SIX:56

LAND TO THE WEST OF JUNCTION 20 OF THE M6 MOTORWAY AND JUNCTION 9 OF THE M56 MOTORWAY AND TO THE SOUTH OF GRAPPENHALL LANE AND CLIFF LANE, GRAPPENHALL, WARRINGTON.

055635-0160-0-ENV-RP-0
R03

5TH APRIL 2023

EXPERT NOISE REPORT

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FOR LANGTREE PROPERTY PARTNERS LLP

LOCAL PLANNING AUTHORITY – WARRINGTON BOROUGH COUNCIL: REFERENCE 2019/34799

PLANNING INSPECTORATE: REFERENCE APP/M0655/V/22/331187

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1. INTRODUCTION & REASONS FOR CALL IN

INTRODUCTION

1.1. This expert noise report is submitted to the inquiry on behalf of Langtree Property LLP in relation to noise and vibration issues associated with the called-in planning application for land to the west of junction 20 of the M6 motorway and junction 9 of the M56 motorway and to the south of Grappenhall Lane and Cliff Lane, Grappenhall, Warrington – known as SIX:56.

1.2. Langtree Property LLP and Panattoni has applied for outline planning permission with all matters reserved other than access for:

"*Construction of up to 287,909m2 (gross internal) of employment floor space (Use Class B8 and ancillary B1(a) offices), demolition of existing agricultural outbuildings and associated servicing and infrastructure, including car parking and vehicle and pedestrian circulation, alteration of existing access road into the site including works to the M6 junction 20 dumbbell roundabout and realignment of the existing A50 junction, noise mitigation, earthworks to create development platforms and bunds, landscaping including buffers, creation of drainage features, electrical substation, pumping station and ecological works*".

1.3. The Application Site is 98.09ha and includes land within the administrative boundaries of Warrington Borough Council and Cheshire East Council. 92.16ha of the site lies within the Borough of Warrington, with the remaining 5.93ha in Cheshire East.

1.4. Each of Cheshire East and Warrington Borough Councils has dealt with the planning application for the part of the proposed development that sits within its administrative boundary.

1.5. Both planning authorities granted planning permission for the elements of the scheme in their district and referred the decision to the Secretary of State.

1.6. The application was referred to the Secretary of State, who after initially having directed that the application should be determined by Warrington Borough Council, subsequently reconsidered matters and called the application in for his own determination by letter dated 22 November 2022. This call-in decision gives rise to a public inquiry, the subject of this expert report.

REASONS FOR CALL IN

1.7. The Secretary of State has stated that the primary issues in relation to the call-in are:

(a) the extent to which the Development is consistent with Green Belt Policies in the National Planning Policy Framework;

(b) the extent to which the Development is consistent with the Development Plan; and

(c) any other matters the Inspector considers relevant.

1.8. This report does not consider Greenbelt policy or the extent to which the Development is consistent with the Development Plan. Instead, the report provides evidence that the scheme complies with National and local plan policies and guidance regarding noise and vibration.

2. QUALIFICATIONS & PERSONAL STATEMENT

2.1. Qualifications and Experience

2.2. I am a technical director of Vanguardia Limited, a company whose services include specialising in the field of acoustics, noise, and vibration. I was awarded the Chartered Institute of Environmental Health's Diploma in 1986 and a Master of Science (MSc) in Environmental Acoustics from the Southbank University in 1999; and have over 30 years of experience in the field of acoustics having worked as an Environmental Health Officer in London from 1986 until 2002, and as an acoustic consultant in the private sector since then. I am a full member of the Institute of Acoustics (IoA) and the Chartered Institute of Environmental Health Officers (CIEH), and I am a member of the IoA Environmental Noise Committee. I have a wide range of experience in all technical aspects related to acoustics and have managed numerous projects as well as presenting evidence at planning committees and appeals, legal proceedings, public inquiries and House of Commons and Scottish Parliament Scrutiny Committees. I have presented technical papers and written articles nationally and internationally on noise and acoustics covering a wide range of aspects. My overall project experience includes being the project director or manager and participant in Environmental Impact Assessments for multi-modal freight interchange, logistics depots, airports, road transport, guided transport (trams and buses), light and heavy railway projects, renewable energy, hospital development, mixed developments, harbour developments, leisure developments, sport stadiums, commercial and industrial developments, residential schemes and schools. I was the noise and vibration expert witness for Parkside Regeneration LLP in relation to noise and vibration issues associated with the called-in planning application for the former Parkside colliery, Phase 1, Winwick Road, Newton Le Willows. This scheme with similar noise and vibration issues, assessment methods and outcomes to the Six56 proposals, was found to have acceptable noise and vibration effects and was recommended by the inspector and approved by the

Secretary of State with conditions to ensure noise and vibration impacts were suitably controlled.

2.3. I have visited the vicinity of the proposed scheme and viewed the site and the relationship with adjoining and nearby noise and vibration sensitive properties from publicly accessible areas around the scheme.

2.4. **Personal Statement**

I, Dani Fiumicelli declare that:

2.4.1. I understand that my duty in providing this expert report is to help the Inquiry, and that this duty overrides any obligation to the party by whom I am engaged or the person who has paid or is liable to pay me or my employers. I confirm that I have complied and will continue to comply with my duty.

2.4.2. I confirm that insofar as the facts stated in this report are within my own knowledge I have made clear which they are, and I believe them to be true, and that the opinions I have expressed represent my true and complete professional opinion.

2.4.3. I have endeavoured to include in my report those matters, of which I have knowledge or which I have been made aware, that might adversely affect the validity of my opinion. I have clearly stated any qualifications to my opinion.

2.4.4. I have shown the sources of all information I have used.

2.4.5. I have not without forming an independent view included or excluded anything which has been suggested to me by others, including my instructing clients and their lawyers.

2.4.6. I will notify those instructing me immediately and confirm in writing if for any reason my report requires any correction or qualification.

3. PLANNING NOISE POLICY AND GUIDANCE

NATIONAL NOISE PLANNING POLICY AND GUIDANCE

Noise Policy Statement for England (NPSE)

3.1. NPSE seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The statement applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

3.2. The statement sets out the long-term vision of the Government's noise policy, which is to "promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development".

3.3. The policy promotes the effective management and control of noise, within the context of Government policy on sustainable development and thereby aims to:

- 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 improvements of health and quality of life.

3.4. The statement adopts established concepts from toxicology that are currently being applied to noise impacts. The concept details noise levels, at which the effects of an exposure may be classified into a specific category. The classification categories as detailed within the NPSE are as follows:

- No Observed Effect Level (NOEL) - the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;

- Lowest Observable Adverse Effect Level (LOAEL) - the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) - the level above which significant adverse effects on health and quality of life occur.

3.5. It is recognised that SOAEL does not have a single objective noise-based level that is applicable to all sources of noise in all situations and therefore the SOAEL is likely to be different for different sources, receptors and at different times of the day.

3.6. No guidance has been issued at the time of writing to identify the noise levels that represent SOAEL and LOAEL for typical noise sources and receptors.

National Planning Policy Framework (NPPF)

3.7. Paragraph 174 advises that:

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

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;"

3.8. In addition, paragraph 185 of the NPPF advises that:

"*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".

National Planning Practice Guidance (NPPG)

3.9. The Planning Practice Guidance (PPG) is issued by the Department of Communities and Local Government and at Paragraph: 005 Reference ID: 30-005-20140306 expands on the use of Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL) as follows:

LOAEL - "*Noise can be heard and causes small changes in behaviour and/or attitude, 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 perceived change in the quality of life*".

3.10. Thus, the PPG is explicit in saying that although noise can be heard, the effects have been mitigated and minimised as far as is practicable and this is the lower limit to what policy requires i.e. there is no policy imperative to achieve Noise Observed Effect Level (NOEL) i.e. for noise to be inaudible.

3.11. The PPG goes on to describe the effects of SOAEL as follows:

"*If the exposure is above this level the planning process should be used to avoid this effect occurring, by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused.*"

3.12. In the same section the PPG also goes on to identify unacceptable noise exposure as:

"*At the highest extreme, noise exposure would cause extensive and sustained changes in behaviour without an ability to mitigate the effect of noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be prevented from occurring.*"

3.13. At Paragraph: 002 Reference ID: 30-002-20140306 the NPPG states that noise can override other planning considerations; with the qualification that: "*but neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of proposed development.*"

3.14. The NPPG at Paragraph: 003 Reference ID: 30-003-20140306 advises that when dealing with noise aspects of planning applications LPAs should "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".

WARRINGTON COUNCIL ADOPTED LOCAL PLAN (2015)

3.15. The Warrington Local Plan considers the noise associated with freight transport at policy MP% which states:

Policy MP 5

Freight Transport

"*Proposals for freight related development will be supported where they achieve a reduction in road traffic kilometres through their location and/or where they reduce the impact of freight traffic on local or inappropriate routes.*

In addition to the provisions set out in Policy CS11 Strategic Opportunity – Port Warrington, the Council will encourage development which generates significant movement of freight to locate on sites which are served by rail and / or water or where such facilities can be provided as part of the development. Where such opportunities are not available, such development should be located where there is good access to the Primary Road Network.

Proposals should demonstrate that they would not have an adverse impact in terms of;

- *heavy goods vehicles using local or residential roads or congested central areas;*
- *unacceptable problems of noise, vibration, lighting, emissions, or other pollution for neighbouring occupiers.*"

POLICY CONCLUSIONS

3.16. In summary, National and local planning policy and guidance require that:

- The worst, unacceptable, effects of noise on its own that remain despite mitigation, must be prevented; and,
- That the lesser significant effects of noise should be avoided; and,

- The least effects of adverse impacts should be mitigated and minimised;
- Residential amenity and quality of life shall be protected.

4. HOW THE NOISE AND VIBRATION IMPACTS OF THE SCHEME ARE ASSESSED

4.1. The noise and vibration assessment for the scheme is presented in the Addendum to Environmental Statement Part 2 – Noise and Vibration Technical Paper 7 (CD 4.8). This section of my report provides information about relevant acoustic factors and describes how the noise and vibration impacts of the scheme have been assessed in the ES Addendum.

NOISE METRICS

4.2. Noise levels and the frequency content of sound are rarely ever steady and typically change from moment to moment, minute to minute, hour to hour and day to day. We only notice these variations when the difference becomes meaningful in the context of the circumstances, but a sound level meter will detect these changes. Consequently, the science of acoustics has developed a range of noise metrics or indices to try and articulate the complex time and frequency varying nature of noise in more easily understood and readily used single figure values. To do this the ideal noise metric would have at least the following attributes:

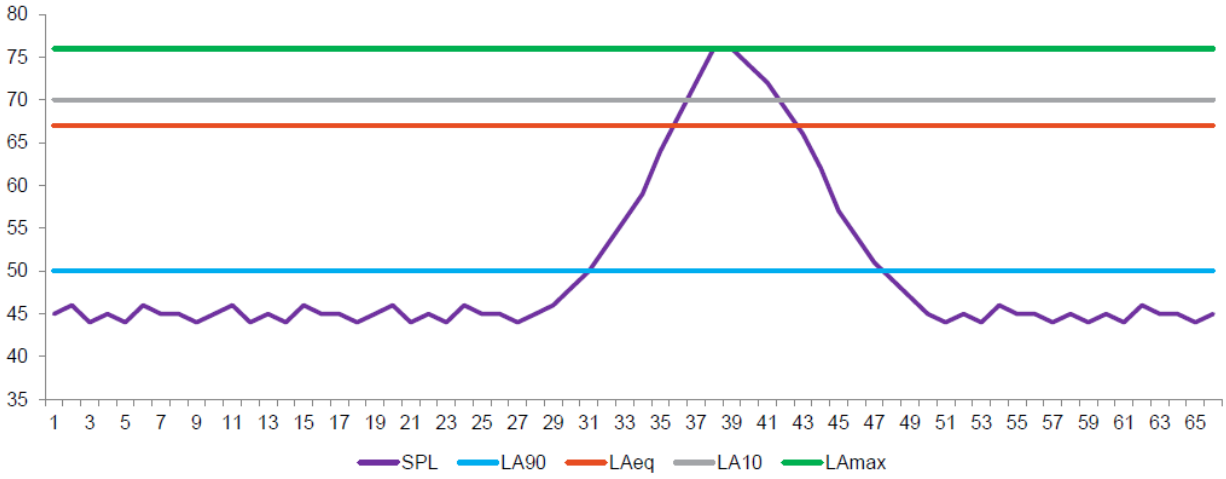
- Take account of the absolute or peak noise level;
- Allow for the duration of the noise;
- Allow for all the acoustic energy and its variation during the measurement period.
- Include the degree to which the noise exceeds the background and ambient noise;
- Appreciate how often the noise occurs;
- Correlate well with the different effects of the noise e.g. annoyance, sleep and activity disturbance, speech interference etc;
- Be easily measured;

- Be capable of modelling/prediction;
- Be readily understood by non-specialists.

4.3. Unfortunately, no single noise index has yet been developed that can meet all the above requirements. Consequently, it is common that different noise metrics are used to describe varying noise conditions, assorted noise sources and the multiple effects of noise.

4.4. The figure below shows how four different noise metrics can be applied to the sound pressure level of a single noise event over time e.g. a vehicle driving by a fixed listening point.

FIGURE 1: SOUND PRESSURE LEVEL PROFILE OF A VEHICLE DRIVE BY ASSESSED WITH DIFFERENT NOISE METRICS



4.5. The different noise metrics shown in the figure above describe the highest Sound Pressure Level (SPL) during the measurement (LAmax), the noise level exceeded for 10 percent of the duration of the measurement (LA10), the noise level of a steady sound with the same overall noise energy equivalent to the varying noise energy during the measurement (LAeq) and the noise level exceeded for 90 percent of the duration of the measurement (LA90).

4.6. The glossary of this report provides more information on noise metrics.

BASELINE

4.7. Understanding the baseline noise conditions at noise sensitive receptors is important as the impacts of the scheme can be assessed by reference to these and comparison with the predicted noise from the scheme.

4.8. The Site sits predominantly within the jurisdiction of Warrington Borough Council and, due to the size of the Application Site, the prevailing noise climate is affected by several sources. These include:

- Ambient noise levels to the north and northwest portions of the site are largely driven by road traffic on Grappenhall Lane.
- Ambient noise levels in the northeast corner of the site are largely driven by road traffic on Cliff Lane.
- Ambient noise levels in the southern portion of the site are dominated by road traffic on the M6 and M56.
- Background noise levels across the site are generally dominated by distant road traffic noise from the M6 to the east and the M56 to the south.

4.9. Noise sensitive receptors that I consider are representative of all those in the vicinity of the proposed scheme, have been identified at the locations listed and shown below:

A. GRAPPENHALL LODGE
B. DWELLINGS ON CARTRIDGE LANE:
- Southott
- Hunters Lodge and Hunters Croft
- Manors Farm with The Old Stables
- Croftside

- The Bungalow
- 5 Cartridge Lane
- 7 Cartridge Lane
- Cliff Lane Farm, Cartridge Lane*

C. BRADLEY VIEW COTTAGE

D. HOWSHOOTS FARM

E. TAN HOUSE FARM

F. BARLEYCASTLE FARM

G. BRADLEY HALL COTTAGES

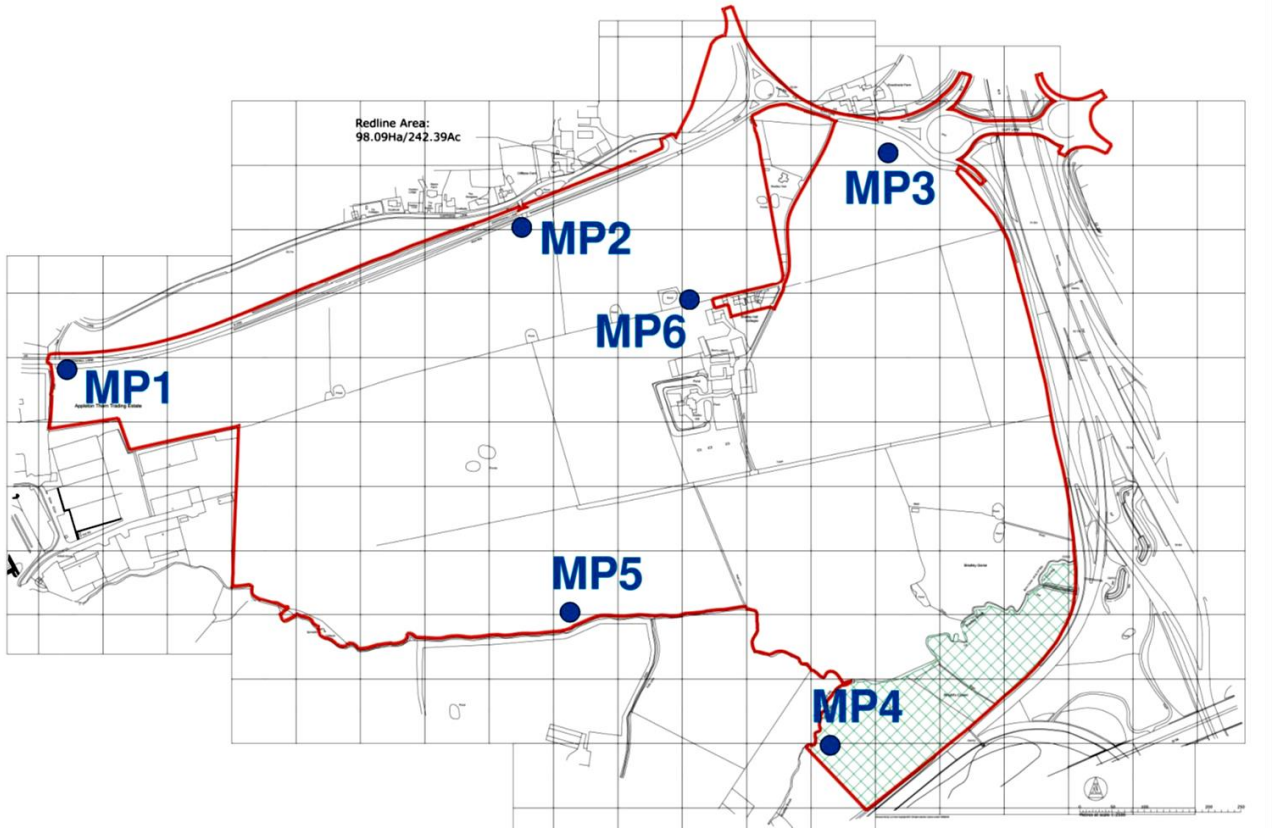
H. BEEHIVE FARM

I. BOOTH'S FARM

FIGURE 2: DISTRIBUTION AND LOCATION OF NOISE SENSITIVE RECEPTORS NEAR TO THE PROPOSED SCHEME (THE NUMBERS RELATE TO RECEPTORS LISTED ABOVE)

4.10. Baseline noise surveys have been undertaken at 6 locations places representative of the distribution of noise sensitive receptors around the site as shown in the figure below:

FIGURE 3: BASELINE NOISE SURVEY LOCATIONS (MP) REPRESENTATIVE OF NEARBY NOISE SENSITIVE RECEPTORS



- **MP1** - North-west corner of the site, approximately 3m from the boundary hedge to Grappenhall Lane. Assumed to be representative of the prevailing background noise climate at the Grapppenhall Lodge, approximately 45m away.
- **MP2** - North boundary of the site, approximately 3m from the boundary hedge to Grappenhall Lane. Assumed to be representative* of the prevailing background noise climate at the dwellings on Cartridge Lane, approximately 40m away.
- **MP3** - North-east corner of the site, approximately 3m from the boundary hedge to Cliff Lane. Assumed to be representative of the prevailing background noise climate at Howshoots Farm approximately 16m away.
- **MP4** - South-east corner of the site, on the site boundary. Assumed to be representative of the prevailing background noise climate at Tan House Farm on Barleycastle Lane, approximately 150m away.
- **MP5** - On the south boundary of the site. Assumed to be representative of the prevailing background noise climate at Barleycastle Farm on Barleycastle Lane, approximately 150m away. Near the eastern pond in the centre of the site, on the boundary to Bradley View Cottages.
- **MP6 -** Near the eastern pond in the centre of the site, on the boundary to Bradley View Cottages.

4.11. There are fewer baseline noise monitoring locations than identified noise sensitive receptors because it is not practical to measure at every individual property; nor is it necessary, as groups of receptors affected by the same dominant noise source will be subject to the approximately the same baseline noise levels.

4.12. Table 7.13 in the Addendum to the Environmental Statement Pt 2 - Noise and Vibration Technical Paper 7 (CD 4.8) provides a summary of the baseline noise levels measured at each of the locations described above.

4.13. I am therefore confident that the baseline noise levels reported in the ES and Addendum, used as part of the assessment of effects, appropriately reflect representative noise conditions at the noise sensitive receptors around the site.

NOISE ASSESSMENT

4.14. Noise assessment methods fall in three broad categories as shown in the table below.

TABLE 1: - TYPES OF NOISE ASSESSMENT

Type of Noise Assessment		
Change Comparisons - Relative	***Absolute/Fixed***	***Context comparisons - Relative***
Use the change in a noise index from before and then after noise control action or development takes place e.g. DMRB for road trafic noise.	Compare the noise level of the source in question with Benchmarks / thresholds of effects e.g. BS 5228 for construction noise.	Compare the specific sound levels, corrected for elements of the nature and character of the noise that aggravate its impact, arising after noise control action or development against appropriate indicators of the pre-existing situation before the noise control action or development takes place e.g. BS 4142 for commercial and industrial noise.

4.15. For a large scheme such as this it is common than at least two, if not all three, types of noise assessment will feature in the overall appraisal of the noise effects of the scheme. With each type of assessment used to evaluate noise from a particular phase or part of the scheme.

4.16. There follows a brief description of the noise assessment methods used for this project.

THE DMRB - CHANGE COMPARISON

4.17. The assessment of highway construction and operational traffic noise and vibration impacts has been undertaken in accordance with the principles of the Design Manual for Roads and Bridges (Highways England) Volume 11, Section 3, Part 7 Detailed Assessment methodology (henceforth referred to as HD 213/11 (The Highways Agency et al, 2011 – CD 4.45). Road traffic noise levels have also been predicted in accordance with the guidance contained in the Department of Transport, Welsh Office publication Calculation of Road Traffic Noise, 1988 (CRTN) (Department of Transport, 1988) and, where appropriate, supplemented with the additional guidance contained in Annex 4 of HD 213/11.

4.18. The Study Area is then defined by the DMRB as being the area that extends 600m from affected routes within the study area, where an affected route is defined as those routes predicted to experience a 1 dB or more change in noise levels because of the proposed scheme compared to the Baseline Year.

4.19. Roads where a change of at least 1 dB are predicted to occur can be determined by considering changes in traffic flow; where a 25% increase equates to an increase in noise of 1dB and a 20% decrease in traffic flow equates to a 1dB decrease in noise level.

4.20. Road traffic noise can be separated into two components. The first is generated by the engine, exhaust system and transmission and is the dominant noise source when traffic is not freely flowing. The second component of road traffic noise is generated through the interaction of vehicles tyres with the road surface. This is the dominant noise source under free flow traffic conditions at moderate to high road speeds and contributes a significant proportion of higher frequency noise.

4.21. The sound from a stream of traffic at a reception point is an aggregation of noise from each of a number of vehicles at various distances. The factors that influence the noise level of traffic accounted for in the CRTN methodology include:

- the volume of traffic,
- vehicle speed,
- the composition of the traffic i.e. the percentage of heavy vehicles – for the calculation of noise these are vehicles of more than 3.5 tonnes unladen weight,
- the gradient; and,
- the surface characteristics of the carriageway.

4.22. In addition to the variables listed above, the propagation of the sound from the source to the receiver needs to be considered. The factors that influence the propagation of noise from traffic accounted for in the CRTN methodology include:

- the distance from the receptor to the source,
- the topography,
- the sound absorbing characteristics of the ground between the source and receptor,
- the presence of any screening or barrier impacts,
- reflections; and,
- wind strength and direction.

4.23. To assess the potential noise impacts for the DMRB Detailed Assessment, it is necessary to compare the following scenarios for both the day and night-time periods:

- Do Minimum (no scheme) scenario in the Baseline Year (2020 DM) versus the Do Something (with Scheme) scenario in the Future Year (2020 DM);

  and,

- Do Minimum scenario in the future assessment year (2030 DM) versus the Do Something Scenario in the in the future assessment year (2030 DS.

4.24. To assess the potential noise impacts of the scheme, various scenarios were compared. The Do Minimum (DM) Scenario refers to the road network as it would exist without the proposed new road scheme, and the Do Something (DS) scenario refers to the road network with the proposed scheme in place. The scenarios assessed in the ES are in accordance with the DMRB detailed assessment methodology.

4.25. When considering two sounds with similar acoustic properties a change of more than 3dB is regarded as being just perceptible to the human ear. It is generally accepted that changes in road traffic noise levels of up to 3dB are not widely perceptible, confirmed in Department for Transport document Transport Analysis Guidance Unit 3.3.2 (Department of Transport, 2007).

"For freely flowing traffic, a difference of about 3dB in noise level is required before there is a statistically significant change in the average assessment of nuisance. The assessment of nuisance however could still be affected even if there is only a 1dB change in the noise level if the change is associated with changes in the view of traffic, or if the change occurs suddenly."

This highlights that people are more sensitive to abrupt changes in traffic noise associated with new road schemes than would be predicted from the steady state evidence e.g. growth of traffic on an existing road.

4.26. In the period following a change in traffic flow, people may find benefits or dis-benefits when the noise changes are as small as 1dB. The magnitude of traffic noise impacts from a road project should be classified into levels of impact to assist with the interpretation of the road project. The DMRB states:

'*A change in road traffic noise of 1dB in the short term (e.g. when a project is opened) is the smallest that is considered perceptible. In the long term a 3dB changes is considered perceptible. The magnitude of impact should, therefore be considered different in the short term and long term.*'

4.27. Consequently, for this scheme short term changes in road traffic noise of less than 1 decibel have been assessed as negligible.

4.28. The magnitude of noise impacts is assessed by comparing the increase or decrease in noise levels between scenarios described in paragraph 5.11 of the ES addendum. The magnitude of noise impacts associated with road traffic noise is defined in DMRB HD213/11 (Table 3.1 and 3.1); Changes in noise level can either be increases or decreases and are assessed in both the short-term and the long-term.

4.29. The table below shows the adopted magnitude of noise impacts due to changes in road traffic noise in the short term from the DRMB, used in this case for the assessment of construction traffic noise impacts

TABLE 2: DMRB MAGNITUDE OF NOISE IMPACTS DUE TO CHANGES IN ROAD TRAFFIC NOISE (SHORT TERM)

Noise Level Change dB LA10,18h	Magnitude of Impact
No change	No change
0.1 – 0.9	Negligible
1 – 2.9	Minor
3 – 4.9	Moderate
5 +	Major

4.30. The scheme uses the DMRB Magnitude of Noise Impacts due to Changes in Road Traffic Noise (Long term) criterion with additional thresholds for

assessment of operational road traffic noise impacts as shown in the table below:

TABLE 3: SCHEME MAGNITUDE OF NOISE IMPACTS DUE TO CHANGES IN ROAD TRAFFIC NOISE (LONG TERM)

Noise Level Change dB LA10,18h	Magnitude of Impact
No change	No change
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate
10 - 14.9	High
15 or more	Substantial

4.31. Road traffic noise levels have been calculated using noise prediction software implementing the CRTN methodology and the additional advice provided in HD 213/11, to predict the LA10,18hr traffic noise level at receptor locations.

4.32. Noise models have been built for the Do Minimum and Do Something Scenarios as described in the ES addendum.

4.33. Mitigation, except for any existing earthworks, has not been included in the calculations. All calculations are based on the predicted traffic flows and associated variables as supplied by the Transportation adviser for the scheme in the form of 18 Hour Annual Average Weekday Traffic (AAWT) for the baseline year, and future years respectively. Additional input data included annual average speeds (km/hr) and percentages of heavy vehicles.

4.34. The changes in predicted traffic noise levels between the scenarios described in the ES Addendum with and without the scheme have then been determined and the significance of the change assessed against the criteria in table 3 above.

4.35. The DMRB methodology focuses on the potential change in the LA,10 noise index over the period 0600 to 2400 hrs. This is a standard approach adopted for many 1000s of schemes across the UK over several decades. Although it does not consider the whole of the night period from 2300 to 0700 hrs it

includes the sensitive times of the night between around 2200 hrs and midnight and 0600 and 0700 hrs when most people are preparing to go to sleep or in the most noise sensitive lighter phases of sleep at the start and end of the night time period. In addition, traffic data for the scheme indicates that peak vehicle movements associated with the scheme will be in the morning after 0700 hrs and in the afternoon and early evening when existing traffic flows are at their highest and therefore any change in traffic noise will be minimal. Notwithstanding this the existing road network is currently and will continue to be used at night, albeit existing traffic flows are reduced compared to during the day and evening. The traffic analysis for the scheme does not identify substantial vehicle movements at night or an atypical pattern to traffic movements. At night HGV movements are very much reduced compared to the day and evening and will tend to use the major arterial routes and motorways which have reduced but still significant traffic flow at night so that any changes in overall noise levels at night due to the scheme are unlikely to be negligible to small and have no significant adverse effects.

4.36. I regard the above approach to the assessment of construction and operational traffic noise and vibration impacts as appropriate, as it is based on relevant guidance and standards; and reflects similar methodologies applied to many analogous schemes that have been approved and constructed.

BS 5228 CONSTRUCTION NOISE ASSESSMENT – ABSOLUTE/FIXED

4.37. BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014 (CD 4.46) are statutorily approved codes of practice covering noise and vibration respectively from construction and demolition activity and open sites.

4.38. The standard provides a data base of noise source levels, methods for calculating noise from construction and demolition activity and open sites, suggested assessment methods and recommended mitigation measures.

4.39. In this case the advice of the standard has been followed to predict noise from construction activities and a haul road on the site and these levels have been assessed against absolute/fixed noise level criteria derived from the suggested means of assessing the significance of noise in BS 5228-1:2009+A1:2014 Annex E, as shown in the table below:

TABLE 4: CONSTRUCTION NOISE MAGNITUDE CRITERIA

Day time (0800 to 1600 weekday and 0800 to 1300 Saturdays) dB LAeq,T	**Magnitude of Impact**
10 dBA below background	Neutral
< 65	Negligible
65 - 70	Minor
70 – 75	Moderate
>75 but for less than 10 days in any 15 days or 40 days in any 6 months	High
>75 but for more than 10 days in any 15 days or 40 days in any 6 months	Substantial

4.40. Similarly, construction vibration magnitude of impact criteria have been derived from BS 5228- 2:2009+A1:2014, as follows:

TABLE 5: CONSTRUCTION VIBRATION MAGNITUDE CRITERIA

Peak Particle Velocity (PPV mm/sec)	**Magnitude of Impact**
0	Neutral
0.14 mm/s	Negligible
0.3 mm/s	Minor
1.0 mm/s	Moderate
10 mm/s	High
15 mm/s	Substantial

4.41. I consider the above approach to the assessment of construction noise and vibration impacts is appropriate as it is based on relevant guidance and standards; and reflects similar methodologies applied to many analogous schemes that have been approved and completed.

BS 4142 CONTEXT COMPARISON - RELATIVE

4.42. Operational noise from within the scheme e.g. noise from plant and machinery and vehicle movements has been assessed using the principles of the methodology of BS 4142:2014 - Methods for rating and assessing industrial and commercial sound (CD 4.47).

4.43. The assessment method in BS 4142 is based on the difference between the measured 'background sound level' without the influence of any industrial noise source, and the 'rating level' of the industrial source, at the receiver location.

4.44. BS4142 states: "*The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs*". An estimation of the impact of the specific sound can be obtained by the difference of the rating sound level and the background sound level and considering the following:

"Typically, the greater this difference, the greater the magnitude of the impact."

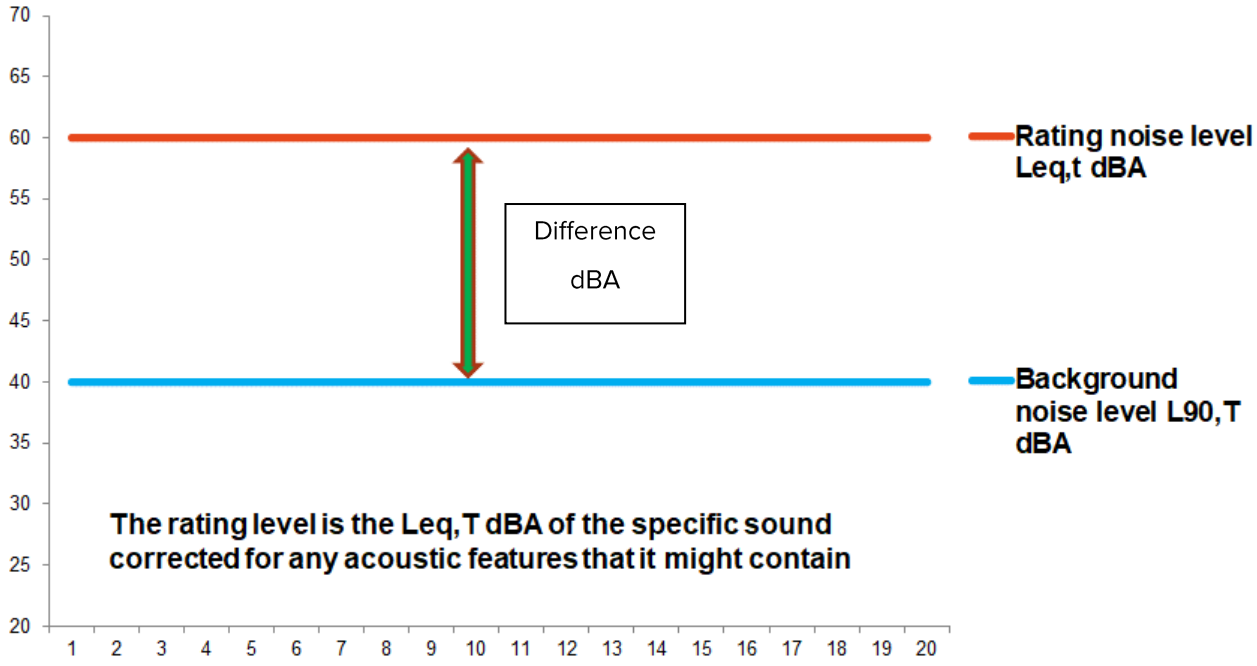
"A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context."

"A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context."

"The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact, depending on the context."

4.45. The principles of BS 4142 are shown in the figure below

FIGURE 4: PRINCIPLES OF BS 4142



4.46. The noise from the operation of the scheme has been predicted using noise modelling software implementing the calculation of propagation of noise methodology from ISO 9613: Attenuation of sound during propagation outdoors — Part 2: General method of calculation (CD 4.48).

4.47. ISO 9613 specifies an engineering method for calculating the attenuation of sound during propagation outdoors to predict the levels of environmental noise at a distance from a variety of sources. The method predicts the equivalent continuous A-weighted sound pressure level (as described in parts 1 to 3 of ISO 1996) under meteorological conditions favourable to propagation.

4.48. These meteorological conditions are for downwind propagation or, equivalently, propagation under a well-developed moderate ground-based temperature inversion.

4.49. The method specified in this part of ISO 9613 applies to sources that may be moving or stationary.

4.50. The ISO 9613 method allows for the following physical effects which influence the propagation of noise outdoors:

- geometrical divergence i.e. distance.
- atmospheric absorption.
- ground effect.
- reflection from surfaces.
- screening by obstacles.

4.51. The method is applicable in practice to a large variety of noise sources and environments. It is appropriate, directly or indirectly, to most situations concerning road or rail traffic, industrial noise sources, construction activities, and many other ground-based noise sources.

4.52. Having predicted noise from sources during the operation of the site these were corrected for any likely acoustic character and to the reference time intervals of the standard to derive rating noise levels, as required by BS 4142. These were then compared to representative background noise levels at receptors from the baseline noise survey.

4.53. The magnitude of impact of the difference in rating level and background noise level was then determined using the criteria in the table below.

TABLE 6: BS 4142 NOISE MAGNITUDE CRITERIA

BS 4142 Rating level – Representative Background LA90,t Noise Level , dBA	Magnitude of Impact
-10 dBA	Neutral
-5	Negligible
0	Minor
+5	Moderate
+10	High
+15	Substantial

4.54. I regard the above approach to the assessment of operational noise impacts as appropriate because it is based on relevant guidance and standards; and

reflects similar methodologies applied to many analogous schemes that have been approved and completed.

5. THE ASSESSMENT OF NOISE & VIBRATION IMPACTS FROM THE SCHEME

5.1. There follows a summary of the noise and vibration assessment included in the Environmental Statement Addendum for the scheme.

POTENTIAL ENVIRONMENTAL EFFECTS

Construction Phase Works

5.2. Based on stated assumed construction plant, programme and methods and using the methodology from BS 5228 construction noise levels are predicted at receptors and the significance of any likely effect assessed at the majority of receptors as negligible and at two receptors of minor adverse effect.

5.3. The ES notes that predicted noise levels do not take account of the Best Practicable Means (BPM) of noise control - pragmatic construction noise mitigation measures detailed in the mitigation section below. Actual noise impact magnitude is therefore likely to be lower than predicted when BPM are implemented.

5.4. It should also be noted that the modelling exercise completed calculates predicted noise impact based upon fixed plant locations. In practice, much of the plant may be mobile, so the magnitude of construction noise impacts will be subject to change through the various phases of construction. The assessment undertaken has, however, been based on assumed typical ‘worst-case’ scenarios. It will be the responsibility of the main contractor on site to limit construction noise impact at nearby noise sensitive receptors.

5.5. It is worth noting that noise effects associated with the construction phase will be temporary, and will be restricted to daytime hours only, thus avoiding the more sensitive evening and night-time periods and will reverse after the construction phase is completed. It should also be remembered that the assessment of noise impact during the construction stage, does not include the

sound attenuation provided by the perimeter bunding to the site, to assess a worst case. The impact of much of the later stages of construction operations will be reduced as the bunding will be in place. Drawing showing sections through the noise bunds are provided in CD 4.30, 4.32 and 4.32.

Construction Traffic Noise

5.6. The magnitude of impact has been determined at each receptor by calculating the likely increase in traffic noise due to construction traffic.

5.7. The predicted increase in noise at each receptor due to construction traffic is no more than 0.1 decibel.

5.8. Assuming the presence of highly sensitive receptors on all relevant road links the predicted increase in noise due to construction traffic is rated as of negligible significance.

Construction Vibration

5.9. Piling is the most likely vibration generating construction activity on site.

5.10. The ES uses the database and methodology from BS 5228 to predict potential vibration levels at receptors based on the likely closest approach of piling works.

5.11. The ES predicts that the vibration from piling works might be above the threshold of perception, but is orders of magnitude below the lowest threshold for possible cosmetic damage to buildings e.g. hairline cracks in plaster from British Standards (Bs 7385) and significantly below the recommended threshold for effects on humans from BS 5228.

5.12. It should be noted that the above assessment of potential construction vibration effects is based upon a theoretical worst-case assessment that piles will be required within 20 m of existing nearby sensitive receptors. As stated, piling will be avoided wherever possible. Any piling required will be carried out over as

short a period as possible and any impacts will be temporary and reversed on completion of the piling phase of the works.

5.13. Consequently, the ES Addendum concludes that significant adverse effects from construction vibration are unlikely.

Operational Phase

5.14. The noise emissions from the commercial operation of the scheme are to be assessed in the ES Addendum in accordance with BS 4142.

5.15. The ES Addendum notes that at this stage, final operators for each of the proposed units have not been confirmed. It is recognised that each may have differing requirements in terms of type of operation and hours of use, however reasonable worst-case assumptions have been modelled.

5.16. Consequently, the operational noise assessment assumes a worst case in terms of noise that that each operator requires cold storage and therefore external chiller plant, together with refrigerated HGV units. In reality some, if not most, operators will not need these plant, and therefore noise emissions will be lower than assumed in the ES.

5.17. The site will operate 24 hours per day, therefore, as the standard compares the rating level of noise from the operations on site to the background noise level at potentially affected receptors. The night-time BS 4142 assessment will provide a worst-case assessment of the potential impacts as background noise levels are invariably lower at night compared to during the day.

5.18. Prediction of noise emitted from the site have been made based on robust assumptions regarding the number and type of plant likely to be on site and the number and type of vehicle movements on site; and the inclusion of noise bunds around the perimeter of the scheme.

5.19. Data regarding the noise emitted from plant and vehicles on site has been taken from verified manufacturers information and measurements made at similar developments.

5.20. The BS 4142 rating level has been determined by applying appropriate corrections for tonality and impulsive characteristics to the predicted operational noise levels at receptors.

5.21. The initial assessment of the operational noise indicates most reports will only have neutral to minor impacts. However, moderate and high impacts are predicted at two individual receptor locations respectively.

Operational Road Traffic Noise

5.22. Changes in traffic noise levels have been calculated using methodologies in line with CRTN guidance. Baseline and operational traffic flow data has been provided as part of the Traffic Assessment (CD 4.3 - ES Addendum Technical Paper 2 – Traffic and Transportation inc. Appendices containing Transport Assessment and Travel Plan).

5.23. Road traffic noise change due to the operation of the scheme are predicted in the ES Addendum for 2021 and 2029.

5.24. For both the 2021 and 2029 scenarios assessed the predicted change in traffic noise due to the scheme at most receptors is less than 1 decibel and only fractionally more than 3 decibels at 1 receptor in 2021 and 2029.

5.25. Using the DMRB methodology predicted increases in road traffic noise of less than 3 decibels are rated as neutral to negligible, and of fractionally above 3 decibels as minor.

5.26. Consequently, the ES Addendum ranks the significance of the predicted changes in road traffic noise due to the scheme as negligible (in most cases) rising to minor adverse at the eastern-most Grappenhall Lane link.

ES ADDENDUM CONCLUSIONS

POTENTIAL ENVIRONMENTAL EFFECTS

Construction Phase

5.27. The significance of effects of construction noise impacting on existing noise sensitive receptors is rated as Neutral to Minor Adverse.

5.28. The significance of effects of construction traffic noise impacting on existing noise sensitive receptors is rated as negligible.

5.29. The significance of effects of construction vibration impacting on existing noise sensitive receptors is rated as negligible.

Operational Phase

5.30. The significance of effects of industrial noise impacts associated with the development – Most Receptors is rated as minor adverse.

5.31. The significance of effects of industrial noise impacts associated with the development – Bradley Hall Cottages and Bradley View is rated as minor adverse.

5.32. The significance of effects of industrial noise impacts associated with the development – Most Receptors is rated as minor adverse.

5.33. The significance of effects of any increase in noise due to traffic on local road networks associated with the development is rated as negligible to minor adverse.

PROPOSED MITIGATION

Construction Phase

5.34. It is anticipated that main contractors delivering the scheme will be required to submit a detailed Construction Environmental Management Plan (CEMP) as part of future Reserved Matters planning applications (a framework CEMP is included in Appendix 9 of the ES second Addendum Part 1 Report). It is likely that they will therefore be committed to following Best Practicable Means (BPM) to minimise the noise and vibration impact on nearby noise sensitive properties. A Construction, Highway and Environmental Management Plan (CHEMP) has subsequently been recommended for each phase of the development by the Council in a planning condition contained in the Officers Report to Committee (ORC).

Operational Phase

5.35. Mitigation measures to limit noise impacts should be adopted as detailed within the Parameters Plans. Which will be controlled by a planning condition and set out in the approved plans listed in the ORC. Noise considerations that have been incorporated during development of these Parameters Plans include:

- The orientation of loading bays / docks with respect to sensitive receptors.
- The location of services plant to maximize distance from noise-sensitive receivers and the potential screening effects afforded by proposed units.
- Provision of noise bunds and screens.

5.36. It should be noted that the current assessment can be considered an absolute worst-case assessment. The noise associated with peak operational road traffic flows on internal roads (based upon the Omega Development) has been combined with service yard operational noise sources on each development plot. BS 4142 acoustic feature corrections have then been added to the noise from all sources operating concurrently and compared against night-time background noise levels at nearby receptors. The probability of all such sources

operating concurrently is low and could only be assessed in detail once specific operators come forward with Reserved Matters applications. At this point, the details of the mitigation measures outlined above could be refined if necessary and implemented prior to occupation of the associated neighbouring industrial unit(s).

RESIDUAL EFFECTS

Potential Residual Effects – Construction Phase

5.37. With mitigation via the CEMP in place the significance of construction works and associated traffic effects noise and vibration is rated from negligible to minor.

Potential Residual Effects – Operational Phase

5.38. With the incorporated mitigation and any further mitigation identified at the reserved matter stage in place the significance of operational on site and associated traffic noise and vibration is rated from negligible to minor.

5.39. Due to the worst-case nature of the assumptions made in the ES Addendum, it is expected that the provision of detailed information by Reserved Matters applicants will provide a betterment of the predicted noise impact at sensitive receptors compared to in the ES Addendum.

CONDITIONS

Operational Phase

5.40. In my view an additional condition to support the existing proposed conditions 21, 22 and 23 requiring noise impact assessment at the detailed application stage is necessary to ensure the impacts of the scheme are no worse than assessed in the ES and its Addendum. Text for such a condition is provided below.

New Condition 24

This condition [24] sets the framework for conditions 21, 23 and 23 to demonstrate what is to be achieved by those conditions. The rating level ($L_{Ar,Tr}$) of noise emanating from the site during the operational phase of the development, when determined in accordance with BS 4142:2014+A1: 2019 and including applicable acoustic character corrections as described in this Standard shall at the locations given not exceed the levels detailed within the following Table.

Receptor Location	***Maximum Permitted Rating Level ($L_{Ar,Tr}$) dBA (from Table 7.21: Impact of noise from operational phase of Addendum to Environmental Statement Part 2 – Noise and Vibration Technical Paper 7 (October 2020)***
A - Grappenhall Lodge	*41*
B - Dwellings on Cartridge Lane: — *Southott* — *Hunters Lodge and Hunters Croft* — *Manors Farm with The Old Stables* — *Croftside* — *The Bungalow* — *5 Cartridge Lane* — *7 Cartridge Lane* — *Cliff Lane Farm, Cartridge Lane*	*50*
C - Bradley View Cottage	*46*
D - Howshoots Farm	*50*
E - Tan House Farm	*44*
F - Barleycastle Farm	*45*

G - Bradley Hall Cottages I.	*48*
H - Beehive Farm	*46*
I - Booth's Farm	*47*

APPENDIX 1 - SUMMARY

5.41. National and Local Plan policies and guidance in relation to noise aim to avoid significant adverse effects, to minimise adverse effects on health and quality of life, and to not cause harm to amenity.

5.42. The prevailing baseline noise climate is affected by several sources. These include:

- Background noise levels across the site are generally dominated by distant road traffic noise from the M6 to the east and the M56 to the south.
- Ambient noise levels in the southern portion of the site are dominated by road traffic on the M6 and M56.
- Ambient noise levels to the north and northwest portions of the site are largely driven by road traffic on Grappenhall Lane.
- Ambient noise levels in the northeast corner of the site are largely driven by road traffic on Cliff Lane.

5.43. The scope and methodology of the noise and vibration assessment for this scheme have been influenced by extensive consultation with the Local Authority Environmental Health Officers. This has included adapting the overall scope and methodology of the assessment; and incorporating specific noise sources and individual sensitive receptors into the assessment. A detailed noise model using established and verified methods for the prediction of noise from the proposed development has been undertaken in relation to both the construction and operational phases of the development.

5.44. A Construction Highways and Environment Management Plan (CHEMP) incorporating noise and vibration assessments, and prior approval of works by the Local Authority would be the focus of mitigation measures during the

construction period; and the resulting impact upon noise-sensitive receptors is predicted to be negligible.

5.45. Mitigation will be incorporated into the design, construction, and operation of the scheme for the operational phase of the development to address noise sources such as the movement of HGVs around the site, external chiller plant, fixed building services and the electrical substation.

5.46. The mitigation incorporated into the development uses the layout of the scheme to maximise the distance to sensitive receptors where practicable and orientating service yards away from sensitive receptors so that the buildings act as barriers to propagation of noise.

5.47. As part of the scheme, substantial noise bunding and screening is proposed along the western and southern boundaries, and around the western and northern boundaries. This will provide protection particularly for residential properties to the south and west of the development. Noise bunding would be used primarily to the east and south of Plot 1 and to the west of Plot 2 with a maximum height of 5m and five acoustic fences would be erected in the vicinity of the eastern site entrance roundabout on the bund to the north-east of Plot 1, west of Bradley View Cottages and on the bund south of Plot 1, west of Bradley View Cottages and on the bund west of Plot 2, east of Bradley View Cottages. In consequence of the proposed mitigation measures there will be no unacceptable impacts upon amenity.

5.48. The effect of noise from traffic increases due to the scheme on the surrounding road network is anticipated to be negligible, primarily because any increase over existing traffic flows and any resulting noise is proportionately small, so when it is evaluated against long established national guidance on road traffic noise the effect is rated as not significant.

5.49. Subject to the imposition of noise conditions, it is concluded there will be no significant adverse noise effects on the amenity of residents at the nearest residential properties.

5.50. The report concludes that the proposed scheme will comply with the requirements of National and Local Plan policies and guidance in relation to noise, to prevent unacceptable effects, avoid significant adverse effects, mitigate and minimise adverse effects on health and quality of life, and to protect amenity.

5.51. A condition (number 24) to ensure the impacts of the scheme are no worse than described in the ES and its Addendum is provided.

GLOSARRY

DECIBELS

Noise is commonly defined as unwanted sound. The range of audible sound is from 0dB to 140dB, which is taken to be the threshold of pain. The sound pressure detected by the human ear covers an extremely wide range. The decibel (dB) is used to condense this range into a manageable scale by taking the logarithm of the ratio of the sound pressure and a reference sound pressure.

The decibel scale is logarithmic so when two noise sources are present together, they have to be combined logarithmically. Therefore, when two sound sources of the same sound pressure level are combined the resultant level is 3dB(A) higher than the single source.

'A' WEIGHTED DECIBELS

The frequency response of the ear is usually taken to be about 18Hz (number of oscillations per second) to 20,000Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than at the lower and higher frequencies, and because of this, the low and high frequency component of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most used, and which correlates reasonably well with the subjective response to noise in many circumstances is the dB(A) weighting. This electronic filter matches the variation in the frequency sensitivity of the meter to that of the human ear. This is an internationally accepted standard for noise measurements.

EQUIVALENT CONTINUOUS SOUND LEVEL – LAeq,T

The subjective response to a noise is dependent not only upon the sound pressure level and its frequency, but also how it varies over time. Various indices have been developed to try and correlate annoyances with the noise level and its fluctuations. The parameter commonly used for this measure is the Equivalent Continuous Sound Pressure Level (LAeq). The A-weighted sound pressure level of a steady sound that has, over a given period (T), the same energy as the fluctuating sound under investigation. In essence, the LAeq provides a single value to express the average sound energy over the measurement period and is the most widely used indicator for environmental noise.

NOISE METRICS:

$L_{A90,T}$: This is the 'A' weighted noise level exceeded for 90% of the measurement period, T. This is normally used to describe the background noise.

$L_{A10,T}$: The A-weighted sound level, in dB, that is exceeded 10% of the measurement period.

$L_{A10,18hr}$: The noise level, in dB, that is exceeded 10% of the time between 0600 and 2400.

L_{Afmax}: The maximum A-weighted level measured using fast time weighting during a given time period.

BS414:2014 TERMINOLOGY

Background Noise Level: The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time

interval. Expressed as LA90,T and generally considered to be the average minimum noise level.

Ambient Noise Level: Totally encompassing sound in a given situation at any given time interval and usually composed of sound from many sources near and far. Usually expressed in terms of LAeq,T

Residual Noise Level: The ambient noise remaining at a given position in a given situation where the specific noise source is suppressed to such a degree that it does not contribute to the ambient noise. Expressed in terms of LAeq,T

Specific Noise Level: The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source (source being assessed) over a given reference time interval (LAeq,Tr)

Rating Noise Level: The specific noise level plus any adjustment for the characteristic features of the noise. Expressed in terms of LAr,Tr. The standard indicates that corrections should be added to the noise if it was tonal, impulsive or irregular enough to attract attention.

DMRB TERMINOLOGY

Do-minimum: Scenario without the project.

Do-something: Scenario with the project.

GENERAL TERMS

Baseline: A description of the state of the environment without implementation of the project.

Façade Level: The sound level at a position 1 m in front of a reflecting façade of a building. The façade noise level is assumed to be 3 dB(A) higher than the level measured or predicted at an equivalent position away from the noise reflected from the building façade i.e. in the free-field.

Free-field Level: The sound level in an open area well away from any buildings or other sound reflecting surfaces other than the ground. Generally the minimum distance from building facades for free-field measurements is taken to be 3.5 m.

Noise sensitive receptor: Receptors which are potentially sensitive to noise. NOTE: Examples can include dwellings, hospitals, healthcare facilities, education facilities, community facilities, END quiet areas or potential END quiet areas, international and national or statutorily designated sites, public rights of way and cultural heritage assets.

Time weighting T: is the time-averaging characteristic used to measure fluctuating noise levels. Most sound level meters have two exponential time weightings, F = Fast and S = Slow. Some also have an impulse time weighting, a quasi-peak detection characteristic with a rapid rise time and a much slower decay.

F: Fast Sound Level = 125 ms rise and decay time

S: Slow Sound Level = 1 second up and down,

I: Impulse Sound Level = 35 ms while the signal level is increasing and 1.5 seconds when the signal level is decreasing.

Back in the days of analogue sound level meters, these time weightings were introduced to give the operator chance to 'follow' the rapid fluctuations of a needle in the meter display by eye and visually estimate a reading. Nowadays most measurements use the fast time weighting as digital processing has removed the need to “visually estimate” levels from a moving needle.

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