development in the area. In addition, the 2018 measured levels are lower than occur at present (based on the updated 2023 noise survey) and also potentially lower than would occur in the future. Reference to lower background noise levels means that more stringent site noise limits have been used in the noise assessment for the site.

## 5. Sample Measurements at Additional Receptors

During the survey on 02 February 2023, WBM took the opportunity to carry out individual measurements at three additional receptor locations. The issue of quarry noise affecting these additional receptors had been raised by WCC in their Statement of Case (January 2023).

Potential quarry noise affecting these additional receptors has been addressed in the noise proof prepared for the appeal, along with suggested site noise limits for these receptors and calculated site noise levels.

The baseline noise levels measured at these locations are included in this document for information.

### Dwellings of Stourbridge Road (application reference 18/0163/FULL)

Within the noise proof, a baseline background level of 44 dB  $L_{A90,T}$  for this site was assumed based on noise measurements undertaken in 2015 on behalf of the applicant.

The single noise measurement at Location A had a background level of 40 dB  $L_{A90,15min}$ . This is 4 dB lower than the 2015 measured data, presumably due to screening from the adjacent roads by the residential development, which is now completed and occupied. However, even with a lower background noise level, there is no impact on these dwellings due to operations at the quarry.

### Lea Castle Village (application references 17/0205/OUTL and 22/0404/OUT)

Within the noise proof, for the permitted central development (former Lea Castle Centre) a background level of 39 dB  $L_{A90,T}$  was assumed. For the wider Lea Castle Village application a background level of 41 dB  $L_{A90,T}$  was assumed.

The single noise measurement at Location B had a background level of 46 dB  $L_{A90,15min}$ . This is at least 5 dB higher than the assumed background levels for these receptors. A higher background noise level would suggest an increased site noise limit for these receptors was appropriate rather than that suggested in the noise proof. Operations at the proposed quarry at Lea Castle Farm would not cause any significant impact on these receptors.

The measured noise at Location B within Lea Castle Village included contribution from construction activity from within the housing development site.

### Dwellings at Wolverley Lodge (application reference 22/0235/PIP)

Within the noise proof, a baseline background level of 36 dB  $L_{A90,T}$  for this site was assumed.

The single noise level measured at Location C had a background level of 41 dB  $L_{A90,15min}$ . This is 5 dB higher than the assumed background level for these receptors. A higher background noise level would suggest an increased site noise limit for these receptors than that suggested in the noise proof. Operations at the proposed quarry at Lea Castle Farm would not cause any significant impact on these receptors.

## 6. Summary

WBM has prepared a response to the request from The Planning Inspectorate to provide additional information:

*“A statement providing commentary on the likely future baseline scenario for noise and confirming why the current baseline data remains representative or the provision of updated survey data. Reason: The latest noise survey data is from July 2018 and maybe unrepresentative of the current baseline and the assessment also lacks consideration of the future baseline position”*

This Technical Note provides commentary on the likely future baseline scenario for noise and confirms that the 2018 background noise levels should indicate a reasonable worst case for the assessment of the quarry development.

Information is also provided on the validity of the 2018 measured data with regard to road traffic noise and indicates negligible change.

Updated noise survey data is also provided, the results of which confirm that the measured background noise levels in 2023 are similar to or higher than the 2018 results at all locations. The suggested noise limits set out in the noise assessment for Lea Castle Farm are therefore a ‘worst case’, resulting in more stringent / conservative noise limits than would be suggested if based on 2023 survey data.

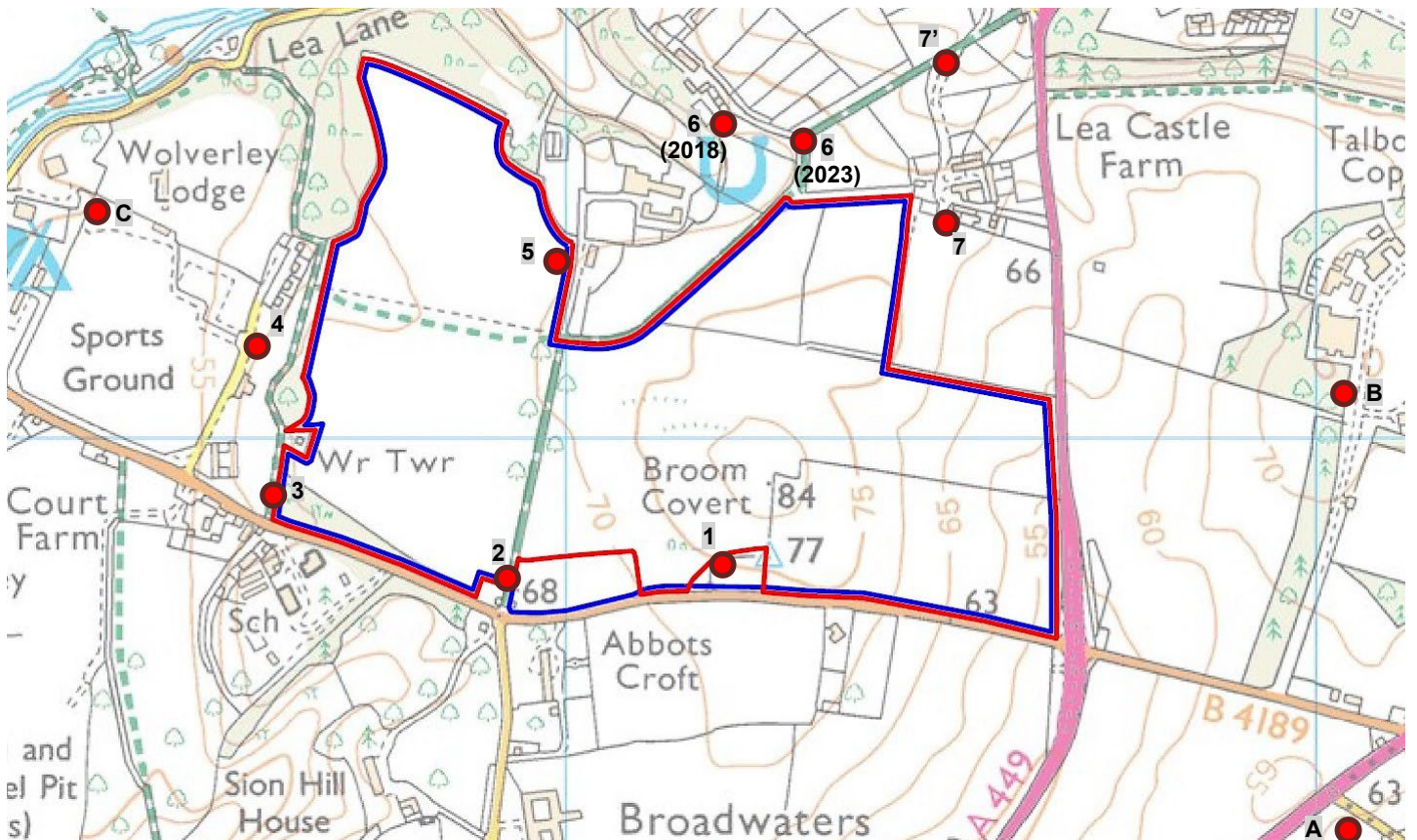
**Rachel Canham**  
Director

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## Appendix A – Noise Survey Locations

Plan A.1: Application Boundary with Noise Survey Locations



- |                               |  |
|-------------------------------|--|
| 1. Broom Cottage:             | Rear garden of dwelling by fence (2018 install & samples, 2023 samples)  |
| 2. South Lodge:               | On driveway to west of property, ~ 20 m from edge of road fence  |
| 3. Heathfield Knoll School:   | On bridleway opposite school, ~ 15 m from edge of road   |
| 4. Brown Westhead Park:       | In road, by entrance gates   |
| 5. McDonalds Bungalow:        | On track / in field to west of property  |
| 6. Keepers Cottage:           | (2018) Near tree by entrance and corner of fence, opposite house<br>(2023) On nearest part of footpath to the dwelling |
| 7. Castle Barns:              | (2018) Install in field south of garden by telegraph pole, samples by fence<br>(2023) Rear of bin store at dwellings   |
| 7'. North Lodge:              | (2023) Between locations 6 & 7, by fork in the road leading to Castle Barns  |
| A. Houses off Stourbridge Rd: | (2023) North edge of development, opposite 45 Albrington Drive   |
| B. Lea Castle Village:        | (2023) Lea Castle Drive, opposite sales centre, approx. 6m from road   |
| C. Houses at Wolverley Lodge: | (2023) East of proposed dwellings, within Brown Westhead Park at edge of parking area                                  |



**Appendix A (continued)**

**Plan A.2: Aerial Image (Google) with Noise Survey Locations**



- |                               |   |
|-------------------------------|---|
| 1. Broom Cottage:             | Rear garden of dwelling by fence (2018 install & samples, 2023 samples)   |
| 2. South Lodge:               | On driveway to west of property, ~ 20 m from edge of road   |
| 3. Heathfield Knoll School:   | On bridleway opposite school, ~ 15 m from edge of road  |
| 4. Brown Westhead Park:       | In road, by entrance gates to playing fields  |
| 5. McDonalds Bungalow:        | On track / in field to west of property   |
| 6. Keepers Cottage:           | (2018) Near tree by entrance and corner of fence, opposite house<br>(2023) On nearest part of footpath to the dwelling              |
| 7. Castle Barns:              | (2018) Install in field south of garden by telegraph pole, samples by fence<br>(2023) Rear of bin store at dwellings (samples only) |
| 7'. North Lodge:              | (2023) Between locations 6 & 7, by fork in the road leading to Castle Barns   |
| A. Houses off Stourbridge Rd: | (2023) North edge of development, opposite 45 Albrington Drive  |
| B. Lea Castle Village:        | (2023) Lea Castle Drive, opposite sales centre, approx. 6m from road  |
| C. Houses at Wolverley Lodge: | (2023) East of proposed dwellings, within Brown Westhead Park at edge of parking area   |



## Appendix B – 2023 Baseline Survey Details & Results

### Date and Locations of Survey

10:00 to 16:30 hours on 02 February 2023 in the vicinity of Lea Castle Farm (locations 1 to 7, 7', A, B and C). The locations are presented in the Plans A.1 and A.2 in Appendix A and described below:

Location		Description
1	Broom Cottage	Rear garden of dwelling by fence (same as used for sample measurements in 2018)
2	South Lodge	On driveway to west of property, ~ 20 m from edge of road (same as used for sample measurements in 2018)
3	Heathfield Knoll School	On bridleway opposite school, ~ 15 m from edge of road (same as used for sample measurements in 2018)
4	Brown Westhead Park	In road, by entrance gates to playing fields (same as used for sample measurements in 2018)
5	McDonalds Bungalow	In field to west of property (near location used for sample measurements in 2018)
6	Keepers Cottage	On nearest part of footpath to the dwelling (near location used for sample measurements in 2018)
7	Castle Barns	Rear of bin store at dwellings (near location used for sample measurements in 2018)
7'	North Lodge	Between locations 6 & 7, by fork in the road leading to Castle Barns
A	Houses off Stourbridge Road	North edge of development, opposite 45 Albrington Drive
B	Lea Castle Village	Lea Castle Drive, opposite sales centre, approx. 6m from road
C	Houses at Wolverley Lodge	East of proposed dwellings, within Brown Westhead Park at edge of parking area

### Survey carried out by

Rachel Canham

### Weather Conditions

Cool (10-12°C), dry, overcast, light to moderate westerly breeze, initially around 2m/s increasing to 3-4m/s.

## Appendix B (continued)

### Instrumentation and Calibration

The instrumentation used (including serial number in brackets) is tabulated below. The sensitivity of the meter was verified on site immediately before and after the survey using the field calibrator. The measured calibration levels were as follows:

Instrumentation	Start Cal	End Cal
Norsonic 140 Sound Level Meter (1403137)	113.7 dB(A)	113.7 dB(A)
Norsonic 1251 Calibrator (31993)		

The meter and calibrator are tested monthly against Norsonic Calibrators, type 1253 (serial number 22906) and type 1256 (serial number 125626100) both with UKAS approved laboratory certificates of calibration. In addition, the meter and calibrator undergo traceable calibration at an external laboratory every two years.

### Survey Details

Attended sample measurements of 15 minutes duration were taken at locations location 1 to 7, 7', A, B and C. The microphone was at a height of around 1.3m above local ground level, with a windshield used throughout.

Detailed observations for each survey location are included in the tabulated results. In general, road traffic remained the dominant noise source for most locations.

## Appendix B (continued)

### Survey Results and Observations

**Table B.1: Survey Results Lea Castle Farm 02 February 2023**

Location	Start Time	Results dB (T = 15 minutes)				Comments / Observations
		L <sub>Aeq,T</sub>	L <sub>Amax,f</sub>	L <sub>A10,T</sub>	L <sub>A90,T</sub>	
A	10:09	46	62	49	40	Distant and local road traffic, birdsong, occasional distant aircraft
B	10:30	54	73	57	46	Distant road traffic, occasional passing cars and construction vehicles (controlled L <sub>Aeq,T</sub> ), birdsong, light aircraft overhead. Distant construction activity (banging, distant plant noise, reversing beepers).
2	10:50	55	67	58	49	Road traffic on Wolverley Road, also some birdsong / calls. Motorbike and car on drive.
5	11:10	44	53	45	42	Distant road traffic, birdsong, light aircraft overhead.
1	11:35	56	71	59	48	Road traffic on Wolverley Road, some birdsong / calls, distant aircraft, some rustling leaves in trees.
1	11:51	55	65	58	48	Road traffic on Wolverley Road, some birdsong / calls, rustling leaves in trees, light aircraft overhead
4	12:13	55	76	58	47	Distant road traffic, rustling leaves, birdsong / calls. Cars arriving to park near gate.
3	12:36	60	68	63	55	Road traffic on Wolverley Road, wind noise / rustling leaves, some bird calls.
C	13:00	44	61	46	41	Distant road traffic, bird song / calls (location is sheltered compared to Location 4)
7	13:28	45	67	47	40	Distant road traffic, wind in trees, bird calls including gulls.
7'	13:48	48	68	51	41	Distant road traffic, wind in trees, bird calls, distant aircraft, distant helicopter / sirens on road.
6	14:07	52	75	54	41	Distant road traffic, wind in trees, noise from horses in paddock, some birdsong / calls, distant aircraft, light aircraft overhead.
3	14:36	57	64	59	53	Road traffic on Wolverley Road, wind in trees, birdsong / calls, distant barking dogs, distant aircraft
4	14:56	53	76	54	46	Distant road traffic, wind in trees, some bird calls, local traffic
5	15:19	47	60	50	44	Distant road traffic, wind in trees, occasional bird calls
2	15:46	57	69	60	54	Road traffic on Wolverley Road, birdsong / calls, passing car on track x 2. Also noise from farm / agricultural activity (affects L <sub>A90,T</sub> )
7'	16:08	54	77	56	42	Distant road traffic, wind in trees, bird song/calls, passing vehicles x 2