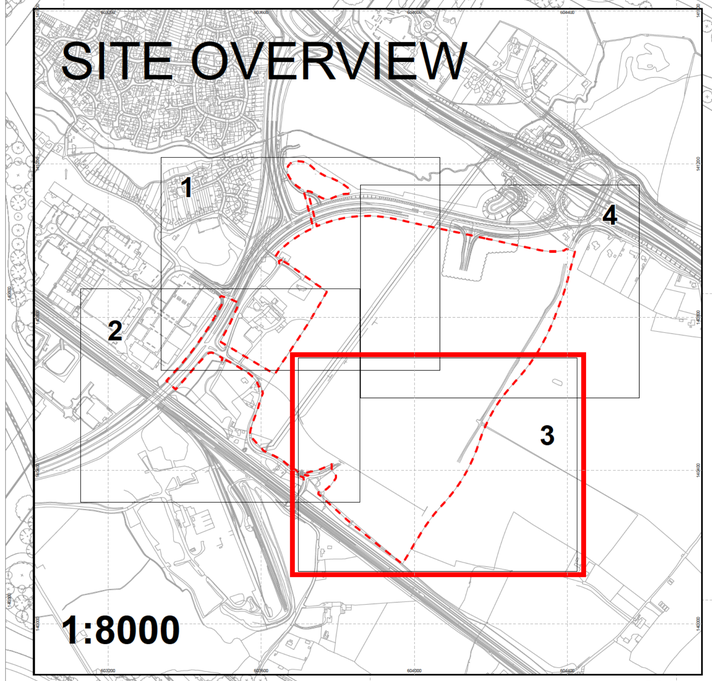
SITE OVERVIEW



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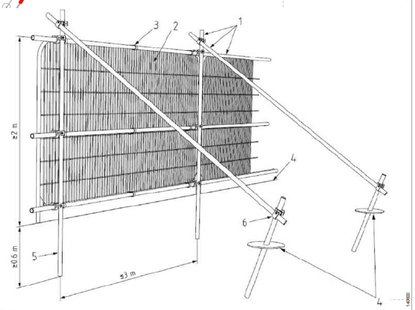

Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

0 25 50 m

C123906-03-01-RevA

Legend

- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category B group to be removed
- Category B group
- Category C group to be removed
- Category C group
- Current canopy - tree to be removed
- Current canopy - tree to be retained
- Root Protection Area
- Tree protection barrier (BS 5837:2012)
- Application area
- Proposed plan
- # Pruning works required

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

Project: Stour Park West

Drawing: Tree Protection Plan Page 3 of 4

Client: Aviva Life and Pensions UK Ltd

Drawing Number	Revision
C123906-03-01-RevA	Rev A
Scale @ A1	Date
1:1,000	May 2019
Approved By	Drawn By

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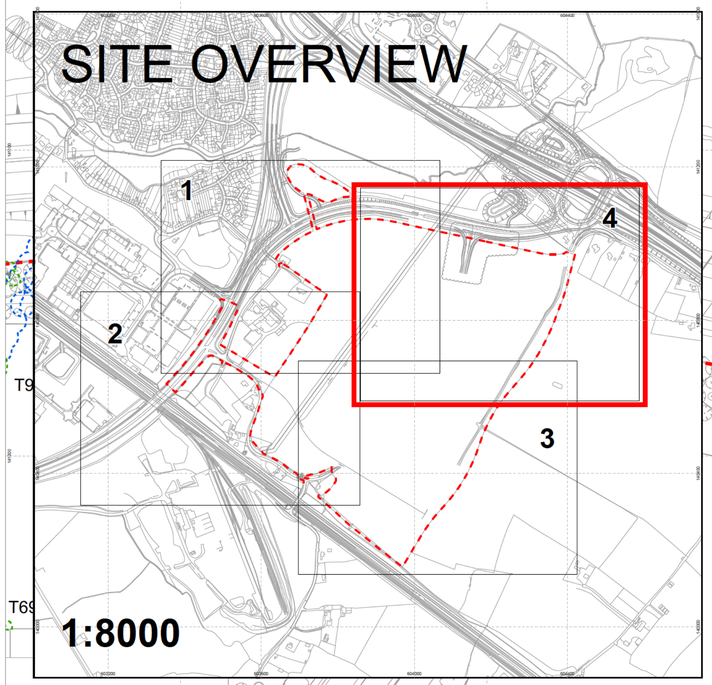
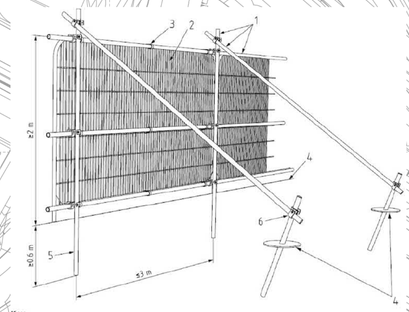
SITE OVERVIEW





Key

1. Standard scaffold poles
2. Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3. Panels secured to uprights and cross-members with wire ties
4. Ground level
5. Uprights driven into the ground until secure (minimum depth 0.6 m)
6. Standard scaffold clamps

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0 25 50 m

C123906-03-01-RevA

Legend

- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category B group to be removed
- Category B group
- Category C group to be removed
- Category C group
- Current canopy - tree to be removed
- Current canopy - tree to be retained
- Root Protection Area
- Tree protection barrier (BS 5837:2012)
- Application area
- Proposed plan
- # Pruning works required

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

N

Project	Stour Park West
Drawing	Tree Protection Plan Page 4 of 4
Client	Aviva Life and Pensions UK Ltd
Drawing Number: C123906-03-01-RevA	Revs on: Rev A
Scale @ A1: 1:1,000	Date: May 2019
Approved By:	Drawn By:

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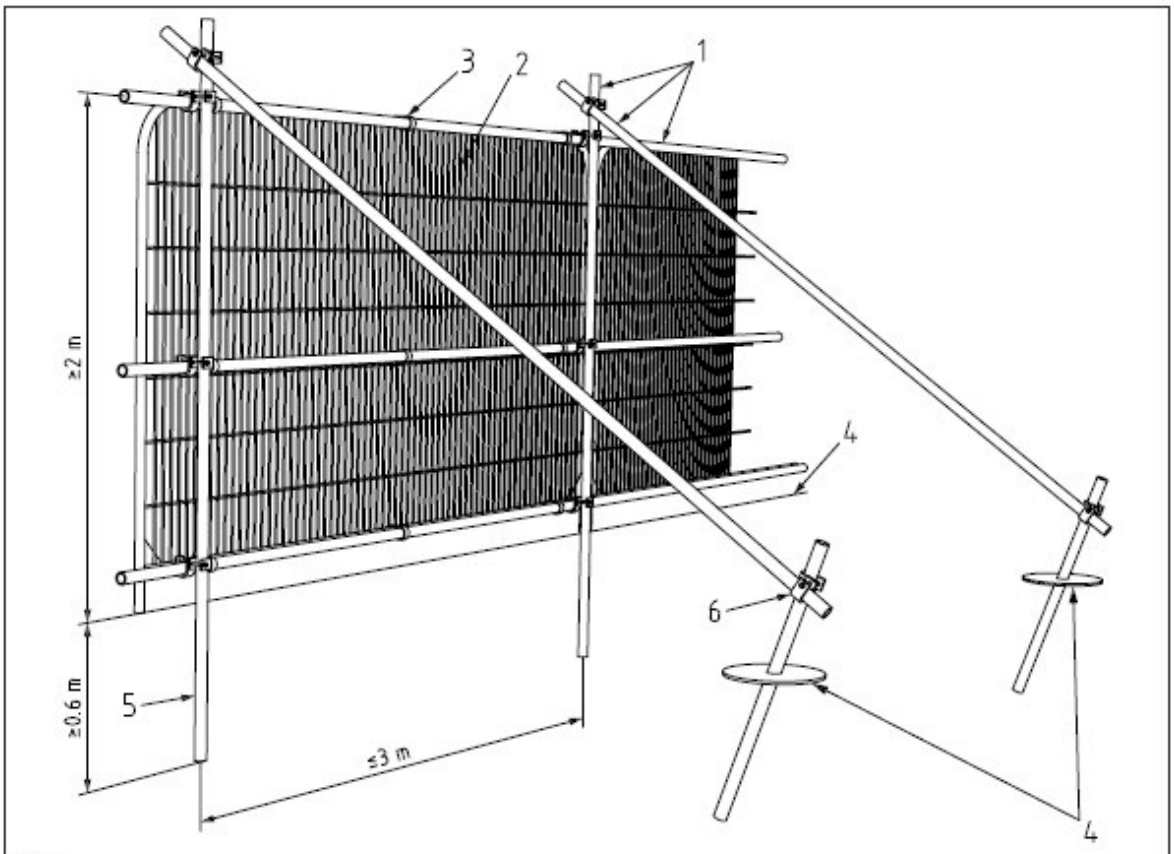
G. Tree Protection Measures

G.1 Extract from BS5837:2012 Default specification for protection barrier



Key

1 Standard scaffold poles
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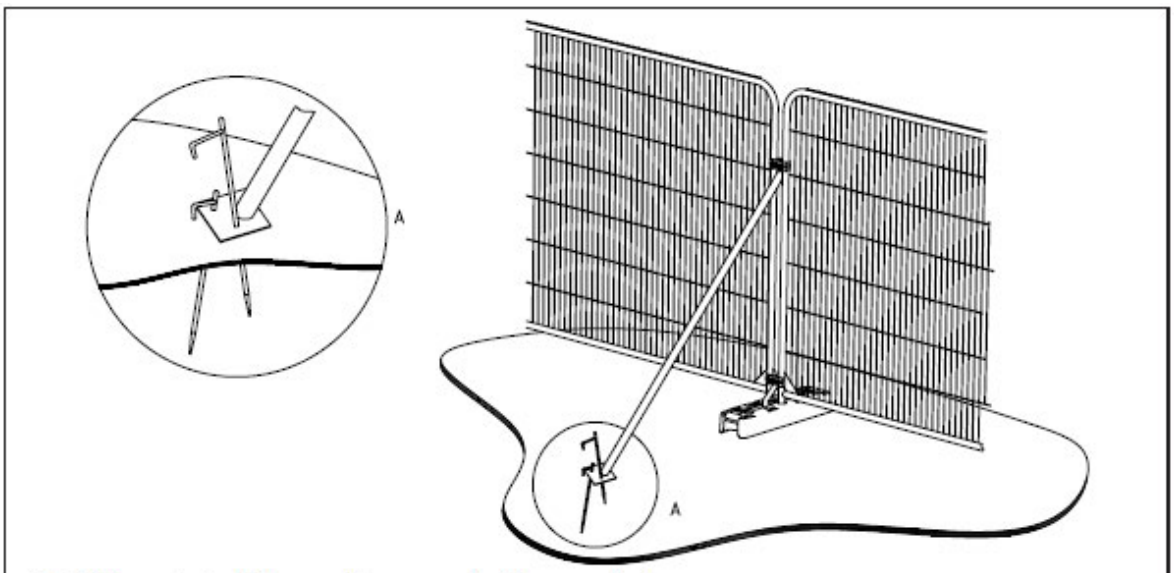
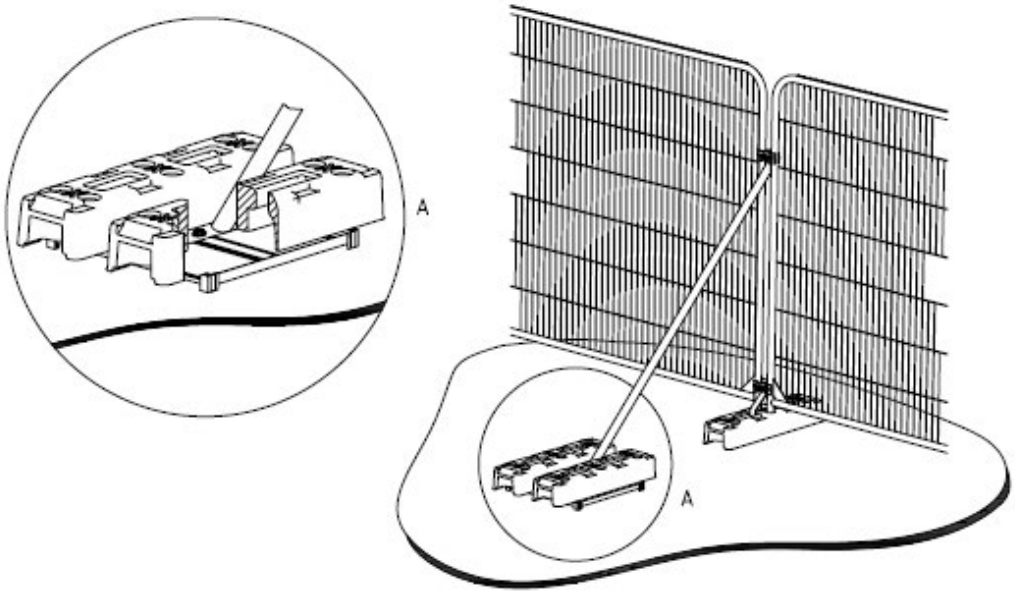
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

G.2 Extract from BS5837:2012 Examples of Ground Stabilising systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

G.3 Extract from BS 5837:2012 Ground Protection during Demolition and Construction

6.2.3.2 Where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site.

6.2.3.3 New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.

NOTE The ground protection might comprise one of the following:

a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;

b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;

c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

6.2.3.4 The locations of and design for temporary ground protection should be shown on the tree protection plan and detailed within the arboricultural method statement (see **6.1**).

6.2.3.5 In all cases, the objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle, especially in wet conditions, so that tree root functions remain unimpaired.

H. References

British Standard BS 5837:2012 Trees in Relation to design, demolition and construction – Recommendations; April 2012; ISBN 978 0 580 69917 7

British Standard BS 3998:2010 Recommendations for Tree Work; Third (present) edition, December 2010; ISBN 978 0 580 53777 6

The National Joint Utilities Group, Issue 1 – 8th October 2007, Volume 4 - Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees

Arboricultural Association, 1991, Leaflet 4 - Tree Management

mottmac.com

MOTT MACDONALD

Sevington Inland Border Facility

Noise Impact Assessment

6 November 2020

Confidential

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6 November 2020

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
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P02	30/10/2020	[redacted]	[redacted]	[redacted]	Second draft updated following updates to model
P03	06/11/2020	[redacted]	[redacted]	[redacted]	Final for Article 4 submission

Document reference: 419419 | 419419-MMD-XX-NW-RP-YA-0001 | P03

Information class: Secure

Contents

1 Introduction

1.1 Overview

Mott MacDonald has been appointed by the Department for Transport (DfT) to undertake an *Analysis of the Likely Environmental Effects of the Development Report* (document ref: 419419-MMD-XX-SV-RP-YE-0002) for the proposed use of a site at Sevington near Ashford in Kent (hereafter referred to as 'the site') for a temporary Inland Border Facility (hereafter referred to as 'the scheme'). The analysis is presented within this report, and it is required as per article 4(2)(h) of the *Town and Country Planning (Border Facilities and Infrastructure) (EU Exit) (England) Special Development Order 2020*. Further details on the scheme including a description of the location of the site is provided in the Sevington Inland Border Facility – An *Analysis of the Likely Environmental Effects of the Development Report* (document ref: 419419-MMD-XX-SV-RP-YE-0002). This noise assessment has been undertaken to support the *Analysis of the Likely Environmental Effects of the Development Report*.

The noise impacts of the lorry holding area are reviewed in line with UK standards and guidance including the *Design Manual for Roads and Bridges (DMRB) LA 111 Noise and Vibration Revision 2 (LA 111 Revision 2)*[1] and *BS5228-1, Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise*[2].

1.2 Assessment Scope

This assessment refers to the term 'movement'. One movement is defined as one heavy goods vehicle (HGV) travelling in a single direction along any given route to or from the site. Where a HGV is diverted to the scheme and returns along the same route this would count as two movements.

Traffic induced vibration is usually expressed in terms of the peak particle velocity. As the PPV is a measure of the peak level rather than a cumulative value, this is an entity that is not expected to increase simply because more HGVs would use roads that are already used by HGVs. As such, vibration impact is scoped out of this assessment.

Two scenarios were investigated for operational noise; a scenario to represent the first 6 months of operation known as disruption and a scenario to model the operation of the site after the first 6 months known as non-disruption. For the first 6 months the site would be used by DfT, Her Majesty's Revenue and Customs (HMRC) and the Department for Environment, Food and Rural Affairs (Defra) and after 6 months only by HMRC and Defra meaning that the capacity of parking spaces decreases within the non-disruption scenario. The scenarios have been assessed separately as they would not occur simultaneously.

The disruption scenario was based on the site running at full capacity and maximum traffic flow on the surrounding road networks which represents the maximum operating scenario. This scenario can also be used to model "disruption days" where transport across the English Channel is disrupted, creating a backlog of HGV traffic on the Kent road network which may occur occasionally outside of the first 6 months of operation.

[1] Highways England (2020) "Design Manual for Roads and Bridges", LA 111 "Noise and Vibration".

[2] British Standards Institution (2009) British Standard 5228-1:2009+A1:2014, "Code of practice for noise and vibration control on construction and open sites – Part 1: Noise"

2 Legislation and guidance

2.1 National Legislation

2.1.1 Noise Insulation Regulations 1975 (amended 1988)

The *Noise Insulation Regulations 1975*[3] *(amended 1988*) were made under Part 2 of the *Land Compensation Act 1973*[4] for the obligatory and discretionary provision of noise mitigation measures for dwellings adjacent to new highways. Among the criteria for a property to qualify for insulation in living rooms and bedrooms is that the façade noise level is at least 68dB $L_{A10,18hr}$ and that noise from the altered highway causes the total noise level to increase by at least 1dB.

2.1.2 National Planning Policy Framework 2019

The *National Planning Policy Framework* (NPPF)[5] came into force in March 2012 and replaced the majority of planning policy. It was updated in February 2019.

Paragraph 109 of the NPPF states that "*the planning system should contribute to and enhance the natural and local environment by: …preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability."*

Paragraph 123 of the NPPF states that planning policies and decisions should aim to:

- *"avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
- *mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*
- *recognise that development would often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions place on them because of changes in nearby land uses since they were established; and,*
- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

2.1.3 Noise Policy Statement for England

The *Noise Policy Statement for England* (NPSE)[6] came into force in March 2010 and set out the following aims in line with its long-term vision of promoting good health and quality of life through the management of noise.

"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."*

[3] HM Government (1975) *The Noise Insulation Regulations*
[4] HM Government (1973) *The Land Compensation Act*
[5] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework*
[6] Defra (2010) *The Noise Policy Statement for* England

Within the aims stated above there are several key phrases that lead to additional concepts now considered in the assessment of noise impact. These and their definitions are detailed below.

- No Observed Effect Level (NOEL): this is the level below which no effect can be detected
- Lowest Observed Adverse Effect Level (LOAEL): this is the level above which adverse effects on health and quality of life can be detected
- Significant Observed Adverse Effect Level (SOAEL): this is the level above which significant adverse effects on health and quality of life can occur

There are no pre-defined values for SOAEL as it is acknowledged that it would be different for different sources, different receptors and at different times.

The levels used in this assessment are defined in Section 3 of this report.

2.1.4 Planning Practice Guidance

Planning Practice Guidance (PPG)[7] is a government web-based resource which provides guidance on how the policy set out in NPPF may be interpreted in practice for a range of issues. PPG advises that:

"*Local planning authorities' planning making and decision taking should 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*
- *Whether or not a good standard of amenity can 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 (including the impact during construction wherever applicable) is, or would be above or below the significant observed adverse effect level…"

Among the specific factors to consider where relevant the guidance states: *"In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur"*.

Table 2.1 below summarises the noise exposure hierarchy given in PPG, based on the likely average response.

[7] Ministry of Housing, Communities & Local Government '*Planning Practice Guidance: Noise'* 2019

Table 2.1: Noise exposure hierarchy

Perception	Examples of outcomes	Increasing effect level	Action
	No Observed Effect Level		
Not noticeable	No Effect	No Observed Effect	No specific measures required
	No Observed Adverse Effect Level		
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
	Lowest Observed Adverse Effect Level		
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, for example 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 perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
	Significant Observed Adverse Effect Level		
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, for example 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
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, for example regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, for example auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.1.5 Noise Action Plans

Noise Action Plans, which have been published by Defra, are required by the *Environmental Noise Directive (Directive 2002/49/EC)*. Specifically, the *Noise Action Plan: Roads (Including Major Roads)*[8] states that the *Environmental Noise Directive* requires the following, on a five-year cycle:

- *"The determination, through noise mapping, of exposure to environmental noise for major sources of road, rail and aircraft noise and in urban areas (known as agglomerations);*
- *Provision of information to the public on environmental noise and its effects;*
- *Adoption of Action Plans, based upon the noise mapping results, which are designed to manage environmental noise and its effects, including noise reduction if necessary; and,*

[8] Defra (2014) Noise Action Plan: Roads (Including Major Roads) [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/276237/noise-action-plan-roads-201401.pdf (last accessed April 2018).

- *Preservation of environmental noise quality where it is good, particularly in urban areas."*

The Action Plan should also *"apply in particular to the most important areas as established by the strategic noise maps".* It was decided that the important areas (with respect to noise from major roads) will be where the 1% of the population that are affected by the highest noise levels from major roads are located according to the results of the strategic noise mapping. There are also a number of actions for local authorities to take for these important areas in order to address current noise issues and prevent further noise issues.

2.2 Guidance

2.2.1 WHO Night Noise Guidelines for Europe 2009

The World Health Organisation (WHO) Night Noise Guidelines for Europe 2009[9], suggested that there is insufficient evidence that the biological effects observed at the level below 40dB $L_{night,outside}$ are harmful to health. The Guidelines suggest, on a precautionary basis, that the population should not be exposed to a night noise guidelines (NNG) value greater than 40dB of $L_{night,outside}$ during the part of the night when most people are in bed. However, the precautionary nature of this target is fully appreciated by the WHO and an interim target of 55dB $L_{night,outside}$ is recommended in the situations where the achievement of NNG is not feasible in the short term.

2.2.2 WHO Environmental Noise Guidelines for the European Region, 2018

The WHO Environmental Noise Guidelines for the European Region[10] (ENG) were published in October 2018. These superseded aspects of the WHO Community Noise Guidelines (CNG) published in 1999 but complement the WHO Night Noise Guidelines. The ENG sets out recommended maximum levels for a range of environmental noise sources including transportation noise. The Guidelines recommend reducing road traffic noise below 53dB Lden (a combination of daytime, evening and night-time noise levels with 'penalties' of 5dB and 10dB applied to the evening and night-time respectively) as road traffic noise above this level is associated with adverse health effects. The guidelines also recommend reducing noise levels produced by road traffic during the night-time to below 45dB L_{night} as night-time noise above this level is associated with adverse effects on sleep.

The ENG have not been adopted by policymakers in the UK to date. In part this is likely to be because a large proportion of the population is already exposed to noise levels that exceed the recommendations.

Paragraph 2.4.3 of the ENG states "*The GDG [Guideline Development Group] agreed to set guideline exposure levels based on the definition: 'noise exposure levels above which the GDG is confident that there is an increased risk of adverse health effects. … The guideline exposure levels presented are therefore not meant to identify effect thresholds (the lowest observed adverse effect levels for different health outcomes). This is a difference in approach from prior WHO guidelines, like the night noise guidelines for Europe (WHO Regional Office for Europe, 2009), which explicitly aimed to define levels indicating no adverse health effects*."

It follows that no direct association should be made between ENG guideline values and the effect levels of LOAEL and SOAEL.

[9] WHO (2009) Night Noise Guidelines for Europe

[10] WHO (2018) Environmental Noise Guidelines for the European Region

2.3 Standards

2.3.1 British Standard 4142

BS4142, "*Methods for rating and assessing industrial and commercial sound"*, 2019[11] provides guidance for determining sound rating levels and assessing the likely effects from sound of an industrial and/or commercial nature on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

The rating method detailed within the standard is widely accepted as an effective means of assessing the significance of building plant noise. The level of sound from proposed new plant (the overall rating level) is predicted in terms of L_{Aeq} and compared to the existing background sound level, in terms of L_{A90}. If the new sound source is impulsive, intermittent or tonal in nature, then a penalty is added to the specific sound level to account for the character of the noise to give the overall rating level.

While the standard states that it is applicable for the determination of the rating level of sources of sound of an industrial and/or commercial nature, it also explains sound of an industrial and/or commercial nature does not include sound from the passage of vehicles on public roads and railway systems. It also states that it is not intended to be applied to the rating and assessment of sound from sources falling within the scope of other standards or guidance.

2.3.2 British Standard 8233

BS8233, "*Guidance on sound insulation and noise reduction for buildings*", 2014[12] offers guidance on indoor and outdoor ambient noise levels. Paragraph 7.7.3.2 in BS8233 recommends that *"traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise levels does not exceed 50dB $L_{Aeq,T,}$ with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achieved in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."*

BS8233 also notes that it is desirable that internal ambient noise levels do not exceed daytime guideline values of $L_{Aeq,16h}$ 35dB in living rooms, 40dB in dining rooms/areas and 35dB in bedrooms. The night-time guideline value for bedrooms is 30dB $L_{Aeq,8h.}$

Note 7 in paragraph 7.7.2 further added that *"Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5dB and reasonable internal conditions still achieved".*

2.3.3 British Standard 5228-1

BS5228-1 "*Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*", 2009[13] provides a methodology for predicting and assessing noise levels generated by fixed and mobile plant used for a range of typical activities on construction and open sites.

[11] British Standards Institute (2019) BS4142: Methods for rating and assessing industrial and commercial sound

[12] British Standards Institute (2014) BS8233: Guidance on sound insulation and noise reduction for buildings

[13] British Standards Institute (2014) BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

The standard defines an open site as a site where there is significant outdoor excavation, levelling or deposition of material and in the second accompanying note to this definition states *"waste disposal sites and long-term construction projects can, in most cases, be treated as open sites".*

2.3.4 The Design Manual for Roads and Bridges

DMRB LA 111 Noise and Vibration Revision 2 (LA 111 Revision 2) describes a methodology for the assessment of the impacts of noise and vibration for road projects in the UK. It includes a procedure for the calculation of an operational noise study area, a method for the classification of the magnitude of impact, and examples of design and mitigation techniques that may influence noise and vibration impacts.

2.3.5 Calculation of Road Traffic Noise

Calculation of Road Traffic Noise (CRTN)[14] provides procedures for predicting noise levels for a given flow of road traffic at sensitive receptors. These methodologies are used in the determination of entitlement under the Noise Insulation Regulations and for traffic noise change assessments undertaken in accordance with the DMRB guidance noted above.

2.3.6 IEMA Guidelines for Environmental Noise Impact Assessment

The Institute of Environmental Management and Assessment (IEMA) *Guidelines for Environmental Noise Assessment"*[15] provide guidance on noise assessment in the Environmental Impact Assessment (EIA) context. The guidelines define key methodologies used within the noise impact assessment process and provide advice on their limitations. They are relevant to all scales of project. In the context of this assessment the IEMA Guidelines have been used to inform the definition of the sensitivity of receptors and the relation between the magnitude of impact and the significance of effect of noise changes upon those receptors.

The IEMA Guidelines provide a table for the generic relationship between noise impact (magnitude) and noise effect (magnitude and sensitivity) including the evaluation of significance. An extract from that table is reproduced in Table 2.2.

[14] Department of Transport "Calculation of Road Traffic Noise", 1988

[15] The Institute of Environmental Management and Assessment (IEMA) (2014) *Guidelines for Environmental Noise Assessment*

Table 2.2: Extract from IEMA table showing generic relationship between noise impact, effect and significance

Magnitude (nature of impact)	Description of effect (on a specific sensitive receptor)	Significance
Negligible	No discernible effect on receptor	Not significant
Slight	Receptor perception = non-intrusive Noise impact can be heard but does not cause any change in behaviour or attitude, for example turning up the volume of the television, speaking more loudly, closing windows. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life.	Less likely to be significant (greater justification needed based on impact magnitude and receptor sensitivity – to justify a significant effect)
Moderate	Receptor perception = intrusive Noise impact can be heard and causes small changes in behaviour and / or attitude, for example turning up volume of television; speaking more loudly, closing windows. Potential for non-awakening sleep disturbance. Affects the character of the area such that there is a perceived change in the quality of life.	
Substantial	Receptor perception = disruptive Causes a material change in behaviour and / or attitude for example avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty getting to sleep, premature awakening and difficulty getting back to sleep. Quality of life diminished due to change in character of the area.	(Greater justification needed – based on impact magnitude and receptor sensitivity – to justify a non-significant effect) More likely to be significant

3 Assessment methodology

3.1 Methodology

This section describes the methodology which has been used for the assessment of noise from the scheme. The assessment has been undertaken in accordance with guidance from the following key documents: NPPF, NPSE, WHO Guidelines, BS5228-1, BS8233, DMRB, and CRTN.

The main purpose of this assessment is to identify noise impacts associated with the scheme. Part of the assessment process is to identify measures to reduce adverse effects and where practicable, to eliminate significant adverse effects.

Environmental assessment regulations and the NPPF require that the assessment considers the significance of effects on noise sensitive receptors resulting from predicted noise impacts. LOAEL and SOAEL, introduced by NPSE and applied in PPG, have been defined for the scheme, informed by WHO guidance, and guidance from BS8233 and BS5228-1.

3.1.1 Construction

A qualitative assessment for construction has been carried out. Works would mostly include construction of an appropriate hardstanding and stockpiling of material on land to the east of the site boundary. Any raised structures are limited to site offices and inspection sheds. Noise barriers will be constructed around the site by auger methods. As such, the construction works would be short term (maximum 6 months) and would not consist of any high noise and vibration inducing activities such as piling. The closest receptors to the site are situated approximately 10m to 300m from the Article 4 Red Line Boundary and approximately 100m from the proposed stockpile.

The stockpiling is expected to store site-won material on land to the east of the site boundary for a temporary period, stored for up to 12 months. The main noise source would consist of plant such as dumper trucks and excavators moving fill material around which do not constitute high noise level activities.

A Construction Management Plan (CMP) would be agreed with the consenting authority prior to works commencing. The CMP would outline best practice measures taken to control and reduce noise and vibration from construction activities including the use of Best Practicable Means (BPM) which are measures recommended in BS-5228-1. All noisy operations will be completed between 08:00 to 18:00 on weekdays, and 08:00 to 13:00 on Saturdays. Where out of hours working is required, a Section 61 would be agreed with the local authority. For stockpiling, taking measures such as positioning material closest to the residential receptors first, would ensure a bund between the works and the receptors is formed which would reduce noise levels for the remainder of the stockpiling works.

Due to the short-term duration (maximum of 6 months) and nature of the construction works and with the implementation of a sufficient CEMP, it is not expected that construction would result in significant effects and a quantitative assessment has not been carried out.

3.1.2 Operation

3.1.2.1 Value of receptors

Noise affects people in different ways. This may include factors such as annoyance and sleep disturbance, enjoyment of spaces, ability to communicate with others, and ability to concentrate at home or at work.

Different receptors would be subject to different sources and at different times and the significance of this is not the same for each receptor (for example, dwellings that are occupied at night and commercial premises which are not occupied at night). As a consequence, it is not appropriate to consider a single criterion when assessing the sensitivity (value) of an existing noise environment.

The majority of receptors that would be affected by noise and vibration impacts arising from the scheme are dwellings. However, there may be other types of receptors in the study area such as commercial premises and places of worship. Table 3.1 sets out criteria used in determining the sensitivity of a receptor.

Table 3.1: Sensitivity criteria

Sensitivity	Criteria
High	Receptors where occupants or activities are particularly susceptible to noise. Examples include residences, quiet outdoor areas used for recreation, conference facilities, auditoria/studios, schools in daytime, hospitals/residential care homes and religious institutions, for example churches or mosques.
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance. Examples include offices, restaurants and sports grounds where spectator noise is not a normal part of the event and where quiet conditions are necessary (for example, golf or tennis).
Low	Receptors where distraction or disturbance from noise in minimal. Examples include residences and other buildings not occupied during working hours, factories and working environments with existing high noise levels and sports grounds where spectator noise is a normal part of the event.

3.1.2.2 Methodology for assessment of operational impacts

The disruption and non-disruption scenarios would result in potential temporary and permanent[16] impacts respectively. Due to this, the assessment criteria for significant effects differs slightly between the two scenarios however the same methodology was used for both. The potential impact of the scheme is assessed in two ways:

- The change in noise from vehicles using the highway is assessed in accordance with DMRB
- Noise from vehicles within the lorry parking area is assessed in accordance with BS5228-1

DMRB is used for the assessment of changes in road traffic noise because this is the assessment methodology most widely used in the UK for road traffic noise including the development of all road projects including new construction, improvements and maintenance.

BS5228-1 is used in lieu of BS4142 for the assessment of noise from the lorry parking area. This is because the intended use is acoustically more similar to a waste disposal/open site or long-term construction project than a single discernible industrial noise. The acoustic character would consist of HGV movements on private roads as well as fixed and moving plant.

[16] Although a permanent set of criteria are applied, it is noted that this is in reality still temporary as the scheme would be reversed after the 5 year period was used up.

Furthermore, BS4142 specifically excludes noise from vehicle on public roads and where alternative assessment methodologies are available.

The objective of this assessment is to understand the impact on the noise climate with and without the scheme and to determine if any significant adverse effects may arise.

A detailed environmental assessment has been undertaken using the noise modelling software Datakustik's CadnaA v2020 MR, which calculates the source levels from traffic data, the propagation losses between the source and the receptors, and the resulting emission noise levels at the receptors in the study area. The propagation correction includes OS topography but excludes topographical features in the vicinity of the scheme that are likely to influence noise levels (such as noise bunds) and is therefore conservative.

3.1.2.3 Impact of road traffic noise from the highway

The assessment of the operational road traffic noise impacts of the scheme considers only the opening year and not any future design year as data was not available. The scheme is expected to be operational for up to five years.

LA 111 Revision 2 describes the impacts of road traffic noise in terms of the noise descriptors conventionally used for assessing the impact of road traffic in the UK; this is the statistical noise level $L_{A10,18hr}$ over an 18-hour period between 06:00 and 24:00 (the traffic noise index) and the night-time $L_{Aeq,8hr}$ from 23:00 to 07:00 also called $L_{night,outside}$. CRTN methodology has been followed in the traffic noise calculations, which provide input to the assessment of impact using LA 111 Revision 2.

The level of road traffic noise from the road network has been predicted using traffic data provided in terms of 18-hour Annual Average Weekday Traffic (AAWT) flows between the hours of 06:00 to 24:00, along with average vehicle speed and percentage heavy vehicles.

Calculation of the road traffic noise levels has been carried out for the following scenarios:

- Do Minimum option – that is without the scheme
- Do Something option – that is, with the scheme

The assessment of road traffic noise impacts compares the Do Something option with the Do Minimum option.

LA 111 Revision 2 classifies short-term noise impact according to the change in dB $L_{A10, 18hr}$ and $L_{night,outside}$ as set out in Table 3.2.

Table 3.2: Classification of magnitude of short-term noise impacts due to changes in road traffic noise

Magnitude of impact	Change in level [dB]
No change	0
Negligible	0.1 to 0.9
Minor	1 to 2.9
Moderate	3 to 4.9

The criteria used to determine LOAEL and SOAEL values as specified in LA 111 Revision 2 are set out in Table 3.3 below.

Table 3.3: LOAEL and SOAEL thresholds for road traffic noise at dwellings

Time period	Adverse effect level	Noise level
Day	LOAEL, façade	55dB $L_{Aeq,\ 18hr}$
Day	SOAEL, façade	68dB $L_{A10,\ 18\ hr}$
Night	LOAEL, free-field	40dB $L_{night,\ outside}$
Night	SOAEL, free-field	55dB $L_{night,\ outside}$

3.1.2.4 Impact of noise from the site

BS5228-1 does not define strict criteria to determine the significance of effects of noise impacts, although examples of how limits of acceptability have been applied historically and some examples of assessing significance are presented.

Example Method 2 – The 5dB change method (BS5228-1 Annex E Significance of Noise Effects, section E.3.3) has been adopted for the assessment of effects at residential receptors as the approach considers the expected changes in ambient noise levels and better reflects conventional EIA methodologies when compared with the use of fixed or absolute noise limits.

The method states that noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5dB or more, subject to lower cut-off values of 65dB, 55dB and 45dB $L_{Aeq,T}$ from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in a significant effect. The adopted LOAEL and SOAEL values for site noise are:

- LOAEL for the daytime is considered to be a free-field level of 50dB $L_{Aeq,\ 16hr}$ consistent with BS8233 external noise level desirable criteria
- LOAEL for the night-time is the level at which adverse health effects are observed (such as self-reported sleep disturbance) in the WHO Night Noise Guidelines for Europe which is a value of 40dB $L_{night,\ outside}$
- SOAEL for day-time operational noise is 65dB $L_{Aeq,T}$ from site noise alone and is the lower cut-off value for the daytime period
- SOAEL for night-time operational noise is 45dB $L_{Aeq,T}$ from site noise alone and is the lower cut-off value for the night-time period

Table 3.4 summarises the lorry area LOAEL and SOAEL adopted for this assessment.

Table 3.4: LOAEL and SOAEL thresholds for the site at dwellings

Time period	Adverse effect level	Noise level	Criteria / guidance
Day	LOAEL	50dB $L_{Aeq,\ 16hr}$	BS8233
Day	SOAEL	65dB $L_{Aeq,\ 16hr}$	BS5228-1
Night	LOAEL	40dB $L_{night,\ outside}$	WHO Guidelines
Night	SOAEL	45dB $L_{night,\ outside}$	BS5228-1

3.1.2.5 Significance criteria

There are no definitive criteria set out in guidance, standards or legislation for the rating of significant adverse effects due to noise for temporary lorry parking facilities.

The NPPF and NPSE aims are to avoid significant adverse effects and mitigate adverse effects. However, simply breaching the LOAEL and SOAEL thresholds do not form adequate significance noise criteria because:

- Receptors may cross the LOAEL or SOAEL thresholds with a negligible impact when initially only just below the threshold whereas it is customary for the increase in noise levels to pass a minimum threshold criterion
- For both road traffic and noise from the site it is also necessary to consider the magnitude of the impact

The assessment of significance of noise from the scheme depends on many factors as indicated by the IEMA "*Guidelines for Environment Noise Assessment*" and set out in Table 2.2. These include:

- The impact classification: a negligible impact would not cause any discernible effect on receptors and would not give rise to significant adverse effects. However, as impact magnitude increases from minor to moderate and major, the likelihood of significant adverse effects increases
- The sensitivity of the receptor as set out in Table 3.1;
- The level of noise relative to LOAEL and SOAEL: where noise levels exceed SOAEL then a noise impact is more likely to lead to a significant adverse effect. Conversely where noise levels are below LOAEL then a significant adverse effect is less likely
- Acoustic context: where a scheme changes the acoustic character of an area then a noise impact is more likely to be significant whereas a change in noise level but no overall change in character is less likely to be significant

The assessment has assumed that the disruption scenario would not be in use beyond the first 6 months, from 1 January 2021 to 1 July 2021. Therefore, all impacts from this scenario would be temporary although they may last for several months including both winter when windows are more likely to be closed, and summer when windows are more likely to be open for ventilation. It is assumed that the non-disruption scenario would gain planning consent for up to 5 years after opening. This is considered with permanent criteria despite the five-year limit to the scheme. Thus, two different significance criteria have been adopted which are outlined below:

3.1.2.6 Adopted Significance Criteria

A temporary road traffic noise impact is considered to be potentially significant at dwellings if:

- The noise increase is moderate (that is an increase of 3dB or more as a result of the scheme) for a receptor exposed to noise above the road traffic SOAEL

The temporary noise impact from the scheme is considered to be potentially significant if:

- At receptors, the total noise (estimated current ambient plus site noise) exceeds the estimated current ambient noise by 5dB or more and site noise exceeds site SOAEL

A permanent road traffic noise impact is considered to be potentially significant if:

- The noise increase is moderate (that is an increase of 3dB or more as a result of the scheme) for any receptor, or the noise increase is minor (that is an increase of 1dB or more as a result of the scheme) for any receptor exposed to noise above the road traffic SOAEL

The permanent noise impact from the scheme is considered to be potentially significant if:

- At any single receptor, the total noise (estimated current ambient plus site noise) exceeds the estimated current ambient noise by 5dB or more and site noise exceeds site SOAEL

In all cases where a potentially significant adverse effect is indicated, professional judgement is used to determine if a significant adverse effect is likely to arise. This includes consideration of the sources of noise, the causes of change in noise levels, the magnitude of the impact and expected changes in noise character.

3.1.3 Assessment assumptions and limitations

The noise model is developed from the 18-hour annual average weekday traffic flow forecasts for daytime (06:00 to 00:00). It does not include provision for variations in flow during the day or between seasons. It is understood that the flow figures for the scheme represent a maximum operating scenario in terms of traffic volume.

Night-time noise levels have been estimated using formulae in the TRL report PR/SE/451/02, Converting the UK traffic noise index LA10,18h to EU noise indices for noise mapping, specifically example method 3 which provides a conversion from daytime LA10,18h to daytime and night-time L_{Aeq} values.

The assessment is based on the receptors at which a significant adverse effect is likely to arise by comparing the predicted noise levels for the Do Something minus the Do Minimum, and the Do Something levels in relation to SOAEL.

In addition, the following assumptions and limitations have been identified. The uncertainty associated with each limitation has been reduced as far as possible. The assessment is considered appropriate for the purposes of identifying likely significant adverse noise effects.

Road traffic noise and noise from movement of the lorries on site has been calculated using the methodology set out in CRTN and implemented in the CadnaA noise modelling software.

It has been assumed that the lorries would not be permitted to leave engines running at idle while on site but would switch off immediately on reaching a parking place and would not switch on until ready to move off to leave the site.

The contribution of steady noise from refrigerated trailer units (approximately 20% of the total HGVs accessing the site) is considered at this site. It is though anticipated that electric hook-ups would be provided within the site and therefore by including emissions from the refrigerated trailer units in the assessment is conservative. The source level was based on a literature review of sound power levels of refrigerated vehicles that Mott MacDonald conducted. No other sources of fixed plant have been assumed as it is understood that mains power would be available.

Due to the availability of data, long-term noise impacts from road traffic cannot be considered and so daytime and night-time noise is from road traffic is assessed in the short term only.

The noise from HGVs on the site has been calculated assuming that the vehicles travel around the site at a speed of 35km/h and on the main exit road at 20km/h due to the assumption that there could be queuing when attempting to leave the site, which is worst case. While this makes no provision for the vehicles to be stopped and parked, the assumption is that when they are stopped the lorries make no noise. The proportion of HGVs travelling to different areas of the site has been based on the parking capacity of different areas and provides a reasonable prediction of the on-site traffic patterns.

Traffic data used for noise predictions has been based upon traffic data supplied from a validated traffic model. For a 1.0dB change (all other variables being equal) traffic flows need to increase by 25% or decrease by 20%, therefore small errors in forecasting or prediction are unlikely to significantly affect results.

LA 111 Revision 2 advises on reductions of sound from thin surface courses which has been adopted for this assessment. For the purposes of this assessment and as a conservative case, it has been assumed that motorways with traffic speeds above 75kmph have a low noise surface and non-motorways with traffic speeds greater than 75kmph have a HRA surface. For all roads with speeds less than 75kmph, a surface correction of -1dB has been assumed. For roads on the site, no surface correction has been assumed to be conservative.

Within the LA 111 Revision 2 Assessment Summary Tables, the separation between 'No Change' and 'Negligible' impacts is very low (0.1dB). This assessment includes the two categories however neither amounts to significant effects in this context.

3.1.3.1 Study area

LA 111 Revision 2 provides the methodology for assessment of road projects within the UK. The methodology, which has been applied for the purposes of this assessment, requires that the study area is identified as an area within 600m of the physical works associated with the scheme. Within this study area, road traffic noise calculations are performed at any sensitive receptor. Furthermore, routes are identified where there is a possibility of a change of 1dB $L_{A10,18hr}$ upon scheme opening, or 3dB $L_{A10,18hr}$ in the long term. Usually for these routes the assessment reports only the change in basic noise level (BNL) which is the noise level at a reference distance of 10m from the nearest carriageway edge. The change in BNL enables the impact to be classified using the criteria set out in Table 3.2. LA 111 allows study areas to be expanded or restricted if deemed appropriate.

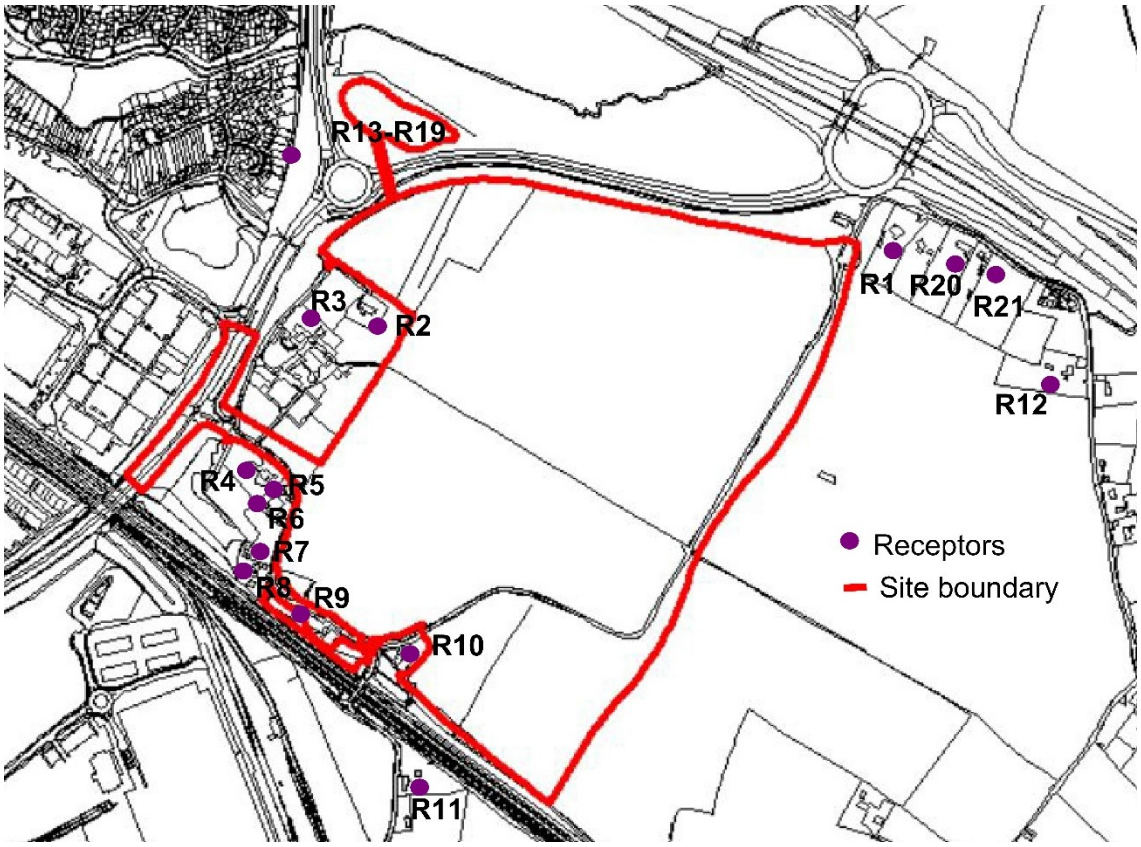
In this assessment, noise important areas were identified within 1km of the site and so road traffic noise calculations were performed at any sensitive receptor within 1km of the site boundary. Outside of this 1km boundary, the BNL of routes with a change of greater than 1dB $L_{A10,18hr}$ upon scheme opening are reported.

Representative receptors used in the assessment of site noise are shown below in Figure 3:1 and have the following addresses:

- R1: [redacted]
- R2: [redacted]
- R3: [redacted]
- R4: [redacted]
- R5: [redacted]
- R6: [redacted]
- R7: [redacted]
- R8: [redacted]
- R9: [redacted]
- R10: [redacted]
- R11: [redacted]
- R12: [redacted]
- R13: [redacted]

- R14: [redacted]
- R15: [redacted]
- R16: [redacted]
- R17: [redacted]
- R18: [redacted]
- R19: [redacted]
- R20: [redacted]
- R21: [redacted]

Figure 3:1: Location plan showing representative receptors and the site boundary



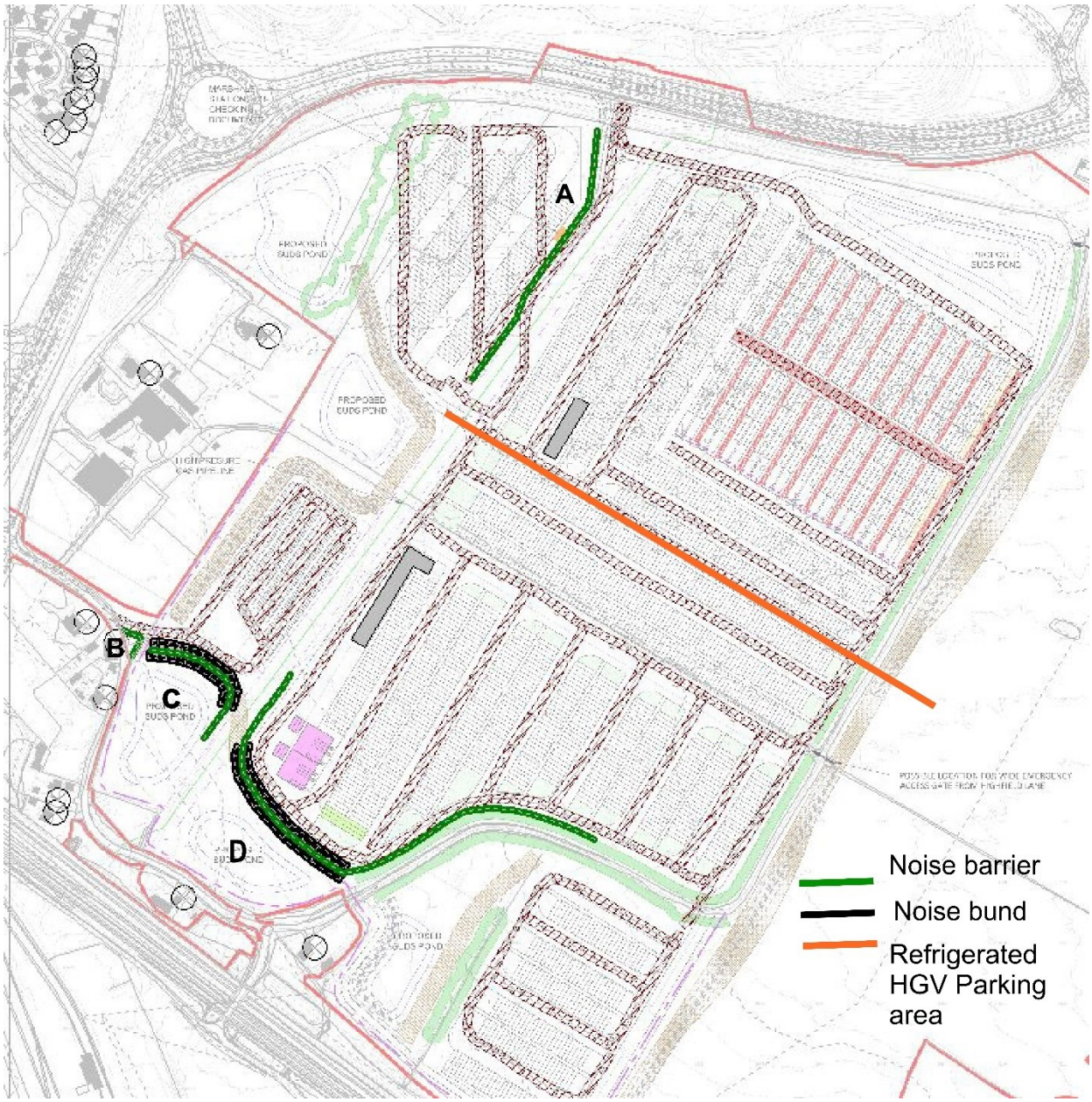
3.1.3.2 Mitigation

For the assessment of operational noise from the site it is assumed that noise mitigation is in place in positions around the site boundary as shown in Figure 3:2. This consists of a combination of bunds and timber reflective noise barriers including:

- A: 5m barrier
- B: 4.5m barrier
- C: 5m barrier represented by the green line only and a 2m bund + 3m barrier represented by the black + green line
- D: 5m barrier represented by the green line only and a 2m bund + 3m barrier represented by the black + green line

Furthermore during the disruption scenario, it is assumed that all refrigerated vehicles (assumed at 20% capacity of the site) are located in the northern half of the site, to the north of the orange line marked in Figure 2, if electric hook ups are not provided.

Figure 3:2: A plan of the mitigation assumed in place for the operational noise assessment



4 Baseline conditions

4.1 Overview

The assessment has been carried out as a desktop study. Baseline noise conditions have been predicted at receptors within the study area using Cadna and were based on traffic volumes forecasted for 2021.

The available data shows that the study area is subject to noise from the nearby M20 motorway, and adjacent A2070. The site is also subject to railway noise from the channel tunnel line to the south of the site.

5 Assessment of likely significant effects

5.1 Potential impacts

The scheme has the potential to give rise to temporary noise impacts in the daytime and night-time.

Potential impacts that may arise from the operation of the scheme are predominantly due to increases in road traffic noise from HGVs and staff cars using access roads and noise from HGVs and staff cars on the site.

5.2 Road Traffic Noise

5.2.1 Disruption Scenario

Tables 5.1 and 5.2 below set out a summary of the temporary changes in noise levels from road traffic for each property within the study area for the disruption scenario, grouped into noise change bands during the daytime and night-time respectively.

Table 5.1: Summary of operational road traffic noise changes – daytime disruption

Change in noise level			Number of dwellings	Number of other sensitive receptors
Increase in noise level, dB LA10,18h	Negligible	0.1-0.9	1628	128
	Minor	1.0-2.9	18	1
	Moderate	3.0-4.9	0	0
	Major	5.0+	0	0
No change		0	56	16
Decrease in noise level, dB LA10,18h	Negligible	0.1-0.9	89	61
	Minor	1.0-2.9	1	0
	Moderate	3.0-4.9	0	0
	Major	5.0+	0	0
Total			1792	206

From a comparison of increases in Table 5.1 with impact definitions in Section 3.1.2.3 and significance criteria in Section 3.1.2.6, it can be seen that the temporary daytime noise increases from road traffic as a result of the scheme are negligible or minor, meaning that the effects are not considered to be significant in the disruption scenario.

Table 5.2: Summary of operational road traffic noise changes - night-time disruption

Change in noise level			Number of dwellings
Increase in noise level, dB $L_{night,outside}$	Negligible	0.1-0.9	1069
	Minor	1.0-2.9	1
	Moderate	3.0-4.9	0
	Major	5.0+	0
No change		0	56
Decrease in noise level, dB $L_{night,outside}$	Negligible	0.1-0.9	656
	Minor	1.0-2.9	10
	Moderate	3.0-4.9	0
	Major	5.0+	0
Total			1792

From a comparison of increases in Table 5.2 with impact definitions in Section 3.1.2.3 and significance criteria in Section 3.1.2.6, it can be seen that the temporary night-time noise increases as a result of the scheme are negligible or minor, meaning that the effects are not considered to be significant in the disruption scenario.

5.2.2 Non-disruption Scenario

Tables 5.3 and 5.4 below set out a summary of the changes in noise levels from road traffic for each property within the study area for the inbound scenario, grouped into noise change bands during the daytime and night-time respectively.

Table 5.3: Summary of operational road traffic noise changes – daytime non-disruption

Change in noise level			Number of dwellings	Number of other sensitive receptors
Increase in noise level, dB LA10,18h	Negligible	0.1-0.9	1524	173
	Minor	1.0-2.9	220	18
	Moderate	3.0-4.9	0	0
	Major	5.0+	0	0
No change		0	45	13
Decrease in noise level, dB LA10,18h	Negligible	0.1-0.9	3	2
	Minor	1.0-2.9	0	0
	Moderate	3.0-4.9	0	0
	Major	5.0+	0	0
Total			1792	206

It can be seen from Table 5.3 that for all receptors, the daytime noise increases from road traffic as a result of the scheme are negligible or minor. Of all the dwellings with an increase in noise, 221 have do-something noise levels above the SOAEL level of 68dB and all of these receptors experience a noise increase of less than 1dB. The effects at these receptors are therefore not considered to be significant.

Table 5.4: Summary of operational road traffic noise changes - night-time non-disruption

Change in noise level			Number of dwellings
Increase in noise level, dB $L_{night,outside}$	Negligible	0.1-0.9	1668
	Minor	1.0-2.9	1
	Moderate	3.0-4.9	0
	Major	5.0+	0
No change		0	45
Decrease in noise level, dB $L_{night,outside}$	Negligible	0.1-0.9	78
	Minor	1.0-2.9	0
	Moderate	3.0-4.9	0
	Major	5.0+	0
Total			1792

From a comparison of increases in Table 5.4 with impact definitions in Section 3.1.2.3 and significance criteria in Section 3.1.2.6, it can be seen that at all receptors the night-time noise increases from road traffic as a result of the scheme are negligible or minor. For the receptor that experience a minor increase in noise level, the do-something noise level is below the SOAEL level of 55dB and are therefore is not considered to be significant.

5.3 Noise from the site

5.3.1 Disruption scenario

For selected receptors around the site Table 5.5 shows the approximate baseline noise level and predicted noise level including the site for the daytime disruption scenario which was extracted from the noise model based on baseline road traffic noise in the area. The table then shows if the criteria for a significant adverse effect are likely to be exceeded, that is, the total noise with the scheme (estimated current ambient plus site noise) exceeds the estimated current ambient noise by 5dB or more and site noise exceeds site SOAEL. As can be seen, noise from the site is not expected to cause any significant effects at the closest receptors during the daytime.

Table 5.5: Noise from the site, selected representative receptors, disruption, daytime

Receptor	$L_{Aeq,16hour}$ without scheme, dB	$L_{Aeq,16hour}$ with scheme, dB	$L_{Aeq,16hour}$ change, dB	Significance
R1	62.1	63.1	1.0	Not significant
R2	58.9	61.6	2.7	Not significant
R3	62.0	62.3	0.3	Not significant
R4	56.3	58.0	1.7	Not significant
R5	53.4	55.1	1.7	Not significant
R6	50.9	54.2	3.3	Not significant
R7	54.0	55.2	1.2	Not significant
R8	53.7	55.2	1.5	Not significant
R9	50.3	54.3	4.0	Not significant
R10	52.4	55.2	2.8	Not significant
R11	51.4	54.1	2.7	Not significant
R12	62.3	62.8	0.5	Not significant
R13	58.7	59.2	0.5	Not significant
R14	60.1	60.5	0.4	Not significant

Receptor	$L_{Aeq,16hour}$ without scheme, dB	$L_{Aeq,16hour}$ with scheme, dB	$L_{Aeq,16hour}$ change, dB	Significance
R15	58.8	59.6	0.8	Not significant
R16	57.7	58.3	0.6	Not significant
R17	58.4	58.7	0.3	Not significant
R18	60.5	60.8	0.3	Not significant
R19	60.2	60.7	0.5	Not significant
R20	62.4	63.3	0.9	Not significant
R21	61.6	62.2	0.6	Not significant

Table 5.6 is similar to Table 5.5 but for the night-time in lieu of the daytime. As can be seen, noise from the site is not expected to cause any significant effects at the closest receptors during the night-time.

Table 5.6: Noise from the site, selected representative receptors, disruption, night-time

Receptor	$L_{night,outside}$ without scheme, dB	$L_{night,outside}$ with scheme, dB	$L_{night,outside}$ change, dB	Significance
R1	57.5	59.2	1.7	Not significant
R2	53.9	57.9	4.0	Not significant
R3	55.4	56.4	1.0	Not significant
R4	50.3	53.6	3.3	Not significant
R5	48.5	52.3	3.8	Not significant
R6	47.0	51.1	4.1	Not significant
R7	48.5	50.4	1.9	Not significant
R8	47.9	50.4	2.5	Not significant
R9	46.7	51.5	4.8	Not significant
R10	48.0	51.6	3.6	Not significant
R11	46.9	50.2	3.3	Not significant
R12	59.8	60.2	0.4	Not significant
R13	52.4	53.8	1.4	Not significant
R14	54.0	55.3	1.3	Not significant
R15	52.5	54.5	2.0	Not significant
R16	50.9	52.8	1.9	Not significant
R17	53.4	54.3	0.9	Not significant
R18	54.7	55.5	0.8	Not significant
R19	54.2	55.6	1.4	Not significant
R20	57.7	59.1	1.4	Not significant
R21	57.2	58.4	1.2	Not significant

5.3.2 Non-disruption scenario

Table 5.7 shows the approximate baseline noise level for the daytime non-disruption scenario extracted from the noise model based on road traffic noise in the area. Noise from the site is not expected to cause any significant effects at the closest receptors during the daytime.

Table 5.7: Noise from the site, selected representative receptors, non-disruption, daytime

Receptor	$L_{Aeq,16hour}$ without scheme, dB	$L_{Aeq,16hour}$ with scheme, dB	$L_{Aeq,16hour}$ change, dB	Significance
R1	60.5	61.3	0.8	Not significant
R2	57.8	60.2	2.4	Not significant

Receptor	$L_{Aeq,16hour}$ without scheme, dB	$L_{Aeq,16hour}$ with scheme, dB	$L_{Aeq,16hour}$ change, dB	Significance
R3	61.1	61.2	0.1	Not significant
R4	57.2	58.5	1.3	Not significant
R5	55.1	56.2	1.1	Not significant
R6	51.1	54.0	2.9	Not significant
R7	53.6	54.8	1.2	Not significant
R8	53.5	54.9	1.4	Not significant
R9	53.5	55.7	2.2	Not significant
R10	51.8	54.8	3.0	Not significant
R11	50.9	53.0	2.1	Not significant
R12	62.7	63.0	0.3	Not significant
R13	57.5	57.9	0.4	Not significant
R14	59.1	59.4	0.3	Not significant
R15	57.5	58.0	0.5	Not significant
R16	57.5	57.9	0.4	Not significant
R17	57.9	58.1	0.2	Not significant
R18	59.5	59.7	0.2	Not significant
R19	59.1	59.4	0.3	Not significant
R20	61.2	61.9	0.7	Not significant
R21	60.8	61.2	0.4	Not significant

Table 5.8 is similar to Table 5.7 but for the night-time in lieu of the daytime. As can be seen, noise from the site is not expected to cause any significant effects at the closest receptors during the night-time.

Table 5.8: Noise from the site, selected representative receptors, non-disruption, night-time

Receptor	$L_{night,outside}$ without scheme, dB	$L_{night,outside}$ with scheme, dB	$L_{night,outside}$ change, dB	Significance
R1	58.1	58.9	0.8	Not significant
R2	54.1	56.6	2.5	Not significant
R3	55.0	55.5	0.5	Not significant
R4	51.3	53.7	2.4	Not significant
R5	50.0	52.6	2.6	Not significant
R6	47.9	51.0	3.1	Not significant
R7	48.7	50.4	1.7	Not significant
R8	48.2	50.3	2.1	Not significant
R9	48.2	52.0	3.8	Not significant
R10	48.2	51.8	3.6	Not significant
R11	47.1	49.6	2.5	Not significant
R12	60.5	60.7	0.2	Not significant
R13	52.0	52.8	0.8	Not significant
R14	53.7	54.3	0.6	Not significant
R15	51.7	52.8	1.1	Not significant
R16	51.7	52.5	0.8	Not significant
R17	53.9	54.2	0.3	Not significant
R18	54.7	55.1	0.4	Not significant
R19	54.1	54.7	0.6	Not significant

Receptor	$L_{night,outside}$ without scheme, dB	$L_{night,outside}$ with scheme, dB	$L_{night,outside}$ change, dB	Significance
R20	58.6	59.1	0.5	Not significant
R21	58.2	58.6	0.4	Not significant

5.4 Noise Important Areas

There are two noise important areas (NIAs) that could be affected by the scheme, one to the north west of the site along the A2070 to J10 (ref: r3_ID : 4509) containing approximately 50 properties, and a short stretch of the M20 near J10a (r3_ID:4507) containing two properties. Noise levels at both of these locations would increase as a result of the additional lorry movements due to the scheme.

5.4.1 Road Traffic Noise

For the disruption scenario during the night-time the increase would be in the order of 0dB to 0.5dB and in the daytime the increase would be 0dB to 1.2dB. The NIAs that experience a noise increase of greater than 1dB during the daytime do not have absolute noise levels greater than the SOAEL level and are not considered significant.

For the non-disruption scenario during the night-time the increase would be in the order of 0dB to 1.1dB and in the daytime the increase would be 0.8dB to 1.7dB. The NIAs that experience a noise increase of greater than 1dB do not have absolute noise levels greater than the SOAEL level and are not considered significant.

5.4.2 Noise from the site

In Tables 5.5 – 5.8 both NIA areas are represented by receptors R13 to R21. For both daytime assessments, the increase in noise levels due to the site is expected to be less than 1dB and at night-time the increase is expected to be up to 2.0dB for the disruption scenario and 1.2dB for the non-disruption scenario. Neither scenario results in significant effects during the daytime or night-time.

5.5 Cumulative Assessment

Noise from the site and from the public roads has been assessed separately above. Receptors subject to the noise from the lorries would, of course, be subject to noise from both sources simultaneously and there is therefore a need to consider how this may affect the assessment outcome as it is possible that for some receptors, while neither source alone leads to a significant adverse effect, the combination of both sources could do so.

There are no specific criteria for significance for the combined noise sources and professional judgement has therefore been used to consider what circumstances could lead to a cumulative significant adverse effect when neither the noise from the site nor the public road noise alone was significant. This is unlikely to arise for receptors which are very close to the site (for which the noise from the site dominates) or the public roads (for which the road traffic noise dominates). It is also unlikely to arise for receptors at large distances from both sources because the overall noise increase would not be significant. The assessment of cumulative effects has therefore considered receptors which fall outside these exclusion criteria.

Any cumulative significant adverse effect is more likely to arise at night-time than in the daytime because night-time noise effect levels are lower at night and baseline noise levels are lower at night. A qualitative assessment has been carried out for night-time noise on the closest receptors and no cumulative effects have been identified.

5.6 Mitigation

The scheme has included a number of mitigation measures as set out in paragraph 3.1.3.2, which balances the need to reduce noise levels from the site with other potential adverse effects, meeting the requirement of the NPSE to minimise noise impacts. No further physical mitigation has been proposed however the site operators should consider other mitigation actions as discussed below.

5.6.1 Additional mitigation options

Although the assessment shows that noise from the site is not expected to cause any significant effects, the site is not exempt from Statutory Nuisance provisions, and therefore the local authority could act in the event of a justified complaint.

The site Operational Management Plan should detail a procedure to handle complaints alongside other measures which may help to alleviate complaints. Measures could include:

- Engagement with the local authority
- A straightforward complaints handling procedure
- Noise monitoring on the site boundary

The site operator should consider ways to engage the community with the proposal and also consider mitigation methods. It is advised that the operators engage with the local authority to understand their opinion on the site. Opening and maintaining a dialogue with the local authority could give the operators insight into what is expected of them in relation to noise and could also help the local authority understand the need for the project and the restrictions of what is achievable. The local authority would likely have their own criteria on the difference between current background noise levels and the noise levels created using the site which is important for the operators to understand and aim for.

The implementation of a complaints handling procedure which is straightforward for complainants to use and quick for the operator to respond to may help to alleviate feelings of frustration from local residents. If complaints are dealt with directly and in a considerate manner, this may also help to reduce the negative perception of the site.

Noise monitoring can be used to collect data on operational activities coming from the site which could be analysed against complaints logs. For example, if a log of site operations was kept, this could be cross-referenced with the noise data and complaints occurrence to establish if certain activities were likely to trigger complaints. This could then be used to inform changes in the site operation plan. It should be noted that any noise data captured would include all ambient noise from the local area and separating site noise from local sources would be difficult. A tool like this could be used in discussions with the local authority to demonstrate the effectiveness of on-site management measures.

6 Conclusion

Considering the results presented in this assessment, for the disruption scenario any effects are considered to be temporary and are not predicted to cause any significant effects on the surrounding road network and or due to the site. The effects of the non-disruption scenario are also expected to be temporary as the site would be decommissioned after five years but has been assessed as if it were permanent. Receptors within a one-kilometre boundary of the site are not expected to experience any significant effects due to the scheme.

This assessment has assumed that mitigation is in place around the site boundary consisting of noise barriers and bunds for the duration of the operation of the site.

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Flood Risk Assessment and Drainage Strategy

November 2020

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