Heidelberg Materials

TYTHERINGTON QUARRY: 6 MILLION TONNES ADDITIONAL RESERVES

Environmental Statement: Chapter 7 Noise

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TABLES

7 NOISE

7.1 INTRODUCTION

7.1.1 This ES chapter reports the outcome of the assessment of likely significant noise effects arising from the Proposed Scheme. This chapter (and its associated figures and appendices) is intended to be read as part of the wider ES with particular reference to **Chapter 3: Description of Proposed Scheme.**

7.2 LIMITATIONS AND ASSUMPTIONS

7.2.1 With the Proposed Scheme, there will be no changes to the extant consented vehicle and train movements. Staff and visitors will continue to access and park at the quarry as per existing arrangements and there will be no change to the current operating hours. There will be no increase in the number of plant items used for mineral extraction, and no intensification of mineral extraction activities.

7.3 POLICY AND LEGISLATIVE CONTEXT

7.3.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to noise. Further information on policies relevant to the Proposed Scheme is provided in **Chapter 5: Planning policy overview** as well as the accompanying Planning Statement.

LEGISLATIVE FRAMEWORK

7.3.2 A summary of the relevant legislation is provided in **Table 7-1**.

Table 7-1 – Legislation relevant to the noise assessment

Legislation	Legislative context
The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017 No. 571)	Defines the requirements and process to undertake EIA for development meeting specific criteria which have the potential to give rise to significant effects on the environment.
The Control of Pollution Act 1974[1] (CoPA)	Defines the legislative basis for the control of noise and vibration from construction activities, including codes of practice and Best Practicable Means (BPM).
The Environmental Protection Act 1990 (as amended by the Noise and Statutory Nuisance Act 1993)[2] (EPA)	The EPA covers statutory nuisance and sets out the duty for local authorities to detect statutory nuisances within their administrative areas.

[1] HMSO (1974). *Control of Pollution Act 1974.*
[2] HMSO (1990). *Environmental Protection Act 1990.*

Legislation	Legislative context
The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996[3] (NIR)	The Noise Insulation (Railways and Other Guided Transport Systems) regulations of 1996 details requirements for the provision of noise insulation to dwellings adjacent to new and altered railway or tram schemes.

PLANNING POLICY

7.3.3 A summary of the relevant national and local planning policy is provided in **Table 7-2**. The Planning Statement will cover the detail of actual policies.

Table 7-2 - Planning policy relevant to the noise assessment

Policy Reference	Implications
National Policy:	
National Planning Policy Framework, 2023[4] (NPPF)	The NPPF states that new development should contribute to and enhance the environment by preventing new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by unacceptable levels of noise pollution.
Noise Policy Statement for England, 2010[5] (NPSE)	The first aim of the NPSE is: *"Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development."* The second aim is: *"Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development."* The third aim of the NPSE is: *"Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development."* The NPSE introduces the concept of effect threshold levels from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. The effect threshold levels are: **NOEL – No Observed Effect Level** This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. **LOAEL – Lowest Observed Adverse Effect Level**

[3] HMSO (1996). *The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996.*
[4] Department for Levelling Up, Housing and Communities (2023). *National Planning Policy Framework.*
[5] DEFRA (2010). *Noise Policy Statement for England.*

Policy Reference	Implications
	This is the level above which adverse effects on health and quality of life can be detected. Extending these concepts for the purpose of the NPSE leads to the concept of a significant observed adverse effect level. **SOAEL – Significant Observed Adverse Effect Level.** This is the level above which significant adverse effects on health and quality of life occur. It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different Receptors and at different times. Further guidance on the different effect levels is provided in National Planning Practice Guidance (NPPG)[6] on noise, which introduces the additional effect level: **UAEL – Unacceptable Adverse Effect Level** This is the level above which adverse effects become very disruptive, causing extensive and regular changes in behaviour.
National Planning Practice Guidance (NPPG) - Minerals, 2014[7]	The National Planning Practice Guidance (NPPG), published in March 2014, states that the principal environmental issues of minerals working that should be addressed by mineral planning authorities, include (among others) noise associated with the operations. The main noise guidance from the NPPG (Paragraph: 021) states that: *"Mineral planning authorities should aim to establish a noise limit, through a planning condition, at the noise-sensitive property that does not exceed the background noise level ($L_{A90,1h}$) by more than 10dB(A) during normal working hours (0700-1900). Where it will be difficult not to exceed the background level by more than 10dB(A) without imposing unreasonable burdens on the mineral operator, the limit set should be as near that level as practicable. In any event, the total noise from the operations should not exceed 55dB $L_{Aeq,1h}$ (free field). For operations during the evening (1900-2200) the noise limits should not exceed the background noise level ($L_{A90,1h}$) by more than 10dB(A) and should not exceed 55dB $L_{Aeq,1h}$ (free field). For any operations during the period 22.00 – 07.00 noise limits should be set to reduce to a minimum any adverse impacts, without imposing unreasonable burdens on the mineral operator. In any event the noise limit should not exceed 42dB $L_{Aeq,1h}$ (free field) at a noise sensitive property".* The NPPG also acknowledges that mineral operations can often incorporate some particularly noisy short-term activities, which may not meet the limits described above. Such activities may include soil-stripping, the construction and removal of baffle mounds, soil storage mounds and spoil heaps, construction of new permanent landforms and aspects of site

[6] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019). *National Planning Practice Guidance - Noise.*

[7] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2014). *National Planning Practice Guidance - Minerals.*

Policy Reference	Implications
	road construction and maintenance. For such activities, the NPPG (Paragraph: 022) states that: *"Increased temporary daytime noise limits of up to 70dB $L_{Aeq,1h}$ (free field) for periods of up to eight weeks in a year at specified noise-sensitive properties should be considered to facilitate essential site preparation and restoration work and construction of baffle mounds where it is clear that this will bring longer-term environmental benefits to the site or its environs.* *Where work is likely to take longer than eight weeks, a lower limit over a longer period should be considered. In some wholly exceptional cases, where there is no viable alternative, a higher limit for a very limited period may be appropriate in order to attain the environmental benefits. Within this framework, the 70 dB $L_{Aeq,1h}$ (free field) limit referred to above should be regarded as the normal maximum".*
Local Policy:	
South Gloucestershire Local Plan: Policies, Sites and Places Plan (adopted November 2017)[8]	Policy PSP21 – Environmental Pollution and Impacts supports development proposals where they demonstrate that development has been designed to prevent unacceptable risks and avoids unacceptable levels of pollution including noise and vibration. Criteria C of this policy requires proposals to provide a scheme of noise mitigation through design where proposals would lead to significant adverse effects. Policy PSP8 – Residential Amenity. This policy supports development proposals where they do not create unacceptable living conditions or have unacceptable impact on the residential amenity of occupiers of the development or nearby properties.

TECHNICAL GUIDANCE

7.3.4 A summary of the technical guidance for noise is provided in **Table 7-3**.

Table 7-3 — Technical guidance relevant to the noise assessment

Technical Guidance	Summary
BS 5228–1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise[9]	Standard for construction noise magnitude of impact and threshold of sensitivity.
Institute of Environmental Management and Assessment (IEMA), Guidelines for	Presents guidelines on how the assessment of noise effects should be presented within the Environmental Impact Assessment (EIA) process. The IEMA guidelines cover aspects such as scoping, baseline, prediction and example definitions of significance criteria.

[8] South Gloucestershire Council (2017). *South Gloucestershire Local Plan: Policies, Sites and Places Plan (adopted November 2017).*

[9] British Standards Institution (2019). *BS 5228–1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.*

Technical Guidance	Summary
Environmental Noise Impact Assessment, 2014[10]	
Extant Principal Planning Consent[11]	Planning conditions attached to consent ref. NA/IDO/002/A relevant to noise are reproduced below for reference: *"Days and hours of operation* *3. Unless as may be approved otherwise in writing by the Local Planning Authority and with the exception of emergencies to maintain safe quarry working (which shall be notified to the Local Planning Authority):* *a) no mineral extraction, crushing and screening of stone or any other ancillary operations involving aggregate processing (other than production of coated roadstone, water pumping, servicing, environmental monitoring, maintenance and testing of plant or other similar work) shall be carried out on the site except between the following times:* *6.00am to 9.00pm Mondays to Fridays; and* *7.00am to 1.00pm on Saturdays* *b) no servicing, maintenance and testing of plant shall be carried out between 10.00pm and 4.30am;* *c) operations for the stripping of soils and removal of overburden and the formation and subsequent removal of material from any environmental bank or soil store area shall not be carried out except between the following times unless otherwise agreed in writing by the Local Planning Authority:* *8.00am to 6.00pm Mondays to Fridays; and* *8.00am to 1.00pm on Saturdays* *d) no operations or activities (other than the production of coated roadstone and environmental monitoring and water pumping) shall take place on Sundays, Bank Holidays and National Holidays.* *Reason: To protect the amenity of local residents* *…* *Noise* *11. All vehicles, plant and machinery operated within the area of the mineral review site shall be maintained in accordance with manufacturer's specifications at all times and shall be fitted with effective silencers to minimise noise emissions.* *Reason: To minimise any disturbance from noise.* *12. Unless approved otherwise by the Local Planning Authority hydraulic hammers shall not be used on the area of the mineral review site except for secondary rock breakages and temporary construction.*

[10] IEMA (2014). *Guidelines for Environmental Noise Impact Assessment, Version 1.2.*
[11] South Gloucestershire Council (2006). *Town and Country Planning Act 1990, Permission for Development. Application no. NA/IDO/002/A.*

Technical Guidance	Summary
	Reason: To minimise any disturbance from noise. *13. No mobile plant/ machines or vehicles shall be used on the area of the mineral review site after the date of the final approval of these conditions unless fitted with an audible reverse warning system of a suitable design so as to attenuate noise disturbance experienced outside the boundary of the site. The audible reverse warning system shall be utilised on all vehicles performing reversing manoeuvres at the site.* *Reason: To minimise any disturbance from noise.* *<u>Blasting and Vibration</u>* *14. Unless as may be approved otherwise in writing by the Local Planning Authority or, in the case of an emergency which shall be notified to the Local Planning Authority as soon as it is practical, no blasting shall take place on the area of the review site except between the hours of 11.00 and 16.00 hours Mondays to Fridays. No blasting shall take place on Saturdays, Bank Holidays and National Holidays.* *Reason: To protect the amenities of local residents.* *…* *17. In the event of a complaint being received by the quarry operators or by the Local Planning Authority relating to … noise disturbance resulting from blasting operations at the mineral review site the quarry operators shall undertake as soon as is practical, blast vibration monitoring at, or immediately adjacent to, the complainant's property. The results of the monitoring will demonstrate… if… the effects of …noise disturbance arising from blasting operations are proven to be environmentally unacceptable then the quarry operators shall cease production blasting in the area of the quarry giving rise to concern and shall carefully review all aspects of blast design at the mineral review site so as to… seek to remedy the adverse effects of air overpressure and noise disturbance from blasting as experienced at the complainant's property. The amended blast design shall be implemented on site by the quarry operators and the results of the subsequent blast monitoring at the complainant's property shall be submitted to the Local Planning Authority for approval as soon as practicable.* *Reason: To protect the amenities of local residents and to ensure compliance with the conditions relating to blasting.* *18. Copies of all blast monitoring results shall be retained on site and shall be made available on request to the Local Planning Authority.* *Reason: To ensure compliance with the conditions relating to blasting.* *19. No secondary blasting shall take place on the site except with the written agreement of the Local Planning Authority.* *Reason: To protect the amenity of local residents.* *20. A warning signal to be audible at the site boundary of the quarry shall be sounded prior to the commencement of any blasting operation taking place on the mineral review site and shall be sounded again immediately after any blasting operation has occurred.*

Technical Guidance	Summary
	Reason: To give local residents advance notice that a blasting event is about to take place on site and when the blast has finished."

7.4 DATA GATHERING METHODOLOGY

STUDY AREA

7.4.1 The study area is an area approximately 1km from the quarry boundary, which encompasses all the nearest receptors to the quarry. The receptors (and, therefore, also the study area) to be considered in the assessment were agreed with South Gloucestershire Council (SGC) in a consultation exercise, as described below in **Section 7.6**. The study area is indicated in **Figure 7.1**.

DESK STUDY

7.4.2 A desktop study, based on review of aerial imagery, was undertaken to identify receptors that could potentially be affected by noise arising from the Proposed Scheme. A summary of the desktop data used is provided in **Table 7-4** below.

Table 7-4 – Desktop data for noise assessment

Desktop data	Source of desktop data	Details of the information
Aerial imagery from Google Earth Pro	Google Earth Pro	Aerial views of the study area described above in paragraph 7.4.1, and surrounding environs, to establish potential noise sensitive receptors.

SURVEY WORK

7.4.3 To inform the assessment, baseline surveying was undertaken in line with the methodology agreed during the consultation exercise described in **Section 7.6**.

7.4.4 The baseline survey was undertaken from Thursday 11 April 2024 to Wednesday 24 April 2024. The monitoring consisted of an unattended monitoring location on the north-western boundary of the site, representative of receptors on Itchington Road, and attended monitoring during the daytime, evening and night-time at two locations: one representative of receptors west of the quarry and north of the M5 and one representative of receptors in Tytherington, east of the quarry and south of the M5.

7.4.5 Surveying was carried out in free field conditions. All sound level meters used were subject to a laboratory calibration within two years of the surveying and all acoustic calibrators were subject to a laboratory calibration within one year of the surveying. Field calibration checks were performed before and after each set of measurements and no significant drift was observed (maximum drift +0.2 dB).

7.4.6 Publicly available meteorological data, obtained from a weather station approximately 3 km west of the quarry, was used to exclude data obtained at the unattended monitoring location affected by winds above 5 m/s and by precipitation. Analysis of the meteorological data indicates that approximately 93% of the survey period was unaffected by winds above 5 m/s, and that winds were

from the prevailing direction (west – south) for around 65% of the survey period. There were four periods of precipitation, two shorter events on 17th and 19th Paril, and two longer events on the 15th and 22nd April. All periods affected by precipitation were removed from the analysis.

7.4.7 Subjective observations of the dominant sources affecting the baseline environment at the Long Term (LT) and Short Term (ST) monitoring locations indicate that sound from road traffic on the M5 tends to dominate the acoustic environment at all times of day. At Itchington Road, near LT1, sound from the quarry was noted to provide a significant contribution in the evening and was audible at the beginning of the night-time period and, at ST1, was just audible during one measurement in the daytime.

7.5 OVERALL BASELINE

CURRENT BASELINE

7.5.1 A summary of the baseline survey results are provided in **Table 7-5** below, for the Long Term (LT) unattended monitoring location, and in **Table 7-6** below, for the attended monitoring. Detailed results of the baseline surveys are provided in **Appendix 7A**.

Table 7-5 – Baseline survey results: LT1

Period	Average measured sound levels, per period, dB*					
	Day		Evening		Night	
	$L_{Aeq,T}$	$L_{A90,T}$	$L_{Aeq,T}$	$L_{A90,T}$	$L_{Aeq,T}$	$L_{A90,T}$
Weekdays	52	46	47	42	52	41
Sunday	50	44	47	43	49	36
Sunday (0600-0700 hrs)	-	-	-	-	50	43
Sunday (2300-0000 hrs)	-	-	-	-	44	40

* - $L_{Aeq,T}$ sound levels: logarithmic average, $L_{A90,T}$ sound levels - arithmetic average

7.5.2 In consideration of the LT monitoring results in **Table 7-5**, particular attention is given to the differences between the measured sound levels on weekdays and Sundays, because the quarry does not operate on Sundays, and the measured sound levels on Sundays are therefore considered to be indicative of baseline sound levels on other days, in absence of sound from the quarry. Whilst considered representative, there may be fewer road traffic movements on Sundays and so measured sound levels on Sundays may be lower than would be anticipated on a typical weekday.

7.5.3 The results in **Table 7-5** indicate that, during the daytime and evening, there is little variation in weekday and Sunday ambient and background sound levels. In consideration of the whole night (2300 to 0700 hrs) sound levels, a slightly greater variation is observed in weekday and Sunday night-time ambient and background sound levels. But the shoulder periods of the Sunday night-time, from 2300 to 0000 hrs and from 0600 to 0700 hrs, again show little variation between Sundays and weekdays.

7.5.4 Overall, the measurement results from LT1, provided above in **Table 7-5**, indicate that background sound levels at receptors in the vicinity of LT1 are high, and that the maximum absolute noise limits provided in the NPPG - Minerals[7] guidance would be considered appropriate at all times.

7.5.5 Average measured sound levels at the attended monitoring locations are provided below in **Table 7-6**.

Table 7-6 – Baseline survey results: attended monitoring

Location	Period	Average measured sound levels, dB*	
		$L_{Aeq,T}$	$L_{A90,T}$
ST1	Day	65	61
	Evening	63	60
	Night**	65	60
ST2	Day	60	55
	Evening	51	46
	Night**	57	50

* - $L_{Aeq,T}$ sound levels: logarithmic average, $L_{A90,T}$ sound levels - arithmetic average

** - 2300-0000 and 0600-0700 hrs

7.5.6 The results in **Table 7-6** indicate that baseline sound levels are very consistent at ST1, with no typical diurnal variation observed. At ST2 there is some typical diurnal variation evident with evening and night-time sound levels falling slightly below daytime sound levels, though the variation is minimal indicating that sound from the M5 is dominant, and fairly consistent, at all times of day.

7.5.7 The measurement results from ST1 and ST2, provided above in **Table 7-6**, indicate that background sound levels at receptors in the vicinity of ST1 and ST2 are high, and that the maximum absolute noise limits provided in the NPPG - Minerals[7] guidance would be considered appropriate at all times.

7.5.8 For receptors at a greater distance to the M5 than the baseline survey locations, a distance correction can be applied to estimate the likely background sound levels. Though there is some uncertainty associated with this approach, it is considered reasonable because of the dominance of road traffic noise from the M5, which will be the primary influence on the measured $L_{A90,T}$ sound levels. **Table 7-7** provides the calculation of the correction required to predict the background sound level at a key sensitive receptor location.

Table 7-7 – Baseline survey results: attended monitoring

Receptor	Nearest survey location	Correction, dB	Remarks
R1 - Dodsmoor	ST1	-7	Increase in distance to M5 from 110 m to 530 m

7.5.9 Accounting for the correction for distance set out in **Table 7-7**, the estimated daytime background sound level at R1 – Dodsmoor is 54 dB $L_{A90,T}$ and the estimated evening and night-time background sound levels are 53 dB $L_{A90,T}$. As such, the maximum absolute noise limits provided in the NPPG - Minerals[7] guidance would be considered appropriate at all times.

PREDICTED FUTURE BASLINE

7.5.10 It is anticipated that, without the Proposed Scheme, the baseline acoustic environment would not vary substantially: quarry operations would continue in line with the extant consent, and sound from road traffic on the M5 would likely remain at a similar level to that which is currently present.

7.6 CONSULTATION

7.6.1 The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in **Section 2.4** of **Chapter 2: Approach to Environment Impact Assessment**.

SCOPING

7.6.2 A Scoping Opinion was issued by SGC on 18 January 2024. The Scoping Opinion noted that The Environmental Protection Team at SGC *"…notes and concurs with the detailed scope of the report in anticipation of the full EIA any further pre application discussions and a subsequent full planning application"*. The assessment presented herein has been undertaken in accordance with the parameters and criteria referred to in the Scoping Report.

7.6.3 With regard to transportation the Scoping Opinion stated that *"Adverse changes to noise, vibration and air quality should be particularly considered, including in relation to compliance with the European air quality Limit Values and/or Local Authority designated Air Quality Management Areas (AQMAs) and World Health Organisation (WHO) criteria"*. However, as described in **Section 7.2**, there will be no changes to the extant consented vehicle and train movements. Staff and visitors will continue to access and park at the quarry as per existing arrangements, and there would be no increase in vehicle movements. As such, road traffic noise is not specifically addressed within the assessment.

SUBSEQUENT ENGAGEMENT

The Environmental Protection Team at SGC were contacted via email in March 2024, prior to undertaking the baseline surveying and assessment, to agree the method for the surveying and the scope of the assessment. A chartered Environmental Health Practitioner responded confirming agreement with the proposed approach.

7.7 ENVIRONMENTAL MEASURES INCORPORATED INTO THE PROPOSED DEVELOPMENT

7.7.1 A range of environmental measures have been embedded into the development proposals as outlined in **Chapter 3 (Section 3.3)**. **Table 7-8** outlines how these embedded measures will influence the noise assessment.

Table 7-8 - Summary of the embedded environmental measures and how they influence the noise assessment

Receptor	Change and effects	Embedded measure and influence on assessment
All receptors	Potential adverse effects associated with mineral extraction activities.	An Operational Noise Management Plan (ONMP) will be produced, which will set out: ■ Constraints on working times and activities. ■ The major plant and processes used at the site, and the physical measures used to minimise noise emissions from them such as the provision of bunds and acoustic screening. ■ The management procedures in place used to control noise emissions, such as inspection of silencers, maintenance of plant, operating plant in accordance with best practice by using appropriate material drop heights, powering down plant when not in use, and methods of controlling blasting noise: design of blasts, Maximum Instantaneous Charge (MIC), delay interval, spacing, stemming, etc. ■ Routine monitoring undertaken to quantify noise emissions from site activities and monitoring undertaken in response to any complaints. ■ The complaint handling procedure to be implemented in response to any complaints received. ■ The requirement to update the ONMP whenever additional management processes, monitoring requirements or mitigation measures are put in place to reduce noise emissions or avoid any potential adverse impacts identified through monitoring. The ONMP will guide the management of noise emissions from the Proposed Scheme, and adherence to the requirements of the ONMP will be enforced whilst Proposed Scheme is in operation. Compliance with the requirements of the noise and blasting planning conditions will ensure ongoing management of noise emissions from the site, and avoidance of noise emissions during the more sensitive hours of the night-time and on Sundays, Public Holidays and National Holidays. Seeding and planting of perimeter screening bunds and the subsequent maintenance. This will serve to provide a visual screen which will reduce the perception of noise sources at the quarry.
All receptors	Potential adverse effects associated with road and rail movements.	The ONMP will set out requirements for vehicles accessing and egressing the site to adhere to agreed travel routes. The ONMP will detail any other appropriate measures applicable for reducing noise emissions from on site and off site vehicle movements, such as ensuring that vehicles are not left idling when stationary, that vehicles are fitted with appropriate manoeuvring alarms, etc.

Receptor	Change and effects	Embedded measure and influence on assessment
		There will be no increase in the number of road vehicle movements or train movements as part of Proposed Scheme. This will ensure that noise emissions from road and rail movements do not increase.

7.8 SCOPE OF THE ASSESSMENT

7.8.1 Since the issue of the Scoping Report and Scoping Opinion, scheme information has been received which has confirmed the following:

- The Proposed Scheme requires no new additional plant and no intensification of activities.
- There would be no change to the working hours.
- There would be no change to the road or rail movements associated with the operation of the quarry.

7.8.2 On this basis, the main factor that could give rise to a change in the noise emissions from the Proposed Scheme as compared to the existing quarry site is the marginal spatial shift of quarry activities in Woodleaze Quarry extending slightly to the south-west. Therefore, the scope of predictions of airborne noise levels have been simplified, on the basis that noise level predictions undertaken using the methods and guidance provided in BS 5228-1+A1:2014[9] will provide appropriate information to indicate the likely change in noise levels compared with existing quarry operations, and hence indicate the likelihood of significant noise effects, when considered in the context of the results of the baseline surveys.

The Proposed Development

7.8.3 As there will be no change in the number of road and rail movements, there will be no increase in associated noise emissions. Road and rail movements are not, therefore, required to be specifically addressed either in the prediction of noise levels or in the assessment.

7.8.4 To enable the extraction of minerals from beneath the consented soil store area, site preparation will be required, consisting of removal and relocation of soil, to expose the minerals to be worked below. In accordance with the NPPG – Minerals[7], described in **Section 7.3**, temporary higher noise limits are applicable to such works, for eight weeks in a year. Though the proposed approach to removal of soils is proposed to be gradual, it is considered that if adverse noise impacts arise due the gradual

7.8.5 Based on the above, the primary focus of the assessment is the reduced proximity of mineral extraction activities in Woodleaze Quarry to receptors to the west and south. If the assessment demonstrates that no significant effects are likely at these receptors, then it would be unlikely that significant noise effects would occur at any other receptor.

SPATIAL SCOPE

7.8.6 The spatial scope of the assessment of Noise covers the area of the Proposed Scheme contained within the red line boundary, together with the Zones of Influence (ZoIs) that have formed the basis of the study area described in **Section 7.4**.

7.8.7 The study area was determined on the basis of including all nearby receptors that could potentially be affected by noise from the Proposed Scheme. Based on professional experience of similar schemes, it would be unlikely that receptors further than 1km would experience significant noise effects from quarry activities.

TEMPORAL SCOPE

7.8.8 The temporal scope of the assessment of Noise is consistent with the period over which the Proposed Scheme would be carried out and therefore covers the currently consented period of operation. The Proposed Scheme will be undertaken within 3 development phases, which in total will last a period of circa 6 to 7.5 years subject to market conditions, but not extend beyond the extant 2042 end date of the principal planning consent.

POTENTIAL RECEPTORS

7.8.9 The desk study identified a number of potential receptors that could be affected by the Proposed Scheme. All potential receptors identified in the desk study are dwellings and are considered to be of high sensitivity to noise effects. The potential receptors, grouped by location, are listed below in **Table 7-9**.

Table 7-9 – Potential receptors

ID	Name	Approx. Distance and Direction from Quarry Site Boundary	Location Group
R1	Dodsmoor	600m southwest	Southwest of quarry, north of M5
R2	Owlsnest Farm	800m southwest	
R3	Harrows End	700m southwest	
R4	Holcombe Cottage	850m southwest	
R5	The House on the Hill	650m south	South of quarry, south of M5
R6	Freemans	800m south	
R7	Isaacs Peace	650m southeast	
R8	Wistaria Cottage	800m southeast	
R9	Ruth's Close	400m southeast	East of quarry, south of M5
R10	Lakeside Cottages	400m southeast	
R11	Clements Way	450m southeast	
R12	Stow Hill Road	250m east	
R13	Larches Farm	250m north	North of quarry, north of M5
R14	Harwood	250m north	
R15	Traveller's Site	200m north	

ID	Name	Approx. Distance and Direction from Quarry Site Boundary	Location Group
R16	Itchington Road	20-100m west/northwest	

7.8.10 Sensitive receptor locations which are both the closest to the quarry and furthest from the M5 are considered to be locations most likely to be affected by noise from the Proposed Scheme. On this basis, the following potential receptors identified above have been taken forward into the assessment: R1, R9 and R16. Results of the assessment at these key receptor locations are considered representative of potential worst-case effects at other receptor locations as follows:

- R1: representative of receptors southwest of quarry and north of M5, and receptors southwest of quarry and south of M5.
- R9: representative of receptors east of quarry and south of M5.
- R16: representative of receptors north of the quarry.

7.8.11 All receptor locations are shown on **Figure 7.1: Noise Sensitive Receptors & Baseline Noise Survey Locations**.

POTENTIALLY SIGNIFICANT EFFECTS

Effects scoped-in to the assessment

7.8.12 The potential noise effects that have been taken forward for further assessment are those arising from mineral extraction activities, and preparation of the proposed mineral extraction area, at the key receptor locations identified above.

Effects scoped-out of the assessment: transport sources

7.8.13 As set out in **paragraphs 7.8.1** to **7.8.5**, there are no changes in road and rail movements from or to the quarry site as part of the Proposed Scheme, therefore there are no significant noise effects anticipated from road and rail movements. On this basis, noise associated with transport to and from the site is scoped out of the assessment.

Effects scoped-out of the assessment: blasting noise

7.8.14 As set out in **Table 7-8**, blasting noise, will be managed in accordance with the ONMP to manage potential noise impacts in accordance with Planning Conditions 14 to 20, which are reproduced in **Table 7-3**. Based on the above, blasting noise is scoped out of the assessment.

7.9 ASSESSMENT METHODOLOGY

7.9.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 4** in **Sections 4.5 to 4.7**. However, whilst this has informed the approach that has been used in this noise assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this noise assessment.

METHODOLOGY FOR PREDICTION OF EFFECTS

7.9.2 There are currently no details on the phasing and plant requirements for the preparation of the proposed mineral extraction area. As set out in **Chapter 3: Description of the Proposed Scheme** the preparation of the proposed mineral extraction would be undertaken gradually and would be phased to release minerals from the proposed mineral extraction area over Phase 1 and Phase 2

over a period of 7 years. As such, a qualitative assessment of the preparation of the proposed mineral extraction area has been undertaken, to determine the likely significant noise effects at key receptor locations during the preparatory stages.

7.9.3 A quantitative assessment has been undertaken, to determine the likely significant noise effects at key receptor locations during the operation of the quarry. Predictions of quarry noise have been undertaken based on details received indicating the plant in use at the quarry, that will also be used in the Proposed Scheme. The predictions of quarry noise have been undertaken using the methods provided in BS 5228–1:2009+A1:2014[9]. The predicted quarry noise levels have been assessed against the NPPG – Minerals[7] criteria, which have been defined based on the measured baseline sound levels.

7.9.4 The magnitude of change criteria, provided below in **Table 7-10**, has been determined based on the guidance and criteria in NPPG – Minerals[7].

Table 7-10 – Magnitude of change criteria

Predicted quarry noise level	Magnitude of change
Not exceeding the NPPG – Minerals[7] criteria	**Small to negligible**, depending on how far the predicted quarry noise levels fall below the criteria. For example, if quarry noise levels are at least 10 dB below the criteria, this could indicate a negligible magnitude of change.
Exceeding the NPPG – Minerals[7] criteria	**Large to medium**, depending on how far the predicted quarry noise levels exceeds the criteria. For example, if quarry noise levels are at more than 10 dB above the criteria, this would indicate a large magnitude of change.

SIGNIFICANCE EVALUATION METHDOLOGY

7.9.5 The significance level attributed to each effect has been assessed based on the sensitivity/value of the affected receptor(s) and the magnitude of change arising from the Proposed Scheme, as well as a number of other factors that are outlined in more detail in **Chapter 4: Approach to EIA**. The sensitivity of the affected receptor is assessed on a scale of high, medium, low and negligible, and the magnitude of change is assessed on a scale of large, medium, small, negligible and no change, as set out in **Chapter 4: Approach to EIA**.

Effect Significance

7.9.6 The following terms have been used to define the significance of the effects identified and may apply to both beneficial and adverse effects, however only adverse noise effects are considered:

- **Major effect**: where the Proposed Scheme could be expected to have a substantial deterioration on receptors;
- **Moderate effect**: where the Proposed Scheme could be expected to have a noticeable deterioration on receptors;
- **Minor effect**: where the Proposed Scheme could be expected to result in a perceptible deterioration on receptors; and
- **Negligible**: where no discernible deterioration is expected as a result of the Proposed Scheme on receptors, including instances where no change is confirmed.

7.9.7 As set out in **Chapter 4: Approach to EIA**, effects that are classified as moderate or above are considered to be **significant**. Effects classified as minor or below are considered to be **not significant**.

7.9.8 The significance matrix provided below in **Table 7-11** is based on that provided in **Chapter 4: Approach to EIA**. However, the matrix used to determine significance of potential noise effects provided in **Table 7-11** has been modified to be appropriate for the noise assessment. Only receptors of high sensitivity need to be considered, as only dwellings are assessed, and these are all considered to be of high sensitivity. Therefore, receptors of lower sensitivity have been removed from the matrix. As the magnitude of change criteria provided in **Table 7-10** are based on absolute limits as defined in national guidance (NPPG - Minerals[7]), the significance outcomes have been modified to reflect this. Therefore, for a small magnitude of change, where noise from the Proposed Scheme is predicted not to exceed the national limits, the resulting effects would be not significant, and hence would only be of minor significance.

Table 7-11 – Matrix for determining Significance of Effect

		Sensitivity (Value / Importance)
		High
Magnitude of Change	**Large**	Major
	Medium	Moderate
	Small	Minor
	Negligible	Negligible

Note: Significant effects are those identified as 'Major'. 'Moderate' effects would normally be deemed to be significant. However, there may be some exceptions, depending on the environmental topic and the application of professional judgment.

7.10 ASSESSMENT OF EFFECTS

PREPARATION PHASE

7.10.1 As set out in **Chapter 3: Description of the Proposed Scheme** the preparation of the proposed mineral extraction area would be undertaken gradually and would be phased to release minerals over Phase 1 and Phase 2 over a period of 7 years. Although preparatory works would entail plant activity in slightly closer proximity to receptors south and south west of the quarry, the preparatory works would require no additional plant than is currently in operation at the quarry.

7.10.2 Based on the proposed gradual phased release of minerals in the proposed mineral extraction area, it is considered unlikely that preparatory works would entail any significant increase in noise emissions from the quarry.

7.10.3 In any case, the guidance provided in NPPG - Minerals[7] allows for a higher noise limit of up to 70 dB $L_{Aeq,T}$ during preparatory works for up eight weeks in a year. If, as the preparatory works are being undertaken, a need for a period of intensive works is identified, then the scheduling of these works should be specified so as not to exceed a period of eight weeks in one year, if associated noise levels due to the preparatory works have the potential to exceed the normal limits specified in

NPPG - Minerals[7]. In this case, the preparatory works should be designed to ensure that noise levels at the nearest receptors does not exceed 70 dB $L_{Aeq,T}$ and only occur for a duration of less than eight weeks in any one year period.

7.10.4 Based on the above, and with reference to the criteria in **Table 7-10**, it is considered that the likely magnitude of change at all receptors due to noise associated with preparatory works would be no greater than small. With reference to the matrix provided in **Table 7-11**, a small magnitude of change to receptors of high sensitivity results in effects of minor significance which are **not significant**.

OPERATIONAL NOISE

7.10.5 The focus of the assessment is quarry noise levels from 0600 to 1800 hrs when all plant is in operation. The predicted quarry noise levels, for the current scenario and future scenario with the Proposed Scheme, are presented below in **Table 7-12**. Full calculations are provided in **Appendix 7B**. It is noted that there is some uncertainty associated with the predictions, which are considered to tend towards a worse-case estimate of noise form the quarry.

Table 7-12 – Predicted daytime quarry noise levels at key receptor locations

Receptor	Predicted noise levels from quarry, dB $L_{Aeq,T}$	
	Current	Future
R1 - Dodsmoor	46	46
R9 - Ruth's Close	49	50
R16 - Itchington Road	54	53

7.10.6 The results in **Table 7-12** indicate that current quarry noise levels, and future quarry noise levels, are not predicted to exceed the NPPG - Minerals[7] daytime criteria of 55 dB $L_{Aeq,T}$. When comparing the current and future quarry noise levels, no change is anticipated at R1, an increase of 1 dB is predicted at R9 and a decrease of 1 dB is predicted at R16. The results indicate that there would be no material increases in quarry noise levels at the key receptor locations during the operation of the Proposed Scheme.

7.10.7 Based on the above, and with reference to the criteria in **Table 7-10**, predicted daytime quarry noise levels result in a small magnitude of change at the key receptor locations assessed. As set out under **paragraph 7.8.10**, the assessment results are considered to be representative of all potential receptors set out in **Table 7-9**. The results of the assessment therefore indicate that noise from the Proposed Scheme at all receptors is anticipated to give rise to a small magnitude of change. With reference to the matrix provided in **Table 7-11**, a small magnitude of change to receptors of high sensitivity results in effects of minor significance which are **not significant**.

7.11 ASSESSMENT OF CUMULATIVE EFFECTS

7.11.1 As there is no increase in road or rail movements associated with the Proposed Scheme, there is no potential for cumulative effects due to transport sources.

7.11.2 Consented and proposed schemes set out in **Chapter 15: Cumulative Effects** were reviewed to identify any proposals that could have the potential to result in cumulative effects, noting that only those schemes that could have the potential to generate noise from site activities alone (i.e. construction activities and operation of fixed plant).

7.11.3 Review of the consented and proposed schemes identified no quarry works that could have the potential to give rise to cumulative effects, as these are all at least 5 km away.

7.11.4 One consented scheme was identified that could have the potential to give rise to cumulative effects: the erection of a building to form 8 new business units at Tytherington Road Nursery. It is considered that, during the erection of the building, there could be the potential for cumulative effects. However, this would be limited to the construction phase of the new building to form 8 new business units, and during the construction phase it is likely that the construction of the building would likely exceed quarry noise levels at the nearest receptors. On this basis, it is considered that the potential for cumulative noise effects with this scheme is negligible.

7.11.5 Based on the above, cumulative noise effects with the consented and proposed schemes set out in **Chapter 15: Cumulative Effects** are considered to result in minor to negligible effects and are **not significant**.

7.12 ASSESSMENT OF IN-COMBINATION CLIMATE IMPACTS

7.12.1 The In-combination Climate Change Impacts (ICCI) assessment considers the extent to which climate change exacerbates or ameliorates the potential effects identified for noise.

7.12.2 The ICCI assessment presented has been informed by the future baseline presented within **Chapter 13: Climate Resilience**. The ICCI uses the topic specific assessment methodologies and professional judgement to assess likelihood and magnitude of the impacts, with the combined consideration of future climate trends and impacts.

Table 7-13 - In-Combination Climate Change Impacts (ICCI) related to noise

EIA topic	Climate Hazard	Potential impacts of Climate Change	Mitigation
Chapter 7: Noise	▪ Extreme temperature events	Higher temperatures could lead to more time when windows are open, leading to greater exposure to noise	No additional mitigation is required beyond those measures set out in **Chapter 7: Noise**, which are considered sufficient to address risks from increased noise exposure.

7.13 MITIGATION AND ENHANCEMENT MEASURES

7.13.1 Opportunities to mitigate potential adverse effects have already been incorporated within the development or are imposed through a number of existing regulatory controls. The Proposed Scheme with these measures and controls in place has been subject to assessment. No other measures are proposed as mitigation in relation to the effects that are identified in this chapter.

7.13.2 The principles of good practice mitigation during the operational phases will be included in the Operational Noise and Vibration Management Plant to be drafted.

7.14 CONCLUSIONS OF SIGNIFICANCE EVALUATION

7.14.1 The following table provides a summary of the conclusions about the significance of the predicted noise effects that have been subject to assessment in this ES.

Table 7-14 - Summary of significance of predicted noise effects

Receptor and effects	Magnitude[1]	Sensitivity[2]	Significance	
			Level	Rationale
Preparation Phase				
Preparation Phase noise at residential receptors	Slight adverse effect	High	NS	Use of Noise and Vibration Management Plan expected to control noise to below NPPG criterion for preparatory works
Operational Phase				
Operational Phase noise at residential receptors	Slight adverse effect	High	NS	Use of Noise and Vibration Management Plan expected to control noise to below NPPG criterion for operational noise
Key	**Magnitude[1]**	**Sensitivity[2]**	**Significance**	
	Substantial adverse effect Moderate adverse effect Slight adverse effect Negligible effect	High Medium Low Negligible	S = Significant NS = Not Significant	

7.15 IMPLEMENTATION OF ENVIRONMENTAL MEASURES

7.15.1 **Table 7-15** describes the environmental measures embedded within the Proposed Scheme and the means by which they will be implemented, i.e. they will have been secured through the planning conditions.

Table 7-15 - Implementation of environmental measures

Environmental measure / mitigation	Responsibility for implementation	Compliance mechanism	ES section reference
Noise and Vibration Management Plan	Heidelberg Materials	By Planning Condition drafted and monitored by South Gloucestershire Council.	7.7

7.16 REFERENCES

- Reference 7.1: HMSO (1974). *Control of Pollution Act 1974*.
- Reference 7.2: HMSO (1990). *Environmental Protection Act 1990*.
- Reference 7.3: HMSO (1996). *The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996*
- Reference 7.4: Department for Levelling Up, Housing and Communities (2023). *National Planning Policy Framework*
- Reference 7.5: DEFRA (2010). *Noise Policy Statement for England.*
- Reference 7.6: Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019). *National Planning Practice Guidance - Noise*.
- Reference 7.7: Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2014). *National Planning Practice Guidance - Minerals*
- Reference 7.8: South Gloucestershire Council (2017). *South Gloucestershire Local Plan: Policies, Sites and Places Plan (adopted November 2017).*
- Reference 7.9: British Standards Institution (2019). *BS 5228–1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*
- Reference 7.10: IEMA (2014). *Guidelines for Environmental Noise Impact Assessment, Version 1.2*
- Reference 7.11: South Gloucestershire Council (2006). *Town and Country Planning Act 1990, Permission for Development. Application no. NA/IDO/002/A.*

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