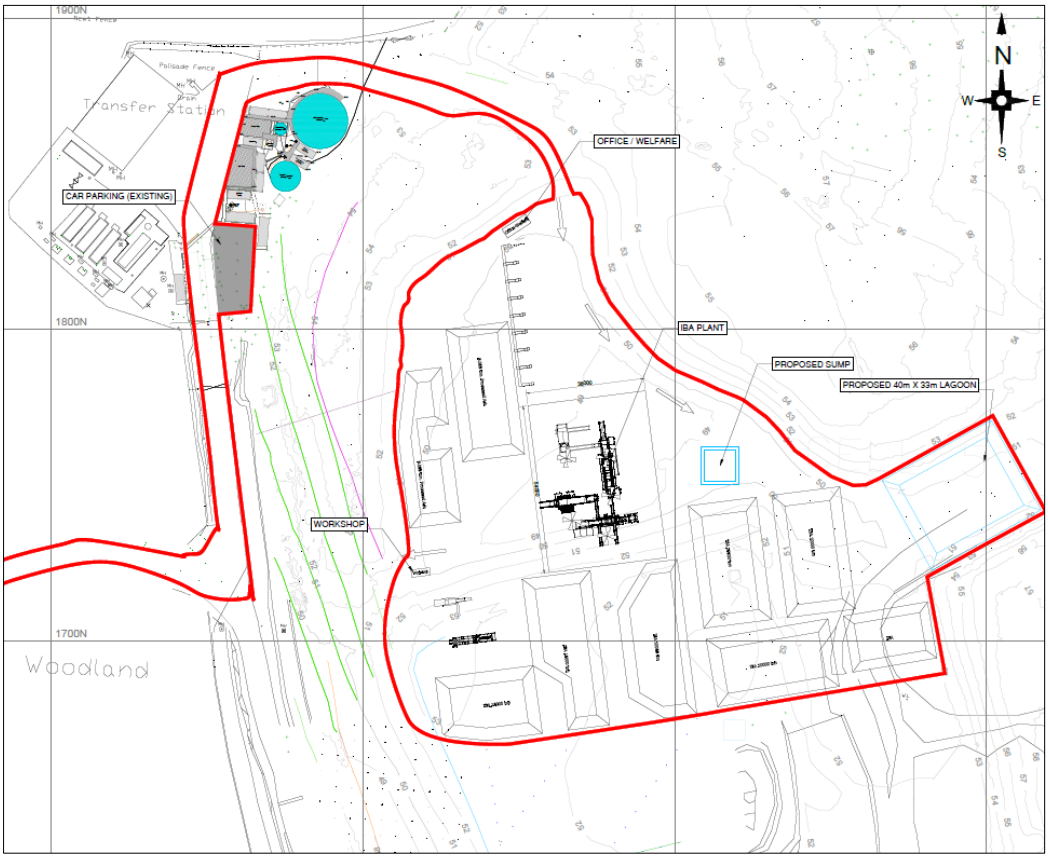
Chatsworth Blue Haze Landfill, Hants, BH24 3QE

Noise Assessment

784-B054837



Veolia

February 2024

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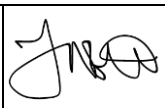
Revision:	0	**Prepared by:**	Joe Nott Environmental Consultant	
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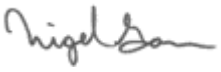
Status:	First Issue	**Approved By:**	Nigel Mann Environmental Consultant	
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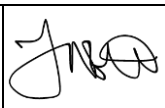
Revision:	1	**Prepared by:**	Joe Nott Environmental Consultant	
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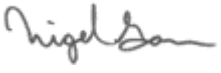
Status:	First Issue	**Approved By:**	Nigel Mann Environmental Consultant	
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1.0 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

This report presents the findings of a noise assessment for the installation of a temporary incinerator bottom ash (IBA) pad at the Veolia site at Chatsworth Blue Haze Landfill, Somerley, Ringwood, Hants . Noise emissions from proposed plant items have been assessed against the noise criteria in Condition 33 of the granted 2021 application for amendments and reprofiling of landfill site final restoration levels (planning reference 21/10083).

Condition 33

> *'Noise from operations on the site, including both fixed plant and mobile machinery, shall not exceed 55dB(A) $L_{Aeq,\ 1\ hour}$ (freefield) as measured at the façade of the nearest houses. The operator shall take such measures, including insulation of plant and machinery, and the provision of suitable acoustic screening, as may be necessary to ensure that this noise level is not exceeded.*
>
> *Reason: To safeguard the amenity of the area in accordance with Policy 10 (Protecting public health, safety and amenity) of the Hampshire Minerals and Waste Plan (2013).'*

A list of acoustic terminology and abbreviations used in this report is provided in Appendix A and Report Conditions are presented in Appendix B.

1.2 LEGISLATIVE CONTEXT

This report is intended to provide information relevant to the local planning authority and their consultees in support of a planning application for the above proposed development. Policy guidance with respect to noise is found in the National Planning Policy Framework (NPPF), published in September 2023. With regard to noise and planning, the NPPF contains the following statement at paragraph 174:

> *"174 Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans…"*
>
> *"185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason…"*

"187. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

188. The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."

Practice Guidance (PPG): Noise provides further guidance with regard to the assessment of noise within the context of Planning Policy. The overall aim of this guidance is, tying in with the principles of the NPPF and the Explanatory Note of the Noise Policy Statement for England (NPSE), is to, 'identify whether the overall effect of noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.'

A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the PPG and repeated below in Table 1.1.

Table 1.1: NPPG Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not present	No Effect	No Observed Effect	No Specific Measures Required
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No Specific Measures Required
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			

Perception	Examples of Outcomes	Increasing Effect Level	Action
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

The NPPF, NPSE and PPG do not, however, present absolute noise level criteria which define SOAEL, LOAEL and NOEL which is applicable to all sources of noise in all situations. Therefore, within the context of the Proposed Development, national planning policy and appropriate guidance documents including 'BS 8233 – Guidance on Sound Insulation and Noise Reduction for Buildings' (2014) and 'BS 4142: 2014 Methods for Rating and Assessing Industrial and Commercial Sound'. Section 2.0 presents the noise level criteria used as a basis of this assessment.

The PPG also states that neither the NPSE nor the NPPF (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of the proposed development.

1.3 ACOUSTIC CONSULTANTS' QUALIFICATIONS AND PROFESSIONAL MEMBERSHIPS

The lead project Acoustic Consultant is Joe Nott. The report has been checked by Gus Egan and verified by Nigel Mann. Relevant qualifications, membership and experience are summarised in Table 1.2 below.

Table 1.2: Acoustic Consultants' Qualifications & Experience

Name	Education	Experience in Undertaking Noise Assessments (Start date of working in noise & acoustics)	Attained Associate Membership of the Institute of Acoustics (date)	Attained Membership of the Institute of Acoustics (date)
Joe Nott	BSc 2016	Aug 2016	Aug 2017	-
Gus Egan	BSc 2011 MSc 2016 PgDip 2019	Jun 2017	Feb 2021	-
Nigel Mann	BSc 1997 MSc 1999 PgDip 2001	Nov 1998	Nov 2001	Jul 2005

2.0 ASSESSMENT CRITERIA

2.1 NATIONAL PLANNING PRACTICE GUIDANCE

In order to enable the assessment of the proposed development in terms of LOAEL and SOAEL, Table 2.1 presents equivalent noise levels and associated actions with the target noise level criteria identified. The noise level criteria detailed below have been derived from standards and design guidance:

- BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings – Code of practice'
- World Health Organisations (1999) Guidelines for community noise

Table 2.1: Noise Level Criteria and Actions

Effect Level	Noise Sources	Noise Level Criteria	Justification for Effect Level- Action Required
No Observed Adverse Effect Level (NOAEL)	Absolute internal noise criteria for the following noise sources with windows closed: • Road traffic noise • Goods vehicle deliveries including arrival and departure of vehicles and unloading of vehicles. • Service yard noise including forklift truck movements. • Car Parks	Noise levels are below: *Living Rooms:* • *35 dB$L_{Aeq,16hours}$* *Kitchens, Dining Rooms, and Studies:* • *40 dB$L_{Aeq,16hours}$* *Bedrooms Rooms:* • *35 dB$L_{Aeq,16hours}$* • *30dB $L_{Aeq,8hr}$* $L_{AFmax,2min}$ noise levels do not exceed: • *45dB L_{AFmax} based on 10th highest $L_{AFmax,2min}$ sample)*	***Justification for Effect Level:*** Less than threshold values in Table 4 in BS8233:2014 and Table 1 in World Health Organisation (1999) Guidelines on Community Noise ***Action Required:*** None
Lowest Observed Adverse Effect Level (LOAEL)	Absolute internal noise criteria for the following noise sources with windows closed: • Road traffic noise • Goods vehicle deliveries including arrival and departure of vehicles and unloading of vehicles. • Service yard noise including forklift truck movements. • Car Parks	Noise levels are between: *Living Rooms:* • *35-40 dB$L_{Aeq,16hours}$* *Kitchens, Dining Rooms, and Studies:* • *40-45 dB$L_{Aeq,16hours}$* *Bedrooms Rooms:* • *35-40 dB$L_{Aeq,16hours}$* • *30-35dB $L_{Aeq,8hr}$* • $L_{AFmax,2min}$ noise levels do not exceed *45dB L_{AFmax} based on 10th highest $L_{AFmax,2min}$ sample)*	***Justification for Effect Level:*** Exceed threshold guidelines in Table 4 of BS8233:2014 and World Health Organisation (1999) Guidelines on Community Noise by no greater than 5dB to achieve *reasonable internal conditions* as defined by Note 7 to Table 1 in BS8233:2014 ***Action Required:*** Mitigate and reduce to a minimum the exceedance over the threshold
Significant Observed Adverse Effect Level (SOAEL)	Absolute internal noise criteria for the following noise sources with windows closed: • Road traffic noise • Goods vehicle deliveries including arrival and departure of vehicles and unloading of vehicles. • Service yard noise including forklift truck movements. • Car Parks	Noise levels are between: *Living Rooms:* • *40-45 dB$L_{Aeq,16hours}$* *Kitchens, Dining Rooms, and Studies:* • *45-50 dB$L_{Aeq,16hours}$* *Bedrooms Rooms:* • *40-45 dB$L_{Aeq,16hours}$* • *35-40dB $L_{Aeq,8hr}$* • 45-55dB $L_{AFmax,2min}$ *based on 10th highest $L_{AFmax,2min}$ sample)*	***Justification for Effect Level:*** Exceeds BS8233:2014 $L_{Aeq,T}$ reasonable criteria by 5dB or exceeds $L_{AFmax,2min}$ (10th highest sample) ***Action Required:*** Additional mitigation required to achieve effect of LOAEL or less.

Effect Level	Noise Sources	Noise Level Criteria	Justification for Effect Level- Action Required
Unacceptable Observed Adverse Effect Level (UOAEL)	Absolute internal noise criteria for the following noise sources with windows closed: • Road traffic noise • Goods vehicle deliveries including arrival and departure of vehicles and unloading of vehicles. • Service yard noise including forklift truck movements. Car Parks	Noise levels exceed: *Living Rooms:* • *45 dB$L_{Aeq,16hours}$* *Kitchens, Dining Rooms, and Studies:* • *50 dB$L_{Aeq,16hours}$* *Bedrooms Rooms:* • *45 dB$L_{Aeq,16hours}$* • *40dB $L_{Aeq,8hr}$* • $L_{AFmax,2min}$ noise levels exceeds 55*dB L_{AFmax} based on 10th highest $L_{AFmax,2min}$ sample)*	***Justification for Effect Level:*** Exceeds BS8233:2014 $L_{Aeq,T}$ reasonable criteria by 10dB or exceeds $L_{AFmax,2min}$ (10th highest sample) by 10dB or more. ***Action Required:*** Additional mitigation required to achieve effect of LOAEL or less.

3.0 ASSESSMENT METHODOLOGY

3.1 NOISE MODELLING METHODOLOGY

Three-dimensional noise modelling has been undertaken based on the monitoring data to predict noise levels at a number of locations both horizontally and vertically. CADNA noise modelling software has been used. This model is based on ISO 9613-2 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios both horizontally and vertically. The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data and model settings as given in the table below have been used.

Table 3.1: Modelling Parameters Sources and Input Data

Parameter	Source	Details
Horizontal distances – around site	Ordnance Survey	Ordnance Survey
Ground levels – around site	Ordnance Survey	LIDAR 2m DTM
Building heights – around site	Tetra Tech Observations	8 m height for two storey residential properties, and 4 m for Bungalows.
Receptor positions	Tetra Tech	1 m from façade, height of 1.5 m for ground floor, 4 m for first floor properties.
Proposed Plans	Veolia	Drawing Title: Proposed Site Layout Drawing No: VES_TD_BHAZEIBA_100_002 Dated: Sep 2023

It is acknowledged that a number of the values of parameters chosen will affect the overall noise levels presented in this report. However, it should be noted that the values used, as identified above, are worst-case.

3.2 MODEL INPUT DATA

3.2.1 Operational Noise

Information regarding noise emissions from equipment used during the operation of the incinerator bottom ash plant has been obtained from a noise report undertaken by Sweco and provided toTetra Tech by Veolia.

Information regarding noise emissions for auxiliary mobile plant, linked to the operation of incinerator bottom ash plant the Annex C of BS 5228-1:2009 + A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*. This annex presents a range of current sound level data on typical site equipment and common site activities.

This data is obtained by field measurements for items of plant in actual use on construction and open sites in the UK. Levels quoted in the database are based on an average (logarithmic) of measured sound levels, and where appropriate have been derived from more than one model of similarly sized plant. All sound pressure levels are standardised to 10 metres.

The items of plant and associated noise levels shown in Table 3.2 below have been used for the purposes of this assessment and consider the range of typical activities likely to be employed during the operation of the IBA plant.

Table 3.2: Plant Noise Data

Equipment	BS 5228-1:2009 Annex C Ref.	Octave Band Sound Pressure Levels (Hz)								Model Input $L_{Aeq,1hour}$ at 10m dB
		63	125	250	500	1K	2K	4K	8K	
Wheeled Loader	C.2.26	87	82	77	78	73	70	64	57	79
Dump Truck (tipping fill)	C.2.30	85	74	78	73	73	74	67	63	79
Incinerator Bottom Ash Plant	-	-	-	-	-	-	-	-	-	80

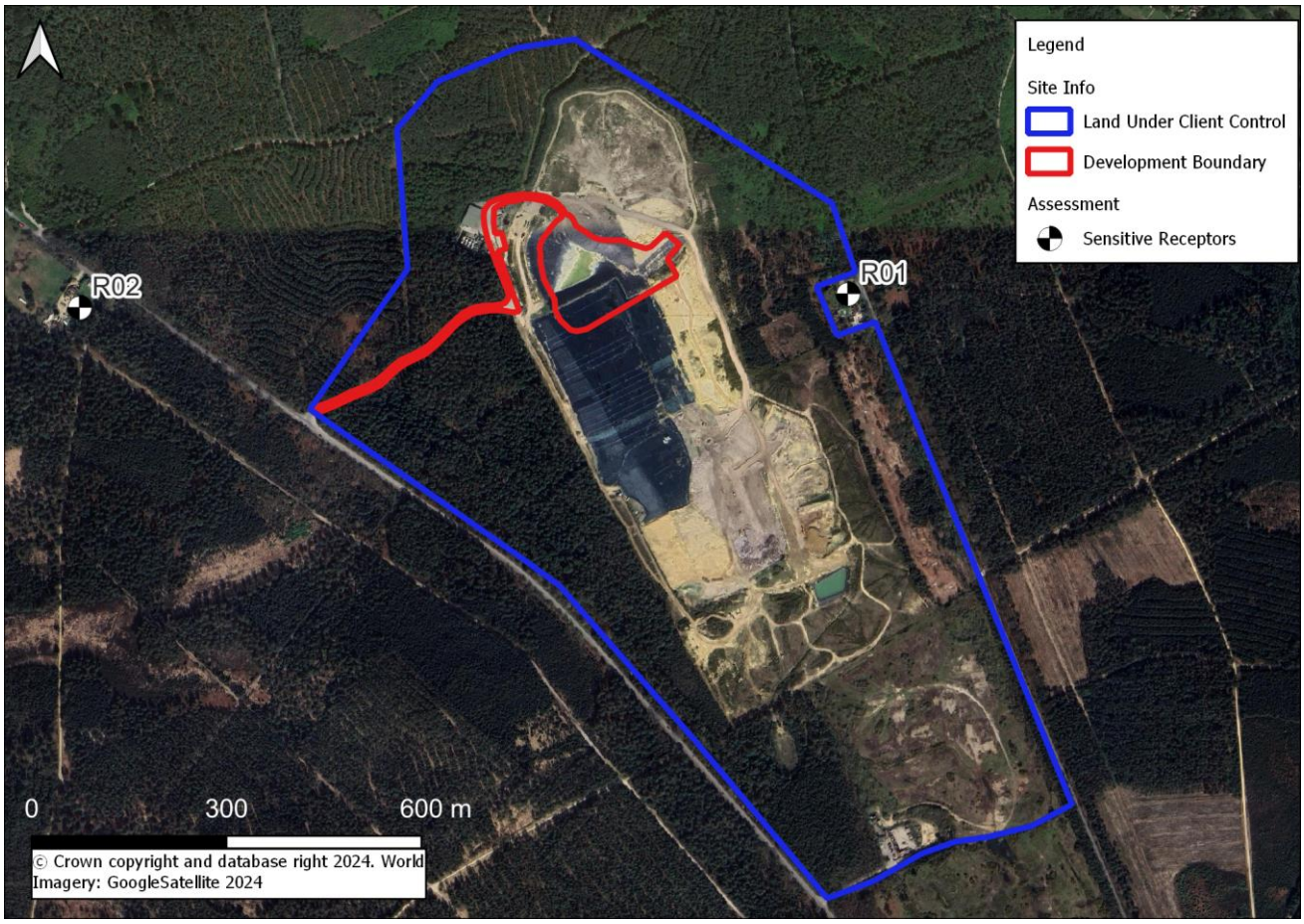
3.3 SENSITIVE RECEPTORS

Table 3.3 below summarises receptor locations that have been selected to represent worst-case sensitive receptors with respect to direct noise from the site. Façades of the nearest noise sensitive properties to the development site have been represented. As the site is currently permitted to operate during daytime hours only receptor heights have been assessed at 1.5 metres. The locations of the receptors are shown in Figure 3.1 below.

Table 3.3: Existing Receptor Locations

Ref.	Description	Type of Use	Height (m)
R01	Blue Haze Cattery (Belt Cottage)	Residential	1.5
R02	Ebblake House	Residential	1.5

Figure 3.1: Sensitive Receptor Locations



4.0 ASSESSMENT OF EFFECTS

4.1 OPERATIONAL NOISE ASSESSMENT

Noise levels from operation activity associated with the Incinerator Bottom Ash at the application site have been assessed against the Condition 33 free-field noise limit of 55dB $L_{Aeq,1hour}$ at facades of the nearest receptors.

This assessment has been undertaken in order to establish the maximum external noise levels at neighbouring properties for the proposed operation activities of the site and whether proposed plant and activities will be meet these criteria. To present a worst-case assessment, the model assumes that all sources will be operating simultaneously across the application site.

Table 4.1 below shows predicted levels of noise at existing noise sensitive properties. Daytime noise levels are illustratively shown in Figure 4.1.

Table 4.1: Operational Noise Assessment Results (Fixed Limits Assessment)

Ref	Description	Operational Noise Level (dBA)	Condition Criteria (dBA) $L_{Aeq,1hour}$	Meets Condition Criteria?
R01	Blue Haze Cattery (Belt Cottage)	49.2	55.0	Yes
R02	Ebblake House	40.7	55.0	Yes

All values are sound pressure levels in dB re: 2x 10-5 Pa.

The results indicate that the noise levels at the façades of the existing noise sensitive properties would meet the Condition criteria of 55dB $L_{Aeq,1hour}$ free field.

Even though the condition criteria of 55dB $L_{Aeq,1hour}$ would be met, where possible specific mitigation measures will assist in further identifying and minimising noise impacts, examples of best practice measures are:

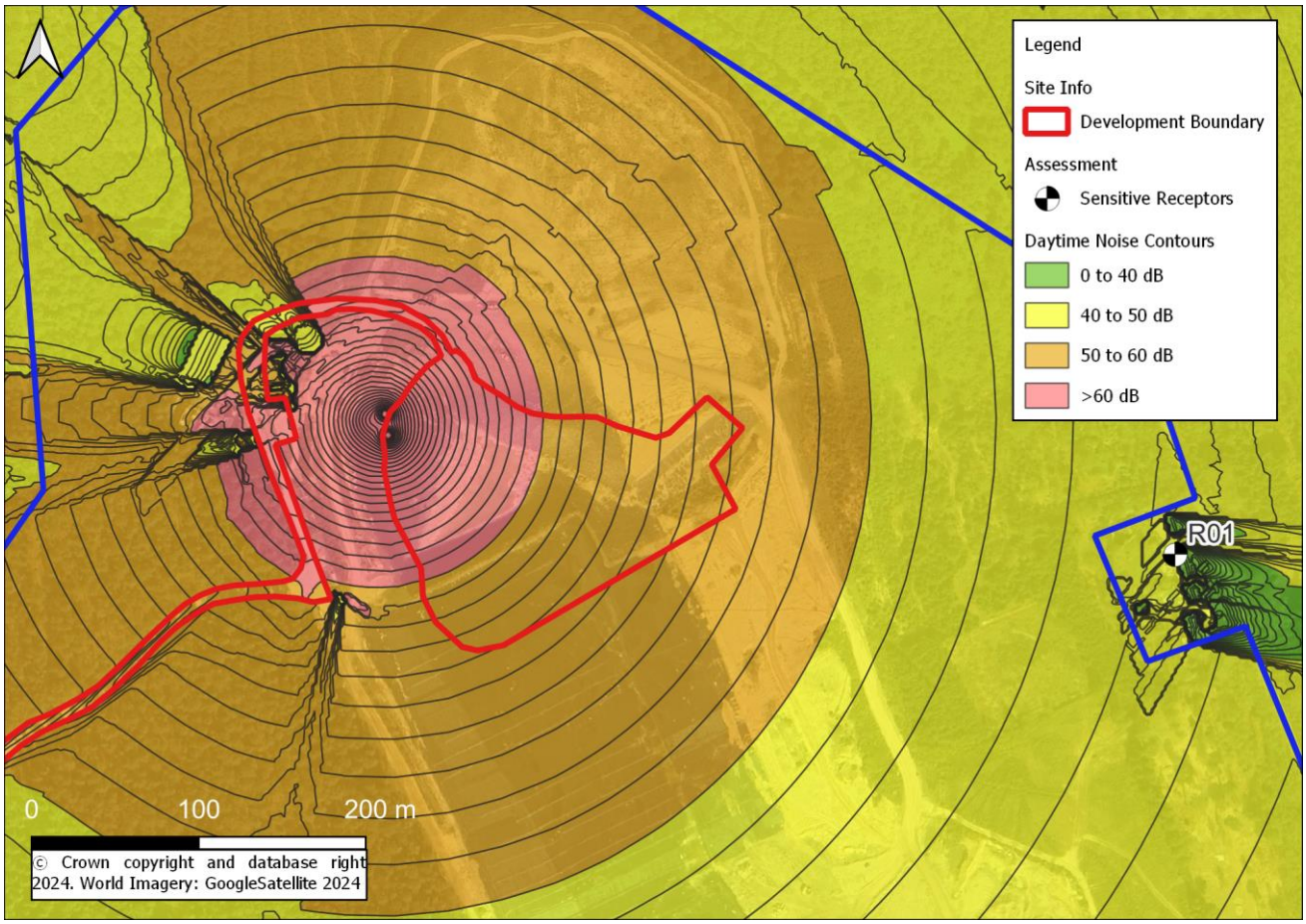
Wherever possible noise will be controlled at source.

- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained and avoid steep gradients;
- Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- Minimize drop height of materials;
- Start up plant and vehicles sequentially rather than all together.
- Careful selection of working methods and programme;
- Selection of quietest working equipment available (e.g. electric/battery powered equipment which is generally quieter than petrol/diesel powered equipment);
- Positioning equipment behind physical barriers, i.e. existing features, hoarding, etc., or provision of lined and sealed acoustic covers for equipment that could potentially contribute to a noise nuisance;

- Positioning of noise generating equipment, such as any blending plant in areas which minimise noise as far as practicable;
- Directing plant noise emissions, including exhausts or engines away from sensitive locations;
- Ensuring that regularly maintained and appropriately silenced equipment is used;
- Shutting down equipment when not in use, i.e. maintain a 'no idling policy';
- Handling all materials in a manner which minimises noise;
- Switch all audible warning systems to the minimum setting required by the Health and Safety Executive;
- Employ best practices and follow guidance of British Standard 5228 – Parts 1 and 2.

The plant and activities to be employed on the site will be reviewed to ensure that they are the quietest available for the required purpose; this is in accordance with best practicable means.

Figure 4.1: $L_{Aeq,1hour}$ Day-time Noise Contour Plot (1.5m)



5.0 CONCLUSIONS

A desk-based noise assessment was undertaken for the installation of a temporary incinerator bottom ash (IBA) pad at the Veolia site at Chatsworth Blue Haze Landfill, Somerley, Ringwood, Hants. Noise emissions from proposed plant items have been assessed against the noise criteria in Condition 33 of the granted 2021 application for amendments and reprofiling of landfill site final restoration levels (planning reference 21/10083)at the above site.

Operational Phase

The noise levels from the proposed IBA plant and auxiliary mobile plant have been calculated and are below predicted to be below the 55dB $L_{Aeq,1\ hour}$ (free field) condition on noise operations from the site at the nearest sensitive receptors.

Therefore, as demonstrated above, the installation of the IBA plant and pad will not reduce the amenity of the area in accordance with Policy 10 (Protecting public health, safety and amenity) of the Hampshire Minerals and Waste Plan (2013).

APPENDICES

APPENDIX A – ACOUSTIC TERMINOLOGY AND ABBREVIATIONS

Acoustic Terminology

dB — Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.

dB(A) — Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.

L_{Aeq} — Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq,\ 07:00\ -\ 23:00}$ for example, describes the equivalent continuous noise level over the 16-hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower that the $L_{Aeq,\ 07:00\ -\ 23:00}$.

L_{Amin} — The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.

L_{Amax} — The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.

L_n — Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say. 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $L_{A10,\ 1\ hr}$ = x dB.

The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90}, the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.

R_w — The *weighted sound reduction index* determined using the above *measurement* procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Abbreviations

CADNA – Computer Aided Noise Abatement

DMRB – Design Manual for Roads and Bridges

HGV – Heavy Goods Vehicle

PPG – Planning Practice Guidance

UDP – Unitary Development Plan

UKAS – United Kingdom Accreditation Service

APPENDIX B – REPORT CONDITIONS

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The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections'. Environmental conditions can vary, and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The "shelf life" of the Report will be determined by a number of factors including; its original purpose, the Client's instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.