

LEICESTER QUARRY NOISE AND VIBRATION MANGEMENT PLAN

1.0 INTRODUCTION

- 1.1 Owing to the nature of the operations carried out at the installation, there will be emissions of noise arising from site works undertaken by both MGL and Ibstock. Extraction is progressing within the quarry to supply clay to the adjacent brickworks as it has for the last 25 years. A ROMP planning permission was approved for the quarry in 2015 which covered the continuation of extraction and restoration of the quarry. LF Acoustics' Noise assessment dated September 2019 was produced to assess the noise levels associated with the proposed importation of materials to complete the infilling of the site and to provide an improved restoration profile.
- 1.2 Calculations of the likely worst case noise levels associated with the operation of the quarry and the landfilling undertaken by LF Acoustics indicate that the noise levels associated with the vehicle movements would be remain below the current planning condition limits and therefore acceptable. Conditions 23 to 27 of the current permission are:-

23. Measures shall be taken within the site to ensure that the best practicable means are used to control the emission of noise from the area shown edged with a solid red line on Figure 2 dated Nov 14 and to ensure so far as is reasonably practicable that the operations carried out within the area shown edged with a solid red line on Figure 2 dated Nov 14 do not give rise to nuisance at nearby residential properties.
24. Between the hours of 0700 and 1900 Monday to Friday and 0700 and 1400 Saturdays the free-field equivalent continuous noise level, LAeq, T noise levels arising from the continued development (with the exception of the temporary operations identified in Condition No. 25 below) when measured 3.5 metres from the most exposed external façade of a noise sensitive property shall not exceed the following levels at the locations specified:
- 53 Pretoria Road - 53.1 dB (LAeq 1hr)
 - 193 Pretoria Road - 46.8 dB (LAeq 1hr)
 - The Villas - 50.2 dB (LAeq 1hr)
 - 151 Ibstock Road - 52.4 dB (LAeq 1hr)
 - Centre Bungalow, Clay Lane - 46.1 dB (LAeq 1hr)
 - 339 Whitehill Road – 55 dB (LAeq 1hr)
 - The Grange, Ellistown Terrace Road - 55 dB (LAeq 1hr).
- Measurements taken to verify compliance shall have regard to the effects of extraneous noise and where practical a correction shall be made for any such effects.
25. Noise levels arising from temporary operations such as soil stripping and the construction and removal of soil mounds shall not exceed 70 dB (LAeq, 1 hr) free field at any of the locations specified in Condition number 24. Temporary operations which exceed the normal day to day criterion set out in condition number 24 shall only be carried out between the hours of 0800 and 1800 Monday to Friday and the hours of 0800 and 1200 on Saturdays, and shall be limited to a total of 44 days in any 12-month period. Advance notice of the commencement of such noisier activities shall be submitted in writing to the Mineral Planning Authority at least 7 days in advance of their commencement.

26. All vehicles, plant and machinery operated within the land shown edged with a solid red line on Figure 2 dated Nov 14 shall be fitted with effective silencers which shall be maintained in accordance with the manufacturer's specification when in use.
27. All audible warning devices fitted to vehicles, plant and machinery operating within the land shown edged with a solid red line on Figure 2 dated Nov 14 shall be of a design that use of the warning devices does not give rise to complaints from neighbouring residents and/or occupiers.
- 1.3 Figure 1 gives the location of the residential properties identified in Condition 24 of the planning permission. Grid References for all locations of receptors, fixed and mobile plant, site traffic and barriers mentioned in this management plan are given in LF Acoustics' Noise assessment dated September 2019.
- 1.4 Further baseline noise monitoring was undertaken in September 2019 (please see LF Acoustics' NIA), which indicated a general increase in background noise levels compared to those assumed when determining the planning condition limits specified above. Assessing the noise levels from the proposed operations thus ensures that the infilling operations would not result in any significant adverse noise impacts when assessed against the requirements of the planning conditions and BS 4142:2014+A1:2019.
- 1.5 There is presently plant operating within the quarry associated with the extraction operations:
- Mobile plant, e.g. excavators, compactors, bulldozers, dump trucks, with the mobile plant fitted with audible reversing signals; and
 - Heavy Goods Vehicles arriving at and leaving the site transporting material between the two brickworks sites.
- 1.6 The main additional sources of noise associated with the infilling operations would be as follows:-
- Heavy Goods Vehicles arriving at and leaving the site;
 - Mobile plant, e.g. excavator and bulldozer; and
 - Reversing signals fitted to mobile plant.
- 1.7 The risk assessment has concluded that the generation of vibration as a result of operations at the installation will not be significant due to the distances from residential properties and is therefore given no further consideration.
- 1.8 This procedure outlines the management techniques that will be used at the installation to minimise emissions of noise and vibration.

2.0 RISK ASSESSMENT

- 2.1 The measures necessary to control noise have been considered in the context of the installation setting, the proximity of sensitive receptors and the proposed operations that will be carried out.
- 2.2 At present, there is no requirement to carry out any regular monitoring of noise levels associated with the operations within the quarry, as the assessments carried out to support the ROMP, which included excavation and restoration operations indicated acceptable noise levels.
- 2.3 Mitigation measures have already been implemented within the quarry to ensure that the excavation and restoration operations do not adversely impact on the occupants of surrounding properties. Measures adopted include the provision of boundary bunding around the northern area of the quarry and the provision of appropriate buffer zones between working areas and the neighbouring properties. Grid References for all locations of receptors, fixed and mobile plant, site traffic and barriers mentioned in this management plan are given in LF Acoustics' Noise assessment dated September 2019.
- 2.4 An assessment of the current mitigation measures, which would be retained during the infilling phase, would ensure that noise levels are controlled.
- 2.5 One area where noise levels are anticipated to be higher is during works within the latter stages of Phase A, when the infilling plant is working close to the final levels. Prior to the plant operating close to equivalent ground levels to the neighbouring properties, mitigation comprising bunding and a boundary fence to an overall height of 5 metres would be constructed along the boundary with the properties to ensure that the infilling plant remains effectively screened. Grid references shown in NIA.
- 2.6 Should the controls identified be considered inadequate once the infilling operations commence (e.g. due to a change in phasing), then an action plan will be drawn up by site management detailing the actions to be taken, responsibilities and timescales.
- 2.7 Further details of the risk assessment can be found in the LF Acoustics Noise assessment dated September 2019.

3.0 OPERATIONAL TECHNIQUES

3.1 Management Responsibility

- 3.3.1 The site manager will have responsibility for ensuring that nuisances and hazards arising from the landfill due to noise and vibration are minimised.

3.2 Liaison with Neighbours

- 3.2.1 Regular liaison will be maintained with neighbours to ensure they are notified in advance of activities, which may give rise to increased noise levels.

3.3 Training

- 3.3.1 All installation personnel will be trained in the need to minimise installation noise and will be responsible for monitoring and reporting excessive noise when carrying out their everyday roles.

3.4 Operational Hours

- 3.4.1 Except in an emergency, in order to minimise disturbance to neighbours, waste disposal operations involving the use of mobile plant and equipment and the importation of waste will not be carried on outside the permitted operational hours of 07:00 – 19:00 hours Mondays to Fridays and 07:00 – 14:00 hours on Saturdays.

3.5 Noise Suppression Equipment

- 3.5.1 In line with Conditions 26 and 27 of the ROMP permission, it is proposed to use “white noise” reversing alarms or intelligent alarms on all mobile plant that can only be heard in the immediate vicinity of the machine. Further details can be found in the LF Acoustics Noise assessment dated September 2019.

3.6 Selection of Plant and Equipment

- 3.6.1 During the selection process for new plant and equipment, consideration will be given to the need to meet all legislation and statutory guidance on noise levels and to minimise levels of noise from selected equipment.
- 3.6.2 If older items of plant are found to give rise to unacceptable noise levels, consideration will be given to their replacement with quieter designs.

3.7 Positioning of Plant and Equipment

- 3.7.1 When positioning noisy equipment, consideration will be given to the proximity of receptors and the prevailing wind direction.

3.8 Maintenance of Plant and Equipment

- 3.8.1 All plant and equipment in use at the installation will be regularly maintained to minimise noise resulting from their operation.

3.9 Modification to Plant and Equipment

- 3.9.1 If an item of plant is found to generate unacceptable noise levels, consideration will be given to modifying the equipment to incorporate noise suppression equipment.

3.10 Reversing Alarms

- 3.10.1 White noise warning signals will be utilised on vehicles on site to minimise the impact on local receptors.

3.11 Sound Barriers

- 3.11.1 Whilst the assessment did not indicate any adverse noise impacts with appropriate controls and mitigation measures implemented, should noise levels be identified to be unacceptable in the vicinity of receptors, additional sound bunds and barriers may be constructed around operational areas and acoustic screening erected around fixed plant. Grid references shown in NIA.

- 3.11.2 For temporary plant, portable acoustic screens or straw bale enclosures will be considered if necessary.

3.12 Speed Limits

- 3.12.1 The imposition of a speed limit for vehicles on site will reduce noise associated with high engine speeds and excessive braking.

3.13 Vehicle Circulation Routes

- 3.13.1 Vehicles using the installation will travel across designated routes that have been designed and located to minimise nuisance and hazard to both internal installation users and, receptors located outside the installation boundary.

3.14 Road Maintenance

- 3.14.1 The regular maintenance of roads to prevent the development of potholes will significantly reduce the noise generated particularly by empty vehicles exiting the installation.

3.15 Separation of Workings

- 3.15.1 To ensure no disruption to the extraction operations, the infilling and restoration works would be typically at least 400 metres from the extraction areas. Maintaining this separation, ensures that any cumulative noise effects associated with the extraction and infilling operations were minimised.

- 3.15.2 Plant undertaking the infilling (permitted) operations would not normally operate within 150 metres of the surrounding residential properties, to ensure an appropriate buffer zone is maintained.

4.0 MONITORING TECHNIQUES

4.1 Monitoring of Meteorological Conditions

4.1.1 Wind speed and direction will be routinely monitored and in certain circumstances i.e. when landfilling close to receptors, this will enable potential noise problems to be predicted and necessary remedial action, such as modifications to the method of working, to be planned and implemented.

4.2 Regular Inspection/Monitoring

4.2.1 The site manager will ensure that regular inspections are made of the installation and its perimeter in order to identify any unacceptable or unexpected sources of noise and to establish whether noise is apparent at the perimeter of the installation. Particular attention will be paid to the active landfilling area, and the perimeter of the installation, which is close to sensitive receptors.

4.3 Quantitative Noise Monitoring

4.3.1 Quantitative noise monitoring will be carried out if it is identified that problems are being caused, following receipt of a justified complaint and to demonstrate conformance with any noise levels imposed by the planning consent.

4.3.2 Noise monitoring would normally be carried out during normal working hours on a weekday between 07:00 – 19:00 hours.

4.3.3 Noise measurements would normally be made at the following five locations identified within the noise assessment which supported the planning application:

- Pretoria Road;
- The Villas;
- 151 Ibstock Road; and
- Centre Bungalow, Ellistown.

4.3.4 The monitoring positions used would be at publicly accessible locations as close to each property as possible, where the noise levels monitored were considered to be representative of those at the adjacent dwellings. Grid references shown in NIA.

4.3.5 At each location, two non-concurrent 15 minute attended noise measurements would be made in accordance with the requirements of Condition 24, whilst the site was operational.

4.3.6 The measurements would be made at a freefield location (at least 3.5 metres from the property facade) and a height of 1.2 - 1.5 metres above ground level. Where it was necessary to make measurements adjacent to a property facade or other reflecting surface (i.e. at a distance of 1 metre from the facade or fence), a correction of -3dB(A) would be made to the measured values to convert between facade and equivalent freefield levels.

4.3.7 The measurements would be made using a Sound Level Meter designed to a minimum Class 2 specification in accordance with BS-EN 61672, which would be field calibrated before and after each exercise using a suitable acoustic calibrator. Should the two calibration levels drift by more than 0.5 dB, the measurements would be discarded and the exercise repeated.

4.3.8 The surveys would normally be carried out during dry conditions and when wind speeds averaged less than 5 m/s, to ensure any interference on the microphone was minimised.

- 4.3.9 Measurements would only be taken during periods of normal operation (e.g. excluding periods of plant maintenance and breakdowns) and when the site was fully operational.
- 4.3.10 For each measurement, the following parameters shall be recorded:
- measurement position;
 - $L_{Aeq, 15 \text{ minute}}$, L_{A90} and $L_{Amax,F}$ noise levels;
 - weather conditions, wind speeds and direction;
 - activities being carried out on site; and
 - other influences on noise levels.
- 4.3.11 Where the measurements obtained were clearly influenced by noise from other sources (e.g. road traffic), if possible, the extraneous noise would be paused out of the measurement using the pause function on the sound level meter (only possible if the events are isolated) and a note made, or a note made to the effect that the other sources of noise were identified to be the principal noise source. If the latter were the case, a note would be made regarding the audibility of operations within the quarry and professional judgement used to evaluate whether the noise levels measured attributable to the operation of the quarry were within the noise limits.
- 4.3.12 The measured noise levels would be assessed against the noise limits specified within Condition 24 of the planning permission.
- 4.3.13 Where the measurements indicate that the noise limits were exceeded from site operations, the source of the noise should be identified and the operator should seek to minimise noise from that source, using Best Practicable Means, to reduce noise levels below the limits specified above.
- 4.3.14 The mitigation, which could include reduction at source or by additional bunding for example, should be agreed in writing with the Environment Agency and Minerals Planning Authority and implemented within a period of 8 weeks of the monitoring exercise. Following completion of the works, the measurement exercise would be repeated to ensure that the limits are achieved, and further works carried out if required.
- 4.3.15 Records of each noise monitoring exercise would be available for inspection within the site office within a period of 14 days from completion.

5.0 ACTION PLAN AND COMPLAINTS PROCEDURE

- 5.1 If a noise problem is noticed or a complaint received, it will be immediately reported to the site manager or the next level of management if they are unavailable.
- 5.2 The source of the problem will then be investigated, normally by a visit to the complainant's property within a period of 48 hours of the complaint being received. The manager would undertake a subjective assessment of the noise giving rise to the complaint and undertake remedial action where necessary to reduce the noise.
- 5.3 Should the quarry manager consider the complaint to be justified, the EA would be informed of the complaint within a period of 7 days of the complaint having been received and a noise monitoring exercise carried out in accordance with the above scheme, within a period of 2 weeks of the complaint.
- 5.4 In the event that noise derived from the site giving rise to the complaint is justified and the noise levels found to be above the appropriate noise limits, action will be taken without delay. The remedial action will be related to the meteorological conditions and the high sensitivity receptors. The following remedial action may be appropriate: -
- Relocate landfilling operations pending change in wind direction;
 - Relocate plant and equipment to less sensitive locations;
 - Construct or erect acoustic bunds, barriers or screens;
 - Replace noisy plant and equipment with quieter models;
 - Undertake maintenance on equipment that will reduce noise levels; and
 - Modify plant to incorporate noise suppression equipment.
- 5.5 Each complaint would be logged using the complaints form provided in Appendix A, which will include:
- The results of inspections and monitoring carried out by installation personnel;
 - Wind speed and direction;
 - Problems including date, time, duration, prevailing weather conditions and cause of the problem;
 - Complaints received including address of complainant;
 - Details on the corrective action taken, and any subsequent changes to operational procedures; and
 - An evaluation of the effectiveness of the techniques used.
- 5.6 The complaints log will be held within the Managers Office and made available to the EA upon request.

**Appendix A
Complaint Reporting Form**

Noise complaint report form	Date:	Ref. No.
Name and address of complainant		
Tel no. of complainant		
Time and date of complaint		
Date, time and duration of offending noise		
Weather conditions (e.g., dry, rain, fog, snow)		
Wind strength and direction (e.g. light, steady, strong, gusting)		
Complainant's description of noise (e.g., hiss, hum, rumble, continuous, intermittent)		
Has complainant any other comments about the offending noise?		
Any other previous known complaints relating to installation (all aspects, not just noise)		
Any other relevant information		
Potential noise sources that could give rise to the complaint		
Operating conditions at the time offending noise occurred		
Action taken:		
Final outcome:		
Form completed by	Signed	

NOISE ASSESSMENT

INFILLING AND RESTORATION OF IBSTOCK QUARRY

MICK GEORGE LTD

SEPTEMBER 2019

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NOISE ASSESSMENT

INFILLING AND RESTORATION OF IBSTOCK QUARRY

MICK GEORGE LTD

SEPTEMBER 2019

Status	Prepared By	Date
2.1	L Jephson BEng (Hons) MIOA	17/9/19

This report has been prepared using all reasonable skill and care within the resources and brief agreed with the client. LF Acoustics Ltd accept no responsibility for matters outside the terms of the brief or for use of this report, wholly or in part, by third parties.

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1. Introduction

- 1.1. LFAcoustics Limited have been appointed by Mick George Ltd to undertake a noise assessment with regards the importation of inert materials to infill and restore Ibstock Quarry.
- 1.2. Extraction is progressing within the quarry to supply clay to the adjacent brickworks. A ROMP was approved for the quarry in 2015 (Application Ref. 2015/0262/07 2014/ROMPEIA/0250/LCC), which covered the continuation of extraction and restoration of the quarry.
- 1.3. MGL are seeking to work alongside the Ibstock Group to carry out the infilling and restoration of the quarry. It is proposed to restore the site to a more naturalistic profile than approved at present. The infilling and restoration operations would progress alongside the present extraction and would be phased in a manner to ensure there was not disruption to Ibstock's operations.
- 1.4. This report presents an assessment of the likely noise levels generated at surrounding noise sensitive receptors during the infilling and restoration of the quarry. Section 2 provides a summary of the applicable standards and guidelines, with a summary of the relevant conditions within the present planning permission provided within Section 3. Section 4 provides the results of a baseline noise monitoring exercise undertaken to determine the existing noise levels at properties potentially most affected by the proposed operations. Section 5 discusses the existing and proposed additional infilling operations within the quarry. Calculations and assessment of the noise generated by the infill and restoration operations are provided in Section 6, with recommendations for any additional mitigation or control measures provided in Section 7. Finally, Section 8 presents a summary of this report.

2. Applicable Standards and Guidance

A description of the noise units referred to within this report is provided in Appendix A.

2.1. National Planning Policy Framework

2.1.1. The principal planning guidance in the UK is contained within the National Planning Policy Framework [1]. At the heart of the NPPF is a presumption in favour of sustainable development, although environmental criteria should be set out to ensure that the permitted operations do not have unacceptable adverse impacts, with appropriate noise limits adopted to control noise.

2.1.2. The current planning practice guidance attached to the NPPF relating to noise was updated in March 2014 [2], which covers mineral extraction and related processes, including aggregate recycling, restoration and the disposal of construction waste, provides guidance and advises upon acceptable levels of noise from this type of operations. This is the most recent guidance when assessing noise from minerals and related operations.

2.1.3. For normal daytime works the guidance seeks to ensure that the operations do not result in significant adverse effects and advises for normal daytime operations that the following limits (in terms of $L_{Aeq, 1 \text{ hour}}$ freefield noise levels) should not be exceeded:

- 10 dB above the background (L_{A90}) noise level; subject to
- a maximum value of 55 dB $L_{Aeq, 1 \text{ hour}}$ (freefield).

2.1.4. Where background noise levels are low, the guidance accepts that it may be very difficult to achieve a limit based upon background + 10 dB(A) without imposing unreasonable burdens on the mineral operator. In such cases, the limit set should be as near that level as practicable during normal working hours and should not exceed 55 dB $L_{Aeq, 1 \text{ hour}}$ (freefield).

2.2. British Standard BS 4142

2.2.1. The Environment Agency have requested an assessment of the noise levels attributable to the importation of materials in relation to the infilling and restoration operations to be made against the requirements of BS 4142 [3].

2.2.2. BS 4142 is intended for the assessment of noise from commercial and industrial operations and is not intended to be applied to the assessment of noise from minerals operations, including aggregate recycling and restoration operations and construction and demolition, as advised in Section 1.3 of the Standard. It is clear from the Standard that the most appropriate guidance to adopt should be that contained within the PPG described above.

2.2.3. However, consideration to this Standard has been given within this report to address the requirements of the EA.

2.2.4. BS 4142 is a comparative standard in which the estimated noise levels from the proposed development are compared to the representative background noise level from existing uses.

2.2.5. BS 4142 relates the likelihood of complaint to the difference between the Rating Level of the noise being assessed and the background noise level.

2.2.6. The background noise level is the L_{A90} noise level, usually measured in the absence of noise from the source being assessed, but may include other existing industrial or commercial sounds. The background noise levels should generally be obtained from a series of measurements each of not less than 15 minute duration.

- 2.2.7. The Rating Level of the noise being assessed is defined as its L_{Aeq} noise level (the 'specific noise level'), with the addition of appropriate corrections should the noise exhibit a marked impulsive and/or tonal component or should the noise be irregular enough in character to attract attention. Given that the noise attributable to the operation of a sand and gravel quarry is principally associated with diesel engines, it has not been considered appropriate to apply any corrections when determining the Rating Levels of noise from the operation of the site.
- 2.2.8. During the daytime, the specified noise levels are determined over a reference time interval of 1 hour.
- 2.2.9. If the Rating Level of the noise being assessed exceeds the background level by 10 dB or more BS 4142 advises that there is likely to be an indication of a significant adverse impact, depending upon context. A difference between background level and Rating Level of around 5 dB is likely to be an indication of an adverse impact, depending upon context. The lower the Rating Level is, relative to the background noise level, the less likely the specific source will have an adverse or significant adverse impact. Where the Rating Level does not exceed the background noise level is an indication of a low impact, depending upon context.

3. Current Planning Conditions

3.1. A ROMP for the quarry was approved by Leicestershire in 2015 (Application Ref. 2015/0262/07 2014/ROMPEIA/0250/LCC). The ROMP included an EIA which covered the continued extraction and restoration of the quarry.

3.2. Given that there have been no revisions to mineral planning policy in relation to noise since the application was approved, it is considered that the noise limits specified at neighbouring noise sensitive receptors are considered appropriate when assessing noise from the proposed infilling and restoration operations (and taking account of the potential cumulative impacts associated with the continued extraction).

3.3. Conditions 23 to 27 relate to noise and are reproduced below for reference:

23. Measures shall be taken within the site to ensure that the best practicable means are used to control the emission of noise from the area shown edged with a solid red line on Figure 2 dated Nov 14 and to ensure so far as is reasonably practicable that the operations carried out within the area shown edged with a solid red line on Figure 2 dated Nov 14 do not give rise to nuisance at nearby residential properties.

24. Between the hours of 0700 and 1900 Monday to Friday and 0700 and 1400 Saturdays the free-field equivalent continuous noise level, LAeq, T noise levels arising from the continued development (with the exception of the temporary operations identified in Condition No. 25 below) when measured 3.5 metres from the most exposed external façade of a noise sensitive property shall not exceed the following levels at the locations specified:

- 53 Pretoria Road - 53.1 dB (LAeq 1hr)
- 193 Pretoria Road - 46.8 dB (LAeq 1hr)
- The Villas - 50.2 dB (LAeq 1hr)
- 151 Ibstock Road - 52.4 dB (LAeq 1hr)
- Centre Bungalow, Clay Lane - 46.1 dB (LAeq 1hr)
- 339 Whitehill Road – 55 dB (LAeq 1hr)
- The Grange, Ellistown Terrace Road - 55 dB (LAeq 1hr).

Measurements taken to verify compliance shall have regard to the effects of extraneous noise and where practical a correction shall be made for any such effects.

25. Noise levels arising from temporary operations such as soil stripping and the construction and removal of soil mounds shall not exceed 70 dB (LAeq, 1 hr) free field at any of the locations specified in Condition number 24. Temporary operations which exceed the normal day to day criterion set out in condition number 24 shall only be carried out between the hours of 0800 and 1800 Monday to Friday and the hours of 0800 and 1200 on Saturdays, and shall be limited to a total of 44 days in any 12-month period. Advance notice of the commencement of such noisier activities shall be submitted in writing to the Mineral Planning Authority at least 7 days in advance of their commencement.

26. All vehicles, plant and machinery operated within the land shown edged with a solid red line on Figure 2 dated Nov 14 shall be fitted with effective silencers which shall be maintained in accordance with the manufacturer's specification when in use.

27. All audible warning devices fitted to vehicles, plant and machinery operating within the land shown edged with a solid red line on Figure 2 dated Nov 14 shall be of a design that use of the warning devices does not give rise to complaints from neighbouring residents and/or occupiers.

3.4. Figure 1 indicates the locations of the dwellings identified in Condition 24 above.

4. Baseline Noise Monitoring

4.1. Introduction

- 4.1.1. The Environment Agency have requested further baseline noise monitoring to be undertaken to ensure that the background (L_{A90}) noise levels required for the BS 4142 assessment of the EA permitted operations are representative of the current noise environment, which includes operations within the main brickworks site and present permitted operations within the quarry.
- 4.1.2. To determine the current noise environment, a series of unattended and attended noise measurements were obtained at representative properties surrounding the quarry between Thursday 5th and Tuesday 10th September 2019.
- 4.1.3. Weather conditions for the survey were good, remaining generally fine and dry throughout the survey period, with wind speeds remaining low, averaging less than 5m/s and generally from a south westerly direction. The environmental conditions were considered suitable for undertaking environmental noise monitoring.

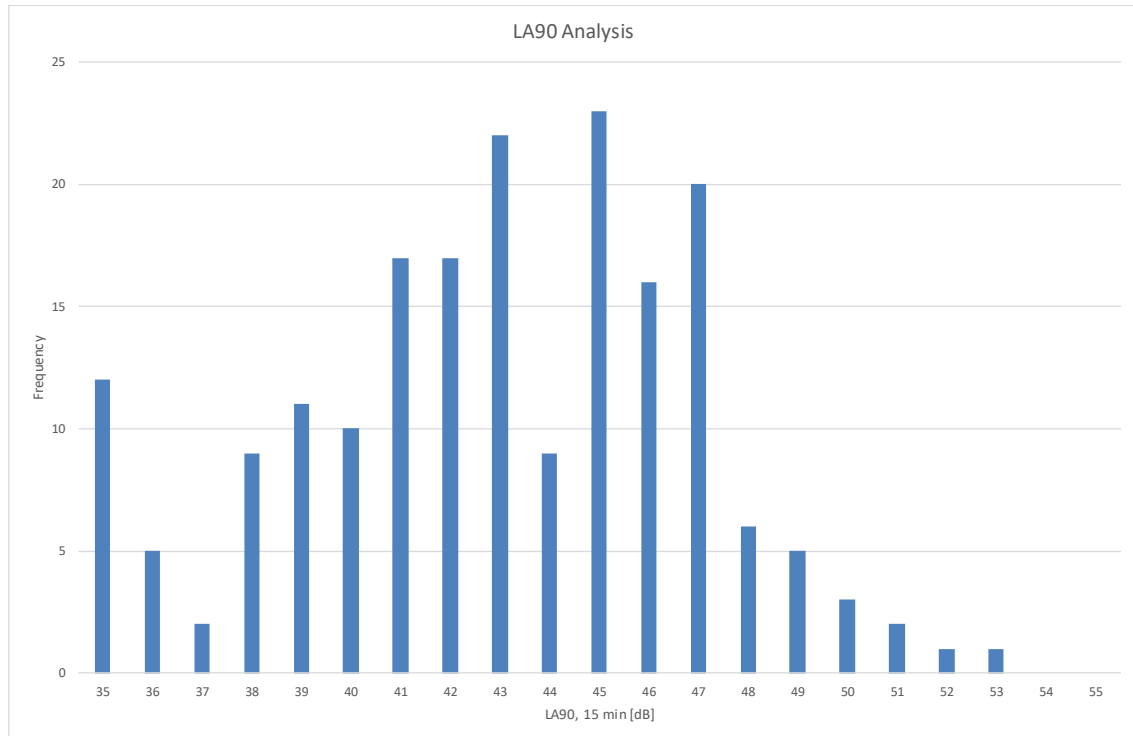
4.2. Unattended Noise Surveys

- 4.2.1. Unattended noise monitoring was carried out at two positions, representative of the dwellings potentially most likely to be affected by noise from the proposed infilling operations.
- 4.2.2. The monitoring positions are indicated on Figure 1.
- 4.2.3. One location was to the rear of the properties along Pretoria Road, to the south west of the quarry . The monitoring equipment was located in the public open space to the rear of the dwellings, with the microphone set freefield and at a height of 1.3 metres above the ground.
- 4.2.4. The second unattended survey position was located to the rear of The Villas, to the west of the quarry. Again, the microphone was positioned freefield and at a height of 1.3 metres above the ground.
- 4.2.5. Two Rion NL-52 Class 1 Sound Level Meters were used for the exercise. Both meters had Rion WS-15 microphone protection fitted, which maintains Class 1 performance and were fitted with audio recording capability to record snapshots of audio throughout the survey period to enable the principal sources of noise to be identified.
- 4.2.6. Both meters were calibrated before and after the exercise using a Rion NC-74 Class 1 Acoustic Calibrator, with the instruments reading 94.0 dB on each occasion. All the monitoring equipment had been calibrated within the past 12/24 months in accordance with national standards, copies of the calibration certificates can be provided on request.
- 4.2.7. The meters were configured to record over 15 minute periods throughout the duration of the survey. This time period was considered sufficient to provide representative background noise levels.
- 4.2.8. The results of the surveys are provided graphically in Appendices B and C.
- 4.2.9. The background (L_{A90}) noise levels obtained at each position have been subsequently analysed using a statistical analysis method to determine the typical levels during the operational period for the quarry (between 07:00 – 19:00 Monday to Friday and 07:00 – 14:00 Saturday), in accordance with the methodology provided in BS 4142. The results of the analysis and description of the noise environment at each location is provided below.

Position U1 – Pretoria Road

4.2.10. Noise levels at this location were observed to be influenced by a mix of sources, including the operation of the main brickworks site and distant road traffic on the surrounding road network. The plant operating within the quarry was not generally audible at this location.

4.2.11. The results of the background noise level analysis for this location is provided below.

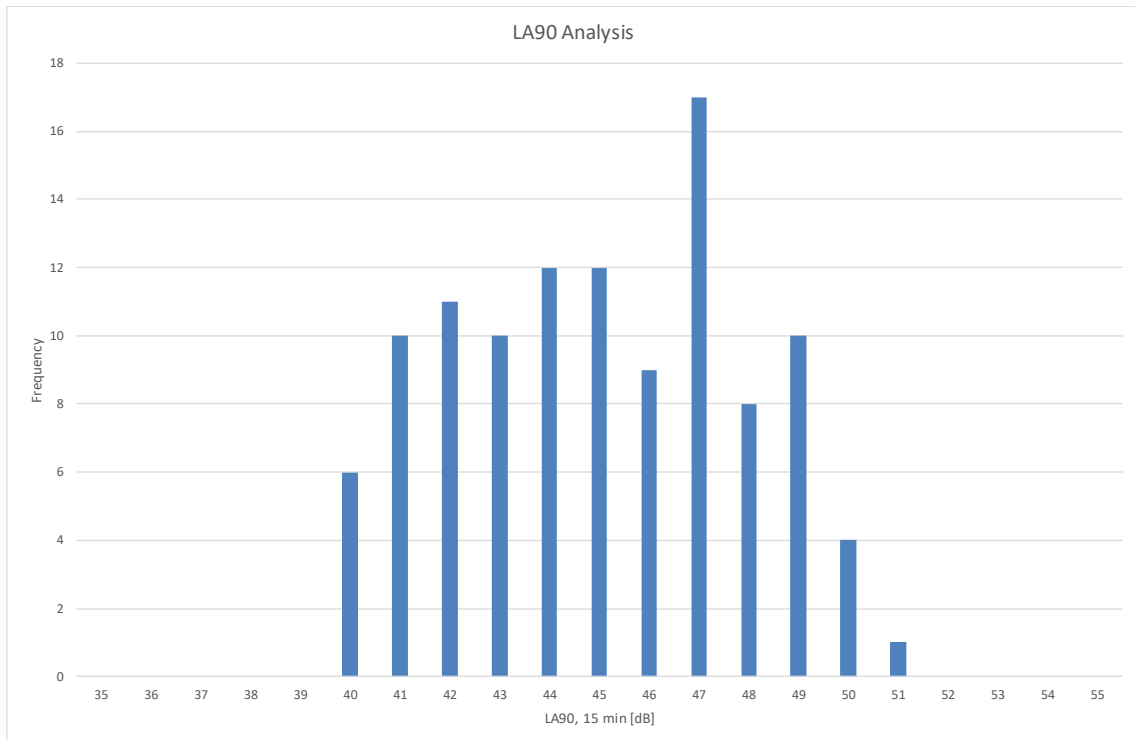


4.2.12. The analysis indicates a typical background noise level at this location of between 45 – 46 dB $L_{A90, 15 \text{ minute}}$. This level of noise is considerably higher than the background noise level upon which the planning condition noise limits, derived in accordance with the requirements of the minerals PPG, which were based upon a limit of background level +10 dB(A) required to satisfy planning requirement, and indicating a background noise level of 36.8 dB L_{A90} . The difference is likely to be attributable to the fact that the brickworks and present quarry operations, which form part of the current noise environment may not have been operation at the time of the surveys undertaken to support the planning application.

Position U2 – The Villas

4.2.13. Noise levels at this location were also observed to be influenced by a mix of sources, including the operation of the main brickworks site, vehicles accessing the brickworks and road traffic on the surrounding road network. The plant operating within the quarry during the survey period was not generally audible at this location.

4.2.14. The results of the background noise level analysis for this location is provided below.



4.2.15. The analysis indicates a typical background noise level presently of 47 dB LA90, 15 minute.

4.3. Attended Noise Monitoring

4.3.1. Attended noise monitoring was carried out at two further positions, to supplement the attended noise measurements during Thursday 5th and Tuesday 10th September 2019.

4.3.2. The monitoring positions are indicated on Figure 1.

4.3.3. One position was located along the public footpath adjacent to 151 Ibstock Road (Position S1).

4.3.4. The second monitoring position (Position S2) was selected to be representative of Centre Bungalow, located within Ellistown, to the east of the quarry. It was not possible to access the rear of the property and a substitute location along the access road into the quarry was used, which was an equivalent distance from Whitehill Road and the brickworks.

4.3.5. The measurements were obtained using a Rion NA-28 Class 1 Sound Level Analyser, calibrated before and after each exercise using a Rion NC-74 Class 1 Acoustic Calibrator.

4.3.6. On each occasion, measurements were obtained over a period of 1 hour, making four 15 minute measurements on each occasion. The duration of the surveys was considered sufficient to determine the typical noise levels. The results of the monitoring are provided below.

Position S1 – 151 Ibstock Road

4.3.7. Noise levels monitored at this location were principally influenced by road traffic along Ibstock Road, with more distant road traffic audible throughout. The operation of the brickworks was also audible at this location. Plant operating within the quarry was audible at times, although noted to have minimal influence on the measured noise levels.

4.3.8. The results of the monitoring at this location are provided in Table 4.1 below.

Date	Start Period	Measured Noise Levels [dB]		
		L _{Aeq}	L _{Amax,F}	L _{A90}
Thursday 5/9/19	10:15	52.2	63.7	46.3
	10:30	53.9	72.6	47.7
	10:45	54.3	67.6	48.7
	11:00	53.8	69.9	47.3
Tuesday 10/9/19	12:15	52.2	69.2	44.5
	12:30	51.7	63.7	44.5
	12:45	52.6	67.7	45.9
	13:00	52.8	69.3	45.6
Typical L_{A90}				46

Table 4.1 Results of Attended Noise Monitoring Carried Out at 151 Ibstock Road

Position S2 – Centre Bungalow, Ellistown

4.3.9. Noise levels monitored at this position were generally influenced by distant road traffic noise and noise from the surrounding industrial / commercial land uses. The access road leading into the quarry was in use during the survey periods, with two 8-wheeled tippers transporting material between the two brickwork sites (passing on average every 5 – 10 minutes). To ensure the noise levels monitored were representative to the dwelling, the measurements were paused whilst the vehicles were passing.

4.3.10. The results of the monitoring at this location are provided in Table 4.1 below.

Date	Start Period	Measured Noise Levels [dB]		
		L _{Aeq}	L _{Amax,F}	L _{A90}
Thursday 5/9/19	11:35	46.1	59.6	41.8
	11:50	45.4	60.8	41.3
	12:05	46.6	63.6	41.5
	12:20	43.0	55.7	40.5
Tuesday 10/9/19	13:30	50.9	70.4	38.4
	13:45	49.3	74.4	39.3
	14:00	45.9	64.7	40.8
	14:15	44.2	64.3	39.8
Typical L_{A90}				40

Table 4.2 Results of Attended Noise Monitoring Carried Out at Ellistown

4.4. Summary of Baseline Noise Monitoring

4.4.1. The baseline noise monitoring carried out recently indicates higher background noise levels at the positions monitored compared to the baseline noise monitoring carried out upon which the planning condition limits were based.

4.4.2. The noise limits were based upon the derivation from the background (L_{A90}) noise levels +10 dB(A) in accordance with relevant minerals planning practice guidance.

- 4.4.3. When assessing noise levels against the requirements of BS 4142, the Standard advises that where Rating levels of noise are around 10 dB(A) or more, there is a likelihood of a significant adverse noise impact, depending upon context.
- 4.4.4. Given that the nature of the noise generated by the proposed infilling and restoration plant would be equivalent to that presently operating within the quarry and principally attributable to diesel engine noise, the plant would not generate any characteristic or tonal sounds compared to the current noise climate. On this basis, it is not necessary to apply any penalties when assessing the noise levels against the requirements of BS 4142.
- 4.4.5. Therefore to ensure that the noise attributable to the infilling / restoration operation doo not result in any significant adverse noise impacts, noise levels attributable to the operation of the plant should remain below a level of +10 dB(A) above the prevailing background noise levels, thus equivalent to the planning guidance.
- 4.4.6. Given that the current noise monitoring exercise indicated higher background noise levels than those upon which the planning noise limits were defined and imposed, to ensure any potential adverse noise effects upon the occupant of surrounding properties are minimised, it is proposed to adopt the present planning condition limits to cover the cumulative noise levels attributable to the quarrying and infilling / restoration operations. By adopting this approach, noise levels attributable to the plant operating within the quarry would remain substantially below a level of +10 dB(A) above the current prevailing background noise levels.

5. Current and Proposed Operations

- 5.1. The phasing for the quarry is indicated on Figure 2.
- 5.2. Extraction is presently progressing within the quarry, with the present extraction being carried out within the north western part of the quarry (Phase C as indicated on Figure 2). The extraction is carried out in benches, with the face progressing in a northerly direction. Once Phase C is worked out, the extraction will move into the eastern half of the quarry and where Phase D (north) would progress from north to south then Phase D (south) would progress west to east.
- 5.3. The extraction operations are primarily carried out using 2 – 3 dozers and excavators working at the quarry faces, with the clay transported to the factory using up to eight 30 tonne ADTs. Clay is presently being mixed in an area of the quarry close to the brickworks and Pretoria Road, the ADTs deliver clay to this area, where it is stockpiled and mixed using a dozer before being sent into the main works.
- 5.4. Soils storage bunding has been constructed along the northern boundaries of the quarry to provide additional screening to the neighbouring properties, which would be retained during the infilling operations. The bunding is between 2 – 3 metres in height. Some restoration of the south eastern corner of the quarry (Phase A) has already been carried out, which has provided a 2m high landscaped mound. Further restoration of this area is to be carried out during the infilling of Phase A, although retaining the present screening bund. The position of the bunding is provided on Figure 3.
- 5.5. The infilling (EA permitted operations) and restoration operations would commence within Phase A, located within the south western part of the quarry. Inert materials would be delivered to the site by HGV, accessing via the existing access road from Ellistown Terrace Road to the east. The imported material would be delivered directly to the restoration area and spread periodically during the day using a dozer.
- 5.6. 200,000 – 250,000 cubic metres of inert materials would be delivered to the site per annum to restore the quarry, which equates to approximately 120 loads per day.
- 5.7. To ensure no disruption to the extraction operations, the infilling and restoration works would be typically at least 400 metres from the extraction areas. Initially restoration would commence within Phase A, whilst Phase C is worked out and would progress in a northerly direction within Phases B and C whilst Phase D was worked. It is anticipated that restoration of Phase C and potentially Phase D (north) would be undertaken whilst the clay was extracted from Phase D (South). Maintaining this separation, seeks to ensure that any cumulative noise effects associated with the extraction and infilling operations were minimised.

6. Calculations and Assessment

6.1. Criteria to be Adopted for the Assessment

- 6.1.1. As advised previously, the noise limits specified in Conditions 24 and 25 of the 2015 ROMP have been considered appropriate upon which to base the present assessment.
- 6.1.2. The limits imposed seek to ensure that the operation of the quarry do not result in adverse noise impacts and thus ensure compliance with the requirements of the NPPF.
- 6.1.3. By adopting this approach, the noise levels attributable to the operation of the plant within the quarry would remain substantially below a level of +10 dB(A) above the present background noise levels, specified in BS 4142 as representing a level where there is an indication of a significant adverse impact, depending upon context. The approach taken would ensure that the cumulative extraction and infilling operations would not result in any significant adverse noise impacts when assessed against either the planning condition limits or BS 4142.
- 6.1.4. The ROMP included both the extraction and restoration and to fully assess the noise levels attributable to the operation of the quarry, the cumulative noise effects of the extraction and restoration operations have been considered within this assessment.

6.2. Source Term Information

- 6.2.1. The noise source terms for the plant assumed for this assessment are provided in Table 5.1.

Source	SWL	L _{Aeq} at 10m	Number	% On-Time
Extraction				
Dozer	-	79	2	100
Excavator	-	75	3	100
ADT Movements	110	-	24 per hour	-
Infilling and Restoration				
Dozer	-	79	1	50
HGV Movements	106	-	24 per hour	-

Table 5.1 Source Term Noise Levels

6.3. Calculation Methodology

- 6.3.1. The calculations of the noise levels from the proposed operations at the closest properties have been made using the methodology contained within BS 5228-1 [3]. Where barrier corrections have been calculated, the algorithm used within a Calculation of Road Traffic Noise [4] has been used.
- 6.3.2. Calculations have been made at potentially most affected properties adjacent to the proposed restoration operations and site access.
- 6.3.3. The calculations associated with the restoration operations have assumed that the plant would be operational at the base of the quarry, to represent noise levels from the initial stages of restoration in each phase and close to the final restoration level. With regards the extraction operations, it has been assumed that the main plant would be operating below the surrounding ground levels, as per the current situation.

6.3.4. The details of the calculations are provided in Appendix D.

6.4. Assessment of Noise Levels at 193 Pretoria Road

6.4.1. This property is located at the eastern end of Pretoria Road, closest to the south western corner of Phase A and would be the property potentially most affected by noise from the infilling operations within Phase A.

6.4.2. At present, there is a small earthworks band running alongside the quarry boundary adjacent to this property, which is approximately 2 metres high. The earthworks provide visual screening from the operations within the quarry.

6.4.3. At the commencement of the infilling and restoration of the quarry, the dozer would operate at the base of the quarry, at least 15 metres below the surrounding ground levels. During the initial stages, the plant would be fully screened by the sides of the quarry, providing effective noise mitigation. Calculations of the noise levels attributable to the restoration operations indicate a level of up to 40 dB $L_{Aeq, 1 \text{ hour}}$ during this stage. Extraction at this time would be continuing within Phase C and calculations of the noise levels attributable to these operations indicate a level of 40 dB $L_{Aeq, 1 \text{ hour}}$ attributable to the extraction. The cumulative noise level would be 43 dB $L_{Aeq, 1 \text{ hour}}$ during this time, remaining below the 46.8 dB $L_{Aeq, 1 \text{ hour}}$ limit and resulting in noise levels equivalent to the present prevailing background noise environment.

6.4.4. As the level of restoration increased, the noise levels associated with the infilling operations would increase. It is proposed to construct a close boarded fence (and constructed with a minimum surface density of 10 kg/m²) along the southwestern boundary of Phase A on top of the earthworks, to an overall height of 5 metres, whilst the dozer was operational below a level equivalent to the ground level at the property, thus ensuring the existing boundary mitigation remained effective.

6.4.5. The provision of the additional mitigation would seek to ensure that the plant would remain screened during the remainder of the restoration operations within Phase A. Noise levels during the final stage of restoration within this phase are anticipated to be up to 45 dB $L_{Aeq, 1 \text{ hour}}$ and would remain below the planning condition limit when taking account of the cumulative effects.

6.4.6. As the restoration moves into Phase B, the extraction operations are anticipated to have commenced within Phase D, with the plant working at the base of the quarry and progressing from north to south, thus ensuring the quarry face provides effective screening from this and the neighbouring properties. Noise levels attributable to the extraction are anticipated to remain of the order or below 40 dB $L_{Aeq, 1 \text{ hour}}$ at this property.

6.4.7. Noise levels attributable to the infilling and restoration operations would be lower, during Phase B to D, as the plant would be operating further from the properties and generally screened by the existing land formation and quarry sides. Worst case calculations of the noise levels have been made for these phases, on the basis of the plant operating close to the final restoration levels. The calculations indicate a level of 44 dB $L_{Aeq, 1 \text{ hour}}$ during works in Phase B and between 40 – 41 $L_{Aeq, 1 \text{ hour}}$ during restoration operations within Phases C and D. Noise levels during these phases would remain below the prevailing background noise levels during this period and thus unlikely to result in any adverse noise impacts when assessed against the requirements of BS 4142.

- 6.4.8. Taking account of the cumulative effects associated with the extraction operations during these phases, noise levels are anticipated to remain below 46 $L_{Aeq, 1 \text{ hour}}$ and not to exceed the planning condition limit at this property. Furthermore, the predicted noise levels during the infilling operations, taking account of the noise from both quarrying and infilling operations would not result in noise levels generally exceeding the existing background noise levels. On this basis, an assessment against the requirements of BS 4142 would indicate that the operations would have a low impact upon the residents at this location.
- 6.4.9. With appropriate mitigation and control measures implemented for the infilling and restoration operations, noise levels from the operation of the site at this and neighbouring properties would remain below the planning condition limits. The operation of the site would therefore not result in any significant noise effects upon the residents of these properties.
- 6.5. Assessment of Noise Levels at The Villas
- 6.5.1. These properties are located to the north west of the quarry, adjacent to Phase C. At present, only one of these properties is occupied, with the second used by the brickworks for storage. Consideration has also been given to the properties located along Ibstock Road to the north east of The Villas.
- 6.5.2. A landscaped buffer zone outside of the planning application boundary has previously been provided between the properties and quarry, with a fishing lake also having been constructed. These measures ensure that no plant would operate within 100 metres of the dwellings. Beyond this, bunding has been constructed to ensure that the present extraction operations within Phase C remain fully screened from the properties and to ensure that noise levels remain within the planning condition limits and thus not result in any adverse noise impacts. The bunding would be retained whilst restoration of this phase was completed and would be removed as part of the final operations in this area following completion of the landfilling operations.
- 6.5.3. This property would be most affected during the infilling and restoration of Phase C. It is proposed to restore this area of the quarry to a lower level to create water bodies within the northern part of the quarry. The proposed restoration would ensure that the plant would operate below the ground levels at the neighbouring properties within Phase C.
- 6.5.4. The initial infilling and restoration operations within Phase A would be carried out at least 400 metres from the property, with extraction progressing at the base of the quarry typically between 200 – 300 metres from the dwelling. Noise levels attributable to the infilling and restoration operations during this phase would be at a maximum during the final stage. During this period, noise levels are anticipated to be 37 dB $L_{Aeq, 1 \text{ hour}}$. Considering the cumulative operation, overall noise levels during this period are anticipated to remain below 45 dB $L_{Aeq, 1 \text{ hour}}$ and would thus remain below the noise limit and current background noise levels, thus ensuring the operations result in a low impact when assessed against the requirements of BS 4142.
- 6.5.5. Noise levels associated with the infilling operations would increase during Phase B, with noise levels increasing to 44 dB $L_{Aeq, 1 \text{ hour}}$ whilst the plant was operating close to the final levels, with noise levels from the overall quarry operations anticipated to be up to 46 dB $L_{Aeq, 1 \text{ hour}}$ during this period, again, not anticipated to generally exceed the prevailing noise levels.

- 6.5.6. As indicated above, noise levels would be at their highest at this property during the infilling and restoration of Phase C, with noise levels associated with these operations anticipated to be between 38 – 45 dB $L_{Aeq, 1 \text{ hour}}$ whilst the plant was operating at lower levels and thus screened from the property. Noise levels would increase for a period during the final stages of the restoration, as the bunding was removed and the soils spread, with noise levels of 49 dB $L_{Aeq, 1 \text{ hour}}$ calculated. Taking account of the extraction operations during this short period, overall noise levels would not be anticipated to exceed 50 dB $L_{Aeq, 1 \text{ hour}}$, thus remaining below the noise limit at this location.
- 6.5.7. The noise levels during this period would be up to 2 dB(A) above the current prevailing background noise levels. An assessment against the BS 4142 guidance indicates that the operations would continue to result in the potential for a low impact.
- 6.5.8. As infilling progresses into the northern part of Phase D, it is anticipated that the extraction operations would be nearing completion within Phase D (South). Noise levels during the restoration of this phase would be at a maximum of 40 dB $L_{Aeq, 1 \text{ hour}}$ whilst the plant was working close to the surface and would reduce as the extraction nears completion. Noise levels during the infilling and restoration of Phase D would therefore remain substantially below the normal working limit and background noise levels at this location.
- 6.6. Assessment of Noise Levels at 151 Ibstock Road
- 6.6.1. This property is located to the north east of Phase D (North). At present, no operations are being undertaken within Phase D, although a similar approach to Phase C would be undertaken to ensure noise levels remained acceptable, through the use of a buffer zone and boundary mitigation to ensure that the plant operating within the quarry was screened from the property.
- 6.6.2. Noise levels during the infilling and restoration of Phases A and B, which are furthest from the property would remain low and are not anticipated to exceed 40 dB $L_{Aeq, 1 \text{ hour}}$, thus remaining substantially below the prevailing background noise levels and planning condition limit of 52.4 dB $L_{Aeq, 1 \text{ hour}}$, even taking the cumulative effects into account. These operations would result in a low impact when assessed against the requirements of BS 4142.
- 6.6.3. Noise levels would increase marginally during the restoration of Phase C, although this Phase would remain some distance from the property. Noise levels attributable to the restoration operations are not anticipated to exceed 42 dB $L_{Aeq, 1 \text{ hour}}$, with the overall noise levels attributable to the operation of the quarry anticipated to remain below 45 dB $L_{Aeq, 1 \text{ hour}}$.
- 6.6.4. Noise levels associated with the infilling and restoration operations would be at a maximum during works within Phase D (North), which are likely to be undertaken during the final stage of extraction within Phase D (South).
- 6.6.5. Noise levels at the commencement of infilling within Phase D (North) are anticipated to be 40 dB $L_{Aeq, 1 \text{ hour}}$, with the overall noise levels associated with the operation of the quarry not anticipated to exceed 45 dB $L_{Aeq, 1 \text{ hour}}$. Noise levels during this period would not be likely to exceed the current background noise levels, resulting in a low impact when assessed against the requirements of BS 4142.
- 6.6.6. Noise levels would gradually increase as the fill level increases, with noise levels of up to 50 dB $L_{Aeq, 1 \text{ hour}}$ calculated as the restoration nears completion in this phase. Noise levels during this period would be up to 4 dB(A) above the current background noise levels. An assessment against the requirements of BS 4142 would indicate that the operations would not result in any adverse noise impacts during this period.

6.6.7. As the restoration progresses into Phase D (South), noise levels would reduce, as the plant would be operating further from the property. Noise levels associated with the general infilling operations during this Phase are not anticipated to exceed 42 dB $L_{Aeq, 1 \text{ hour}}$.

6.6.8. Noise levels at this property associated with the normal operations would remain below the existing planning condition limit at this location during the proposed infilling and restoration operations and would thus remain acceptable.

6.7. Assessment of Noise Levels at Centre Bungalow

6.7.1. This property is located to the east of the quarry and to the north of the access road which would be used by the vehicles delivering inert materials to the quarry. The access is presently used periodically, by vehicles transporting material between the Ibstock and Ellistown brickwork sites.

6.7.2. The extraction and infilling operations would be over 500 metres from this property, with noise associated with the plant operating on site likely to generate low levels of noise at this property.

6.7.3. The main noise associated with the proposed infilling and restoration operations at this property would be associated with the vehicles travelling along the access road into the quarry. This access has been previously surfaced with tarmac to ensure a good and smooth running surface, which would minimise noise from the vehicles travelling along it.

6.7.4. Whilst forming part of the overall quarry, the access road is outside to the application area for the current EA permit, which only includes the main quarry.

6.7.5. Calculations of the noise levels associated with the operation of the quarry indicate that the noise levels associated with the vehicle movements would be 45 dB $L_{Aeq, 1 \text{ hour}}$ on the basis of 24 vehicle movements per hour, thus remaining below the planning condition limit of 46.1 dB $L_{Aeq, 1 \text{ hour}}$ at this location and would therefore seek to ensure noise levels were acceptable.

6.7.6. An assessment against BS 4142, based upon the present background noise level of 40 dB L_{A90} at this location, indicates that the operations within the quarry and vehicle movements associated with the infilling would be at worst 5 dB(A) above the background levels, which would be an indication of an adverse impact, depending upon context. To place the noise into context, the noise levels would be low and principally attributable to the vehicle movements along the access, generating a similar character of noise to other surrounding road traffic and with existing ambient levels of between 45 – 50 dB L_{Aeq} , it is considered that the vehicle movements would not result in any disturbance to the occupants of the properties in this location.

6.7.7. However, given that the noise levels associated with the vehicle movements would be close to the planning condition limit, effective controls and management would be adopted and maintained to ensure that the vehicles travel along the access at the appropriate speed and maintaining low engine speeds to minimise noise levels.

7. Periodic Noise Monitoring and Control Measures

- 7.1. The assessment within Section 5 indicates that noise levels associated with the infill and restoration operations within would remain within the existing planning condition limits and not result in any adverse noise effects upon on the occupants of surrounding properties, when assessed against the requirements of BS 4142.
- 7.2. At present, it is understood, given the low levels of noise generated by the quarry operations at surrounding noise sensitive receptors, that there has not been a requirement to implement a noise management plan or to carry out periodic noise monitoring.
- 7.3. To ensure noise levels associated with the operations during the infilling of the quarry are minimised, a noise management plan would be implemented, with appropriate on-site controls would continuing to be adopted, which include:
 - Ensuring all plant is kept well maintained;
 - Ensuring silencers on plant are effective;
 - Turning off plant when not in use; and
 - Using alternative non tonal reversing signals on mobile plant.
- 7.4. Vehicles travelling along the access roads within the quarry have potential to cause disturbance even at low noise levels. To ensure potential disturbance is minimised, the routes would be inspected at regular intervals to ensure that the surfaces remain in good condition. Where defects are identified, these should be rectified immediately. This action seeks to ensure that empty vehicles travelling on the access and passing over the defect do not give rise to body slap, which is potentially disturbing. Furthermore, the speed limit on the access road should be well enforced, with drivers maintaining low engine speeds.
- 7.5. Whilst there is no requirement to carry out noise monitoring currently within the quarry, periodic noise monitoring would be undertaken during the periods whilst infilling was being carried out. Monitoring would also normally be carried out following receipt of a justified noise complaint.
- 7.6. For any measurements made, a meter conforming to at least Class 2 standards should be used, which should be calibrated before and after the exercise. The meter should be positioned at a height of 1.2 metres above the ground and at a free-field location (i.e. at least 3.5 metres from a building facade or other reflecting surface other than the ground).
- 7.7. At least one 15 minute measurement should be obtained at each monitoring location, during a period when the site is fully operational (a 15 minute period is usually considered to be representative of the hourly period upon which the limits are based). Notes should be taken identifying the main sources of noise during the monitoring period. Should the results of the monitoring indicate an exceedance of the site noise limits specified within Section 5.3, with the site operations not clearly audible, a second measurement should be obtained whilst the site is stood (e.g. during a break period) to enable a comparison to be made.
- 7.8. If the results indicate that the limits are being exceeded attributable to site operations, further operational controls or mitigation measures, should be considered and implemented, where appropriate.

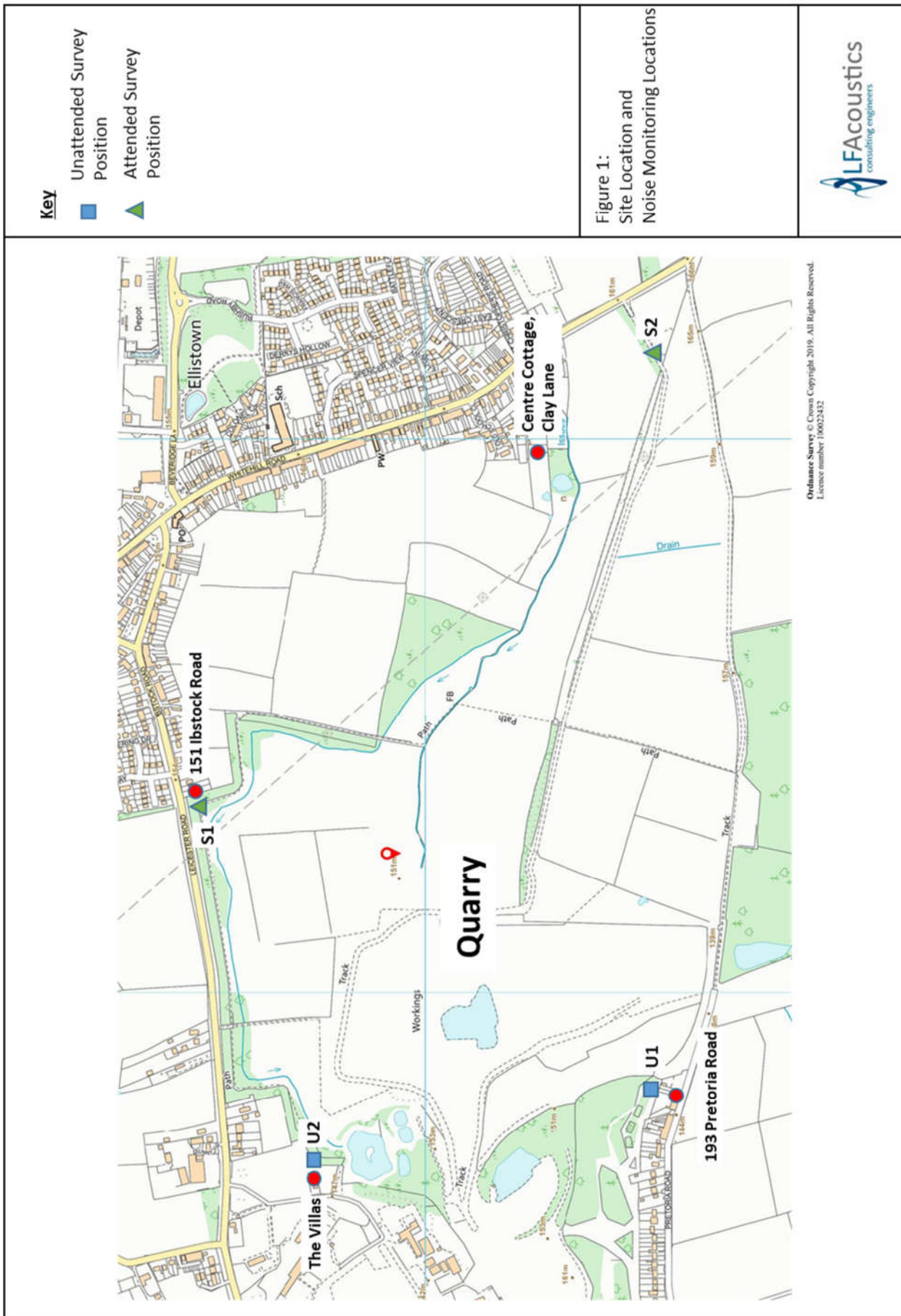
8. Summary

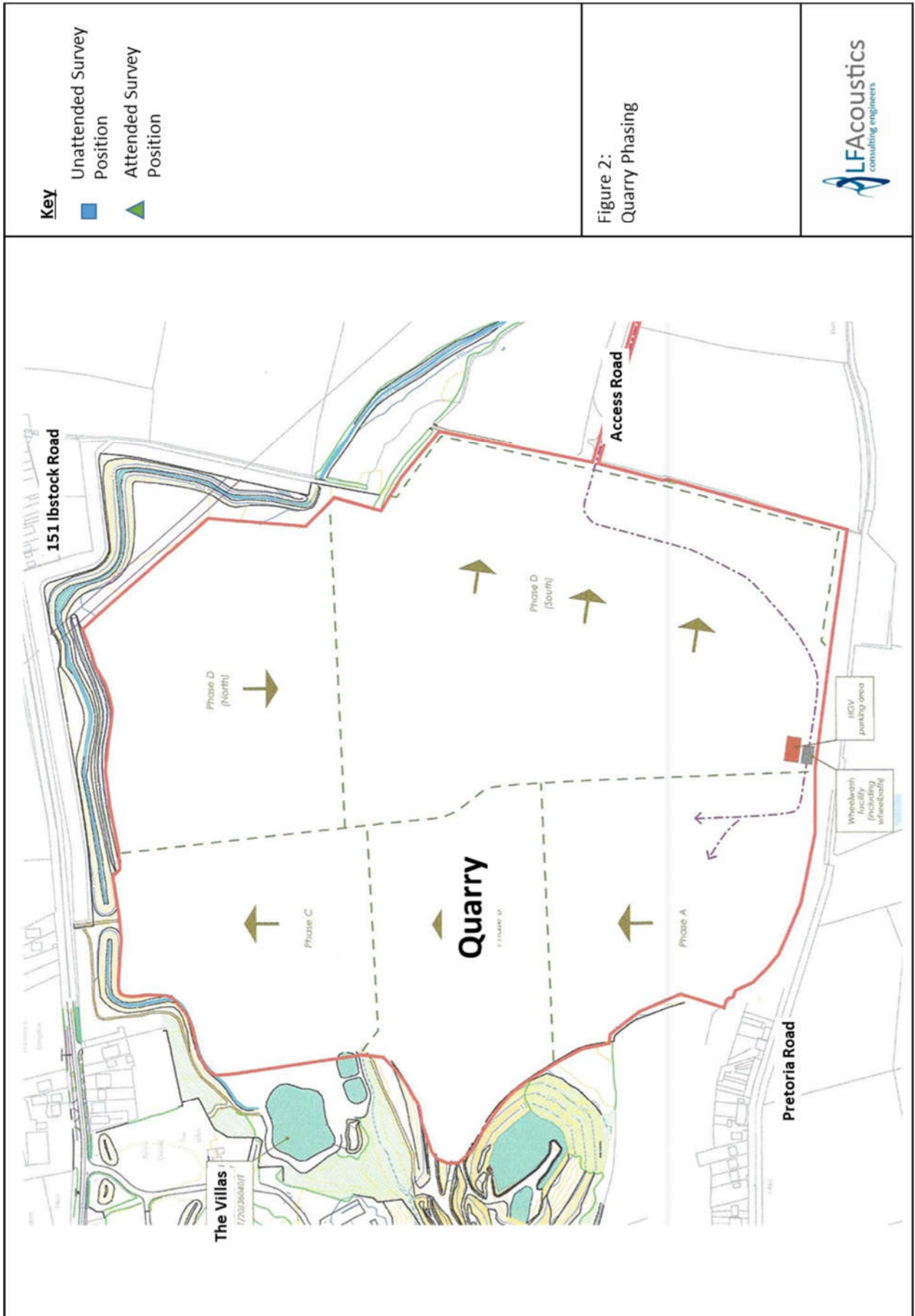
- 8.1. LFAcoustics Limited were appointed by Mick George Ltd to undertake a noise assessment with regards the importation of inert materials to infill and restore Ibstock Quarry.
- 8.2. Extraction is progressing within the quarry to supply clay to the adjacent brickworks. A ROMP was approved for the quarry in 2015 (Application Ref. 2015/0262/07 2014/ROMPEIA/0250/LCC), which covered the continuation of extraction and restoration of the quarry.
- 8.3. MGL are seeking to work alongside the Ibstock Group to carry out the infilling and restoration of the quarry. It is proposed to restore the site to a more naturalistic profile than approved at present. The infilling and restoration operations would progress alongside the present extraction and would be phased in a manner to ensure there was not disruption to Ibstock's operations.
- 8.4. The restoration operations would follow on from the extraction, with the extraction / restoration areas generally separated by at least 400 metres, which seeks to minimise any potential cumulative effects associated with the quarry operations.
- 8.5. Calculations of the likely worst case noise levels associated with the infilling and restoration operations have been prepared and assessed against the existing site noise limits and against the requirements of BS 4142, taking account of the potential cumulative noise from the extraction operations.
- 8.6. The assessment concluded that the operational noise levels at the surrounding properties would remain below the planning condition limits and generally resulting in the potential for a low impact, when assessed against the requirements of BS 4142. The proposed operations are therefore acceptable.

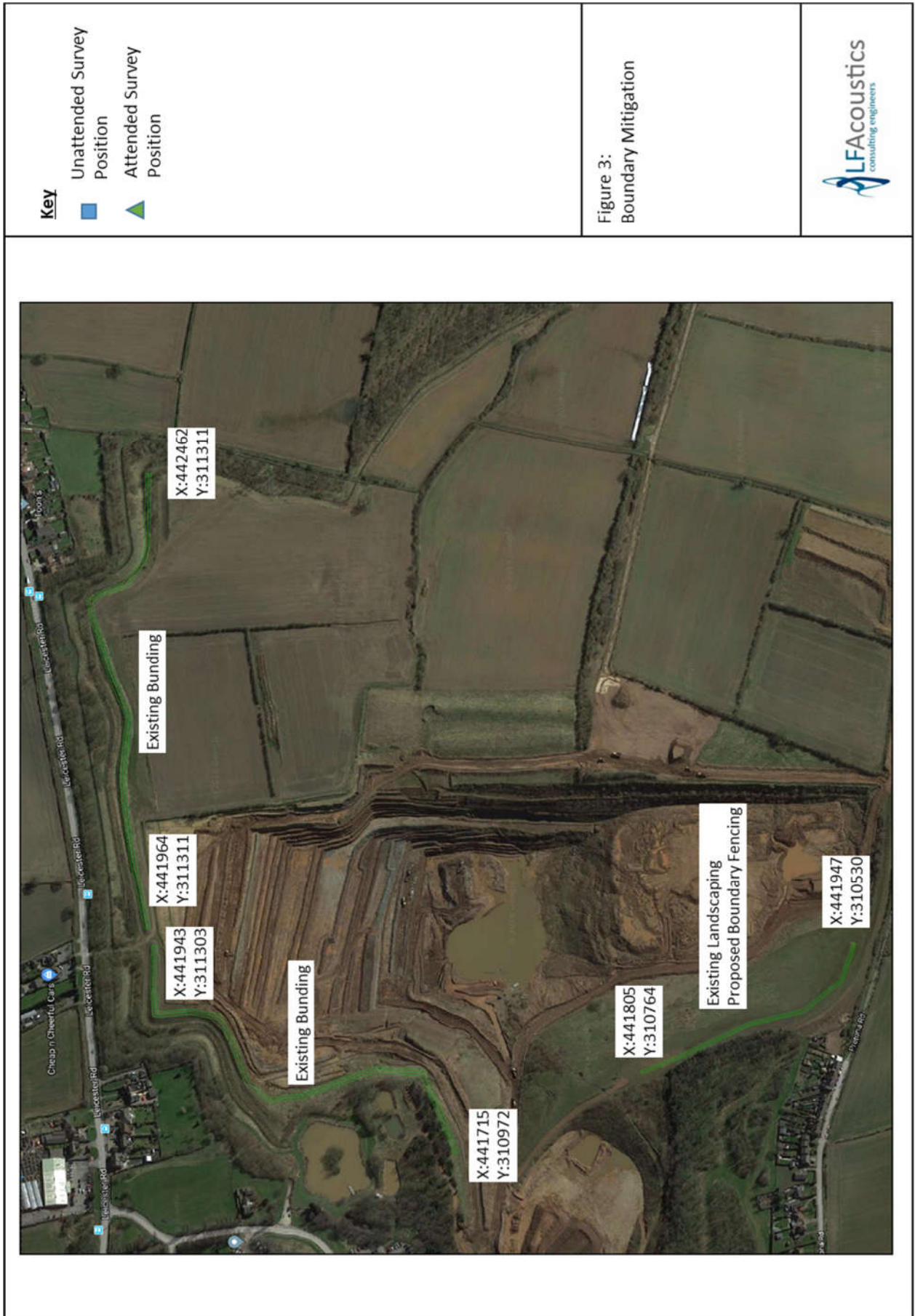
References

1. Ministry of Housing, Communities and Local Government. National Planning Policy Framework. February 2019.
2. Department for Communities and Local Government. Planning Practice Guidance. Assessing Environmental Impacts from Minerals Extraction. 6 March 2014.
3. British Standards Institute. Methods for Rating and Assessing Industrial and Commercial Sound. BS 4142. 2014+A1:2019.
4. British Standards Institute. Code of Practice for Noise and Vibration Control on Construction and Open Sites. Part 1:Noise. BS 5228-1+A1. 2014.
5. Calculation of Road Traffic Noise (CRTN). Department of Transport. 1988.

Figure







Appendix A Noise Units

Decibels (dB)

Noise can be considered as 'unwanted sound'. Sound in air can be considered as the propagation of energy through the air in the form of oscillatory changes in pressure. The size of the pressure changes in acoustic waves is quantified on a logarithmic decibel (dB) scale firstly because the range of audible sound pressures is very great, and secondly because the loudness function of the human auditory system is approximately logarithmic.

The dynamic range of the auditory system is generally taken to be 0 dB to 140 dB. Generally, the addition of noise from two sources producing the same sound pressure level will lead to an increase in sound pressure level of 3 dB. A 3 dB noise change is generally considered to be just noticeable, a 5 dB change is generally considered to be clearly discernible and a 10 dB change is generally accepted as leading to the subjective impression of a doubling or halving of loudness.

A-Weighting

The bandwidth of the frequency response of the ear is usually taken to be from about 18 Hz to 18,000 Hz. The auditory system is not equally sensitive throughout this frequency range. This is taken into account when making acoustic measurements by the use of A-weighting, a filter circuit that has a frequency response similar to the human auditory system. All the measurement results referred to in this report are A-weighted.

Units Used to Describe Time-Varying Noise Sources (L_{Aeq} , L_{Amax} , L_{A10} , and L_{A90})

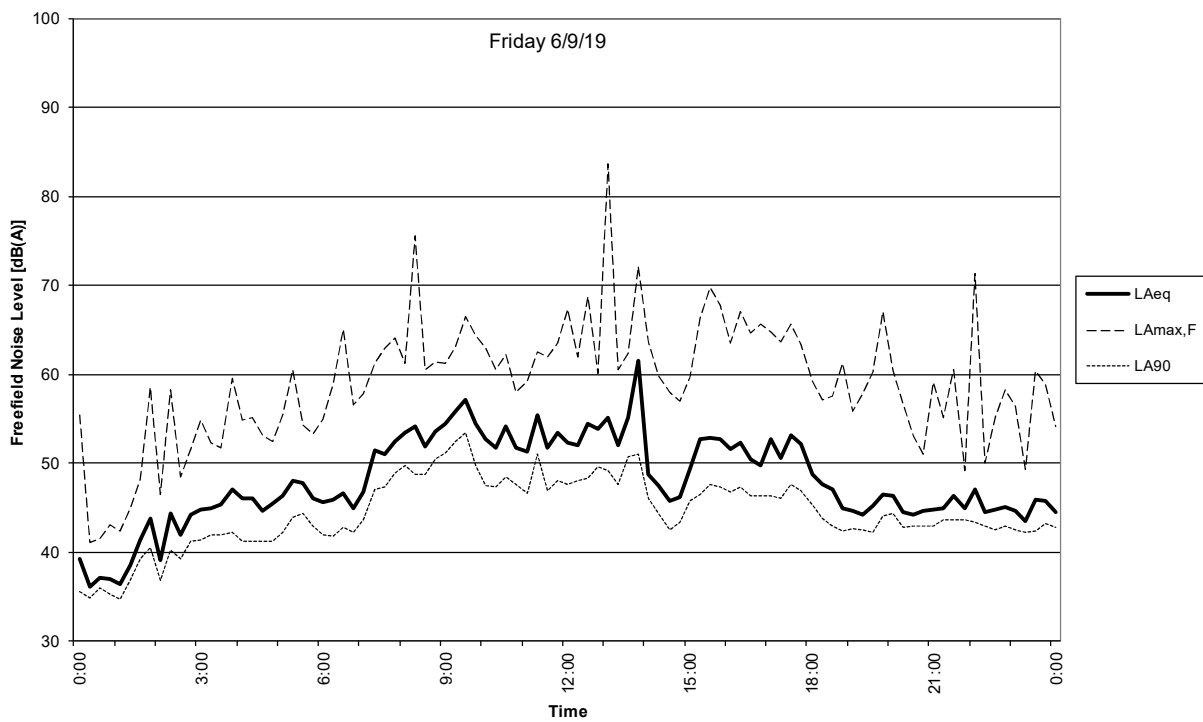
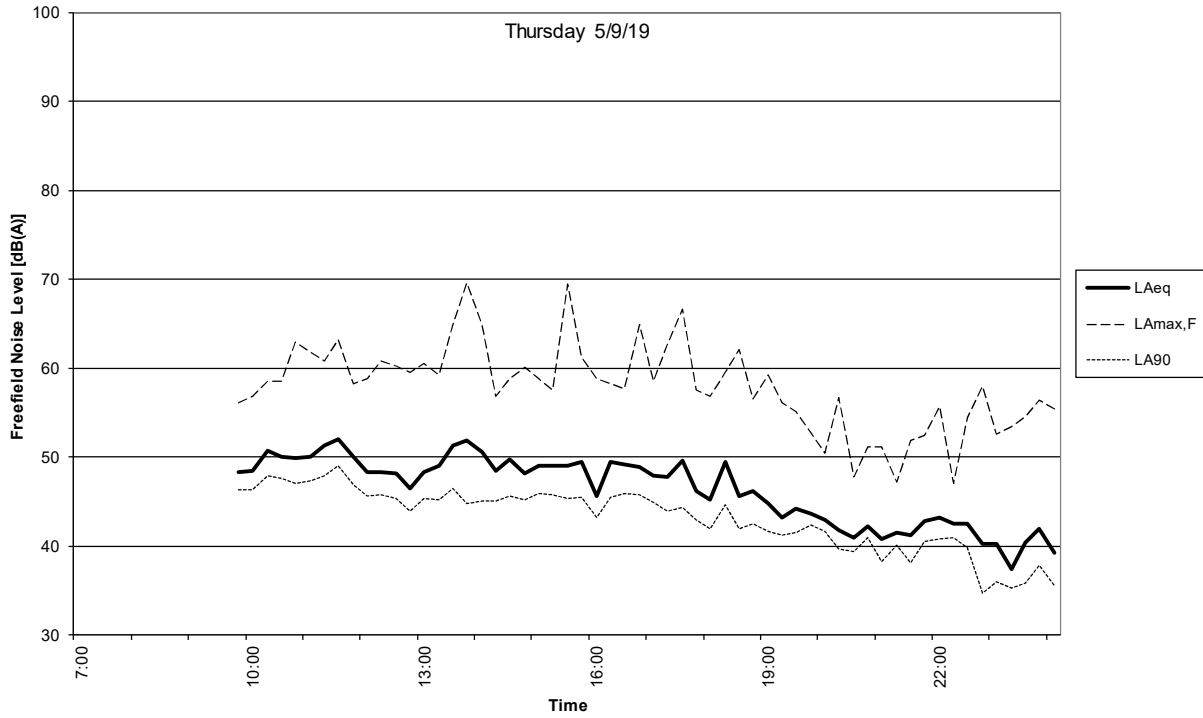
Instantaneous A-weighted sound pressure level is not generally considered as an adequate indicator of subjective response to noise because levels of noise usually vary with time.

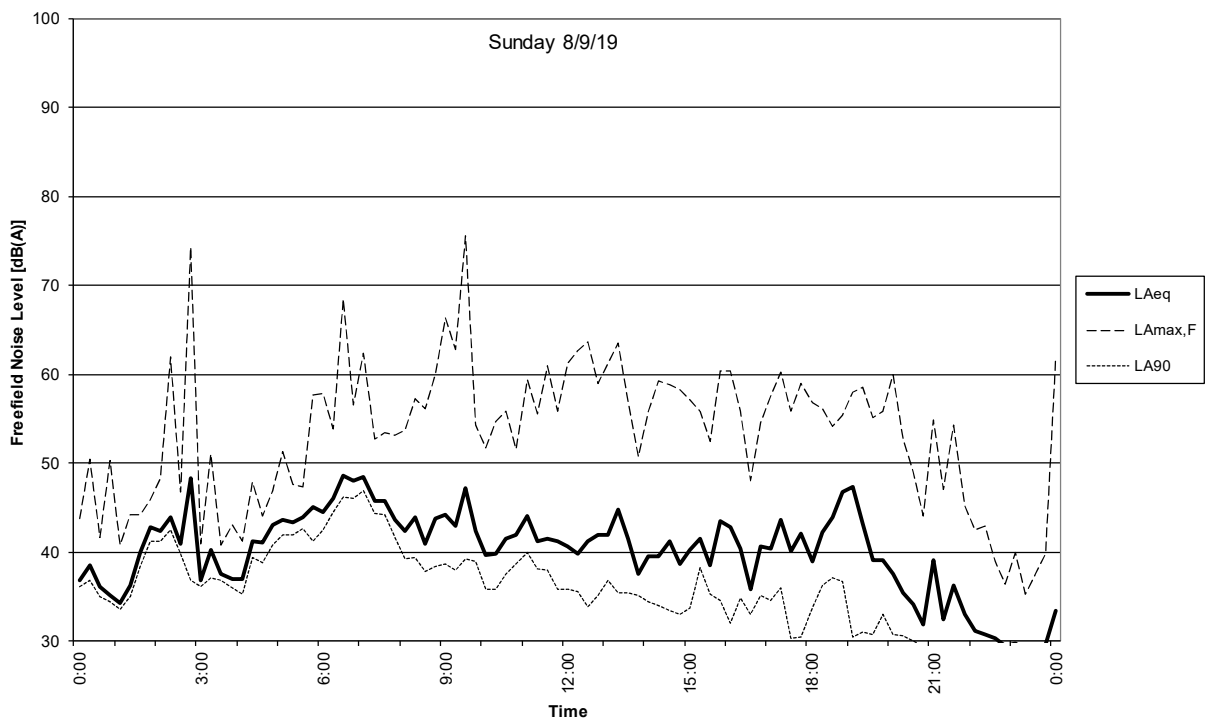
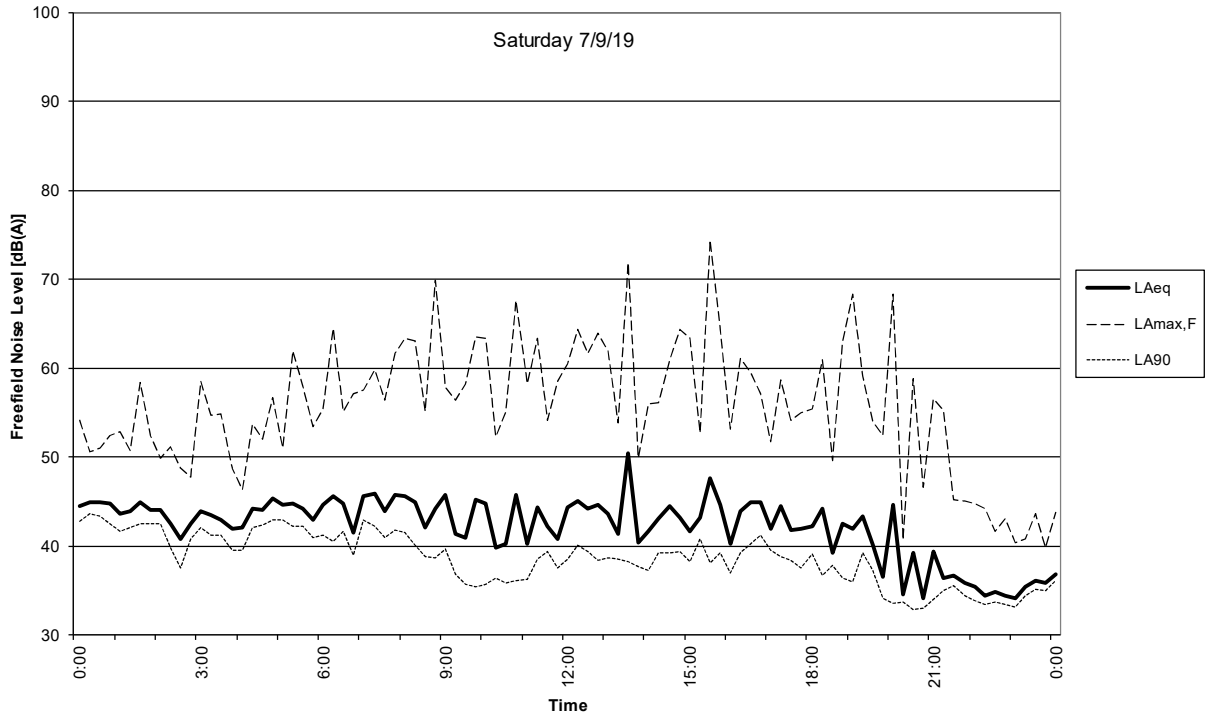
For many types of noise the Equivalent Continuous A-Weighted Sound Pressure Level ($L_{Aeq,T}$) is used as the basis of determining community response. The $L_{Aeq,T}$ is defined as the A-weighted sound pressure level of the steady sound which contains the same acoustic energy as the noise being assessed over a specific time period, T.

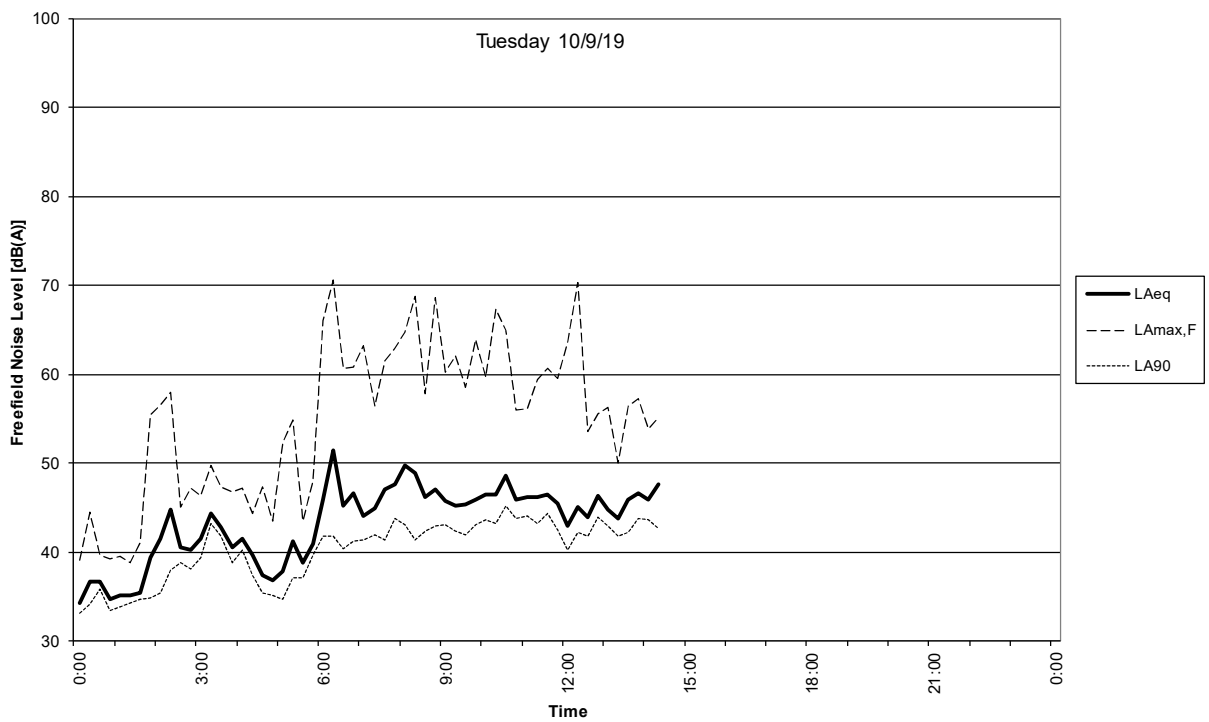
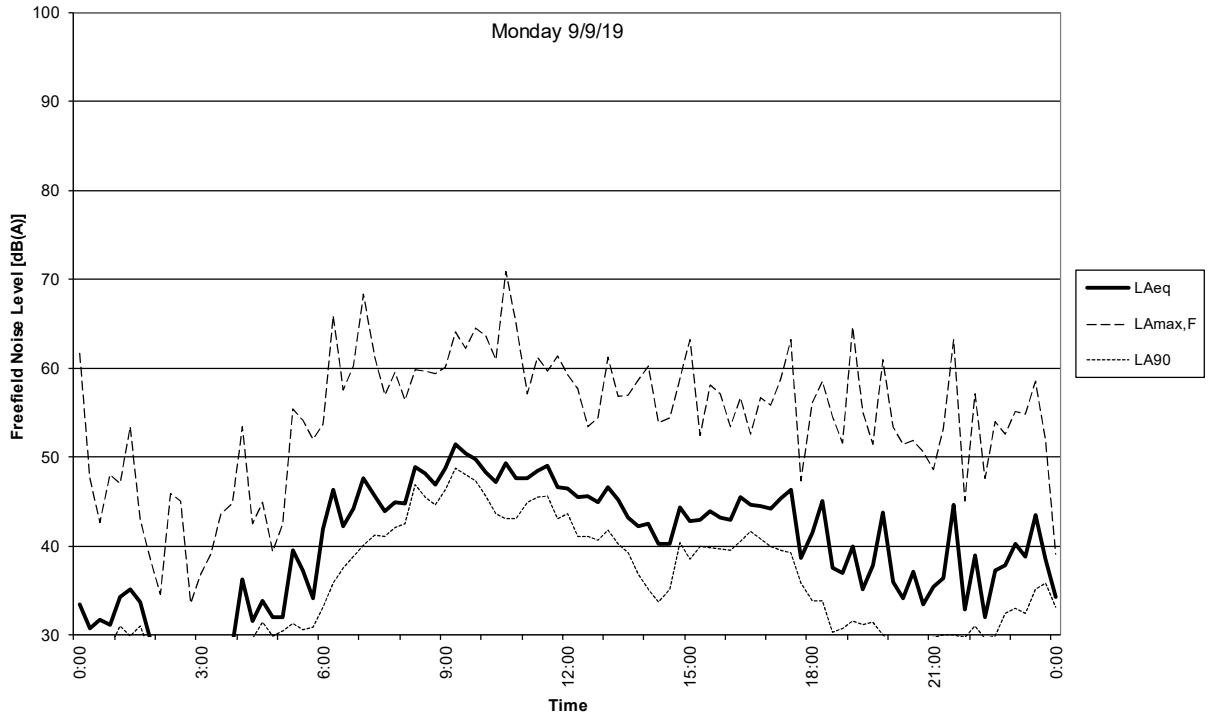
The L_{Amax} is the maximum value that the A-weighted sound pressure level reaches during a measurement period. $L_{Amax,F}$, or Fast, is averaged over 0.125 of a second and $L_{Amax,S}$, or Slow, is averaged over 1 second. All L_{Amax} values referred to in this report are Fast.

The L_{A90} is the noise level exceeded for 90% of the measurement period. It is generally used to quantify the background noise level, the underlying level of noise that is present even during the quieter parts of measurement period.

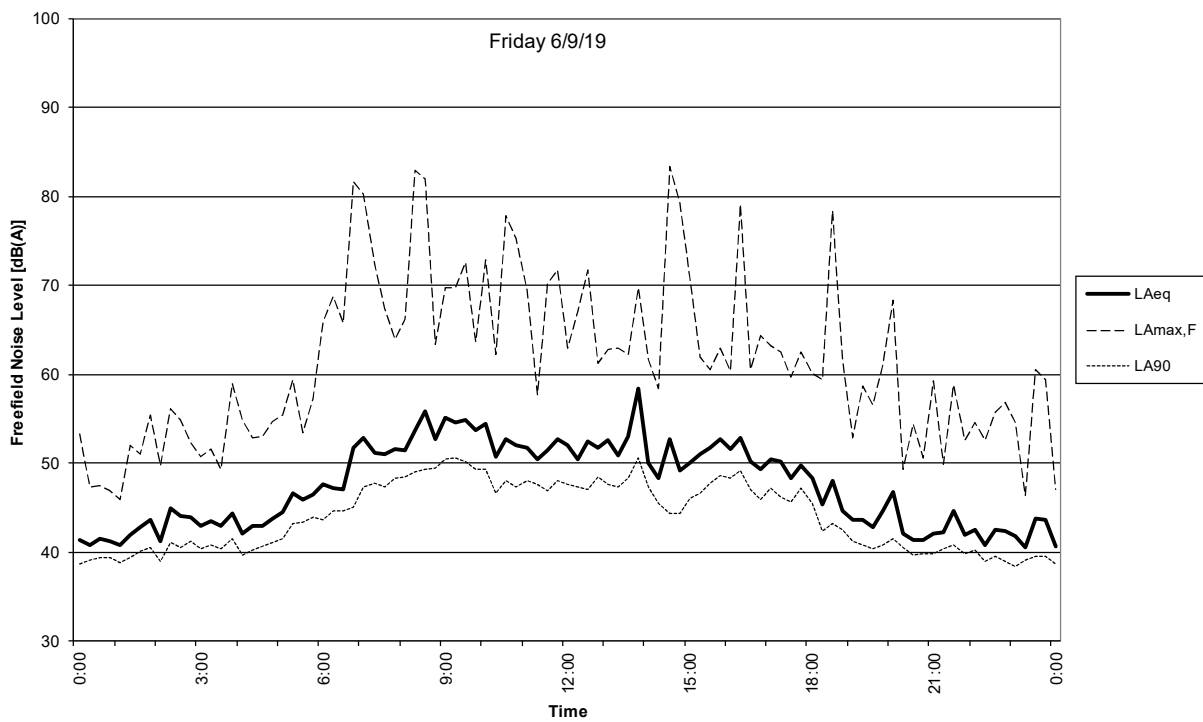
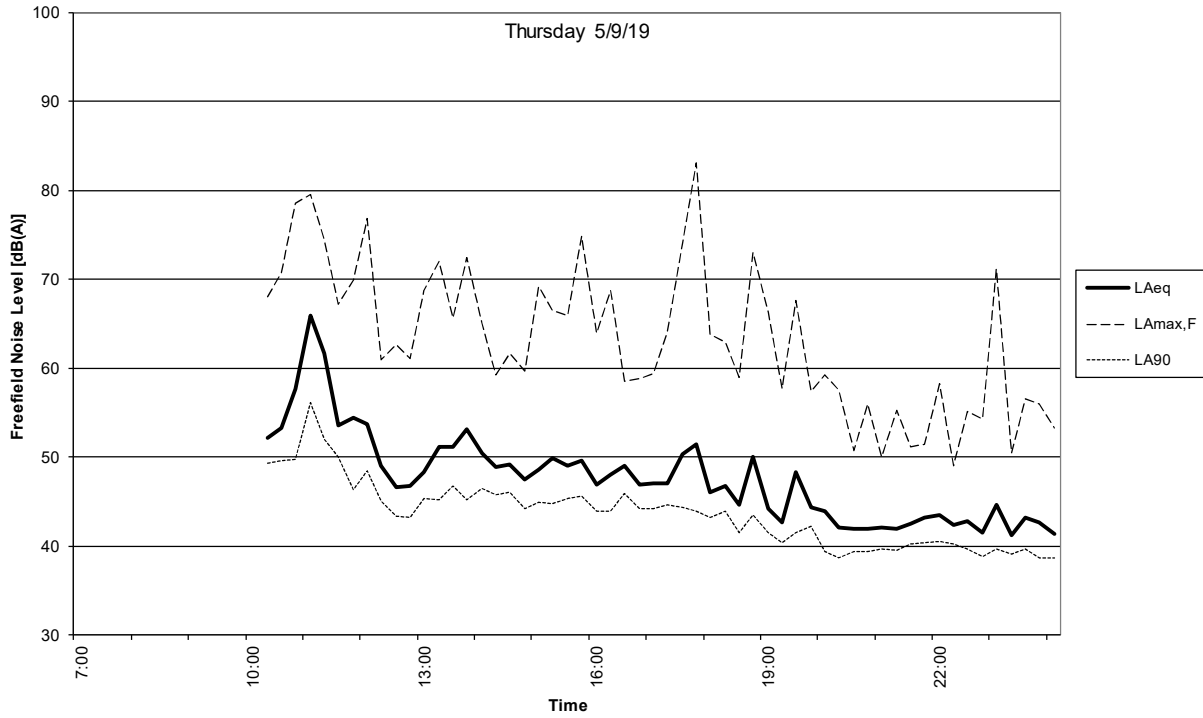
Appendix B
Results of Unattended Noise Monitoring Carried Out at
Position U1 – Pretoria Road

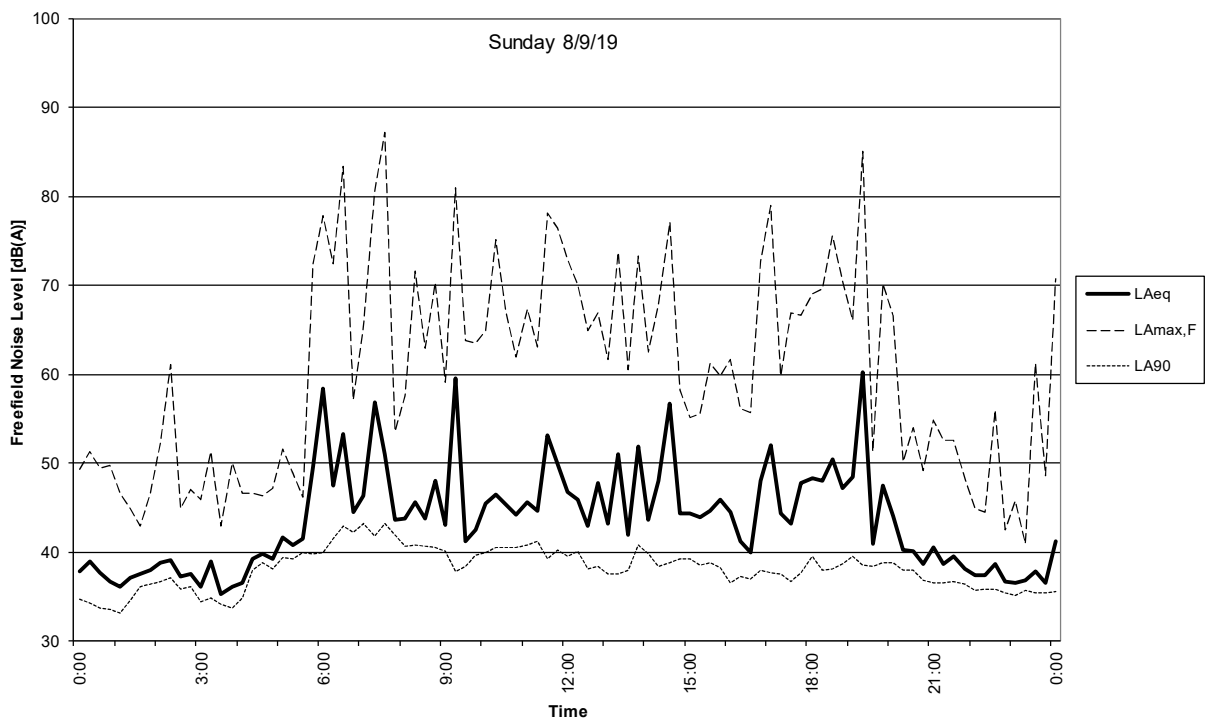
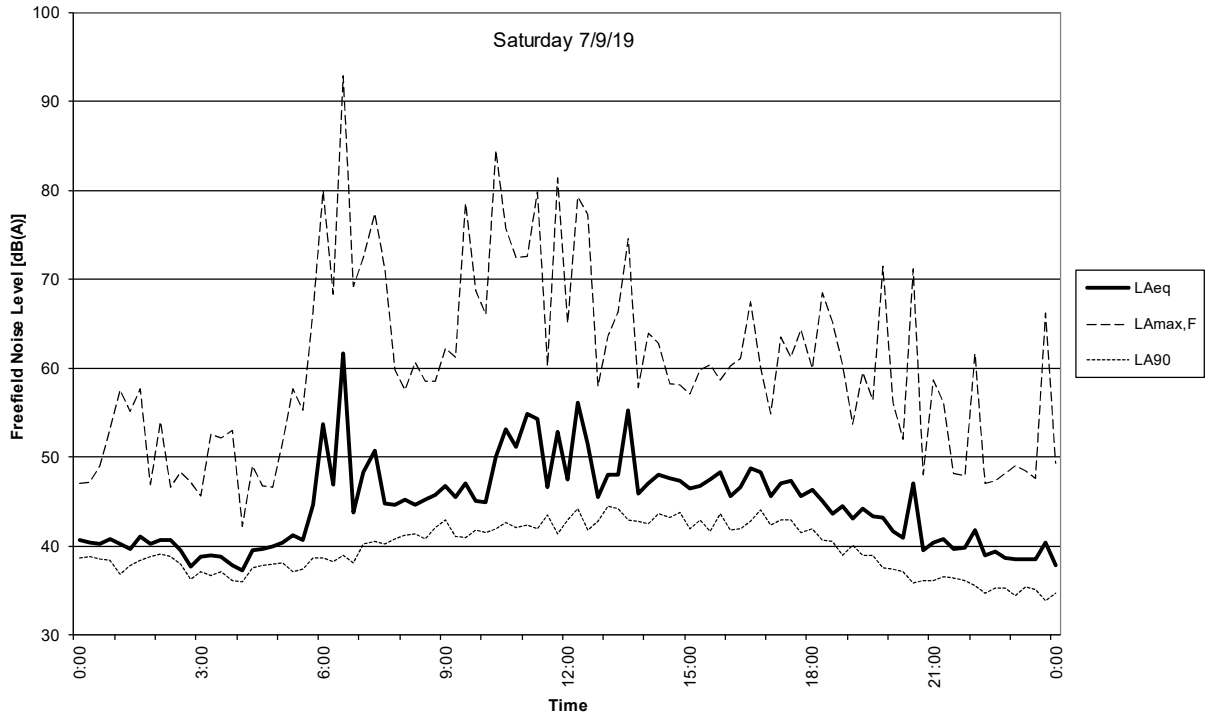


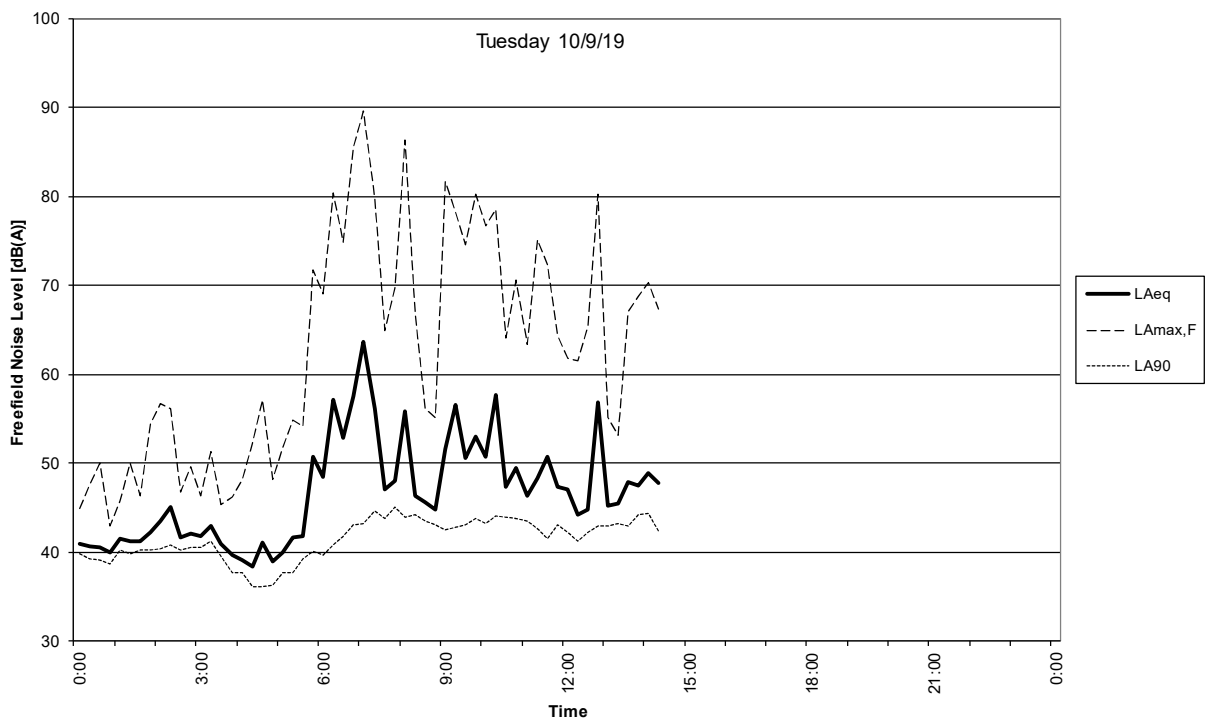
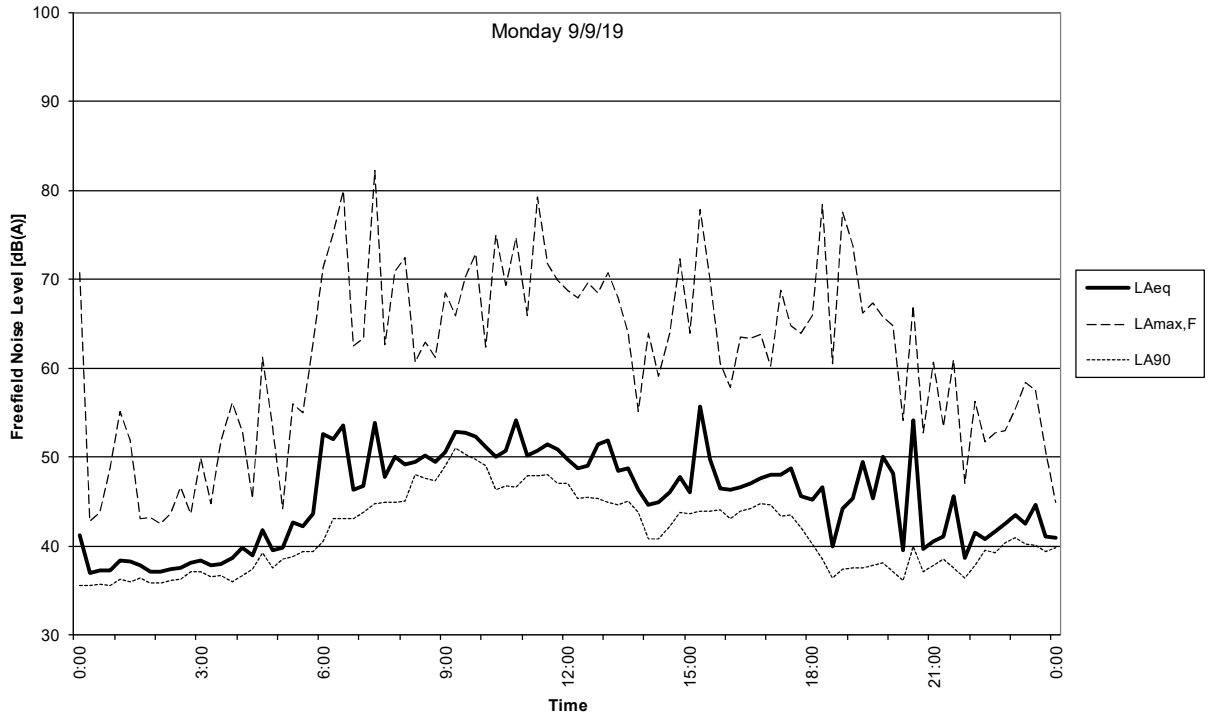




Appendix C
Results of Unattended Noise Monitoring Carried out at
Position U2 – The Villas







Appendix D
Calculation Details

Mick George Limited
Leicester Quarry, Ibstock
Calculated Noise Levels from Extraction, Infilling and Restoration Operations

13-Sep-2019

Receptor: 193 Pretoria Road
 Height: 144 m
 Grid Ref: 441816 X 310552 Y

INFILLING / RESTORATION
 Uses BS5228
 All heights metres AOD

Predicted Freefield Noise Levels

	Ref Level @10m	No.	% On Time	Grid Reference	Source Ht	Dist S-R	Barrier Ht	Dist S-B	Distance Attenuation		Barrier Attenuation	Max Attenuation	LAEq [dB]	Total LAeq [dB]
									Hard	Soft				
Phase A - Working at Current Levels Close to Property														
Dozer	79.0 LAeq	1	50	441951 310618	130	150	145	80	-23.6	-27.4	-14.4	-38.0	38.0	
HGV Movements (Main Access)	38.2 LAeq	24	-	442322 310550	145	500	145	430	-34.0	-40.5	-5.9	-40.5	25.8	
HGV Movements (Travelling into Phase A)	46.9 LAeq	24	-	442012 310617	130	200	145	130	-26.0	-30.6	-12.4	-38.4	30.0	38.9
Phase A - Working at Same Ground Level at Property - 5m Fence (150 AOD)														
Dozer	79.0 LAeq	1	50	441951 310618	144	150	150	80	-23.5	-27.4	-13.0	-36.6	39.4	
HGV Movements (Main Access)	38.2 LAeq	24	-	442322 310550	145	500	150	430	-34.0	-40.5	-11.6	-45.6	20.1	
HGV Movements (Travelling into Phase A)	46.9 LAeq	24	-	442012 310617	145	200	150	130	-26.0	-30.5	-12.1	-38.2	30.2	40.0
Phase A - Working Close to Final Restoration Levels - Above Level of Fence														
Dozer	79.0 LAeq	1	50	441951 310618	153	150	150	80	-23.5	-27.4	-8.0	-31.6	44.4	
HGV Movements (Main Access)	38.2 LAeq	24	-	442322 310550	145	500	150	430	-34.0	-40.5	-11.6	-45.6	20.1	
HGV Movements (Travelling into Phase A)	46.9 LAeq	24	-	442012 310617	153	200	150	130	-26.0	-30.5	-9.1	-35.2	33.3	44.8
Phase A - Working Close to Final Restoration Levels - Above Level of Fence														
Dozer	79.0 LAeq	1	50	441951 310618	153	200	150	130	-26.0	-30.5	-9.1	-35.2	40.8	
HGV Movements (Main Access)	38.2 LAeq	24	-	442322 310550	145	500	150	430	-34.0	-40.5	-11.6	-45.6	20.1	
HGV Movements (Travelling into Phase A)	46.9 LAeq	24	-	442012 310617	153	200	150	130	-26.0	-30.5	-9.1	-35.2	33.3	41.6
Phase B - Working Close to Final Restoration Levels														
Dozer	79.0 LAeq	1	50	441852 310804	150	250			-28.0	-33.0	0.0	-33.0	43.0	
HGV Movements (Main Access)	38.2 LAeq	24	-	442322 310550	145	500			-34.0	-40.5	0.0	-40.5	31.7	
HGV Movements (Travelling into Phase B)	46.9 LAeq	24	-	442012 310617	145	200	145	130	-26.0	-30.5	-5.7	-31.7	36.7	44.2
Phase C - Working Close to Final Restoration Levels														
Dozer	79.0 LAeq	1	50	441852 311008	147	450			-33.1	-39.3	0.0	-39.3	36.7	
HGV Movements (Main Access)	38.2 LAeq	24	-	442322 310550	145	500			-34.0	-40.5	0.0	-40.5	31.7	
HGV Movements (Travelling into Phase B/C)	46.9 LAeq	24	-	442012 310617	145	200	145	130	-26.0	-30.5	-5.7	-31.7	36.7	40.3
Phase D - Working Close to Final Restoration Levels														
Dozer	79.0 LAeq	1	50	442146 310641	152	350			-30.9	-36.6	0.0	-36.6	39.4	
HGV Movements (Main Access)	38.2 LAeq	24	-	442322 310550	145	500			-34.0	-40.5	0.0	-40.5	31.7	
HGV Movements (Travelling into Phase D)	39.9 LAeq	24	-	442146 310641	152	350			-30.9	-36.6	0.0	-36.6	34.2	41.1

Moving Point Sources

	Ref SWL	No. Veh per hour	Speed [km/h]	Dist to Centre of Haul Road	AOV	LAeq [dB]
HGV Movements (Main Access)	106.1	24	25	500	30	38.2
HGV Movements (Travelling into Phase A)	106.1	24	25	200	90	46.9
HGV Movements (Travelling into Phase B / C)	106.1	24	25	200	90	46.9
HGV Movements (Travelling into Phase D)	106.1	24	25	500	45	39.9

Mick George Limited
Leicester Quarry, Ibstock
Calculated Noise Levels from Extraction, Infilling and Restoration Operations

13-Sep-2019

Receptor: 193 Pretoria Road
Height: 144 m
Grid Ref: 441816 X 310552 Y

EXTRACTION

Uses BS5228
All heights metres AOD

Predicted Freefield Noise Levels

	Ref Level @10m	No.	% On Time	Grid Reference		Source Ht	Dist S-R	Barrier Ht	Dist S-B	Distance Attenuation		Barrier Attenuation	Max Attenuation	L _{Aeq} [dB]	Total L _{Aeq} [dB]
				X	Y					Hard	Soft				
Phase C - Present															
Dozer	79.0	L _{Aeq} 1	50	441915	311045	110	500	144	430	-34.0	-40.5	-10.6	-44.6	31.4	39.8
Dozer	79.0	L _{Aeq} 1	50	441920	311089	120	550	144	480	-34.8	-41.5	-8.9	-43.7	32.3	
Excavator	75.0	L _{Aeq} 1	100	441915	311045	105	500	144	430	-34.0	-40.5	-11.3	-45.3	29.7	
Excavator	75.0	L _{Aeq} 1	100	441915	311045	110	500	144	430	-34.0	-40.5	-10.6	-44.6	30.4	
Excavator	75.0	L _{Aeq} 1	100	441915	311045	110	500	144	430	-34.0	-40.5	-10.6	-44.6	30.4	
ADT Movements	49.6	L _{Aeq} 24	-	441812	310902	130	350	144	280	-30.9	-36.6	-8.7	-39.6	35.1	
Phase D															
Dozer	79.0	L _{Aeq} 1	50	442146	310641	120	350	144	280	-30.9	-36.6	-10.8	-41.7	34.3	
Dozer	79.0	L _{Aeq} 1	50	442208	310678	110	400	144	330	-32.1	-38.1	-11.8	-43.9	32.1	
Excavator	75.0	L _{Aeq} 1	100	442146	310641	105	350	144	280	-30.9	-36.7	-13.4	-44.3	30.7	
Excavator	75.0	L _{Aeq} 1	100	442208	310678	110	400	144	330	-32.1	-38.1	-11.8	-43.9	31.1	
Excavator	75.0	L _{Aeq} 1	100	442242	310694	110	450	144	380	-33.1	-39.4	-11.1	-44.2	30.8	
ADT Movements	49.6	L _{Aeq} 24	-	441965	310753	130	250	144	180	-28.0	-33.0	-10.2	-38.1	34.4	40.3

Moving Point Sources

	Ref SWL	No. Veh per hour	Speed [km/h]	Dist to Centre of Haul Road	AOV	L _{Aeq} [dB]
ADT Movements	110	24	25	350	120	49.6

Mick George Limited
Leicester Quarry, Ibstock
Calculated Noise Levels from Extraction, Infilling and Restoration Operations

13-Sep-2019

Receptor: The Villas
 Height: 149 m
 Grid Ref: 441658 X 311170 Y

Uses BS5228
 All heights metres AOD

INFILLING / RESTORATION

Predicted Freefield Noise Levels

	Ref Level @10m	No.	On Time %	Grid Reference X	Grid Reference Y	Source Ht	Dist S-R	Barrier Ht	Dist S-B	Distance Attenuation		Barrier Attenuation	Max Attenuation	L _{Aeq} [dB]	Total L _{Aeq} [dB]
										Hard	Soft				
Phase A - Working Close to Surface (Worst Case)															
Dozer	79.0	1	50	441944	310770	153	500				-34.0	-40.5	0.0	-40.5	35.5
HGV Movements (Main Access)	36.1	24	-	442415	310759	145	800				-38.1	-45.6	0.0	-45.6	28.6
HGV Movements (Travelling into Phase A)	37.4	24	-	442001	310680	153	600				-35.6	-42.5	0.0	-42.5	30.5
Phase B - Working Close to Surface (Worst Case)															
Dozer	79.0	1	50	441796	310961	150	250				-28.0	-32.9	0.0	-32.9	43.0
HGV Movements (Main Access)	36.1	24	-	442415	310759	145	800				-38.1	-45.6	0.0	-45.6	28.6
HGV Movements (Travelling into Phase B)	41.2	24	-	441796	310961	150	250				-28.0	-32.9	0.0	-32.9	44.0
Phase C - Initial Restoration Close to Base of Quarry															
Dozer	79.0	1	50	441804	311150	135	150				-23.6	-27.4	-14.4	-38.0	38.0
HGV Movements (Main Access)	36.1	24	-	442102	310936	145	500				-34.0	-40.5	-7.1	-41.1	22.5
HGV Movements (Travelling into Phase C)	43.9	24	-	441842	311103	135	200				-26.0	-30.6	-12.4	-38.4	27.0
Phase C - Working Close to Surface															
Dozer	79.0	1	50	441804	311150	148	150				-23.5	-27.4	-7.5	-31.0	45.0
HGV Movements (Main Access)	36.1	24	-	442102	310936	145	500				-34.0	-40.5	-7.1	-41.1	22.5
HGV Movements (Travelling into Phase C)	43.9	24	-	441842	311103	148	200				-26.0	-30.5	-7.1	-33.1	32.3
Phase C - Working Close to Surface (Bund Removed)															
Dozer	79.0	1	50	441804	311150	148	150				-23.5	-27.4	0.0	-27.4	48.6
HGV Movements (Main Access)	36.1	24	-	442102	310936	145	500				-34.0	-40.5	0.0	-40.5	29.6
HGV Movements (Travelling into Phase C)	43.9	24	-	441842	311103	148	200				-26.0	-30.5	0.0	-30.5	39.4
Phase D (North) - Working Close to Surface															
Dozer	79.0	1	50	442058	311180	148	400				-32.0	-38.1	0.0	-38.1	37.9
HGV Movements (Main Access)	36.1	24	-	442142	311026	145	500				-34.0	-40.5	0.0	-40.5	29.6
HGV Movements (Travelling into Phase D)	40.4	24	-	442110	311116	148	450				-33.1	-39.3	0.0	-39.3	34.1

Moving Point Sources

	Ref SWL	No. Veh per hour	Speed [km/h]	Dist to Centre of Haul Road	AOV	L _{Aeq} [dB]
HGV Movements (Main Access)	106.1	24	25	800	30	36.1
HGV Movements (Travelling into Phase A)	106.1	24	25	600	30	37.4
HGV Movements (Travelling into Phase B)	106.1	24	25	250	30	41.2
HGV Movements (Travelling into Phase C)	106.1	24	25	200	45	43.9
HGV Movements (Travelling into Phase D)	106.1	24	25	450	45	40.4

Mick George Limited
Leicester Quarry, Ibstock
Calculated Noise Levels from Extraction, Infilling and Restoration Operations

13-Sep-2019

Receptor: The Villas
 Height: 149 m
 Grid Ref: 441658 X 311170 Y

EXTRACTION
 Uses BS5228
 All heights metres AOD

Predicted Freefield Noise Levels

	Ref Level @10m	No.	On Time %	Grid Reference		Source Ht	Dist S-R	Barrier Ht	Dist S-B	Distance Attenuation		Barrier Attenuation	Max Attenuation	L _{Aeq} [dB]	Total L _{Aeq} [dB]
				X	Y					Hard	Soft				
Phase C - Present															
Dozer	79.0 LAeq	1	50	441853	311147	130	200	147	100	-26.1	-30.6	-13.5	-39.5	36.5	43.9
Dozer	79.0 LAeq	1	50	441899	311142	120	250	147	150	-28.0	-33.0	-14.4	-42.4	33.5	
Excavator	75.0 LAeq	1	100	441951	311134	110	300	147	200	-29.6	-35.0	-15.0	-44.6	30.4	
Excavator	75.0 LAeq	1	100	441999	311126	105	350	147	250	-30.9	-36.7	-14.5	-45.4	29.6	
Excavator	75.0 LAeq	1	100	441999	311126	105	350	147	250	-30.9	-36.7	-14.5	-45.4	29.6	
ADT Movements	51.3 LAeq	24	-	441754	310988	145	200	147	100	-26.0	-30.5	-5.0	-31.0	41.8	
Phase D															
Dozer	79.0 LAeq	1	50	442060	311174	120	400	147	300	-32.1	-38.1	-10.6	-42.6	33.4	
Dozer	79.0 LAeq	1	50	442107	311173	110	450	147	350	-33.1	-39.4	-11.6	-44.7	31.3	
Excavator	75.0 LAeq	1	100	442060	311174	105	400	147	300	-32.1	-38.1	-13.3	-45.4	29.6	
Excavator	75.0 LAeq	1	100	442107	311173	110	450	147	350	-33.1	-39.4	-11.6	-44.7	30.3	
Excavator	75.0 LAeq	1	100	442107	311173	110	450	147	350	-33.1	-39.4	-11.6	-44.7	30.3	
ADT Movements	51.3 LAeq	24	-	441754	310988	130	200	147	100	-26.1	-30.6	-13.5	-39.5	33.3	

Moving Point Sources

Ref SWL	No. Veh per hour	Speed [km/h]	Dist to Centre of Haul Road	AOV	L _{Aeq} [dB]
110	24	25	200	100	51.3

Mick George Limited
Leicester Quarry, Ibstock
Calculated Noise Levels from Extraction, Infilling and Restoration Operations

13-Sep-2019

Receptor: 151, Ibstock Road
 Height: 155 m
 Grid Ref: 442363 X 311419 Y

Uses BS5228
 All heights metres AOD

INFILLING / RESTORATION

Predicted Freefield Noise Levels

	Ref Level @10m	No.	% On Time	Grid Reference		Source Ht	Dist S-R	Barrier Ht	Dist S-B	Distance Attenuation		Barrier Attenuation	Max Attenuation	L _{Aeq} [dB]	Total L _{Aeq} [dB]
				X	Y					Hard	Soft				
Phase A - Working Close to Surface (Worst Case)															
Dozer	79.0	1	50	442092	310804	153	600			-35.6	-42.5	0.0	-42.5	33.5	
HGV Movements (Main Access)	39.5	24	-	442442	310773	145	550			-34.8	-41.5	0.0	-41.5	32.8	
HGV Movements (Travelling into Phase A)	38.5	24	-	442085	310762	153	700			-36.9	-44.1	0.0	-44.1	31.3	37.4
Phase B - Working Close to Surface (Worst Case)															
Dozer	79.0	1	50	442048	311016	150	500			-34.0	-40.5	0.0	-40.5	35.5	
HGV Movements (Main Access)	39.5	24	-	442442	310773	145	550			-34.8	-41.5	0.0	-41.5	32.8	
HGV Movements (Travelling into Phase B)	41.2	24	-	442048	311016	150	500			-34.0	-40.5	0.0	-40.5	34.7	39.3
Phase C - Working Close to Surface															
Dozer	79.0	1	50	442106	311307	148	350			-30.9	-36.6	-1.6	-36.6	39.4	
HGV Movements (Main Access)	39.5	24	-	442442	310773	145	550			-34.8	-41.5	-1.6	-41.5	31.2	
HGV Movements (Travelling into Phase C)	43.9	24	-	442019	311197	148	400			-32.0	-38.1	-1.5	-38.1	36.4	41.6
Phase D (North) - Initial Restoration															
Dozer	79.0	1	50	442244	311316	135	150			-23.6	-27.5	-15.4	-39.0	37.0	
HGV Movements (Main Access)	39.5	24	-	442442	310773	145	550			-34.8	-41.5	-1.6	-41.5	31.2	
HGV Movements (Travelling into Phase D)	43.9	24	-	442296	311218	148	200			-26.0	-30.5	-2.6	-30.5	36.7	40.4
Phase D (North) - Working Close to Surface															
Dozer	79.0	1	50	442244	311316	148	150			-23.5	-27.4	0.0	-27.4	48.6	
HGV Movements (Main Access)	39.5	24	-	442442	310773	145	550			-34.8	-41.5	0.0	-41.5	32.8	
HGV Movements (Travelling into Phase D)	45.1	24	-	442296	311218	148	200			-26.0	-30.5	0.0	-30.5	40.6	49.3
Phase D (South) - Working Close to Surface															
Dozer	79.0	1	50	442352	311058	148	350			-30.9	-36.6	0.0	-36.6	39.4	
HGV Movements (Main Access)	39.5	24	-	442442	310773	145	550			-34.8	-41.5	0.0	-41.5	32.8	
HGV Movements (Travelling into Phase D)	42.1	24	-	442352	311011	148	400			-32.0	-38.1	0.0	-38.1	36.1	41.7
Moving Point Sources															
	Ref SWL	No. Veh per hour	Speed [km/h]	Dist to Centre of Haul Road	AOV	L _{Aeq} [dB]									
HGV Movements (Main Access)	106.1	24	25	550	45	39.5									
HGV Movements (Travelling into Phase A)	106.1	24	25	700	45	38.5									
HGV Movements (Travelling into Phase B)	106.1	24	25	500	60	41.2									
HGV Movements (Travelling into Phase C)	106.1	24	25	400	90	43.9									
HGV Movements (Travelling into Phase D)	106.1	24	25	200	60	45.1									
HGV Movements (Travelling into Phase D)	106.1	24	25	400	60	42.1									

Mick George Limited
Leicester Quarry, Ibstock
Calculated Noise Levels from Extraction, Infilling and Restoration Operations

13-Sep-2019

Receptor: 151, Ibstock Road
Height: 155 m
Grid Ref: 442363 X 311419 Y

EXTRACTION

Uses BS5228
All heights metres AOD

Predicted Freefield Noise Levels

	Ref Level @10m	No.	On Time %	Grid Reference		Source Ht	Dist S-R	Barrier Ht	Dist S-B	Distance Attenuation		Barrier Attenuation	Max Attenuation	L _{Aeq} [dB]	Total L _{Aeq} [dB]
				X	Y					Hard	Soft				
Phase C - Present															
Dozer	79.0 LAeq	1	50	441999	311236	130	400	148	100	-32.1	-38.1	-15.1	-47.1	28.9	35.8
Dozer	79.0 LAeq	1	50	441958	311209	120	450	148	150	-33.1	-39.4	-16.4	-49.5	26.5	
Excavator	75.0 LAeq	1	100	441958	311209	110	450	148	150	-33.1	-39.4	-19.3	-52.4	22.6	
Excavator	75.0 LAeq	1	100	441958	311209	105	450	148	150	-33.1	-39.4	-20.6	-53.8	21.2	
Excavator	75.0 LAeq	1	100	441958	311209	105	450	148	150	-33.1	-39.4	-20.6	-53.8	21.2	
ADT Movements	44.3 LAeq	24	-	441958	311209	145	450	148	150	-33.1	-39.3	-4.7	-39.3	33.4	35.8
Phase D (North)															
Dozer	79.0 LAeq	1	50	442244	311316	120	150	150	50	-23.8	-27.7	-15.0	-38.8	37.2	
Dozer	79.0 LAeq	1	50	442230	311253	110	200	150	100	-26.2	-30.8	-15.0	-41.2	34.8	
Excavator	75.0 LAeq	1	100	442230	311253	105	200	150	100	-26.3	-30.9	-15.0	-41.3	33.7	
Excavator	75.0 LAeq	1	100	442197	311216	110	250	150	150	-28.1	-33.1	-15.0	-43.1	31.9	
Excavator	75.0 LAeq	1	100	442197	311216	110	250	150	150	-28.1	-33.1	-15.0	-43.1	31.9	
ADT Movements	46.8 LAeq	24	-	442197	311216	130	250	150	150	-28.0	-33.0	-10.8	-38.8	31.0	41.8
Phase D (South)															
Dozer	79.0 LAeq	1	50	442352	311058	120	350	150	250	-30.9	-36.7	-10.4	-41.4	34.6	
Dozer	79.0 LAeq	1	50	442352	311011	110	400	150	300	-32.1	-38.1	-11.4	-43.4	32.5	
Excavator	75.0 LAeq	1	100	442352	311011	105	400	150	300	-32.1	-38.1	-12.3	-44.4	30.6	
Excavator	75.0 LAeq	1	100	442338	310962	110	450	150	350	-33.1	-39.4	-10.3	-43.4	31.6	
Excavator	75.0 LAeq	1	100	442338	310962	110	450	150	350	-33.1	-39.4	-10.3	-43.4	31.6	
ADT Movements	45.4 LAeq	24	-	442352	311058	130	350	150	250	-30.9	-36.6	-7.6	-38.5	32.0	40.2

Moving Point Sources

Ref SWL	No. Veh per hour	Speed [km/h]	Dist to Centre of Haul Road	AOV	L _{Aeq} [dB]
110	24	25	450	45	44.3
110	24	25	250	45	46.8
110	24	25	350	45	45.4

Mick George Limited
Leicester Quarry, Ibstock
Calculated Noise Levels from Extraction, Infilling and Restoration Operations

13-Sep-2019

Receptor: Centre Bungalow
 Height 162 m
 Grid Ref: 443026 X 310804 Y
 Uses BS5228
 All heights metres AOD

Predicted Freefield Noise Levels

	Ref Level @10m	No.	% On Time	Grid Reference		Source Ht	Dist S-R	Barrier Ht	Dist S-B	Distance Attenuation		Barrier Attenuation	Max Attenuation	L _{Aeq} [dB]	Total L _{Aeq} [dB]
				X	Y					Hard	Soft				
Infilling (Phase D) Worst Case															
Dozer	79.0	L _{Aeq} 1	50	442408	310835	153	600			-35.6	-42.5	0.0	-42.5	33.5	
HGV Movements (Main Access)	49.1	L _{Aeq} 24	-	443026	310586	153	200			-26.0	-30.5	0.0	-30.5	44.6	44.9
Extraction (Phase D)															
Dozer	79.0	L _{Aeq} 1	50	442408	310835	120	600	150	75	-35.6	-42.5	-15.0	-50.6	25.4	
Dozer	79.0	L _{Aeq} 1	50	442408	310835	110	600	150	75	-35.6	-42.5	-15.0	-50.6	25.4	
Excavator	75.0	L _{Aeq} 1	100	442408	310835	105	600	150	75	-35.6	-42.5	-15.0	-50.6	24.4	
Excavator	75.0	L _{Aeq} 1	100	442408	310835	110	600	150	75	-35.6	-42.5	-15.0	-50.6	24.4	
Excavator	75.0	L _{Aeq} 1	100	442408	310835	110	600	150	75	-35.6	-42.5	-15.0	-50.6	24.4	
ADT Movements	40.3	L _{Aeq} 24	-	442258	310835	130	750	150	225	-37.5	-44.9	-12.1	-49.6	20.8	32.2

Moving Point Sources

	Ref SWL	No. Veh per hour	Speed [km/h]	Dist to Centre of Haul Road	AOV	L _{Aeq} [dB]
HGV Movements (Main Access)	106.1	24	25	200	150	49.1
ADT Movements	110	24	25	750	30	40.3