NOISE ADDENDUM

Hatfield Aerodrome

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1.0 Introduction

In 2015 SLR Consulting Ltd. (SLR) was instructed by Brett Aggregates Ltd. to undertake a noise assessment for the proposed operations at Hatfield Aerodrome. The assessment was reported as Chapter 10 in an Environmental Statement published in January 2016, referred to as the '2016 Assessment'.

This assessment was completed with reference to the following two guidance documents:

- Planning Practice Guidance: Noise.
- BS5228:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Noise.

This Addendum Report presents the results of the 2016 Assessment and provides an update to the assessment by comparing the predicted noise levels against baseline noise levels measured in 2021.

This Report is structured as follows:

- Guidance Documents.
- 2021 Baseline Survey Results.
- Assessment.
- Conclusion.

Whilst reasonable effort has been made to ensure that this report is easy to understand, it is technical in nature; to assist the reader, a glossary of terminology is included in Appendix 01.

2.0 Guidelines

The following two documents will be referenced in this Addendum:

- Planning Practice Guidance: Noise.
- BS5228:2009+A1:2014.

Relevant sections of these two documents are summarised below.

2.1 Planning Practice Guidance 2014

The web-based Planning Practice Guidance (PPG) sets out the Government's guidance for development projects for England and has a specific category for mineral developments.

With respect to noise, it requires those making mineral development proposals to carry out a noise impact assessment which should identify all sources of noise and for each source, take into account the emission level, its characteristics, proposed operating location, percentage on-time and subsequently its potential impact at the nearby noise-sensitive receptors.

The guidance also sets out the basis of the parameters to be considered for the control or mitigation of any potential impacts including:

- Consider the main characteristics of the production process and its environs, including the location of noise-sensitive receptors.
- Assess the existing acoustic environment around the site of the proposed operations, including the gathering of background noise levels at nearby noise-sensitive receptors.
- Estimate the likely future noise from the development and its impact.
- Identify proposals to minimise, mitigate and remove noise emissions at the source.
- Monitor the resulting noise to check compliance with any proposed or imposed conditions.

Paragraph 020 of the guidance describes how mineral planning authorities should determine the impact of noise from minerals sites, stating:

"Mineral planning authorities should take account of the prevailing acoustic environment and in doing so consider whether or not noise from the proposed operations would:

- Give rise to a significant adverse impact
- Give rise to an adverse impact
- Enable a good standard of amenity to be achieved.

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure would be above or below the significant observed adverse effect level and the lowest observed effect level for the given situation."

Paragraph 021 of the guidance sets out appropriate noise standards for mineral extraction sites for normal operations, i.e. those that would be undertaken over a period greater than eight weeks in any working year. The guidance states:

"Mineral planning authorities should aim to establish a noise limit, through a planning condition, at the noisesensitive property that does not exceed the background noise level (LA90,1h) by more than 10dB(A) during normal



working hours (0700 to 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(A) LAeq,1h (free field). For any operations during the period 2200 – 0700 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(A) LAeq,1h (free field) at a noise sensitive property."

2.2 British Standard 5228-1:2009+A1:2014

Operational noise levels have been calculated in accordance with BS5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.* This standard sets out a methodology for predicting noise levels arising from a wide variety of open site activities and contains tables of sound power levels generated by a wide variety of mobile and fixed plant equipment.

Noise levels generated by open site operations and experienced at local receptors will depend upon a number of variables, the most significant of which are likely to be:

The amount of noise generated by plant and equipment being used at the development site, generally expressed as a sound power level:

- The periods of operation of the plant at the development site, known as the "on-time".
- The distance between the noise source and the receptor, known as the "stand-off".
- The attenuation due to ground absorption or barrier screening effects.
- Reflections of noise due to the presence of hard vertical faces such as walls.

3.0 **2021 Baseline Survey**

3.1 Results

For the 2016 Assessment environmental baseline noise surveys were undertaken on 23rd September 2015 to capture the prevailing noise climate at the nearby noise-sensitive receptor locations agreed with the Local Authority.

Updated baseline noise surveys have been undertaken on 27th of May 2021 and 28th of June 2021.

Since the previous baseline monitoring was completed in 2015, a new residential development located on land adjacent to the garden centre/nursery to the west of the application site, called Jove Gardens, has been built. Therefore, as part of the updated baseline monitoring for 2021, a noise meter was installed at this location. The 2016 Assessment noted the proposal for a development in this location and assumed noise levels would be similar to that at Pasture View, referred to below.

The noise monitoring locations were chosen as being representative of the nearest Noise-Sensitive Receptors (NSRs) identified and are shown on Figure 3-1 namely:

- 1) Popefield Farm, Hatfield Road, to the south.
- 2) The Lodge and No.403 St Albans Road West, to the south.
- 3) No. 616 Hatfield Road, to the southwest.
- 4) Pasture View and Radio Nursery, to the west.
- 5) Walker Grove and Nimrod Drive, to the east.
- 6) Jove Gardens, to the west.

At each monitoring location the following parameters were measured:

- L_{Aeq,T} The A-Weighted equivalent continuous noise level over the measurement period.
- L_{A90} The A-weighted background noise level, i.e. the noise level exceeded for 90% of the measurement period thereby excluding short duration noise events.
- L_{A10} The A-weighted noise level exceeded for 10% of the measurement period, usually used to describe road traffic noise.
- L_{Amax} The maximum A-weighted noise level during the measurement period.

Figure 3-1 details the nine Noise sensitive Receptors included in the 2021 assessment (colour coded green or yellow). The six positions where noise levels were measured in 2021 are those shown green.

Figure 3-1 Noise Sensitive Receptor Locations



The noise monitoring equipment used during the surveys is detailed in Table 3-1. The sound level meter was field calibrated before and after the surveys and no significant drift in calibration was found to have occurred. The calibration chain is traceable via the United Kingdom Accreditation Service (UKAS) to National Standards held at the National Physical Laboratory (NPL).

Table 3-1 Noise Monitoring Equipment

Location	Description of Equipment	Serial Number
1 Depofield Form	Rion NL-52 Type 1 sound level meter	976174
1. Popeneid Farm	Rion NC-74 Acoustic calibrator	34478298
2. The Lodge and No.403	Cirrus CR171B Type 1 sound level meter	G301839
St. Albans Road West	Cirrus CR515 Acoustic calibrator	93674
2 No. C1C Hotfield Dood	Cirrus CR171B Type 1 sound level meter	G301707
3. NO. 616 Hatfield Road	Cirrus CR515 Acoustic calibrator	94806
4. Desture Misure	Cirrus CR171B Type 1 sound level meter	G079816
4. Pasture view	Cirrus CR515 Acoustic calibrator	81268
	Cirrus CR171C Type 1 sound level meter	G301707
5. Walker Grove	Cirrus CR515 Acoustic calibrator	94806
C. Java Candana	Cirrus CR171C Type 1 sound level meter	G300561
6. Jove Gardens	Cirrus CR515 Acoustic calibrator	87922

Weather conditions during the surveys were within the parameters suitable for baseline monitoring, being predominantly dry with 50-80% cloud cover. The temperature was between 14-17°C and wind speeds were below 5ms⁻¹ throughout the survey periods.

The results of the baseline surveys are presented in full in Appendix 02 and are summarised in Table 3-2 below. The noise climate in the area consisted of close and distant road traffic noise dependant on the receptor location, occasional aircraft overhead and natural sounds, such as birdsong, wind in nearby trees, etc.

Location	L _{Aeq,T}	L _{A90}	L _{A10}	L _{Amax}
1. Popefield Farm	58.6	52.3	60.4	77.3
2. No.403 St. Albans Road West & The Lodge	73.4	56.8	77.2	88.8
3. No. 616 Hatfield Road	72.2	60.6	75.8	87.9
4. Pasture View & Radio Nursery	45.5	42.5	47.0	61.2
5. Walker Grove & Nimrod Drive	44.0	32.3	40.0	75.5
6. Jove Gardens	45.5	41.0	47.2	71.0

Table 3-2Measured 2021 Baseline Levels

For information a comparison between the baseline background sound levels measured in 2015 with those measured in 2021 can be seen in Figure 3-2.





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Comparing the 2021 baseline background noise monitoring data to that measured in 2015 the following is noted:

- At Popefield Farm the background noise level has increased by 1.4dB.
- At the location representative of The Lodge (and No. 403 St Albans Road) the background noise level has increased by 3.8dB.
- At No. 616 Hatfield Road the background noise level has increased by 6.1 dB.
- At Pasture View (also representative of Radio Nursery) the background noise level has decreased by 4.4dB.
- At Walker Grove (also representative of Nimrod Drive) the background noise level has decreased by 8.5dB.
- At Jove Gardens the measured baseline noise level in 2021 was 5.9dB lower than the proxy location Pasture View used in 2015.

Whilst there is no clear pattern to the difference in the measured baseline background sound levels between 2015 and 2021, it must be noted that the noise monitoring undertaken during 2021 was still during the COVID pandemic and thus must be viewed with a degree of caution due to changes in lifestyle during this period.

3.2 Noise Limits

Based on the survey results in Table 3-2 the noise limit of operations from the Quarry at each NSR is detailed in Table 3-3. The limits have been set with reference to the criteria stipulated in the PPG, namely 10dB above the background subject to a maximum of 55dB(A).

Location	Derived Background Noise Level, L _{A90}	Derived Noise Limit, L _{Aeq,1hr}
1. Popefield Farm	52.3	55
2. No.403 St. Albans Road West & The Lodge	56.8	55
3. No. 616 Hatfield Road	60.6	55
4a. Pasture View	42.5	53
4b. Radio Nursery	42.5	53
5a. Walker Grove	32.3	42
5b. Nimrod Drive	32.3	42
6. Jove Gardens	41.0	51

Table 3-32021 Noise Limits for Normal Operations, free-field, dB

Compared to the 2016 Assessment the limits have remained the same with the following exceptions:

- Pasture View: The limit has reduced from 55dB(A) to 53dB(A).
- Radio Nursery: The limit has reduced from 55dB(A) to 53dB(A).
- Walker Grove: The limit has reduced from 51dB(A) to 42dB(A).
- Nimrod Drive: The limit has reduced from 51dB(A) to 42dB(A).
- Jove Gardens: The limit has reduced from 55dB(A) to 51dB(A).

4.0 Assessment

The noise limits derived from the 2021 baseline survey are presented in Table 4-1. The difference between the 2021 limit and the predicted Appeal Site noise level is calculated.

The predictions include the following mitigation measures:

- A 3m high acoustic fence from the Site Access with the A1057 to a point parallel with Radio Nursery House. The fence is approximately 340m long.
- A 3m high bund adjacent to the southern, western, and northern boundary of the Appeal Site.

Abcoontent						
Location	Predicted Noise Level, L _{Aeq,1hr}	Derived Noise Limit, L _{Aeq,1hr}	Difference			
1. Popefield Farm	54	55	-1			
2a. No.403 St. Albans Road West	54	55	-1			
2b. The Lodge	55	55	0			
3. No.616 Hatfield Road	53	55	-2			
4a. Pasture View	50	53	-3			
4b. Radio Nursery	52	53	-1			
5a. Walker Grove	42	42	0			
5b. Nimrod Drive	43	42	+1			
6. Jove Gardens	54	51	+3			

Table 4-1 Assessment

Table 4-1 shows that the 2016 predicted Appeal Site noise level would be equal to or below the 2021 derived noise limit at all NSR's except at Nimrod Close and Jove Gardens.

4.1 Discussion Nimrod Drive

In 2015 the measured baseline background sound level at Walker Grove, which was considered representative of Nimrod Drive, was higher than in 2021. Consequently, when using the measured baseline data in 2021, the derived noise limit at Nimrod Close has decreased from 51dB(A) to 42dB(A). This has changed the difference between the derived limit and the predicted noise level from minus 8dB to plus 1dB.

From a review of the 2016 ES it has been identified that at Nimrod Drive the highest Appeal Site noise level was predicted to occur during Phase A.

Where the limit of 10dB(A) above the background sound level is exceeded, the PPG allows for an upper L_{Aeq,1hour} limit of 55dB(A) under the following circumstances (see Paragraph 021 of the PPG):

"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(A) LAeq, 1h (free field)".





As all reasonable mitigation measures have been implemented, and the Appeal Site noise level at Nimrod Drive is more than 10dB(A) below the upper limit of 55dB(A), the impact of noise from the Appeal Site at Nimrod Drive is not considered significant.

4.2 Discussion Jove Gardens

In 2015 the baseline background sound level used for Jove Gardens was higher than in 2021. Consequently, when using the measured baseline data in 2021, the derived noise limit at Jove Gardens has decreased from 55dB(A) to 51dB(A). This has changed the difference between the derived limit and the predicted noise level from the Appeal Site from minus 1dB to plus 3dB.

From a review of the 2016 ES it has been identified that at Jove Gardens the highest Appeal Site noise level was predicted to occur during Phase G (North).

Where the limit of 10dB(A) above the background sound level is exceeded, as detailed earlier in this Addendum, the PPG allows for an upper L_{Aeq,1hour} limit of 55dB(A).

The noise sources affecting Jove Gardens are mitigated by the proposed 3m high acoustic fence along the western boundary of the Haul Route. Without this fence the unmitigated $L_{Aeq,1hour}$ noise level at Jove Gardens during Phase G(North) increases from 54.1dB to 54.7dB.

As reasonable mitigation measures have been implemented, and the Appeal Site noise level at Jove Gardens is below 55dB(A), the impact of noise from the Appeal Site at Jove Gardens is not considered significant.



5.0 **Conclusion**

In 2015 SLR was instructed by Brett Aggregates Ltd. to undertake a noise assessment for the proposed operations at the Appeal Site.

This assessment was completed with reference to the following two guidance documents:

- Planning Practice Guidance: Noise.
- BS5228:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Noise.

This Addendum Report has presented the results of the 2016 Assessment and has provided an update to the Assessment by comparing the predicted noise levels against baseline noise levels measured in 2021.

The comparison has found:

In 2016, predicted Appeal Site noise levels would be equal to or below the 2021 derived noise limit at all NSR's except at Nimrod Close and Jove Gardens.

In 2015 the assumed baseline background sound level at Nimrod Close and at Jove Gardens were higher than in 2021. Consequently, when using the measured baseline data in 2021, the derived noise limits at these two NSR's are lower, and the limit (above background) is exceeded. However, in both cases the predicted noise level would not exceed the maximum limit of 55dB(A) prescribed in the PPG, and it is considered that, as all reasonable mitigation measures have been implemented, the impact of noise from the Appeal Site is not significant.

APPENDIX 01

Glossary of Terminology

To assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Sound Level	Location
OdB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

Table 01-1Sound Levels Commonly Found in the Environment

Acoustic Terminology

dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10-5Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
LAeq	LAeq is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L10 & L90	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L90 is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L10 index to describe traffic noise.
LAmax	L_{Amax} is the maximum - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.



APPENDIX 02

Survey Results

Table 02-1Measured Noise Levels, Popefield Farm (representative position), free-field, dB

Date	Time	L _{Aeq}	Lago	L _{A10}	LAFMax
28/06/2021	13:45	57.7	51.6	60.1	71.2
28/06/2021	14:00	57.3	51.8	60	69.8
28/06/2021	14:15	60.5	54.3	62.9	77.3
28/06/2021	14:30	58.3	52.8	60.7	73.9

Table 02-2

Measured Noise Levels, 403 St Albans Road West / The Lodge, free-field, dB

Date	Time	L _{Aeq}	Lago	L _{A10}	LAFMax
27/05/2021	10:45	73.3	56.7	77	86.1
27/05/2021	11:00	73.6	57.9	77.3	88.8
27/05/2021	11:15	73.4	55.3	77.1	86.4
27/05/2021	11:30	73.4	56.8	77.3	88

Table 02-3Measured Noise Levels, 616 Hatfield Road, free-field, dB

Date	Time	L _{Aeq}	L _{A90}	L _{A10}	LAFMax
27/05/2021	10:45	72.6	63	76.1	83.1
27/05/2021	11:00	72.6	58.3	76.3	86.6
27/05/2021	11:15	71.9	59.5	75.5	83.5
27/05/2021	11:30	71.8	61.7	75.2	87.9

Table 02-4Measured Noise Levels, Pasture View, free-field, dB

Date	Time	L _{Aeq}	L _{A90}	L _{A10}	LAFMax
28/06/2021	12:30	45.1	42.3	46.6	61.2
28/06/2021	12:45	44.9	42.4	46.3	58.8
28/06/2021	13:00	45.5	42.9	47.0	59.6
28/06/2021	13:15	45.2	42.1	46.8	56.8
28/06/2021	13:30	45.8	43.2	47.7	57.7
28/06/2021	13:45	44.2	41.8	45.9	54.5
28/06/2021	14:00	45.6	42.5	47.5	60.1
28/06/2021	14:15	46.4	43.9	47.8	59.0
28/06/2021	14:30	46.0	43.1	47.6	59.1



Table 02-5									
Measured Noise Levels, Walker Grove, free-field, dl	B								

Date	Time	LAeq	L _{A90}	L _{A10}	LAFMax
27/05/2021	10:15	47.8	33.6	46.8	75.5
27/05/2021	10:30	36.5	32.4	38.2	60.0
27/05/2021	10:45	44.5	31.9	40.9	64.3
27/05/2021	11:00	38.4	32.1	39	59.6

Table 02-6Measured Noise Levels, Jove Gardens, free-field, dB

Date	Time	L _{Aeq}	L _{A90}	L _{A10}	LAFMax
28/06/2021	11:15	46.0	42.3	48.1	54.1
28/06/2021	11:30	46.9	40.9	48.1	64.9
28/06/2021	11:45	45.2	42.5	46.9	56.4
28/06/2021	12:00	45.0	41.1	46.8	58.5
28/06/2021	12:15	46.2	40.5	49.7	64.1
28/06/2021	12:30	47.0	41.7	49.7	62.9
28/06/2021	12:45	47.2	42.3	50.6	58.0
28/06/2021	13:00	43.9	41.2	45.2	57.9
28/06/2021	13:15	45.1	40.9	47.3	58.8
28/06/2021	13:30	42.8	40	44.2	63.5
28/06/2021	13:45	42.0	39.2	43.3	64.9
28/06/2021	14:00	43.8	40.9	44.2	64.5
28/06/2021	14:15	45.5	42.1	47.0	69.0
28/06/2021	14:30	46.3	40.5	49.5	71.0

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