

REFUSED

DATE: 03/09/2024

APPLICATION No: P21/S3961/CM, (MW.0115/21)



Noise Assessment

Proposed Mineral Extraction and Processing Operations, Land at White Cross Farm, Wallingford, Oxfordshire

GREENFIELD ASSOCIATES

R21.11173/2/AP

Date of Report: 02 August 2021

REPORT DETAILS

| | |
|--------------------------|--|
| Client | Greenfield Associates |
| Report Title | Noise Assessment – Proposed Mineral Extraction and Processing Operations |
| Site Address | Land at White Cross Farm, Wallingford, Oxfordshire |
| Report Ref. | R21.11173/2/AP |
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QUALITY ASSURANCE

| Issue No. | Issue Date | Author | Technical Review |
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NON-TECHNICAL SUMMARY

1. Greenfield Associates are seeking planning permission for proposed mineral extraction and processing operations on land at White Cross Farm, Wallingford, Oxfordshire. Vibrock Limited have been commissioned to conduct a noise impact assessment of the proposals.
2. An original application (MW.0033/18) was refused on 10 September 2020 with the reasons for refusal focusing particularly on the marina end use, with limited concern raised over the enabling mineral development, which involves extracting, processing and exporting the proven sand and gravel present on the site.
3. The resubmitted application proposes that the mineral extraction phase would be the same, but rather than restoring the land to a marina development, it is now proposed to restore the land to agriculture, with biodiversity enhancements, including a small lake and wetland areas.
4. As with the previous application the restoration of the site would involve the importation of clean, inert fill, but this would require more material than originally assumed to return the land to the required levels. As a result, the total number of vehicles associated with the restoration phase would be higher but it should be noted that this would result in a longer time period for restoration, rather than a higher number of HGVs per day. Although the restoration of the site will continue for a greater proportion of time, this phase will still be completed within the overall development timeframe of approximately 5 years.
5. As part of the assessment, existing noise levels have been measured at locations chosen to represent noise-sensitive premises in the vicinity of the proposed extraction and processing areas. This information has been used to establish the baseline conditions.
6. Predicted noise levels from proposed operations have been calculated at nearby noise-sensitive premises. These predictions are based on detailed information regarding the proposed working of the site and have been undertaken following calculation methods that are suitable for open sites such as quarries.
7. The proposed development has been assessed with reference to current policy and guidance relating to noise emissions from mineral sites.
8. The outcome of the assessment demonstrates that the proposed scheme is able to operate in accordance with the recommended noise limits and there are not considered to be any significant or unacceptable adverse impacts. A range of recommendations have been made to minimise potential noise emissions from the site during the implementation of the proposed scheme.

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1.0 INTRODUCTION

1.1 Overview

- 1.1.1 Greenfield Associates are seeking planning permission for proposed mineral extraction and processing operations on land at White Cross Farm, Wallingford, Oxfordshire. Vibrock Limited have been commissioned to conduct a noise impact assessment of the proposals.
- 1.1.2 This study benefits from a site inspection and sound level monitoring undertaken in July and September 2016. The purpose of this survey was to identify potentially noise-sensitive premises within the vicinity of the proposed quarry site and establish the background sound levels currently experienced at these locations.
- 1.1.3 An assessment of the potential impact of the scheme at the identified noise-sensitive premises has been made by comparison of predicted noise levels with relevant guidance and criteria.
- 1.1.4 Where necessary, suitable mitigation measures are recommended to control noise emissions from the site.

1.2 Proposals

- 1.2.1 An original application (MW.0033/18) was refused on 10 September 2020 with the reasons for refusal focusing particularly on the marina end-use, with limited concern raised over the enabling mineral development, which involves extracting, processing and exporting the proven sand and gravel present on the site.
- 1.2.2 The resubmitted application proposes that the mineral extraction phase would be the same, but rather than restoring the land to a marina development, it is now proposed to restore the land to agriculture, with biodiversity enhancements, including a small lake and wetland areas.
- 1.2.3 As with the previous application the restoration of the site would involve the importation of clean, inert fill, but this would require more material than originally assumed to return the land to the required levels. It is understood that the amount of imported restoration materials will increase from approximately 150,000 m³ to around 290,000 m³ and as a result the total number of vehicles associated with the restoration of the site would be higher. However, it should be noted that, whilst the restoration phase will continue for a greater proportion of time within the 5 year development period, the rate of importation will remain the same and there will therefore be no increase in number of HGVs per day as a result of the revised application.

2.0 NOISE POLICY AND GUIDANCE

2.1 National Planning Policy and Guidance

Noise Policy Statement for England (NPSE)

2.1.1 The NPSE sets out the Government's policy on noise and includes the long term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

2.1.2 This long term vision is supported by the following aims:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life;
and
- where possible, contribute to the improvement of health and quality of life.

2.1.3 There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They 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) – this is the level above which adverse effects on health and quality of life can be detected.

2.1.4 Extending these concepts further, 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.

2.1.5 NPSE acknowledges that it is not possible to have a single objective noise-based measure that defines NOEL, LOAEL and SOAEL that is applicable to all sources of noise in all situations. It is therefore suggested that more specific advice from other applicable noise standards and guidance could be employed to determine suitable noise level criteria within the overall principles of the NPSE.

National Planning Policy Framework (NPPF)

- 2.1.6. The NPPF was first published on 27 March 2012 and updated on 24 July 2018, 19 February 2019 and 20 July 2021. This sets out the government's planning policies for England and how these are expected to be applied.
- 2.1.7. Where issues of noise impact are concerned the NPPF provides brief guidance in Chapter 15 'Conserving and enhancing the natural environment' as follows:

Paragraph 174:

Planning policies and decisions should contribute to and enhance the natural and local environment by 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.

Paragraph 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; and*
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

Paragraph 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.

2.1.8. Specifically in relation to mineral sites, the NPPF provides guidance in Chapter 17 ‘Facilitating the sustainable use of minerals’ as follows:

Paragraph 209:

It is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. Since minerals are a finite natural resource, and can only be worked where they are found, best use needs to be made of them to secure their long-term conservation.

Paragraph 210:

Planning policies should:

- a) provide for the extraction of mineral resources of local and national importance, but not identify new sites or extensions to existing sites for peat extraction;
- b) so far as practicable, take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials, whilst aiming to source minerals supplies indigenously;
- c) safeguard mineral resources by defining Mineral Safeguarding Areas; and adopt appropriate policies so that known locations of specific minerals resources of local and national importance are not sterilised by non-mineral development where this should be avoided (whilst not creating a presumption that the resources defined will be worked);
- d) set out policies to encourage the prior extraction of minerals, where practical and environmentally feasible, if it is necessary for non-mineral development to take place;
- e) safeguard existing, planned and potential sites for: the bulk transport, handling and processing of minerals; the manufacture of concrete and concrete products; and the handling, processing and distribution of substitute, recycled and secondary aggregate material;
- f) set out criteria or requirements to ensure that permitted and proposed operations do not have unacceptable adverse impacts on the natural and historic environment or human health, taking into account the cumulative effects of multiple impacts from individual sites and/or a number of sites in a locality;
- g) when developing noise limits, recognise that some noisy short-term activities, which may otherwise be regarded as unacceptable, are unavoidable to facilitate minerals extraction; and

- h) ensure that worked land is reclaimed at the earliest opportunity, taking account of aviation safety, and that high quality restoration and aftercare of mineral sites takes place.

Paragraph 211:

When determining planning applications, great weight should be given to the benefits of mineral extraction, including to the economy. In considering proposals for mineral extraction, minerals planning authorities should:

- i) as far as is practical, provide for the maintenance of landbanks of non-energy minerals from outside National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites, scheduled monuments and conservation areas;
- j) ensure that there are no unacceptable adverse impacts on the natural and historic environment, human health or aviation safety, and take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality;
- k) ensure that any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source, and establish appropriate noise limits for extraction in proximity to noise sensitive properties;
- l) not grant planning permission for peat extraction from new or extended sites;
- m) provide for restoration and aftercare at the earliest opportunity, to be carried out to high environmental standards, through the application of appropriate conditions. Bonds or other financial guarantees to underpin planning conditions should only be sought in exceptional circumstances;
- n) consider how to meet any demand for small-scale extraction of building stone at, or close to, relic quarries needed for the repair of heritage assets, taking account of the need to protect designated sites; and
- o) recognise the small-scale nature and impact of building and roofing stone quarries, and the need for a flexible approach to the duration of planning permissions reflecting the intermittent or low rate of working at many sites.

Planning Practice Guidance (PPG)

- 2.1.9 PPG is written in support of the NPPF and provides an increased level of specific planning guidance.
- 2.1.10 PPG-Noise states that noise needs to be considered when new development may create additional noise or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). Where justified, noise can override other planning concerns, although it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users and its surroundings, as these can have an important effect on whether noise is likely to pose a concern.
- 2.1.11 Plan-making and decision taking need to take account of the acoustic environment and in doing so consider:
- whether or not a significant adverse effect is occurring or likely to occur;
 - whether or not an adverse effect is occurring or likely to occur;
 - and
 - whether or not a good standard of amenity can be achieved.
- 2.1.12 In line with the Explanatory note of the NPSE this would include identifying whether the overall effect of the noise exposure would be above or below the significant observed adverse effect level (SOAEL) and the lowest observed adverse effect level (LOAEL) for the given situation.
- 2.1.13 When noise is not perceived to be present, there is by definition no effect. As the noise exposure increases, it will cross the 'No Observed Effect Level'. However, the noise has no adverse effect so long as the exposure does not cause any change in behaviour, attitude or other physiological responses of those affected by it.
- 2.1.14 As the exposure increases further, it crosses the LOAEL boundary above which the noise starts to cause small changes in behaviour and attitude and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).
- 2.1.15 Increasing noise exposure will at some point cause the SOAEL boundary to be crossed. Above this level the noise causes a material change in behaviour. If the exposure is predicted to be above this level the planning process should be used to avoid, but not necessarily prevent, this effect occurring, for example through use of appropriate mitigation such as by altering the design and layout.

2.1.16 The table below summarises the noise exposure hierarchy from PPG-Noise.

| Response | Examples of outcomes | Increasing effect level | Action |
|---|--|-------------------------------------|----------------------------------|
| No Observed Effect Level | | | |
| Not present | No Effect | No Observed Effect | No specific measures required |
| No Observed Adverse Effect Level | | | |
| 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 | | | |
| 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 | | | |
| 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 |

2.1.17 In relation to noise from mineral extraction operations, PPG-Noise makes reference to National Planning Practice Guidance for minerals which is outlined overleaf.

2.1.18 The supporting ‘Minerals’ PPG is the current Government advice applicable to the control of noise from surface mineral workings in England and recognises that planning for the supply of minerals has a number of special characteristics that are not present in other development.

2.1.19 It includes the following appropriate noise standards for ‘normal operations’;

“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(A) $L_{Aeq,1h}$ (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(A) $L_{Aeq,1h}$ (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) $L_{Aeq,1h}$ (free field) at a noise sensitive property.

2.1.20 The same document includes instances where particularly noisy short-term activities may occur and the appropriate criteria for such circumstances;

“Activities such as soil-stripping, the construction and removal of baffle mounds, soil storage mounds and spoil heaps, construction of new permanent landforms and aspects of site road construction and maintenance.

Increased temporary daytime noise limits of up to 70dB(A) $L_{Aeq,1h}$ (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(A) $L_{Aeq,1h}$ (free field) limit referred to above should be regarded as the normal maximum”.

2.1.21 The suitability of each proposed mineral site, whether an extension to an existing site or a new site, must be considered on its individual merits but thought should also be given to the cumulative impact of proposals in an area.

2.1.22 The cumulative impact of mineral development is also capable of being a material consideration when determining individual planning applications.

National Policy Statement for Waste

- 2.1.23 This National Policy Statement sets out detailed waste planning policies. Noise and Vibration is addressed in Appendix B as follows:

“In testing the suitability of sites and areas in the preparation of Local Plans and in determining planning applications, waste planning authorities should consider the factors below. They should also bear in mind the envisaged waste management facility in terms of type and scale...”

...j. noise, light and vibration

Considerations will include the proximity of sensitive receptors. The operation of large waste management facilities in particular can produce noise affecting both the inside and outside of buildings, including noise and vibration from goods vehicle traffic movements to and from a site. Intermittent and sustained operating noise may be a problem if not properly managed particularly if night-time working is involved. Potential light pollution aspects will also need to be considered.”

2.2 Local Planning Policy

South Oxfordshire Local Plan 2035

- 2.2.1 The South Oxfordshire Local Plan (SOLP) 2035 was adopted on 10 December 2020 and replaces the South Oxfordshire Local Plan 2011 and Core Strategy (2012).
- 2.2.2 The SOLP policies most relevant to this assessment are:

Policy ENV12: Pollution - Impact of Development on Human Health, the Natural Environment and/or Local Amenity (Potential Sources of Pollution)

1. Development proposals should be located in sustainable locations and should be designed to ensure that they will not result in significant adverse impacts on human health, the natural environment and/or the amenity of neighbouring uses.

2. The individual and cumulative impacts of development on human health, the natural environment and/or local amenity will be considered when assessing development proposals.

3. The consideration of the merits of development proposals will be balanced against the adverse impact on human health, the natural environment and/or local amenity, including the following factors:

- *noise or vibration;*
- *smell, dust, odour, artificial light, gases and other emissions;*
- *air pollution, contamination of the site or its surroundings and hazardous substances nearby;*
- *land instability; and*
- *any other relevant types of pollution.*

Policy DES6: Residential Amenity

1. Development proposals should demonstrate that they will not result in significant adverse impacts on the amenity of neighbouring uses, when considering both individual and cumulative impacts, in relation to the following factors:

- i) loss of privacy, daylight or sunlight;*
- ii) dominance or visual intrusion;*
- iii) noise or vibration;*
- iv) smell, dust, heat, odour, gases or other emissions;*
- v) pollution, contamination or the use of/or storage of hazardous substances; and*
- vi) external lighting.*

Oxfordshire Minerals and Waste Local Plan 2017

2.2.3 The Oxfordshire Minerals and Waste Local Plan (OMWCS) was adopted by the County Council on 12 September 2017. The OMWCS policy most relevant to this assessment is:

Policy C5: Local environment, amenity and economy

Proposals for minerals and waste development shall demonstrate that they will not have an unacceptable adverse impact on:

- the local environment;*
- human health and safety;*
- residential amenity and other sensitive receptors; and*
- the local economy;*

including from:

- noise; dust; visual intrusion; light pollution; traffic; air quality; odour; vermin; birds; litter; mud on the road; vibration; surface or ground contamination; tip and quarry-slope stability; differential settlement of quarry backfill; subsidence; and the cumulative impact of development.

Where necessary, appropriate separation distances or buffer zones between minerals and waste developments and occupied residential property or other sensitive receptors and/or other mitigation measures will be required, as determined on a site-specific, case-by-case basis.

2.3 Technical Guidance

Design Manual for Roads and Bridges (DMRB) – LA 111 Noise and Vibration (formerly HD 213/11)

- 2.3.1 This document sets out the requirements for assessing and reporting the effects of highways noise and vibration from construction, operation and maintenance projects. The guidance is also often referenced in relation to assessing the potential impacts of development related traffic on the existing road network.
- 2.3.2 LA 111 outlines a method for determining the magnitude of traffic noise level changes as shown below (LA 111 Tables 3.54a and 3.54b).

Table 3.54a Magnitude of change - short term

| Short term magnitude | Short term noise change (dB $L_{A10,18hr}$ or L_{night}) |
|----------------------|---|
| Major | Greater than or equal to 5.0 |
| Moderate | 3.0 to 4.9 |
| Minor | 1.0 to 2.9 |
| Negligible | less than 1.0 |

Table 3.54b Magnitude of change - long term

| Long term magnitude | Long term noise change (dB $L_{A10,18hr}$ or L_{night}) |
|---------------------|--|
| Major | Greater than or equal to 10.0 |
| Moderate | 5.0 to 9.9 |
| Minor | 3.0 to 4.9 |
| Negligible | less than 3.0 |

- 2.3.3 A change in road traffic noise of 1 dB $L_{A10,18h}$ in the short term (e.g. when a project is opened) is the smallest that is considered perceptible and is thus classified as being of 'negligible' impact.
- 2.3.4 In general terms, an increase in noise level of 1 dB $L_{A10,18h}$ is equivalent to a 25% increase in traffic flow assuming other factors, such as average vehicle speed, remain unchanged.

3.0 BASELINE CONDITIONS

3.1 Survey Methodology

- 3.1.1 Sound levels were measured between the hours of 10:00 – 16:00 on Thursday 14 July and Tuesday 6 September 2016. These monitoring periods were chosen to measure typical background sound levels during the daytime but avoiding rush-hour periods when sound levels can become temporarily elevated.
- 3.1.2 Measurements were made at four locations selected to represent noise-sensitive premises in the vicinity of the site. The assessment locations identified for use within this assessment are shown in Figure 4.

3.2 Instrumentation

- 3.2.1 The following instrumentation was used during the survey:

| Manufacturer | Type |
|--------------|--|
| Cirrus | Class 1 CR 811C Integrating Sound Level Meter s/n B12615FF |
| Cirrus | Class 1 CR 831B Integrating Sound Level Meter s/n B15230FE |
| Cirrus | CR 511E Electronic Calibrator |

- 3.2.2 Measurements at all monitoring locations were ‘free field’ (no vertical reflective surfaces within 3.5m of the microphone) and at a height of between 1.2 – 1.5m above ground level. During all measurements the microphones were protected with outdoor windshields.
- 3.2.3 The following set-up parameters were used on the sound level meters during all measurements:
- Main Descriptors: Broadband L_{Aeq} and L_{A90}
 - Time Weighting: Fast
 - Frequency Weighting: A
 - Averaging-Integrating Period: 15 minutes
 - Data Logging: Repeat (Contiguous)
- 3.2.4 With the equipment set up in the configuration used during measurement, field calibration checks were performed on site immediately before and after the survey period using a sound calibrator. No significant drift (i.e. no greater than ± 0.5 dB) in the calibration value was observed between the initial and final checks.

3.3 Observations

- 3.3.1 The proposed site is located approximately 7 km south-east of Didcot. Residential areas surrounding the site include the village of Wallingford to the north and Cholsey to the south west providing the largest concentration of residential dwellings.
- 3.3.2 The main source of existing noise affecting the environs around the site is road traffic along the nearby A4130 Nosworthy Way and the A329 Reading Road.
- 3.3.3 Weather conditions during the survey periods were dry and generally settled with average wind speeds of approximately $1 - 3 \text{ ms}^{-1}$ from a southerly direction, temperatures ranged from $7 - 24^{\circ}\text{C}$.

3.4 Results

- 3.4.1 The table below summarises the results of the baseline survey.

| Location | Ambient Noise Level Average $L_{Aeq,1h}$ dB(A) | Background Noise Level Average $L_{A90,1h}$ dB(A) |
|----------------------------------|--|---|
| Elizabeth House / Meadow Farm | 59 | 46 |
| Winterbrook Lane | 63 | 56 |
| Windward House / Mead Furlong | 60 | 48 |
| Carmel College | 50 | 44 |

4.0 SOUND LEVEL PREDICTIONS

4.1 Introduction

4.1.1 The level of noise in the local environs that arises from a site will depend on a number of factors. The more significant of which are:

- (a) the sound level output of the plant or equipment used on site;
- (b) the periods of operation of the plant on site;
- (c) the distance between the source noise and the receiving position;
- (d) the presence of screening due to barriers;
- (e) the reflection of sound;
- (f) soft ground attenuation.

4.1.2 Potential noise levels from the proposed development have been predicted at nearby noise-sensitive locations based on the following methodology and assumptions.

4.2 Prediction Methodology

4.2.1 The prediction methods used are those outlined in Annex F of BS 5228-1:2009+A1:2014 '*Code of practice for noise and vibration control on construction and open sites. Part 1: Noise*'. This guidance details methods to estimate noise from open sites which can include quarries, waste disposal sites and long-term construction projects.

4.2.2 The most important elements of this standard used to estimate site noise within this assessment include the sound level of plant and activities, the attenuation of sound with distance, site activity on-time, screening effects, ground absorption and angle of view corrections.

4.2.3 In term of screening, BS 5228 indicates that a barrier attenuation of 10 dB(A) can be used when the noise screen completely hides the source from the receiver and an attenuation of 5 dB(A) when the screen partially hides the source from the receiver.

4.2.4 For all noise prediction calculations, the ground absorption coefficient has been estimated according to the combination of soft and hard ground conditions present between the source and receiver position. 'Soft' ground is taken to refer to surfaces which are absorbent to sound, e.g. grassland, cultivated land or plantations as opposed to 'hard' ground surfaces which reflect sound such as paving, asphalt and surface water.

- 4.2.5 In accordance with 5228 methodology, the attenuation from screening and soft ground attenuation have not been combined (where applicable). Instead, either the attenuation from screening and hard ground propagation, or the attenuation provided by soft ground alone has been included in the calculation, whichever is the greater of the two.
- 4.2.6 All noise level predictions have been calculated with the combinations of plant working at the closest point to the assessment location. The predictions are therefore worst-case scenarios which may be of relatively short duration, however, they indicate the potential highest L_{Aeq} noise level to which a particular property or group of properties may be exposed during the working of the site. This worst-case situation may occur intermittently over the lifetime of the site, but the longer-term noise levels perceived outside of the site boundary would normally be significantly less.

4.3 Noise Source Details

- 4.3.1 Information regarding the proposed working of the site has been based on discussions with the applicant.
- 4.3.2 A list of plant and activities from which the noise predictions have been made are presented in Table 1 along with a number of assumptions regarding source noise levels, activity 'on-times' and vehicle movements.
- 4.3.3 The sound power levels adopted for use within this assessment are based on measurements of current plant and activities at similar sites across the UK or information contained within Annex C of BS 5228 which presents current sound level data on specific items of site equipment and site activities.

5.0 NOISE ASSESSMENT

5.1 Introduction

5.1.1 Summaries of the worse case noise level predictions from the proposed development during both short term and normal operations are given in section 5.2 and 5.3 below, together with a comparison against the criteria recommended in PPG.

5.2 Short-Term Operations

5.2.1 PPG permits an increased temporary daytime noise limit of 70 dB(A) $L_{Aeq,1h}$ (free field) for periods of up to 8 weeks in a year to facilitate essential site preparation and restoration work. The short-term activities can 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 road construction and maintenance.

5.2.2 The predicted sound levels from these activities are shown in the table below.

| No. | Location | Predicted Worst Case Noise Level (dB $L_{Aeq,1h}$) | Difference dB(A) |
|-----|--------------------------------|---|--------------------------|
| | | | PPG-Minerals 70 dB Limit |
| 1 | Meadow Farm | 66 | -4 |
| 2 | Elizabeth House | 64 | -6 |
| 3 | Waterside Court | 62 | -8 |
| 4 | Whitecross House | 59 | -11 |
| 5 | Founders House, Carmel College | 58 | -12 |
| 6 | Mansion House, Carmel College | 58 | -12 |
| 7 | Windward House / Mead Furlong | 64 | -6 |

5.2.3 The predicted noise levels indicate that, without exception, all short-term operations associated with the proposed development produce worst-case noise levels that are below the recommended temporary limit outlined in PPG.

5.3 Normal Operations

- 5.3.1 Subject to a maximum daytime (07:00 – 19:00) limit of 55 dB $L_{Aeq,1h}$ (free field) for 'normal' operations, PPG permits a noise limit at noise sensitive property that does not exceed the background level by more than 10 dB(A).
- 5.3.2 Where this poses an unreasonable burden on the operator the limit should be as near the $L_{A90} + 10$ dB(A) criteria as practicable during normal working hours (07:00 – 19:00) and should not exceed 55 dB(A) $L_{Aeq,1h}$ (free field).
- 5.3.3 The predicted sound levels from normal extraction, processing and haulage activities are shown in the table below.

| No. | Location | Existing Background Noise Levels (dB) $L_{A90, 1h}$ | Predicted Worst Case Noise Levels (dB) $L_{Aeq,1h}$ | Difference (dB(A)) | |
|-----|--------------------------------|---|---|--------------------|-----------------|
| | | | | Background Noise | PPG Limit 55 dB |
| 1 | Meadow Farm | 46 | 49 | +3 | -6 |
| 2 | Elizabeth House | 46 | 49 | +3 | -6 |
| 3 | Waterside Court | 56 | 53 | -3 | -2 |
| 4 | Whitecross House | 56 | 51 | -5 | -4 |
| 5 | Founders House, Carmel College | 44 | 50 | +6 | -5 |
| 6 | Mansion House, Carmel College | 44 | 49 | +5 | -6 |
| 7 | Windward House/Mead Furlong | 48 | 53 | +5 | -2 |

- 5.3.4 The table above demonstrates that, without exception, worst-case noise levels associated with the normal operations do not exceed the background by more than 10 dB(A) and are also within the maximum 55 dB limit outlined in PPG.

5.4 Site Traffic

- 5.4.1 The guidance presented within DMRB (outlined in section 2.3 of this report) indicates that a fairly large increase in traffic flow is required before any noticeable change in the traffic noise level is perceived.
- 5.4.2 A change in road traffic noise of 1 dB (equivalent to a 25% increase in traffic flow) is typically the smallest change that is considered perceptible.
- 5.4.3 Access to the site will be provided via a left-in from Reading Road at the western site boundary and egress will be taken onto Nosworthy Way via a left-out at the northern site boundary. It is anticipated that the proposed development would generate 56 movements per day which equates to an increase of less than 0.6% on Reading Road and 0.3% on Nosworth Way.
- 5.4.4 The contribution from site-related traffic is therefore considered to be low when compared to the current level of road traffic along these routes and the potential changes in noise level due to HGV traffic associated with the proposed scheme is likely to be negligible and therefore not significant.

5.5 Night-Time Dewatering

- 5.5.1 It is understood that dewatering will be required as part of the proposed scheme and there is therefore the potential for water pumping equipment to be operated at the site including during the night-time period. It is envisaged that pumping equipment will be moved around the site as required during the life of the development.
- 5.5.2 For any operations during the period 22.00 – 07.00, PPG states that 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) $L_{Aeq,1h}$ (free field) at a noise sensitive property.
- 5.5.3 Dewatering pumps typically have a sound power level in the region of 85 dB(A) – 100 dB(A). Assuming the dewatering pumps to be used on site have a sound power level of 100 dB(A) it would be necessary to have a minimum separation distance of 200m between the pump and each noise sensitive receptor in order to comply with the 42 dB(A) night-time noise limit. Should pumping equipment be required to operate at distances of less than 200m from noise sensitive receptors, suitable noise mitigation shall be employed, such as localised screening or the use of silenced pumping equipment.

6.0 CUMULATIVE IMPACT

- 6.1 In accordance with PPG, the cumulative impact of mineral development is also capable of being a material consideration when determining individual planning applications.
- 6.2 The closest mineral development to White Cross Farm is New Barn Farm Quarry, situated to the west of Wallingford Road and the proposed application site. From an inspection of the local area it is apparent that residential premises located in between Reading Road and Wallingford Road namely; The Lodge, Coachman's Cottage and Elizabeth House, have the potential to experience the effects of cumulative impacts.
- 6.3 The predicted cumulative noise levels from the proposed operations at New Barn Farm and White Cross Farm have been assessed at relevant noise-sensitive premises in line with the noise standards outlined within PPG-Minerals and the noise limits stipulated within Condition 22 of planning permission ref. MW.0094/16 dated 8 November 2018 for mineral extraction and restoration using imported inert materials at New Barn Farm.
- 6.4 Details of worst-case noise emissions associated with permitted operations at New Barn Farm Quarry have been obtained from the noise impact assessment report submitted in support of the New Barn Farm application (WBM Acoustics Report Ref.4420 dated 19 May 2016). This information has been used within this assessment to identify any potential cumulative impacts.
- 6.5 The cumulative noise levels predicted from potential operations at New Barn Farm and White Cross Farm are shown in the table below.

| Location | Predicted Cumulative Noise Level (L _{Aeq,1h} dB) | | |
|--------------------|---|----------------------|------------------------------|
| | White Cross Farm Development | New Barn Farm Quarry | Cumulative Noise Level dB(A) |
| Elizabeth House | 49 | 46 | 51 |
| Coachman's Cottage | 46 | 48 | 52 |
| The Lodge | 43 | 52 | 53 |

- 6.6 The predicted levels indicate that worst-case cumulative noise levels associated with operations at both mineral sites are not expected to exceed the limit of 55 dB stipulated within PPG and Condition 22 of the planning permission for New Barn Farm Quarry. As a result the potential cumulative impacts of noise are not considered to be significant.

7.0 RECOMMENDATIONS

7.1 Noise Limits

7.1.1 PPG recommends 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 10 dB(A) during normal daytime working hours (07:00-19:00). In any event, the total noise from the operations should not exceed 55 dB(A) $L_{Aeq,1h}$ (free field).

7.1.2 With reference to the background noise levels measured during the survey, the following limits are recommended in line with planning practice guidance:-

| No. | Location | Noise Limit from Site Operations (dB $L_{Aeq,1h}$) |
|-----|--------------------------------|--|
| 1 | Meadow Farm | 55 |
| 2 | Elizabeth House | 55 |
| 3 | Waterside Court | 55 |
| 4 | Whitecross House | 55 |
| 5 | Founders House, Carmel College | 54 |
| 6 | Mansion House, Carmel College | 54 |
| 7 | Windward House / Mead Furlong | 55 |

7.1.3 In addition to the above, it is also recommended that:

- potentially noisy short-term operations such as topsoil and subsoil stripping and other works in connection with landscaping and restoration, shall not exceed 70 dB $L_{Aeq,1h}$ free field at any inhabited property and be limited to a period not exceeding 8 weeks in a year at any one property.
- noise levels from water pumping during the night-time period (22:00 – 07:00 hrs) should not exceed 42 dB $L_{Aeq,1h}$ (free field) at noise-sensitive properties.

7.1.4 Should noise limits at noise-sensitive premises be established through a planning condition, it is recommended that compliance with the stipulated levels should be monitored on a routine basis throughout the life of the scheme (on at least one occasion per year).

7.1.5 Prior to the commencement of site operations, it is recommended that a detailed noise monitoring scheme is submitted to, and approved in writing, by the Mineral Planning Authority. Routine noise monitoring should thereafter be carried out in accordance with the approved Noise Monitoring Scheme.

7.2 Mitigation and Control Measures

7.2.1 The following noise control measures should be considered to demonstrate best practice and minimise the potential impact at noise-sensitive receptor locations within the vicinity of the site:

- (a) Adhere strictly to the stated operating hours of the site and ensure that site working hour restrictions are effectively communicated to all site staff and subcontractors;
- (b) All plant and equipment should comply with the relevant statutory requirements regarding noise emissions;
- (c) Audible reversing warning systems on mobile plant and vehicles should be of a type which, whilst ensuring that they give proper warning, has a minimum noise impact on persons outside sites;
- (d) Ensure machinery is regularly well maintained and where appropriate fitted with exhaust silencers. Any defective items should not be used. Regular inspections of plant should be undertaken to identify any faults or wear and tear that may be resulting in excessive noise;
- (e) Minimise drop heights of materials;
- (f) Start up plant and vehicles sequentially rather than all together. Any period of idling required to warm up mobile plant at the start of the working day should be undertaken in locations away from residential premises;
- (g) Avoid unnecessary horn usage and revving of engines. Equipment should be switched off or throttled down to a minimum when not required. Any covers, panels or enclosure doors to engines should be kept closed when the equipment is in use;
- (i) Ensure that any cladding or enclosures around noise-generating plant are regularly inspected for defects/damage/weathering that may negatively impact upon the sound insulation performance of the structure. Once identified any repairs should be carried in a timely manner;
- (j) Where reasonably practicable, noisy equipment should be located as far from sensitive premises as possible. Plant from which the noise generated is known to be particularly directional should, wherever practicable, be orientated so that the noise is directed away from noise-sensitive areas;
- (k) Keep internal haul routes clear and well maintained. Avoid steep gradients where possible. Regularly inspect routes for potholes and repair as necessary;
- (l) Ensure perimeter bunds are to the required height and length and suitably maintained during the implementation of the scheme;

- (m) Operatives should be trained to employ appropriate techniques to keep site noise to a minimum and should be effectively supervised to ensure that best working practice in respect of noise reduction is followed.

8.0 SUMMARY

- 8.1 Vibrock Limited has been commissioned to undertake a noise impact assessment in relation to proposed mineral extraction, processing and restoration operations on Land at White Cross Farm in Wallingford, Oxfordshire.
- 8.2 Proposed development plans have been studied and a series of noise level predictions have been made at noise-sensitive locations within the vicinity of the proposed application site. These potential noise levels have been assessed against relevant criteria including that outlined within Planning Practice Guidance to the National Planning Policy Framework.
- 8.3 All predictions have been calculated with the combinations of plant working at the closest point to each assessment location. They are therefore worst-case scenarios which may be of relatively short duration. However, they indicate the maximum $L_{Aeq,1h}$ (free-field) noise level to which a particular property or group of properties may be exposed during the working of the site. The worst-case situation may occur intermittently over the lifetime of the site, but longer term noise levels perceived outside of the site boundary would normally be significantly less.
- 8.4 The results of the assessment demonstrate that the proposed development can be implemented by the operator whilst adhering to the noise standards contained within current Planning Practice Guidance for mineral sites.
- 8.5 It is therefore considered unlikely that potential future extraction would result in significant or unacceptable adverse impacts at noise-sensitive premises in the vicinity of the site. A range of recommendations have been made to minimise potential noise emissions associated with the potential future operation of the site.
- 8.6 The overall noise impact of the potential development is therefore considered to be in line with current national and local planning policy which seeks to prevent and avoid any significant or unacceptable adverse impacts and, where necessary, mitigate and reduce to a minimum other adverse impacts.

9.0 REFERENCES

1. ANC Guidelines: *Environmental Noise Measurement Guide*. 2013.
2. British Standard 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites. Part 1: Noise*. British Standards Institution 2014.
3. British Standard 7445-1:2003 *Description and measurement of environmental noise – Part 1 Guide to quantities and procedures*. British Standards Institution 2003.
4. Design Manual for Road and Bridges. Sustainability and Environment Appraisal. LA111 Noise and Vibration, Revision 2. 2020.
5. National Planning Policy Framework – Ministry of Housing, Communities and Local Government. July 2021.
6. Noise Policy Statement for England. Government Department for Environment, Food and Rural Affairs. March 2010.
7. Planning Practice Guidance: Minerals – Ministry of Housing, Communities and Local Government. October 2014.
8. Planning Practice Guidance: Noise – Ministry of Housing, Communities and Local Government. July 2019.
9. *Guidelines for Environmental Noise Impact Assessment*, v1.2. Institute of Environmental Management & Assessment. November 2014.

FIGURE 1

Site Location Plan

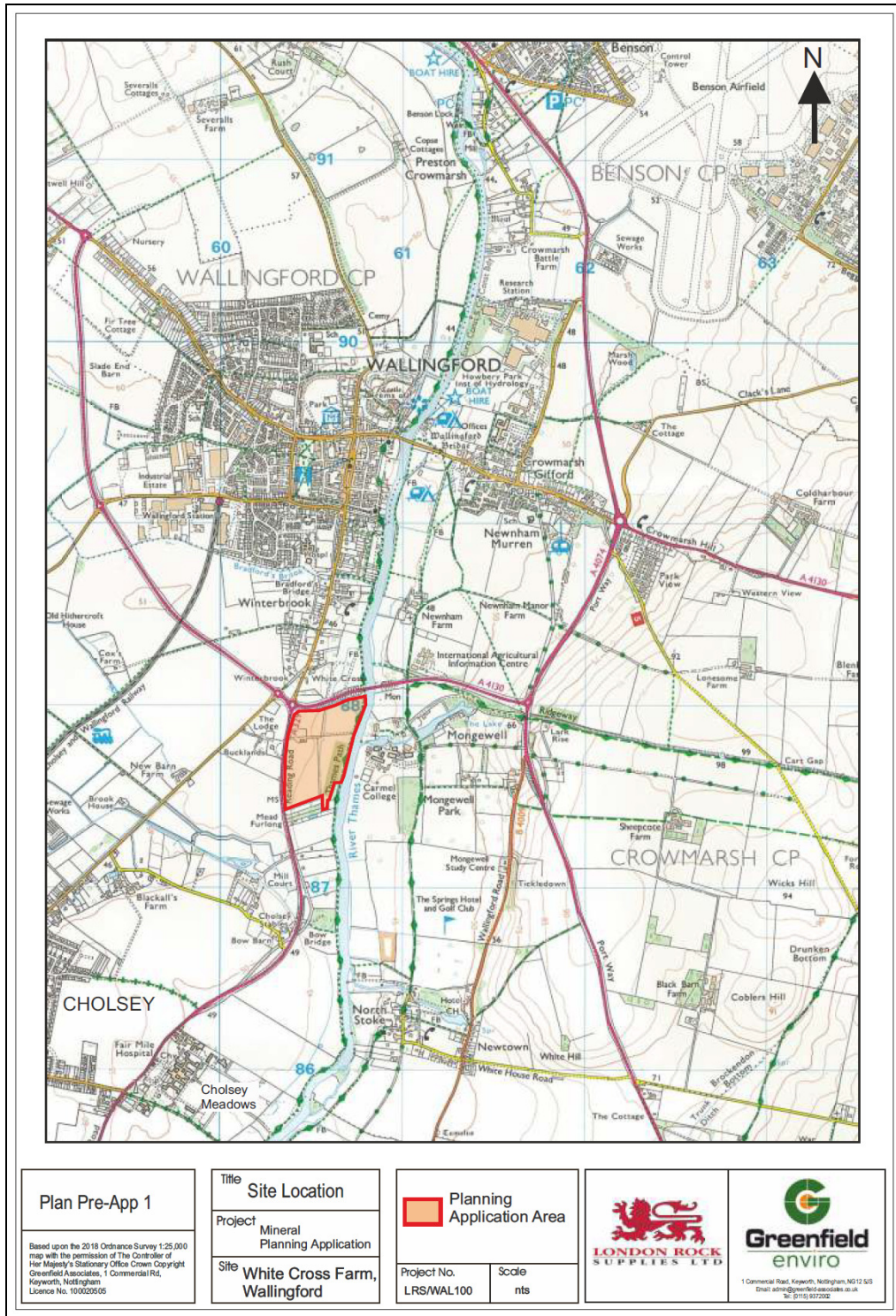


FIGURE 2

Proposed Phasing Plan

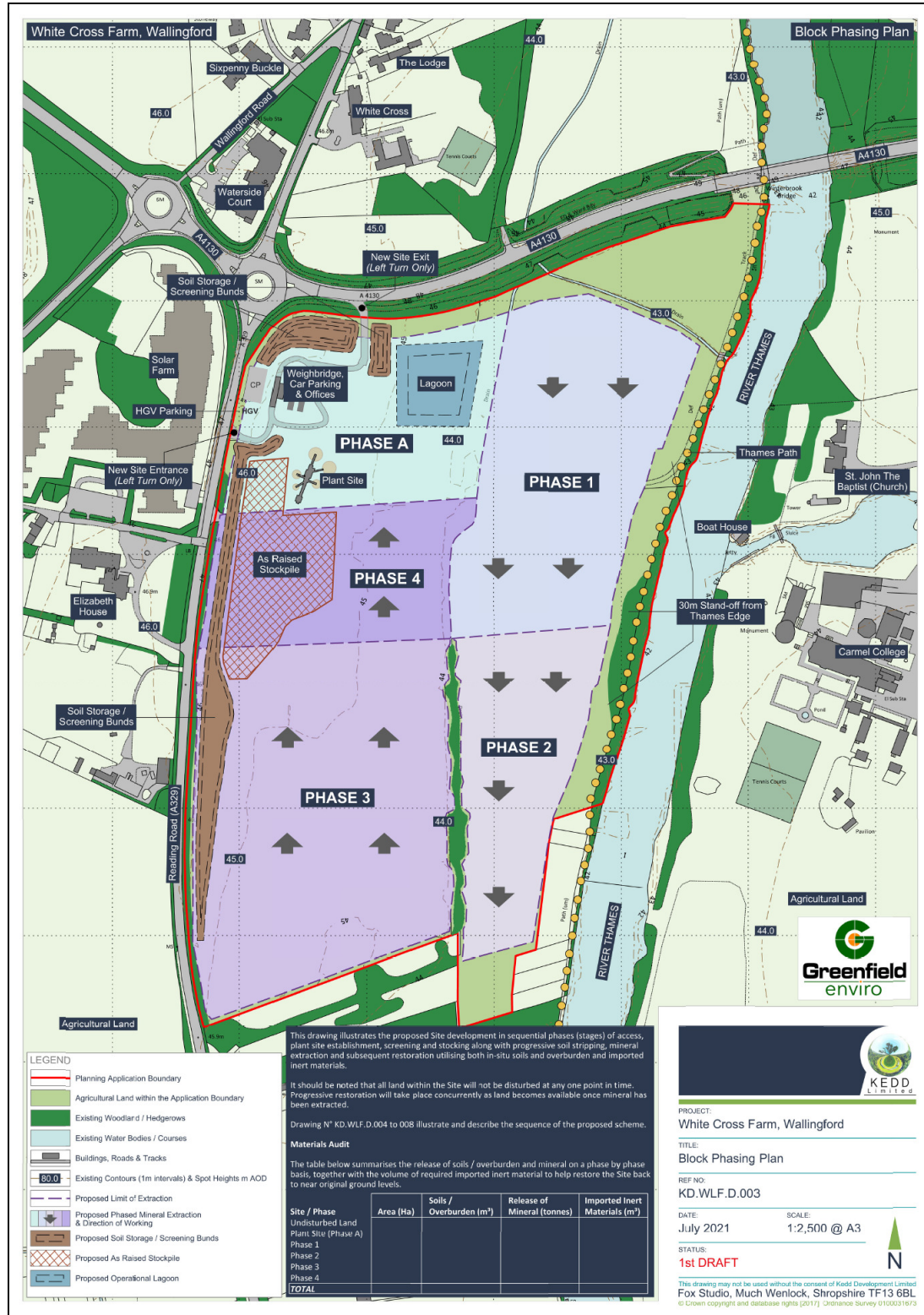


FIGURE 3

Concept Restoration Plan

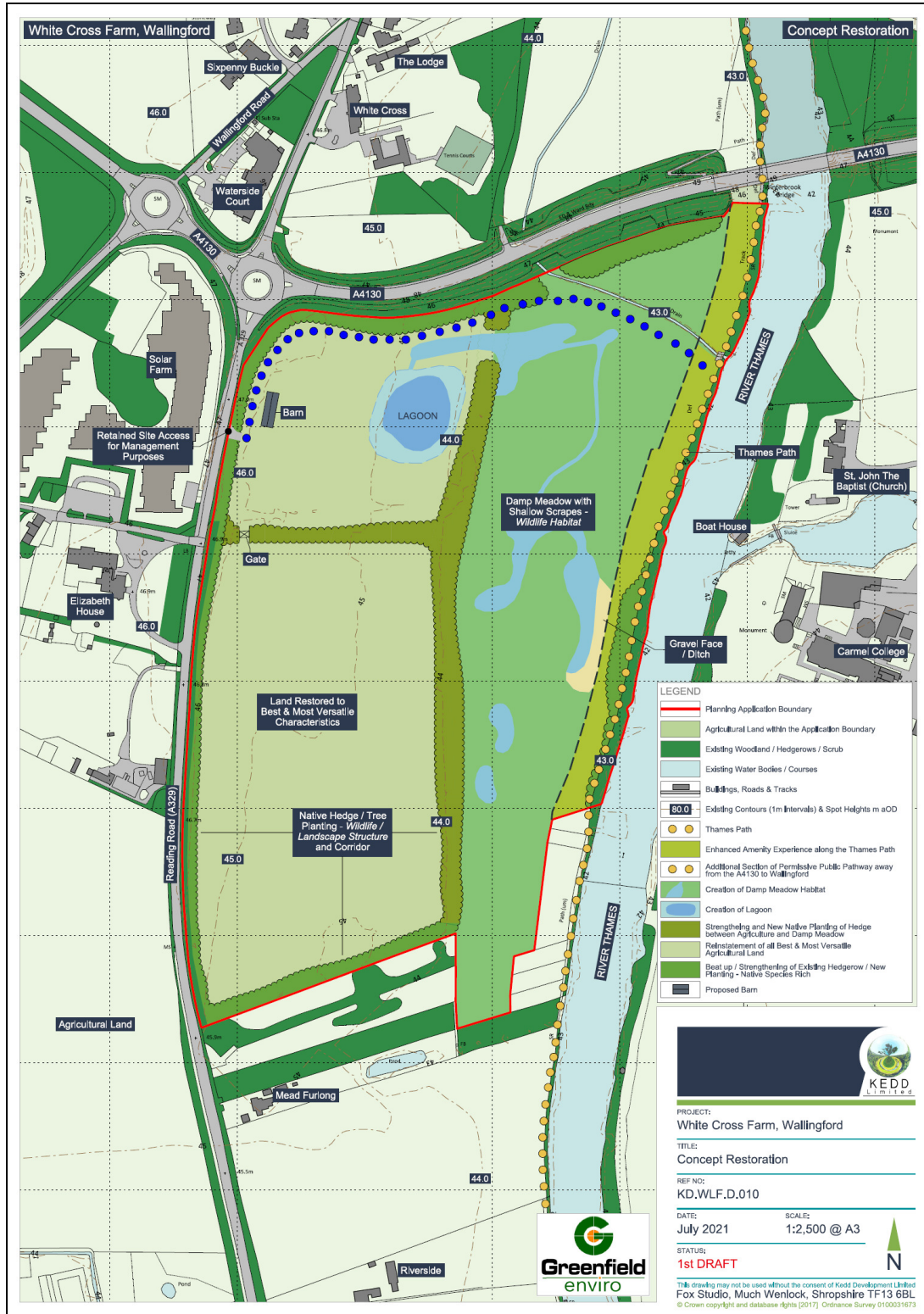


FIGURE 4

Noise-Sensitive Assessment Locations



| No. | Location |
|-----|--|
| 1 | Meadow Farm |
| 2 | Elizabeth House |
| 3 | Waterside Court |
| 4 | Whitecross House |
| 5 | Founders House, Carmel College |
| 6 | Mansion House, Carmel College |
| 7 | Windward House / Mead Furlong |
| 8 | Coachman's Cottage (additional receptor for cumulative assessment) |
| 9 | The Lodge (additional receptor for cumulative assessment) |

TABLE 1

Noise Source Details

| Plant/Activity | Quantity | Sound Power Level dB(A) | Activity On-Time % | Data Source |
|------------------------------|---------------------|-------------------------|--------------------|------------------------------------|
| Short-term Operations | | | | |
| Excavator | 1 | 104 | 75 | Vibrocock Database |
| Bulldozer | 1 | 107 | 75 | BS 5228 (Table C.2, Ref no.11) |
| Dump Truck | 2 | 107 | 75 | Measured at similar site |
| Normal Operations | | | | |
| Excavator | 1 | 104 | 75 | Vibrocock Database |
| Loading Shovel | 2 | 106 | 75 | Vibrocock Database |
| Primary Screen | 1 | 97 | 100 | Vibrocock Database |
| Sand Screen | 1 | 91 | 100 | Vibrocock Database |
| Sand Pump | 1 | 94 | 100 | Vibrocock Database |
| Conveyor | 1 | 81 | 75 | BS 5228 (Table C.10, Ref no.23) |
| Feed Hopper | 1 | 96 | 75 | Vibrocock Database |
| Dump Trucks | 12 per hr 15 mph | 107 | - | Vibrocock Database |
| HGVs | 10 per hr 10 mph | 106 | - | BS 5228 (Table C.11, Ref no.17) |
| Loading | 1 | 104 | 10 | BS 5228 (Table C.10, Ref no.2) |

APPENDIX 1

Terminology and Definitions

Acoustic Environment

Sound from all sound sources as modified by the environment.

Sound Power Level (L_{WA})

The total amount of sound energy per unit of time generated by a particular sound source independent of the acoustic environment that it is in. It is a logarithmic measure of the sound power in comparison to a specified reference level.

Equivalent Continuous A-weighted Sound Pressure Level ($L_{Aeq,T}$)

Value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval T , has the same mean square sound pressure as a sound under consideration whose level varies with time.

A-weighting

A-weighting is used to replicate this sensitivity by modifying the electrical response of a sound level meter with frequency in approximately the same way as the sensitivity of the human hearing system. Measurements in dB(A) broadly agree with people's assessment of loudness.

Ambient Sound Level

Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. Normally expressed as the equivalent continuous A-weighted sound pressure level ($L_{Aeq,T}$).

Specific Sound Level (also referred to as 'site noise')

Sound in the neighbourhood of a site that originates from the site i.e. the sound being assessed.

Background Sound Level ($L_{A90,T}$)

A-weighted sound pressure level of the residual sound at the assessment position with no operation occurring at the proposed site. Defined in terms of the $L_{A90,T}$ which is the "A weighted" noise level exceeded for 90 per cent of the specified measurement period (T).

Free-field

External sound field in which no significant sound reflections occur (apart from the ground).

NOTE Measurements made 1.2 metres to 1.5 metres above the ground and at least 3.5 metres away from other reflecting surfaces are usually regarded as free-field.

Noise-Sensitive Premises

Any occupied premises outside a site used as a dwelling (including gardens), place of worship, educational establishment, hospital or similar institution, or any other property likely to be adversely affected by an increase in noise level.