OTTERPOOL PARK

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ENVIRONMENTAL STATEMENT

OP5 CHAPTER 13 – **NOISE AND VIBRATION**

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OTTERPOOL PARK

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13 Noise and Vibration

13.1 Introduction

13.1.1 This chapter of the ES assesses the impact of construction and operation of the proposed Development with respect to noise and vibration.

13.1.2 This Chapter should be read in conjunction with chapters 1-4 (the introductory chapters).

13.1.3 It has also been prepared alongside and informed by ES Appendices 13.1 to 13.3. ES Appendix 13.3 contains Figures 13.1 to 13.7.

13.1.4 Existing sensitive receptors within and around the proposed Development in a defined study area may be adversely affected by noise and vibration. There is also the potential for newly created receptors forming part of the Framework Masterplan to be adversely affected. Potential adverse effects may occur during the construction and operational phases. The construction phase is programmed to extend over an extended timeframe commencing in 2023. Completion of the whole Framework Masterplan is scheduled for 2044.

Relevant Aspects of the proposed Development

13.1.5 The proposed Development would include the following land use types across the site, with further details presented within Chapter 4: The Site and the Proposed Development:

- Residential and hotel land uses;
- Education, including schools, nurseries and creche;
- Leisure uses, including community facilities, place of worship, community centre;
- Health centres;
- Mixed retail, related facilities and employment land uses;
- Public open space; and
- Associated new and improved road links.

13.1.6 The proposed Development comprises the creation of a garden settlement with large areas of green amenity space with the concept created with the guiding principles set-out in the Otterpool Charter.

13.2 Assessment Methodology

13.2.1 The assessments undertaken within the scope of this section will consider the following aspects of the proposed Development during construction:

- The potential noise and vibration effects upon existing noise sensitive receptors and newly created receptors forming part of the proposed Development.

13.2.2 The assessment also considers the following noise and vibration effects once operational:

- The noise impacts upon existing sensitive receptors within the area and newly created noise sensitive receptors forming the proposed Development. These may be due to road traffic noise resulting from changes in flows, composition and speed of vehicles using the existing road network within the identified study area;
- The potential for noise impacts that the Development may have as a result of new primary road links to be constructed within the proposed Development;

- The potential noise and vibration impacts of the prevailing noise climate of the area upon specific sensitive aspects of the proposed Development;

13.2.3 The proposed Development is expected to be constructed over an approximately 19-year period from 2023 to 2042 and provide 8,500 homes. Additionally, the Otterpool Park Framework Masterplan is expected to provide a further 1,500 homes anticipated to be completed approximately 2 years after the completion of the proposed Development in 2044 resulting in a total of 10,000 homes in total. The first on-site residential occupation is scheduled for 2024, therefore the site would be partially operational whilst the remainder of the proposed Development is built out. Therefore, there is the potential for receptors to be impacted on, both within and adjacent to the outline planning application boundary and Framework Masterplan boundaries, during operational and construction phases. To provide the worst-case situation, assessments in this chapter have considered the construction of the total 10,000 homes.

13.2.4 Sensitive receptors include residential dwellings, schools, medical centres, community facilities, hotel and conferencing provision. Each of these types of sensitive receptors have varying requirements for protection from noise and vibration impacts. As such there are specific technical guidance, standards and local and national standards that are applicable to each and have been considered where appropriate within this assessment.

13.2.5 The screening effects of the proposed building structures within the proposed Development itself cannot be represented or considered in this Tier 1 assessment therefore, the operational and site suitability assessments consider the absolute worst case of uninhibited noise propagation across all aspects of the site. The implementation of the massing of the proposed building structures in the Development would aid to arrest the passage of sound, reducing noise into the central portions of the site to a greater extent than represented within the scope of this report. Therefore, the operational assessments of site suitability are concluded to represent a worst-case consideration.

Legislation, Policy and Guidance

13.2.6 The likely significant effects of the proposed Development have been considered in accordance with relevant UK legislation, policy and guidance with regard to noise and vibration as listed below; further details regarding the content of each listed document is presented in ES Appendix 13.1.

Legislation

13.2.7 The applicable legislative framework for this Section is listed as follows:

- The Control of Pollution Act 1974 (Ref.13.2)
- The Environmental Protection Act 1990 (Ref.13.3)
- The Noise Insulation Regulations 1975 (Ref.13.4)
- The Building Regulations 2010 (Ref.13.5)
- The Environment Act 2021 (Ref.13.28)

National Policy and Guidance

13.2.8 The national policy documents relevant to this Section are listed as follows:

- National Planning Policy Framework (NPPF), Revised 2021 (Ref.13.6);
- Noise Policy Statement for England (NPSE), 2010 (Ref.13.7), and;

- National Planning Practice Guidance: Noise (PPG) 2019 (Ref.13.8).

Local Policy

13.2.9 Specific local policies relating to noise and vibration within this area of Kent, which falls under the jurisdiction of Folkestone and Hythe District Council (F&HDC), are contained within the Core Strategy Review 2022 (Ref.13.9) and are presented as follows:

- **Policy SS7**: Folkestone and Hythe District Council Core Strategy Review 2022 - New Garden Settlement – Place Shaping Principles (1) A landscape-led approach

  planting and habitat creation should also be used to provide distance buffers between the M20/High Speed transport corridor for noise and air quality mitigation purposes.

- **Policy SS8**: Folkestone and Hythe District Council Core Strategy Review 2022 - New Garden Settlement - Sustainability and Healthy New Town Principles (2) A Healthy New Town

  noise and air pollution mitigation measures such as distance buffers between the M20/High Speed 1 transport corridor and the development, incorporating landscaping within the buffers designed to integrate with the wider green infrastructure network.

Technical Guidance

13.2.10 The following is a list of the relevant technical guidance which has been referenced during the consideration of noise and vibration impacts associated with various aspects of the proposed Development.

- Guideline for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment (IEMA) 2010 (Ref.13.10);
- World Health Organisation (WHO): Guidelines for Community Noise 2000 (Ref.13.11);
- World Health Organisation (WHO) Night Noise Guidelines for Europe 2009 (Ref.13.12);
- World Health Organisation (WHO) Guidelines for the European Region 2018 (Ref.13.13);
- BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures (Ref.13.14);
- BS 7445-2:1991 Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use; Ref.13.15)
- BS 8233:2014: Guidance on sound insulation and noise reduction for buildings (Ref.15.16);
- BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites; Part 1 Noise (Ref.13.17);
- BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites; Part 2 Vibration (Ref.13.18);
- Calculation of Road Traffic Noise (CRTN) 1988 (Ref.13.19);
- Design Manual for Roads and Bridges (DMRB) Sustainability and Environmental Appraisal LA111 Noise and Vibration revision 2, May 2020 (Ref 13.20).
- BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground borne vibration (Ref.13.21);

- BS 6472-1:2008: Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting (Ref.13.22);
- BS 4142:2014+A1 2019 Methods for rating and assessing industrial and commercial sound (Ref.13.23);
- Professional Practice Guidance on Planning and Noise – New Residential Development (ProPG) 2017 (Ref.13.24);
- Building Bulletin 93 (BB93) Acoustic Design of Schools – Performance Standards 2015; (Ref.13.25) and,
- Health Technical Memorandum 08-01 (HTM08-01): Acoustics 2013 (Ref.13.26).

Consultation and Scoping

13.2.11 Consultation has been undertaken with the Environmental Protection Department of the Local Planning Authority, Folkestone & Hythe District Council (F&HDC), between November 2016 and September 2018, with regard to noise and vibration issues. A previous application was submitted for the proposed Development, and comments received on the application. Those pertinent to noise and vibration have been considered.

13.2.12 Table 13-1 provides a summary of consultation undertaken for this chapter prior to and following the submission of the 2019 application (Y19/0257/FH). The table summarises how the comments have been addressed in this chapter, where relevant.

Table 13-1 Summary of Consultation

Consultee/Contact/Date	Summary of Consultee Issue	Outcome
F&HDC EHO 14.07.17	F&HDC confirmed acceptance for the timetable for the surveys and agreed that the holiday period would not significantly affect the surveys.	Survey scheduled with option of elements being carried out during the school holidays if necessary ** In actuality this was not required, and all surveys were undertaken outside of school holiday periods*
F&HDC EHO 12.07.17	F&HDC contacted by email regarding the timetable for the proposed noise and vibration surveys. Specifically, it was proposed by Arcadis noise team that the surveys would extend into the school holiday period at which time it was considered that the holidays would have little influence upon the baseline surveys.	
F&HDC EHO 26.05.17	F&HDC confirmed his agreement with the proposed methodology and monitoring points.	
F&HDC EHO 25.05.17	F&HDC contacted by email seeking agreement for the proposed methodology for a baseline noise and vibration survey provided with a plan showing proposed monitoring positions containing minor revisions following minor changes to the scheme Masterplan and accommodating F&HDC request to have a monitoring location in proximity to the Lympne industrial estate that will be included in the assessment.	Survey methodology amended to take account of EHO comments.

Consultee/Contact/Date	Summary of Consultee Issue	Outcome
F&HDC EHO 19.12.16	F&HDC confirmed agreement with the proposed methodology and monitoring points but raised an issue in relation to the Lympne industrial estate located to the south of the proposed Development and requested that consideration should be given to this aspect in the assessment.	Survey methodology amended to take account of EHO comments.
F&HDC EHO 22.11.16	F&HDC contacted by email seeking agreement for the proposed methodology for a baseline noise and vibration survey and provided with a plan showing proposed monitoring positions.	Survey methodology amended to take account of EHO comments.
Consultations since 2019	**This mainly includes addressing the following LPA and key consultee comments to the previously submitted Outline Planning Application Otterpool Park (Y19/2057/FH)**	
Temple IRR April 2019	The ES does not actually assess the likely significance of the effects of construction noise and vibration. Instead it relies on conditions to use the COCP and COP'74 prior approvals to set limits, A "Rochdale Envelope" approach should be adopted i.e. state the assumptions on which a reasonably worst case assessment can be made and use this to assess and mitigate the potential likely significant effects on the basis that in reality they are unlikely to be worse.	The assessment provides typical plant noise that is anticipated to be employed and how construction limits will be controlled to acceptable levels for temporary construction noise at new and existing receptors. Assessment will be undertaken at future Tier stages based on design information that can provide meaningful outcomes and likely effects.
Temple IRR April 2019	The applicant is asked to submit a revised assessment of the noise impacts of the Realigned Section of A20 Ashford Road against the criteria used for road traffic noise elsewhere in the chapter not just against the NIR'78 thresholds, or provide a further rationale of why this has not been carried out.	The A20 and Primary new link road are assessed in this chapter and any significance determined in a similar way to the wider road network. Additionally, assessment is also made to determine whether any residential properties are eligible for noise insulation.
Temple IRR April 2019	The Applicant should either conduct an assessment according to BS 4142:2014 to assess the noise from the existing Lympne Industrial Estate in order to ensure they are complying with the NPPF requirement regarding the "Agent of Change" principle or provide a further rationale of why this has not been carried out.	Section titled **'Site Suitability – Potential Impacts from Existing Lympne Industrial Estate'** provides an assessment of likely effects from the industrial estate. The assessment has drawn upon information from the day and night-time site suitability Figures 13.6 and 13.7, in ES Appendix 13.3 and also included consideration of impact noise events at night. Further assessment in the form of a BS4142:2014 assessment is proposed at future Tier stages when the residential layout can provide distances proposed residential building will be from the IE.

Scoping

13.2.13 A previous EIA Scoping Opinion was undertaken for the 2019 application, where relevant, the comments from this process have been incorporated within Table 13-1. For this amended application, a request for a Scoping Opinion was submitted to F&HDC in June 2020. This outlined the work that had been undertaken to date and sets out the proposed approach to the EIA. A Scoping Opinion was issued by F&HDC in July 2020. Table 13-2 provides a summary of the scoping opinion comments relevant to this chapter, and how they have been addressed.

13.2.14 Additionally, a Scoping Addendum was submitted on 5 October 2021 to outline key changes to the application. These comprised additional land in the north-west corner of the site for provision of the waste water treatment works (WWTW), additional land for highway junction works at Newingreen Junction, minor amendments to clarify land ownership boundaries and a change in the assessment approach in relation to the future uses of Westenhanger Castle. These changes have been assessed in this ES.

Table 13-2 Summary of EIA Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
2019 Application		
F&HDC EHO 20.09.18	Although the noise and vibration monitoring schedule was agreed with the EHO prior to production of the scoping request, the formal council response considered that there were insufficient noise monitoring locations across the proposed Development site. F&HDC confirmed acceptance of subsequent proposals from Arcadis to undertake additional baseline noise monitoring. F&HDC agreed that the number of additional monitoring locations and durations proposed were acceptable.	The revised noise monitoring survey with additional monitoring locations are as described in Section 13.2.
2021 Scoping Opinion		
Temple (on behalf of F&HDC)	The assessment will need to consider phasing, including part-occupation which will introduce new receptors onto the application site.	As part of the traffic assessment, traffic flows for interim years during the construction period, including 2030 which is anticipated to be the peak construction year. This interim traffic data was used for the traffic noise assessment so that the peak construction year coinciding with the development being part operational was considered in the Operational Traffic Noise section 13.2.38 onwards. Further consideration of construction effects that includes newly introduced receptors as the development advances will be considered at future Tier assessment stages.
Temple (on behalf of F&HDC)	Where construction plant information is unavailable, an assessment based on a reasonable worst case scenario should be	The assessment provides typical plant noise that is anticipated to be employed and how construction limits will be controlled to

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
	provided, with the assumptions on which this assessment is made fully explained.	acceptable levels for temporary construction noise at new and existing receptors. Assessment will be undertaken at future Tier stages based on design information that can provide meaningful outcomes and likely effects. Demolition assessment is considered in Section 13.5 based on worst-case assumptions.
Temple (on behalf of F&HDC)	Cumulative construction noise has been scoped out on the basis that sufficient information is unlikely. This is not justified and at least a qualitative assessment would be expected to be provided based on reasonable assumptions	A qualitative assessment is provided in Section 13.5.
Temple (on behalf of F&HDC)	It is noted that the extant planning permission for a Permitted Waste Facility and anaerobic digestion plant at Otterpool Quarry is situated within the application site boundary and that the Applicant proposes to justify the loss of this facility, rather than accommodate a buffer around it. If this approach is revised prior to planning submission, and the facility is expected to be developed, the site suitability assessment would need to consider this facility.	The proposed Development has been assessed upon the basis of both with and without this facility being constructed and operation. This facility is considered in section 'Operational Phase - Consideration of Alternative Development Options' in Section 13.5.
Temple (on behalf of F&HDC)	As this is an outline application, there will be flexibility in the parameters presented. The Scoping Report commits to assessing the worst case scenario in line with 'Rochdale Envelope' principles. The parameters for assessment of the outline scheme elements should be clearly set out and should consider flexibility in size, massing, unit mix, tenure mix, provision of community facilities such as healthcare and education, and flexibility in commercial/retail use classes.	The approach of this application is to base the assessment on a three Tier assessment that is designed to take account of the size of the proposed Development and long construction period during which time the design will evolve and further detailed design information will become available upon which reasonably accurate and realistic effects can be determined. Tier 1 assessments are presented in this chapter where sufficient information is known. In instances where further information is required to progress the assessment beyond the conceptual outline stage the chapter sets out how this will be assessed at future Tier stages. Where sufficient information is available a worst-case approach has been adopted for the assessment.
Temple (on behalf of F&HDC)	The 2020 Scoping Report notes that there is a relatively long construction timeframe (25 years) and phasing is not known. A reasonable worst case scenario approach should be taken	Comment as above

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
	to construction phasing, taking into account early phase occupation as well as the order in which retail and community infrastructure is delivered, which will have implications particularly for noise, air quality, traffic, socioeconomics, health, and landscape and visual impact. We recommend a section or broader commentary explaining how reasonable worst case assessments have been derived and whether any sensitivity testing has been applied to allow for flexibility within any future uses. Specific comments relating to phasing are provided in the topic sections below.	
Temple (on behalf of F&HDC)	Baseline data used for the previous 2019 Application should be 'in date' and updated, if required.	A commentary on the data used and its suitability for the assessments made is provided in Section 13.3 Baseline
Highways England (now National Highways), Spatial Planning Team, Spatial Town Planning Manager	We note that mitigation measures for M20 for noise are proposed. Any measures must be fully funded by the proposed Development and cannot be located on HE land (now National Highways land). 'Residential Land Parcels Para 13.3.9 "The following mitigation measures would require to be considered though the detailed design of any residential areas of the site, especially those to the north within influencing distances of the M20 and HS1 routes, and to the south around the Lympne Business Park: • appropriate façade mitigation measures (glazing and ventilation provision) to ensure that internal noise climates are acceptable. • Layout considerations to ensure that noise is also controlled by layout design to avoid locating external sensitive areas in positions exposed to significant noise sources. • Provision for acoustic screening where necessary either through optimum placement and design of intervening buildings (layout options) or specific acoustic fencing/bunding where necessary.'	The assessments and mitigation proposed in this chapter are not dependant on use of any National Highways land. Detailed mitigation measures will be considered as part of future Tier assessments as explained in the relevant sections of the assessment.
Highways England, Spatial Planning Team, Spatial Town Planning Manager	We note this finding but reiterate that in the event future site occupiers perceive there to be an issue, any resolution must be funded by the proposed Development and not be located on HE land (now NH land).	Comment as above

13.2.15 Temple, on behalf of F&HDC, undertook a review of the Draft ES in December 2021. The topic specific comment and response are provided in Table 13-3.

Table 13-3 Comments on the Draft ES

Consultee	Comment	Response
Temple on behalf of F&HDC, 1 December 2021 Draft ES	This chapter does not consider the potential for noise and vibration from the permitted Waste Transfer Station to affect future site residents, which may be an area of concern under the Agent of Change principle, should development restrict its potential operation in some way.	This has been considered further in the section headed Operational Phase– Consideration of Alternative Development Options in Section 13.5.

The Study Area

13.2.16 The study area considered for the assessments contained in this chapter varies according to each assessment and is described in the following paragraphs:

- Demolition and Construction, Noise - For the purposes of demolition and construction noise impacts, the study area has been defined to consider sensitive receptors up to 300m from the demolition/construction noise sources.
- Demolition and Construction, Vibration - For the purposes of demolition and construction noise impacts, the study area has been defined to consider sensitive receptors up to 600m from the demolition/construction vibration sources.
- Operational Road Traffic, Noise - For the assessment of traffic noise caused by changes in traffic flows, speeds and composition on the existing roads within the proposed Development site area have been considered by adopting and adapting the DMRB guidance for new road schemes to be appropriate for a mixed-use residential scheme. On the wider network, outside of the proposed Development site, where the change in road traffic noise (Basic Noise Level) is anticipated to be 1dB or greater, these have been further considered with noise modelling along corridors 600m either side of these roads. The Study Area also includes all the land within the proposed Development site. This area is shown on the Noise Contour Change Plans for each of the assessment years in Figures 13.2 to 13.5, located in ES Appendix 13.3.
- For the assessment of noise resulting from the new road links including the changes to the A20, the study area has been considered to a distance of 600m from the new roads in accordance with appropriate DMRB guidance.
- Operational Proposed Non-Residential Receptors, Noise – The non-residential elements of the proposed Development within the application site boundary, including educational, open space and commercial (sensitive uses) as located on the Framework Masterplan, have also been considered in this chapter, see Section 13.3.
- Site Suitability, Noise - For the assessment and consideration of site suitability for residential development, the study area has been defined to include the proposed application site boundary as shown on the ProPG Site Suitability Noise Contour Plans for day and night-time periods in Figures 13.6 and 13.7, in ES Appendix 13.3.
- Operational Assessment – Site Suitability, Vibration For the purposes of vibration impacts upon proposed receptors, the study area has been defined to consider sensitive receptors up to 600m from the existing vibration source.

Methodology for Establishing Baseline Conditions

13.2.17 The establishment of baseline noise and vibration conditions has been undertaken based upon Standards and Technical Guidance identified above, and the following:

- Initial desktop studies and consideration of commercial mapping of the local area;
- Consultation with F&HDC relating to locations, durations, scope and methodology; and
- Quantification of the baseline and ambient noise and vibration climate in the vicinity of the proposed Development by means of site surveys for current conditions and computer modelling for future road traffic noise affected scenarios post development.

Methodology for Forecasting Future Baseline Conditions

13.2.18 The approach adopted for the forecasting of the future baseline, as a result of the prolonged buildout of the proposed Development, considers the following aspects of the project:

- Demolition and Construction phase;
- Operational phase – noise levels variations due to traffic flow changes; and
- Operational phase – new development noise sources.

13.2.19 With regards to the future baseline consideration has been given to changes in the noise climate as a result of changes in traffic flows for the following assessment years:

- 2024 selected to represent early build year of the proposed Development;
- 2030 selected to represent interim year coinciding with the peak construction year (with construction traffic included in all assessment years);
- 2037 selected to represent further interim year of long construction period; and
- 2044 selected to represent worst-case operational year with complete build out for the 10,000 homes of the Framework Masterplan and the completion of the site.

13.2.20 For each of these years, noise and vibration baseline consideration has been undertaken based upon the location of both existing sensitive receptors and new sensitive receptors introduced as part of the proposed Development.

Methodology for Assessing Impacts

Impact Characterisation

13.2.21 The methodology for assessing noise and vibration impacts as a result of the proposed Development has been based upon the Standards and Technical Guidance identified above.

13.2.22 The assessments to determine likely residual and cumulative effects are based on the following elements:

- Consideration of additional mitigation measures where necessary and appropriate;
- Consideration of demolition noise effects;
- Consideration of construction noise and vibration effects;
- Operational Phase – Road traffic assessment of existing network (including construction traffic for interim assessment years);

- Operational Phase – Consideration of alternative development options;
- Operational Phase – Assessment of realigned Section of A20 Ashford Road and New Primary Link Road;
- Site suitability – Noise assessment;
- Site Suitability – Ground borne (Train Induced) vibration assessment; and
- Consideration and assessment of residual effects.

Operational Phase Noise Assessment

13.2.23 There are a number of facets to the proposed Development which have the potential to affect/be affected by noise in the vicinity of the site. These are:

- Changes in road traffic noise in the wider road network as a result of changes in traffic flow/composition resulting from the proposed Development.
- Assessment and consideration of the suitability of the site with regard to noise for the areas identified for Sensitive Land Uses including:
- Residential and hotel provision;
- Education, including schools, nurseries and creche;
- Community facilities such as places of worship, community centres;
- Community facilities such as health centres; and
- Accessible Public Open Space (POS).

13.2.24 Consideration of appropriate noise controls with regard to areas of the site identified as having the potential to adversely affect the noise climate of the area including:

- Mixed retail;
- Retail related premises such as coffee shops, café, drive through outlets and commercial premises;
- Employment land (industrial provision).

13.2.25 Each of these elements have been assessed and considered separately within this chapter.

13.2.26 In addition, consideration has been given to the potential cumulative effects of noise associated with other committed transport schemes and developments in the area, and how this could affect the noise profile of the area and the conclusions drawn. More details of these are provided in Section 13.5.

Assessing Significance

13.2.27 UK Policy relating to the consideration of noise and vibration impacts and how they affect a particular development/receptor is contained within the NPPF, NPSE and PPG. This is supported by a suite of technical guidance and British Standard documents which relate specifically to noise and vibration.

13.2.28 Under the NPPF (and in line with the NPSE), 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 will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.
- 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.

13.2.29 The NPSE serves to provide policy on the need to avoid and mitigate adverse noise effects on health arising from and impacting on new development. It attends to three types of noise:

- 'Environmental noise' which includes noise from transportation sources
- 'Neighbour noise' which includes noise from inside and outside people's homes
- 'Neighbourhood noise' which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.

13.2.30 As a result of the nature and complexity of this development proposal, including the multi-faceted nature of the scheme, both Environmental noise and Neighbourhood noise could be apparent.

13.2.31 In line with the aims determined in the NPPF, the NPSE determines three overarching objectives;

- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
- a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

13.2.32 The explanatory note to the NPSE introduces three concepts relating to the adverse impacts of noise:

- 'NOEL – No Observed Effect Level: This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.'
- 'LOAEL – Lowest Observed Adverse Effect Level: This is the level above which adverse effects on health and quality of life can be detected.'
- 'SOAEL – Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.'

13.2.33 The NPSE acknowledges that the values for NOEL, LOAEL and SOAEL are likely to vary depending on the noise source and environment; and that at present there are no defined numerical values to allow flexibility within the policy until further evidence and guidance is presented.

13.2.34 The document PPG: Noise summarises the NOEL, LOAEL and SOAEL concepts introduced by means of a noise exposure hierarchy, based on the likely average response to noise, as set out in Table 13-4.

Table 13-4 Hierarchy of Noise Exposure Responses

Perception	Examples of Outcomes	Effect Level	Action
No Observed Effect Level (NOEL)			
Not noticeable	No Effect	No Observed Effect	No specific measures required
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 (LOAEL)			
Noticeable and intrusive	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.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid

Perception	Examples of Outcomes	Effect Level	Action
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, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

13.2.35 None of the aforementioned policy documents go as far as to specify appropriate noise limits/acceptable noise levels for LOAEL and SOAEL for given development types. The NPSE states on this subject that the vision of the Policy seeks to '*Promote good health and good quality of life*' with regard to noise, qualifying that the 'use of "promote" and "good" [in said statement] recognises that it is not possible to have single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations'. The Policy advocates a method that specifies 'specific local limits for specific developments'.

13.2.36 Therefore, it is necessary for professional judgement to be made with regard to noise levels/limits that are applicable to any specific development type and situation. Reference is therefore made to the Policy objectives relative to appropriate assessment mechanisms, allowing decisions and conclusions to be made with regard to potential effects and perception of noise, ultimately concluding the impact this would have and the necessity for mitigation.

13.2.37 Significant effects are therefore deemed to occur if the following conditions are met/breached for each of the given phase and aspect of the proposed Development.

Demolition and Construction Noise

13.2.38 Significant effects are deemed to occur if noise generated by demolition and construction operations exceeds the calculated noise limits for the locality based upon the example criteria of BS5228-1 2009 (+A1:2014).

13.2.39 For the demolition and construction noise assessment, an approach adopted from the DMRB LA111 has been considered with regard to the setting of LOAEL and SOAEL values for construction noise at residential properties. This is presented within the table below.

Table 13-5 Levels of LOAEL and SOAEL assumed for construction noise

Time period	LOAEL $L_{Aeq,T}$ dB	SOAEL $L_{Aeq,T}$ dB
Daytime (07:00 – 19:00 Monday to Friday and Saturdays 07:00 – 13:00)	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1 (Ref 5.N) Section E3.2 and Table E.1 BS 5228-1 (Ref.5.N)
Night (23:00 – 07:00)	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1 (Ref 5.N) Section E3.2 and Table E.1 BS 5228-1 (Ref.5.N)
Evening and Weekends Time periods not covered above	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1 (Ref 5.N) Section E3.2 and Table E.1 BS 5228-1 (Ref 5.N)

13.2.40 Where the existing ambient noise level already exceeds the level specified to represent a SOAEL as stated in the table above, then a significant effect would be

derived on the basis that construction noise should not increase the ambient noise climate by more than 3dB. A SOAEL is therefore taken to be equivalent to the existing ambient noise level.

Demolition and Construction Vibration

13.2.41 Significant effects are deemed to occur if Peak Particle Velocity (PPV) levels exceed 1mms^{-1} as consistent with the moderate adverse effects for the LOAEL defined in Table 13-6.

13.2.42 For the demolition and construction vibration assessment, the following has been considered with regard to the setting of LOAEL and SOAEL values for construction generated vibration at residential properties.

Table 13-6 Construction vibration significance thresholds

Vibration Level (PPV)	Effect	Significance	Observed Adverse Effect Level
Vibration less than 0.3mms^{-1}	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Neutral	NOEL
Vibration between 0.3 and 1.0mms^{-1}	Vibration might be just perceptible in residential environments	Minor adverse	
Vibration between 1.0 and 10.0mms^{-1}	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.	Moderate adverse	LOAEL
Vibration greater than 10mms^{-1}	Vibration is likely to be intolerable for any more than a very brief exposure to this level.	Major Adverse	SOAEL

Operational Traffic Noise

13.2.43 Noise associated with road traffic sources has been calculated in accordance with the methodology of the Calculation of Road Traffic Noise (CRTN) (Ref 13.19), and assessed in accordance with the DMRB Sustainability and Environmental Appraisal LA111 Noise and Vibration published November 2019 (Ref 13.20).

13.2.44 Traffic flow information provided within the Transport Assessment (ES Appendix 16.4) produced in support of this application has been used, primarily considering road traffic noise based upon 2024, 2030, 2037 and 2044 flow data. The 2044 assessment year represents the final completion of the proposed Development, the others being interim assessment years representative of the phased build out of the proposed Development. The data supplied included both “with” and “without”

proposed Development flows allowing changes in road traffic noise to be considered. For the interim years of 2024, 2030 and 2027 the traffic flows include both operational traffic flow including the built-out element of the proposed Development and construction traffic.

13.2.45 Calculations have been undertaken in accordance with the methodology of the Calculation of Road Traffic Noise to derive Basic Noise Levels (BNL) along identified road links within the study area as defined in Section 13.1. The methodology utilises the total Annual Average Weekday Traffic (AAWT) flow numbers, the percentage of heavy vehicles (greater than 3.5 tonnes) and vehicle speeds over an 18hr period between 06:00 and 00:00 to predict an $L_{A10\ 18\text{-}hour}$ noise level for each link. Separate calculations are made for the "with Development" and "without Development" scenarios allowing the change in road traffic noise as a result of the proposed Development to be calculated.

13.2.46 In the event that the assessment determines that there are no significant effects when assessed against the smaller changes defined in the short term DMRB assessment it follows that there would not be any Significant effects when assessed against the long term DMRB assessment where greater changes are necessary to trigger a significant effect. As such the DMRB short term assessment will be presented to provide the worst-case situation.

13.2.47 The DMRB LA111 (Ref.13.19) provides classification for the magnitude of change in road traffic noise in terms of both long-term and short-term changes in road traffic noise with the smallest perceptible changes (Threshold Values) defined as 3dB(A) in the long term and 1dB(A) in the short-term comparisons. Changes in road traffic noise are referenced to a semantic rating scale within the DMRB to conclude the potential for resulting impacts. These have been amended to assist with the context of this assessment of the existing and evolving road network upon the proposed Development. The impact classifications in Table 13-7 and Table 13-8 show both adverse and beneficial changes for both short and long-term comparisons respectively.

Table 13-7 DMRB Short-term Magnitude Thresholds

Change, road traffic noise level	Short term impact classification
Decrease ≥ 5dB	Major Beneficial (Significant)
Decrease ≥ 3dB and < 5dB	Moderate Beneficial (Significant)
Decrease ≥ 1dB and < 3dB	Minor Beneficial
Decrease > 0dB and < 1dB	Negligible Beneficial
0dB	No Change
Increase > 0dB and < 1dB	Negligible Adverse
Increase ≥ 1dB and < 3dB	Minor Adverse
Increase ≥ 3dB and < 5dB	Moderate Adverse (Significant)
Increase ≥ 5dB	Major Adverse (Significant)

Table 13-8 Magnitude Thresholds

Change, road traffic noise level	Long term impact classification
Decrease ≥ 10dB	Major Beneficial (Significant)
Decrease ≥ 5dB and < 10dB	Moderate Beneficial (Significant)
Decrease ≥ 3dB and < 5dB	Minor Beneficial
Decrease ≥ 1dB and < 3dB	Negligible Beneficial
0dB	No Change
Increase ≥ 1dB and < 3dB	Negligible Adverse
Increase ≥ 3dB and < 5dB	Minor Adverse
Increase ≥ 5dB and < 10dB	Moderate Adverse (Significant)
Increase ≥ 10dB	Major Adverse (Significant)

13.2.48 For the purposes of this assessment, significance attributable to change in road traffic noise have been based upon the guidance provided in the revised DMRB LA111 (Ref 13-19) and is defined in Table 13-9.

Table 13-9 DMRB Determination of Significance derived from magnitude of change

Significance	Short term magnitude of change
Significant	Major
Significant	Moderate
Not Significant	Minor
Not Significant	Negligible

13.2.49 For the purposes of assessing the new road links including the A20 realignment within the proposed Development, daytime noise levels of SOAEL and LOAEL relative to road traffic noise have been based upon the guidance provided in the revised DMRB LA111 (Ref 13.20). The definitions of LOAEL and SOAEL used in the operational traffic noise assessment are presented in Table 13-10 and are relative to the road traffic noise levels at sensitive receptors.

Table 13-10 Operational Levels of LOAELs and SOAELs for existing sensitive receptors in vicinity of new road links

Time Period	LOAEL	SOAEL
Day (06:00 – 24:00)	55 $L_{A10,18hr}$ Facade	68 $L_{A10,18hr}$ Facade
Night (23:00 – 07:00)	40dB L_{night}, outside (free-field)	55dB L_{night}, outside (free-field)

Sensitivity Testing for Road Traffic in Construction Peak/Interim Build Out and Operational Phase

13.2.50 In addition to the operational traffic assessment presented in Section 13.5 a sensitivity test scenario has also been undertaken by the Transport, Air Quality and Noise and Vibration disciplines in Chapters 16, 6 and 13 respectively.

13.2.51 This additional sensitivity test has been undertaken to consider any additional traffic changes between the Do Nothing BNL and Do Something BNL for the same assessment years considered in the traffic assessment for the peak construction and operational phase presented above. A full explanation of this further sensitivity test is provided in Chapter 2.

13.2.52 To reiterate the further scenarios referenced in Chapter 2: EIA Approach and Methodology considered in the additional sensitivity test are:

- Scenario 1: Quantum for approval 2030 (proposed Development plus Framework Masterplan – 10,000 residential units)
- Scenario 2: Quantum for approval 2044 (proposed Development plus Framework Masterplan – 10,000 residential units)

13.2.53 Following the DMRB LA111 (Ref.13.19) assessment methodology, calculations were made using the additional traffic data for the three scenarios stated above and the difference between the Do Nothing BNL (dB) predicted level and the Do Something BNL (dB) predicted level determined. Using the DMRB Semantic Short-term impact classification, presented in Table 13-6 that was used for the original assessment, the impacts were determined.

13.2.54 The data output of these further sensitivity tests of scenarios 1 and 2 described above are provided in Appendix 13.4 as:

- Table 13-45 Further traffic noise sensitivity test results – Scenario 1, Change in traffic noise between 2030 Do Minimum Scenario and 2030 Do Something Scenario, and
- Table 13-46 Further traffic noise sensitivity test results – Scenario 2 Change in traffic noise between 2044 Do Minimum Scenario and 2030 Do Something Scenario.

13.2.55 Following this assessment, it was determined that for all three scenarios there are a very small number of instances in which the DMRB semantic short-term change classification altered from being No Change in the original assessment to Negligible or from Negligible to Minor in the sensitivity test. There are however, no instances of adverse impacts that are greater than Minor resulting from the sensitivity tests and as such the conclusion that there are **no significant effects** from the traffic in the construction peak and operational phase remains the case. Therefore, in all scenarios for all receptors the sensitivity text concludes that the main assessment is appropriate and robust.

Operational Noise: Commercial, Industrial and Retail

13.2.56 Significant effects are deemed to occur if the mitigated operational 'Rating Levels' described in *BS4142:2014+A1 2019 Methods for rating and assessing industrial and commercial sound,* exceeds the measured background noise level (L_{A90}) by more than +5dB.

13.2.57 For the operational noise assessment associated with the noise generating aspects of the proposed Development, the following has been considered with regard to the

setting of NOEL, LOAEL and SOAEL values at noise sensitive residential receptors. These can be applied at the future Tier assessment stages once layouts have been produced for the proposed Development and the proximity of sensitive receptors can be determined.

Table 13-11 Operational noise significance thresholds (noise generating aspects)

BS4142:2014 Assessment	Example Outcome	Noise Policy Statement England	Actions
Greater than L_{A90} – 10dB	No effect – not noticeable	NOEL	No specific measures required
Rating level of between L_{A90}-10dB and L_{A90} +/- 0dB	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.		
Rating level of between L_{A90} +/- 0dB and L_{A90} + 5dB	Noise can be heard and causes small changes in behaviour and/or attitude. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	LOAEL	Mitigate and reduce to a minimum
Rating Level of between L_{A90} + 5dB and L_{A90} + 10dB	The noise causes a material change in behaviour and/or attitude. Quality of life diminished due to change in the acoustic character of the area.		
Rating level of greater than L_{A90} + 10dB	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects.	SOAEL	Mitigate and reduce to a minimum

Consideration of Site Suitability

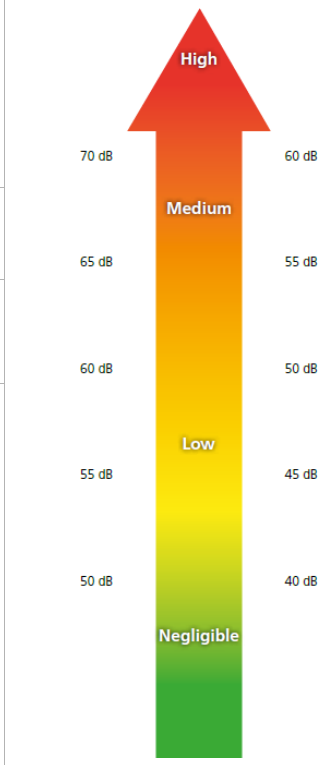
13.2.58 Significant effects are deemed to have occurred if the noise levels within the land parcels identified for residential end use exceed the following criteria based upon the NPPF, NPSE, ProPG, BS8233 and the World Health Organisation's Guidelines for Community Noise as set out in the following paragraphs covering residential, public open space, education and healthcare provision.

Operational Noise: Residential (including Hotel) Site Suitability

13.2.59 With regards to the suitability of the site for residential development the table below presents a matrix assigning noise levels to Policy derived impacts. These levels can then be used for the assessment and consideration of residential suitability.

13.2.60 Significant effects are defined as occurring at the levels defined in Table 13-12 for the day and night-time periods corresponding to the SOAELs.

Table 13-12 Significance criteria – residential suitability

Noise Policy Statement England	Planning Practice Guidance - Noise	Assigned Noise Levels/Limits		Mitigation Strategy
		External Noise	Internal Noise	
SOAEL	Noticeable and very disruptive		Increasing scale of negative impact with increase in noise levels above the BS8233 internal design criteria values	Significant mitigation required. Mitigate to a minimum
LOAEL	Noticeable and intrusive			Detailed mitigation required. Mitigate to a minimum
	Noticeable and disruptive			
NOEL	Not noticeable		BS8233/WHO internal design criteria met	None required

13.2.61 Significant vibration effects are deemed to have occurred where vibration levels within residential portions of the proposed Development are above the threshold values for a SOAEL for day and night-time periods as set-out in Table 13-13 below.

Table 13-13 BS6472 Vibration Dose Value Thresholds

Building/Location	Period	Threshold ($mm/s^{-1.75}$)	BS6472 Guidance	Significance of Effect
Residential Building	Day-time	≤ 0.2	Below threshold of low probability of Adverse Comment	NOEL
Residential Building	Night-time	≤ 0.1		
Residential Building	Day-time	0.2 to 0.4	Low probability of Adverse Comment	LOAEL
Residential Building	Night-time	0.1 to 0.2		
Residential Building	Day-time	0.4 to 0.8	Adverse Comment Possible	SOAEL
Residential Building	Night-time	0.2 to 0.4		
Residential Building	Day-time	0.8 to 1.6	Adverse Comment Probable	
Residential Building	Night-time	0.4 to 0.8		

NOTE – For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose value ranges for a 16-hour day.

13.2.62 To create noise contour plans to demonstrate the site suitability noise modelling techniques were employed in which balancing was undertaken of divergences between the measured LAeq survey data and the traffic noise levels. To facilitate this the LA10 levels were converted to LAeq values using the conversion methodology set out in the document Converting the UK traffic noise index LA10,18hour to EU noise indices for noise mapping, (Ref.13.27) so that they were compatible with the LAeq measured survey levels. This then enabled balancing of the measured survey levels and levels derived from the traffic flows so that noise contour plans could be produced taking account of both sets of data.

Operational Noise: Public Open Spaces

13.2.63 Levels of LOAEL and a SOAEL should only be defined at residential receptors and therefore no such values have been defined for Public Open Spaces.

13.2.64 Assessment and consideration of noise associated with areas of public open space is considered in accordance with the external guidance of both the WHO Guidelines for Community Noise and BS8233. Within BS8233 a level of between 50dB LAeq, T and 55dB LAeq,T is considered to be acceptable for external amenity depending on the local noise environment.

Operational Noise: Education Buildings Site Suitability

13.2.65 Again, as LOAEL and a SOAEL are concepts defined primarily for residential amenity, these are not specified relative to Educational Provision.

13.2.66 Significant effects are therefore deemed to have occurred where noise levels within the areas identified for educational provision have the potential to result in the exceedance of the room usage criteria for indoor ambient noise levels detailed within Building Bulletin 93: Acoustic Performance Standards for Schools.

Operational Noise: Healthcare Buildings Site Suitability

13.2.67 Again, as LOAEL and a SOAEL are concepts defined primarily for residential amenity, these are not specified relative to Healthcare Provision.

13.2.68 Significant effects are deemed to have occurred where noise levels within the areas identified for healthcare provision have the potential to result in the exceedance of

the room usage criteria within Health Technical Memorandum 08-01 (HTM08-01): Acoustics.

Operational Ground Borne Vibration

13.2.69 The consideration of vibration has been undertaken using the guidance of BS6472 relating to human perception thresholds. BS6472 presents values at which vibration from sources other than blasting are likely to result in adverse comment from occupiers in terms of 16hr daytime (07:00 – 23:00) and 8hr night-time (23:00 – 07:00) Vibration Dose Values (VDV).

Table 13-14 BS6472 Vibration Dose Value Thresholds

Building/Location	Period	Threshold Criterion, in (mm/s$^{-1.75}$)		
		Low probability of Adverse Comment (mm/s$^{-1.75}$)	Adverse Comment Possible (mm/s$^{-1.75}$)	Adverse Comment Probable (mm/s$^{-1.75}$)
Residential Building	Day-time	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential Building	Night-time	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

NOTE – For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose value ranges for a 16-hour day.

13.2.70 The assessment is based upon measurements taken in close proximity to the HS1 railway line located immediately beyond the northern border of the proposed Development. This approach provides a worst-case scenario and provides a good representation of ground conditions for new receptors that will be located close to the northern border.

Limitations and Assumptions

13.2.71 The limitations and assumptions applicable to the noise and vibration assessment of the proposed Development are presented and discussed below.

13.2.72 The baseline surveys were completed around the site between September 2017 and October 2018. Whilst fully agreed with Local Planning Authority prior to undertaking and utilising both short and longer term (up to five days) surveys the noise and vibration levels quantified can only ever represent a ‘snapshot’ in time of the noise and vibration climate during the specific periods monitored. However, it is considered the industry norm to assess and consider noise and vibration in this way for the purposes of assessment; and as comprehensive as possible baseline survey has been undertaken at the site to represent the noise climate as robustly as possible. It is considered that any changes to the noise climate between the 2017/2018 survey dates and the publication of this ES will primarily be caused by the effects of the various lockdowns implemented during 2020 and 2021 to combat the Covid 19 pandemic and associated restrictions to the United Kingdom receiving visitors from overseas. Therefore, measurements taken during this period would be considered to be less representative in the long term than those taken during the surveys of 2017 and 2018 presented in this chapter. As such, the baseline noise climate has not been updated since the 2017/2018 survey and is considered to provide a representative reflection of the current noise environment.

13.2.73 The noise assessment is based upon the development proposals shown on the parameter plans (ES Appendix 4.2) and Illustrative Masterplan (ES Appendix 4.5), which allows for flexibility of street layouts and precise location of individual buildings. The screening effects of the proposed building structures within the proposed Development itself cannot be represented or considered in this Tier 1 assessment therefore, the assessment considers the absolute worst case of uninhibited noise propagation across all aspects of the site.

13.2.74 There are inherent limitations to the accuracy of the noise model created. The model assumes positive wind vectors and is reliant upon the accuracy of the data entered into the model including topographical details, noise levels of noise sources, traffic flow data etc. However, the information used is as accurate as was possible to reasonably source.

13.2.75 With regard to the proposed commercial, retail and industrial areas of the proposed Development the limitations of the study are presented below:

- At this early stage of the development process, only indicative areas are identified within the regulatory plans for commercial and industrial end uses; end users and consequentially the noise profiles of these users have not been identified;
- Only areas have been identified on the Illustrative Masterplan (ES Appendix 4.5) and no specific layouts proposed within these areas are available as this would depend upon user interest, requirements and uptake which cannot be determined at this time;
- The use classes proposed (such as Class E Commercial, Business and Service and Class F Local Community Uses) cover a myriad of potential users and as such noise generation profiles of end users cannot be assumed or concluded at this time but can be considered further as part of the future Tier assessments once further information of use classes and layouts become available.

13.2.76 Assumptions have had to be made with regard to the future use of the local rail line and High Speed 1 line during the next 30 years in terms of locomotives and rolling stock, as well as the frequency of services provided. For the purposes of this assessment, it is assumed that this would be no louder than those operating at the time of the surveys and the frequency of services would also be similar to those currently offered.

13.2.77 With regard to these limitations and assumptions, at Tier 1 sufficient information is only available to allow the identification of possible design criteria based upon acoustic guidance which in some instances will require further consideration at the future Tier assessment stages when building designs and layouts are further advanced and controlled through suitably worded planning conditions. This would ensure that noise (and vibration) is considered as a key issue of the detailed design of the proposed Development once end users become identified and subsequent phases built out.

13.2.78 With regards to existing buildings that have an option to be either demolished or retained they have been considered as part of the demolition works in ‘Consideration of demolition noise effects’ and also in ‘Assessment of Building to be Retained’, which considers the scenario that they are retained. The worst-case in the demolition phase (demolition of buildings) and the worst-case in operation (retention of the buildings) has been assessed

13.3 Baseline

Existing Baseline

13.3.1 The following section outlines the baseline information obtained through desk studies, consultation and site specific baseline surveys.

Noise Monitoring Survey

13.3.2 A desktop study of commercial mapping and aerial photography indicated that the primary existing noise sources in the area of the proposed Development site are anticipated to be associated with:

- Noise from road traffic using the M20 motorway just to the north of the proposed Development site and the A20 passing through the proposed Development site;
- Trains using the high-speed electrified rail line that connects London with continental rail networks via the Channel Tunnel (HS1). This railway lines pass to the north of the proposed Development site;
- The Lympne Industrial Estate located towards the southern part of the proposed Development is likely to dominate the baseline noise environment within this part of the site.
- In addition to these specifically identified features, there is a general noise environment across the site that is influenced by road traffic on the local road network and general human activities such as agriculture and residential noise sources.

13.3.3 Following the desktop study, and through consultation with the Local Planning Authority EHO, a baseline noise survey regime was derived comprising of 16 monitoring positions on both an unattended longer term and attended short term basis. This was completed to determine the existing noise climate across the proposed Development area for the original ES, and to capture the likely dominant noise sources referred to above. A review of the baseline surveys undertaken during 2017 and 2018 has been carried out and it has been concluded that there has been no substantial change to the existing road network included in the study area during the intervening period. As such the baseline surveys undertaken are considered to provide a good indication of baseline conditions for this ES, and have been used for the environmental impact assessment provided in this chapter. Also taken into consideration is the recent lockdown measures implemented during 2020 and 2021 to combat the Covid 19 pandemic. Any revised surveys during these recent times are unlikely to provide more accurate baseline information than the surveys previously undertaken on 2017/2018 and presented in this chapter.

13.3.4 The noise monitoring locations for the survey are provided in Figure 13.1 in ES Appendix 13.3 and take account of the additional survey requirements agreed following the receipt of the formal Scoping Opinion Report 2020 received from F&HDC. The noise monitoring locations and durations were determined in consultation with the Environmental Health Officer (EHO) at Folkestone & Hythe District Council. The monitoring was planned on the basis of the following method:

- Longer term unattended surveys would be undertaken over a minimum period of five days to cover both the weekday and weekend periods. In total six number locations were considered in this manner; and
- Shorter term attended monitoring would be undertaken on the basis of a rotational attended 24hr weekday monitoring surveys. The principle of this would be that for a full 24hr period a selection of monitoring locations would be considered, changing

location every 30 – 60 minutes. In total ten locations were considered in this manner over two separate 24hr periods.

13.3.5 Noise measurements have been completed using BS EN 61672-1 Class 1 compliant sound level analysers and baseline noise surveys have been completed in accordance with BS7455-1: 2003 '*Description and measurement of environmental noise – Part 1: Guide to quantities and procedures*' and BS7455-2: 1991 '*Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use'*.

13.3.6 The measurements obtained from the baseline surveys have been used to form the basis of the noise and vibration assessments presented in this chapter.

Noise Monitoring Results

13.3.7 The following suite of tables summarise the monitoring survey results for both the short-term and long-term survey locations, separated into daytime and night-time periods (locations shown on Figure 13.1 in ES Appendix 13.3). In addition, the full short term monitoring datasets are also available in ES Appendix 13.2. Due to the amount of data the full datasets for the longer-term data are not provided in the ES Appendices but can be provided on request.

13.3.8 Within the presentation of the longer-term data within this chapter, the typical 24hr daytime period has been divided into two discrete periods for assessment purposes, as outlined below:

- 16hr Daytime period: 07:00 to 23:00 hours; and,
- 8 hr Night-time period: 23:00 to 07:00 hours.

13.3.9 Within the information in the following tables the "S" suffix denotes the short-term measurement positions and the "L" suffix long term measurement positions. The location numbers quoted relate directly to those presented in Figure 13.1 on ES Appendix 13.3.

Table *13-15 Short-term manned measurement: Summary levels NML01S Stone Street North*

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML01S	15th May 2018	12:55 – 13:55	59.9	75.5	60.7	55.2
	15th May 2018	16:40 – 17:40	59.5	67.5	60.8	57.4
	15th May 2018	21:00 – 22:00	55.6	67.6	57.5	52.5
	16th May 2018	00:50 – 1:50	54.4	79.5	56.6	47.3

Table 13-16 Short-term manned measurement: Summary levels NML02S Ashford Road

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML02S	15th May 2018	11:45 – 12:45	61.6	79.3	64.3	55.4
	15th May 2018	15:30 – 16:30	61.9	84.0	64.5	55.3
	15th May 2018	19:50 – 20:50	59.2	77.5	63.0	50.1
	16th May 2018	23:35 – 00:00	54.4	67.1	58.6	45.2
	16th May 2018	00:00 – 00:35	53.0	69.3	55.4	44.7

Table 13-17 Short-term manned measurement: Summary levels NML03S Folkes Wood Way

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML03S	15th May 2018	10:30 – 11:30	54.9	75.4	55.5	49.0
	15th May 2018	14:10 – 15:10	58.8	79.9	61.8	51.1
	15th May 2018	18:35 – 19:35	53.2	73.7	53.7	46.2
	15th May 2018	22:20 – 23:20	46.9	67.7	49.0	42.9
	16th May 2018	02:05 – 03:05	44.8	62.8	46.1	42.0

Table 13-18 Short-term manned measurement: Summary levels NML04S Somerfield Farm

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML04S (Daytime)	13th June 2018	12:15 – 13:15	47.3	63.3	48.6	43.0
	13th June 2018	15:20 – 16:20	48.6	62.9	50.8	43.0
	13th June 2018	18:30 – 19:30	49.5	66.2	51.5	42.5
NML04S* (After dark)	13th June 2018	21:40 – 22:40	45.1	51.5	46.8	42.1
	14th June 2018	01:00 – 02:00	38.3	50.8	39.5	35.1
	14th June 2018	04:15 – 05:15	48.4	61.0	50.7	41.2
NML04S	14th June 2018	07:20 – 08:20	51.5	63.9	52.1	48.4
	14th June 2018	10:20 – 11:20	52.6	64.9	54.6	49.0

*Survey location NML04S was different for the daytime and after dark survey periods. This was due to safety concerns in unlit areas, and to prevent headlight and noise disturbance to local residents by avoiding driving past the farm repeatedly after darkness had fallen. The location used after dark was considered to be entirely representative.

Table 13-19 Short-term manned measurement: Summary levels NML05S Harringe Brooks Wood

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML05S	13th June 2018	11:30 – 23:00	42.3	69.9	43.5	33.5
	13th June 2018	23:00 – 00:00	35.2	47.9	38.4	28.7
	14th June 2018	00:00 – 03:30	30.4	49.6	32.6	26.9
	14th June 2018	03:45 – 07:00*	48.9	74.1	45.9	33.6
	14th June 2018	07:00 – 11:45	45.6	72.5	47.4	38.1

*elevated noise levels recorded due to dawn chorus

Table 13-20 Short-term manned measurement: Summary levels NML06S East of Lympne Industrial Estate

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML06S	13th June 2018	14:00 – 15:00	44.0	59.0	46.9	37.4
	13th June 2018	16:40 – 17:40	43.9	55.1	47.0	37.6
	13th June 2018	19:50 – 20:50	41.8	55.4	44.5	34.0
	13th June 2018	23:05 – 00:00	34.3	56.3	36.4	28.0
	14th June 2018	00:00 – 00:05	34.0	47.0	33.4	28.0
	14th June 2018	02:25 – 03:25	38.6	60.9	37.2	26.6
	14th June 2018	05:30 – 06:30	42.5	61.6	44.8	34.6
	14th June 2018	09:00 – 10:00	52.1	74.2	52.7	46.5

Table 13-21 Short-term manned measurement: Summary levels NML7S Otterpool Lane (Opposite Industrial Estate Entrance)

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML07S	13th June 2018	18:00 – 18:10	66.4	79.6	71.2	46.6
	13th June 2018	21:15 – 21:25	61.7	86.3	58.0	39.6
	14th June 2018	00:25 – 00:35	35.2	46.5	36.4	32.6
	14th June 2018	03:45 – 03:55	53.9	78.4	53.6	35.4
	14th June 2018	06:55 – 07:05	62.3	79.6	62.8	46.0

Table 13-22 Short-term manned measurement: Summary levels NML08S North of Lympne

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML08S	2nd Oct 2018	08:15 – 09:15	46.8	63.1	47.9	44.6
	2nd Oct 2018	12:57 – 13:57	45.2	61.8	46.4	42.1
	2nd Oct 2018	17:00 – 18:00	45.3	56.3	46.6	43.4
	2nd Oct 2018	20:53 – 21:53	42.9	56.3	44.3	40.3
	3rd Oct 2018	00:55 – 01:55	37.9	46.1	39.8	34.5
	3rd Oct 2018	05:00 – 06:00	44.7	52.1	46.5	41.9

Table 13-23 Short-term manned measurement: Summary levels NML09S West of Westenhanger

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML09S	2nd Oct 2018	09:55 – 10:55	53.1	60.9	54.6	50.8
	2nd Oct 2018	14:19 – 15:19	54.9	68.4	56.3	52.4
	2nd Oct 2018	18:20 – 19:20	52.5	61.6	53.9	50.0
	2nd Oct 2018	22:15 – 23:15	49.1	55.2	51.2	45.8
	3rd Oct 2018	02:20 – 03:20	49.2	58.7	51.9	44.3
	3rd Oct 2018	06:20 – 07:20	57.1	64.7	58.6	54.8

Table 13-24 Short-term manned measurement: Summary levels NML10S East of Westenhanger

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML10S	2nd Oct 2018	11:16 – 12:16	48.7	68.5	49.5	43.6
	2nd Oct 2018	15:40 – 16:40	50.7	69.0	52.3	46.7
	2nd Oct 2018	19:34 – 20:34	49.1	67.0	49.4	44.6
	2nd Oct 2018	23:35 – 00:00	41.7	64.6	42.4	36.8
	3rd Oct 2018	00:00 – 00:35	44.0	66.3	44.0	37.0
	3rd Oct 2018	03:40 – 04:40	47.3	63.6	49.5	42.6
	3rd Oct 2018	07:35 – 08:35	52.3	67.9	54.0	47.2

Table 13-25 Long-term measurements: Summary levels NML1L A20

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML1L	20th Sept 2017	Daytime (14:30 – 23:00)	66.8	77.1 - 89.0	69.0	44.1
		Night (23:00 – 07:00)	59.5	72.2 - 85.1	54.8	43.6
	21st Sept 2017	Daytime (07:00 – 23:00)	66.7	77.5 - 86.2	70.6	47.1
		Night (23:00 – 07:00)	59.5	72.1 - 85.1	54.5	46.8
	22nd Sept 2017	Daytime (07:00 – 23:00)	67.8	78.8 - 94.8	72.2	46.5
		Night (23:00 – 07:00)	58.1	53.7 - 86.1	50.5	38.7
	23rd Sept 2017	Daytime (07:00 – 23:00)	67.8	78.9 - 93.3	72.4	49.3
		Night (23:00 – 07:00)	60.7	51.4 - 85.8	54.8	41.3
	24th Sept 2017	Daytime (07:00 – 23:00)	67.5	77.0 - 96.9	69.6	49.3
		Night (23:00 – 07:00)	59.0	51.4 - 84.9	51.8	42.8
	25th Sept 2017	Daytime (07:00 – 23:00)	66.7	76.8 - 96.0	70.1	51.0
		Night (23:00 – 07:00)	57.9	74.3 - 82.5	54.0	46.6
	26th Sept 2017	Daytime (07:00 – 23:00)	65.2	75.3 - 90.7	69.2	51.8
		Night (23:00 – 07:00)	58.0	54.3 - 85.1	54.7	46.5
	27th Sept 2017	Daytime (07:00 – 16:00)	65.8	77.0 - 92.4	70.7	50.5

Table 13-26 Long-term measurements: Summary levels NML2L West of Industrial Estate

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML2L	20th Sept 2017	Daytime (13:45 – 23:00)	45.4	51.1 - 82.7	45.4	36.9
		Night (23:00 – 07:00)	38.7	41.5 - 67.6	38.2	31.1
	21st Sept 2017	Daytime (07:00 – 23:00)	46.3	48.7 - 73.3	47.2	40.8
		Night (23:00 – 07:00)	44.3	46.9 - 67.5	45.2	39.1
	22nd Sept 2017	Daytime (07:00 – 23:00)	50.4	51.2 - 80.1	49.5	40.7
		Night (23:00 – 07:00)	39.3	40.9 - 64.3	39.7	35.2
	23rd Sept 2017	Daytime (07:00 – 23:00)	52.4	57.7 - 82.5	53.6	46.6
		Night (23:00 – 07:00)	50.4	41.9 - 85.5	45.2	36.9
	24th Sept 2017	Daytime (07:00 – 23:00)	46.4	54.1 - 70.2	48.4	37.8
		Night (23:00 – 07:00)	42.1	40.4 - 71.1	41.7	33.7
	25th Sept 2017	Daytime (07:00 – 23:00)	48.9	53.4 - 79.6	50.4	43.5
		Night (23:00 – 07:00)	44.1	43.8 - 73.5	44.5	38.4
	26th Sept 2017	Daytime (07:00 – 23:00)	50.4	55.0 - 76.7	51.4	44.6
		Night (23:00 – 07:00)	43.6	46.8 - 72.0	45.1	36.7
	27th Sept 2017	Daytime (07:00 – 15:45)	48.9	57.1 - 83.6	50.1	42.1

Table 13-27 Long-term measurements: Summary levels NML3L Northern boundary of proposed Development

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML3L	20th Sept 2017	Daytime (16:30 – 23:00)	59.8	55.1 - 85.9	54.2	49.8
		Night (23:00 – 07:00)	52.6	50.3 - 86.3	48.8	42.3
	21st Sept 2017	Daytime (07:00 – 23:00)	59.0	55.4 - 85.8	54.9	49.5
		Night (23:00 – 07:00)	56.2	56.8 - 85.3	55.3	48.7
	22nd Sept 2017	Daytime (07:00 – 23:00)	60.9	60.1 - 96.6	56.6	52.2
		Night (23:00 – 07:00)	56.4	58.4 - 88.5	56.5	50.8
	23rd Sept 2017	Daytime (07:00 – 23:00)	60.4	64.7 - 95.6	57.0	49.6
		Night (23:00 – 07:00)	50.9	53.9 - 76.9	52.6	44.4
	24th Sept 2017	Daytime (07:00 – 23:00)	60.4	60.0 - 89.4	57.6	51.2
		Night (23:00 – 07:00)	55.5	55.8 - 84.6	53.3	46.1
	25th Sept 2017	Daytime (07:00 – 23:00)	60.3	62.8 - 85.6	57.9	53.7
		Night (23:00 – 07:00)	55.4	56.0 - 84.3	54.8	47.7
	26th Sept 2017	Daytime (07:00 – 23:00)	60.1	59.5 - 87.6	57.7	53.7
		Night (23:00 – 07:00)	56.9	60.8 - 88.1	56.9	50.0
	27th Sept 2017	Daytime (07:00 – 17:45)	59.2	54.9 – 88.0	55.2	51.2

Table 13-28 Long-term measurements: Summary levels NML4L North of Industrial Estate

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML4L	28th Sept 2018	Daytime (15:30 – 23:00)	41.5	41.4 - 58.7	42.4	39.5
		Night (23:00 – 07:00)	37.1	34.6 - 64.3	37.6	33.1
	29th Sept 2018	Daytime (07:00 – 23:00)	40.0	37.5 - 65.1	40.5	33.4
		Night (23:00 – 07:00)	39.3	38.3 - 71.3	36.6	29.9
	30th Sept 2018	Daytime (07:00 – 23:00)	44.3	44.2 - 80.2	40.6	34.6
		Night (23:00 – 07:00)	39.4	41.4 - 70.1	39.8	35.1
	1st Oct 2018	Daytime (07:00 – 23:00)	42.2	46.2 - 74.1	43.5	37.7
		Night (23:00 – 07:00)	43.9	47.6 - 61.4	46.0	38.1
	2nd Oct 2018	Daytime (07:00 – 23:00)	45.1	47.5 - 64.0	46.8	39.4
		Night (23:00 – 07:00)	37.9	40.2 - 62.4	38.9	33.6
	3rd Oct 2018	Daytime (07:00 – 15:30)	42.3	46.7 - 68.7	43.9	35.8

Table 13-29 Long-term measurements: Summary levels NML5L West of Barrow Hill Cottages

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML5L	28th Sept 2018	Daytime (17:45 – 23:00)	56.3	57.1 - 70.1	57.6	54.0
		Night (23:00 – 07:00)	50.4	49.6 - 65.7	51.5	45.8
	29th Sept 2018	Daytime (07:00 – 23:00)	49.7	51.2 – 75.0	50.0	45.3
		Night (23:00 – 07:00)	50.6	54.6 - 64.5	53.2	43.7
	30th Sept 2018	Daytime (07:00 – 23:00)	53.2	55.0 - 73.6	54.7	49.7
		Night (23:00 – 07:00)	50.5	53.9 - 65.9	52.0	45.5
	1st Oct 2018	Daytime (07:00 – 23:00)	54.9	52.1 - 72.2	55.6	51.4
		Night (23:00 – 07:00)	47.7	50.0 - 68.3	48.7	42.7
	2nd Oct 2018	Daytime (07:00 – 23:00)	53.9	55.5 - 73.4	55.2	50.8
		Night (23:00 – 07:00)	50.8	52.8 - 62.5	52.1	44.9
	3rd Oct 2018	Daytime (07:00 – 17:30)	52.5	52.3 - 72.3	53.0	48.7

Table 13-30 Long-term measurements: Summary levels NML6L Otterpool Manor

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML6L	28th Sept 2018	Daytime (17:45 – 23:00)	52.6	55.4 – 75.0	53.8	50.2
		Night (23:00 – 07:00)	48.9	50.2 - 68.8	50.3	45.7
	29th Sept 2018	Daytime (07:00 – 23:00)	50.2	54.5 - 73.6	51.8	46.0
		Night (23:00 – 07:00)	47.6	47.3 - 75.3	49.2	39.2
	30th Sept 2018	Daytime (07:00 – 23:00)	54.8	50.3 – 80.0	53.5	48.6
		Night (23:00 – 07:00)	48.9	48.9 - 78.5	48.4	44.8
	01st Oct 2018	Daytime (07:00 – 23:00)	51.4	47.2 - 74.1	51.2	47.0
		Night (23:00 – 07:00)	42.8	44.7 - 66.8	43.8	38.9
	02nd Oct 2018	Daytime (07:00 – 23:00)	48.7	49.2 - 80.1	49.5	45.3
		Night (23:00 – 07:00)	46.8	46.0 - 65.3	46.9	41.9
	03rd Oct 2018	Daytime (07:00 – 16:15)	53.8	51.7 – 75.0	53.0	42.9

Ground Borne Vibration (Train induced) Monitoring Survey

13.3.10 As a result of the proximity of the active local rail line and the HS1 line both adjacent to the proposed Development site, a ground borne vibration survey has been completed to quantify the prevailing climate at the site and to allow the consideration of any vibration implications on the proposed Development site.

13.3.11 The local rail line and the High Speed 1 (HS1) railway line are located immediately beyond the northern boundary of the proposed Development site. The railway broadly follows the alignment of the M20 Motorway, positioned to the south of the motorway running broadly east/west through this section.

13.3.12 The baseline ground borne vibration surveys were undertaken over a period of four days between Friday 5th October and Tuesday 9th October 2018 on areas of soft ground close to the northern boundary of the site.

13.3.13 The vibration monitoring has been undertaken within the application site boundary at two monitoring location as indicated in Figure 13.1 in ES Appendix 13.3 on the basis of the following method:

- Continuous monitoring extending over a period of 4 days to cover the weekday and weekend periods at VML011. This location is to the West of Westenhanger station at National Grid Reference TR12728 37238. As trains pass close to VML1 some trains are under acceleration after stopping at Westenhanger Station, whilst others, mostly the high-speed services are through trains; and
- Short term attended monitoring over the period of 1 hour at VML2 (summarised in 5-minute intervals). On the southern side of Network Rail Bridge 946 – Barrow Hill Bridleway, National Grid Reference TR11143 37580. At this location the railway is elevated compared with the proposed Development site on an embankment. All trains are generally passing at speed through this section of the railway.

13.3.14 A short-term attended monitoring survey was undertaken at VML2 as no suitably representative secure location could be found within this area of the site. As such, short-term attended monitoring was undertaken capturing pass-bys of the various trains using this section of the railway line.

13.3.15 The monitoring of ground borne vibration was undertaken using a 01db ORION Smart Vibration Monitoring Terminal with an integrated tri-axial digital accelerometer. Measurements were recorded in three orthogonal planes (Longitudinal, Transverse and Vertical) continuously throughout the survey period quantifying both Vibration Dose Values (VDV) and Peak Particle Velocity (PPV) vibration levels for the consideration of human perception and damage potential respectively.

Ground Borne Vibration Monitoring Results

13.3.16 Table 13-31 to Table 13-33 below summarise the ground borne vibration monitoring survey results at the locations detailed above (VML 1 and VML2), and presented in Figure 13.1 in ES Appendix 13.3. The full short term monitoring data is available in ES Appendix 13.2.

Table 13-31 Vibration baseline monitoring survey results VML1 (PPV – Peak Particle Velocity)

Location	Date	Time Period	PPV (X-axis) Lmax (mm/s^{-1})	PPV (Y-axis) Lmax (mm/s^{-1})	PPV (Z-axis) Lmax (mm/s^{-1})
VML1	5th Oct 2018	Daytime (11:15 – 23:00)	0.000516	0.000465	0.000405
		Night (23:00 – 07:00)	0.000419	0.000400	0.000338
	6th Oct 2018	Daytime (07:00 – 23:00)	0.028220	0.031600	0.029910
		Night (23:00 – 07:00)	0.000245	0.000333	0.000299
	7th Oct 2018	Daytime (07:00 – 23:00)	0.002721	0.001510	0.000411
		Night (23:00 – 07:00)	0.000288	0.000397	0.000377
	8th Oct 2018	Daytime (07:00 – 23:00)	0.006845	0.006845	0.006845
		Night (23:00 – 07:00)	0.000300	0.000421	0.000395
	9th Oct 2018	Daytime (07:00 – 11:15)	0.000294	0.000428	0.000384

Table 13-32 Vibration baseline monitoring survey results VML01 (VDV – Vibration Dose Value)

Location	Date	Time Period	VDV (X-axis) Lmax ($mm/s^{-1.75}$)	VDV (Y-axis) Lmax ($mm/s^{-1.75}$)	VDV (Z-axis) Lmax ($mm/s^{-1.75}$)
VML01	5th Oct 2018	Daytime (11:15 – 23:00)	0.005414	0.006979	0.038440
		Night (23:00 – 07:00)	0.004470	0.004412	0.026060
	6th Oct 2018	Daytime (07:00 – 23:00)	0.135300	0.175000	0.159000
		Night (23:00 – 07:00)	0.002866	0.003338	0.019830
	7th Oct 2018	Daytime (07:00 – 23:00)	0.014870	0.010410	0.026030
		Night (23:00 – 07:00)	0.003146	0.004067	0.026690
	8th Oct 2018	Daytime (07:00 – 23:00)	0.158400	0.158400	0.158600
		Night (23:00 – 07:00)	0.003774	0.004818	0.031440
	9th Oct 2018	Daytime (07:00 – 11:15)	0.005414	0.006979	0.038440

Table 13-33 Vibration baseline monitoring survey results VML02 (PPV – Peak Particle Velocity and VDV – Vibration Dose Level)

Date (Survey Period 11:00 to 12:00 10/05/18)	X Axis		Y Axis		Z Axis	
	PPV Lmax (mm/s^{-1})	VDV Lmax ($mm/s^{-1.75}$)	PPV Lmax (mm/s^{-1})	VDV Lmax ($mm/s^{-1.75}$)	PPV Lmax (mm/s^{-1})	VDV Lmax ($mm/s^{-1.75}$)
10/05/2018 11:07	0.00088	0.00778	0.00064	0.01023	0.00034	0.04430
10/05/2018 11:12	0.00041	0.00789	0.00005	0.01023	0.00009	0.04430
10/05/2018 11:17	0.00046	0.00807	0.00017	0.01023	0.00012	0.04430
10/05/2018 11:22	0.00051	0.00833	0.00055	0.01030	0.00029	0.04452
10/05/2018 11:27	0.00024	0.00835	0.00012	0.01030	0.00008	0.04453
10/05/2018 11:32	0.00019	0.00836	0.00009	0.01030	0.00006	0.04453
10/05/2018 11:37	0.00018	0.00836	0.00004	0.01030	0.00005	0.04453
10/05/2018 11:42	0.00033	0.00839	0.00042	0.01032	0.00036	0.04476
10/05/2018 11:47	0.00056	0.00864	0.00005	0.01032	0.00008	0.04476
10/05/2018 11:52	0.00013	0.00864	0.00004	0.01032	0.00005	0.04476
10/05/2018 11:57	0.00022	0.00865	0.00012	0.01032	0.00009	0.04476
10/05/2018 12:02	0.00088	0.00971	0.00011	0.01032	0.00010	0.04476

Future Noise Baseline

13.3.17 The future baseline is the situation that would prevail should a proposed Development not proceed. The future baseline is further defined by the assessment scenario that the topic adheres to. The future baseline for noise and vibration has identified the following.

13.3.18 As construction of the proposed Development progresses and the size of the Framework Masterplan grows over the construction period of 21 years, traffic on the surrounding road network is expected to increase. This growth in traffic has been

assessed for future years as set out in Chapter 16: Transport by the traffic team undertaking the Transport Assessment (ES Appendix 16.4).

13.3.19 This data has then been used to calculate the increase in road traffic noise in the area in order to consider potential changes to the noise climate used in the assessment for future years. It is assumed that rail traffic using the HS1 line immediately to the north of the site will remain broadly the same in future years.

13.4 Design and Mitigation

13.4.1 The following section sets out:

- The embedded design measures, including good practice approaches, relied on in this assessment; and
- The potential significant effects remaining after the application of embedded design measures and good practice approaches, and any additional mitigation required to address these potential significant effects.

13.4.2 The potential significant effects prior to additional mitigation are identified in the Assessment Summary table.

13.4.3 Environmental considerations have influenced the proposed Development throughout the design development process, from early options assessment through to refinement of the Project design. An iterative process has facilitated design updates and improvements, informed by environmental assessment and input from the Project design teams, stakeholders and public consultation.

13.4.4 Impacts would be reduced by measures embedded into the design of the development, as well as by additional mitigation, and together these measures would act to avoid, reduce and mitigate effects. The measures have been summarised by whether they are embedded design measures, which are secured through the documents for approval, or additional mitigation secured, for example, by planning condition or legal agreement. Embedded measures are described as measures that form part of the design, developed through the iterative design process and good practice standard approaches and actions commonly used on development projects to avoid or reduce environmental impacts, typically applicable across the whole Development. Additional mitigation is described as any additional Development-specific measures needed to avoid, reduce or offset potential impacts that could otherwise result in effects considered significant in the context of the EIA Regulations.

Embedded Design Measures

Construction

13.4.5 In order to ensure that noise and vibration generated by the construction of the proposed Development is suitably controlled. An Outline Code of Construction Practice (CoCP) (ES Appendix 4.17) has been prepared as part of this application in which mitigation measures have been set out. A detailed CoCP will be prepared when more construction details become available that will include consideration of any requirement for an application for prior consent to work under Section 61 of the Control of Pollution Act (CoPA).

13.4.6 Taking account of the lengthy construction period as the Framework Masterplan grows over the construction period of 21 years, parts of the proposed Development completed in the early phases of the proposed Development would become noise sensitive receptors to construction works scheduled for the later phases of the project. As such these receptors would require to be taken into consideration within the scope of the detailed CoCP.

13.4.7 Within the Outline CoCP (ES Appendix 4.17), mitigation strategies are presented and considered, formulated on the basis of "Best Practicable Means" (BPM). These measures would be implemented where necessary to minimise noise and vibration impacts at source. The following bullet points identify measures which will be adopted through the CoCP where relevant within construction works.

Plant and Equipment

- Modern, silenced and well-maintained plant would be used at all times, conforming to standards set out in EU Directives;
- Machinery, including vehicles, would be shut down or throttled back when not in use;
- Engine compartments would be closed when equipment is in use and the resonance of body panels and cover plates would be reduced by the addition of suitable dampening materials. Any rattling noise would be addressed by the tightening of loose parts or the addition of resilient materials;
- Semi-static and static equipment would be sited and orientated as far as is reasonably practicable away from noise-sensitive receptors and have localised screening if deemed necessary;
- Static plant known to generate significant vibration levels would be fitted with acoustic dampening;
- Generators and water pumps required for 24-hour operation would be super-silenced or screened as appropriate;
- Crane spindles, pulley wheels, telescopic sections and moving parts of working platforms would be adequately lubricated in order to prevent undue screeching and squealing; and
- Where possible mains electricity should be used rather than generators.

13.4.8 With regard to the potential increases in traffic flows due to construction activities, detailed information is not available at this Tier 1 upon which to base a quantitative assessment although an overall provision for construction traffic based on the Illustrative Masterplan (ES Appendix 4.5) buildout is included in the interim operational years in which 2030 is anticipated to be the peak year of construction. However, as a result of the potential for disturbance, construction traffic and routing would be considered in the future Tier assessments, within the scope of the supporting CoCP; or as part of any CoPA S61 agreements made with the LPA.

13.4.9 With regard to ground borne vibration, the specifics of the construction programme or the requirements for vibration generating techniques within the construction of the site are not currently known. It is therefore appropriate that ground borne vibration effects should also be considered and evaluated within the scope of the CoCP or CoPA S61 agreement when the main contractor has been appointed and detailed construction information becomes available.

13.4.10 Appropriate construction traffic routing would be implemented to minimise noise effects on sensitive receptors. Details of the routing of construction vehicles and visitors to the Site would be agreed with F&HDC. All construction traffic entering and leaving the Site would be closely controlled. Vehicles making deliveries or removing material would travel via designated routes. Measures would be taken to review and reduce where possible the numbers of construction vehicles accessing the application site during peak hours, by adopting measures such as 'just in time' deliveries. These measures are set out in the Outline CoCP (ES Appendix 4.17) and would be elaborated on in the Detailed CoCP.

Additional Mitigation

13.4.11 An iterative appraisal of the proposed Development taking into account the embedded design measures and good practice was undertaken to identify any potentially significant effects that would require additional mitigation. Effects related to noise and vibration that could be significant and therefore required further consideration for additional mitigation were as follows (all are operational effects):

- Permanent adverse effects from noise created by the prevailing noise climate of the area and future changes as a result of the proposed Development on new residential properties and hotel (site suitability);
- Permanent adverse effects from ground borne vibration created by trains using the railway lines on new residential properties and hotel (site suitability);
- Permanent adverse effects from noise associated with industrial activity/HGV movements at the Lympne Industrial Estate on new residential properties (site suitability);
- Permanent adverse effects from noise sources created by newly created businesses on new residential properties and existing residential properties (site suitability);
- Permanent adverse effects on learning caused by poor acoustics of new education buildings and noise in the environment on education provision (site suitability);
- Permanent adverse effects on patient well being caused by poor acoustics of new health buildings and noise in the environment on health provision (site suitability); and
- Permanent adverse effect on Public Open Space (site suitability) caused by a high noise levels of noise or unpleasant noise characteristics that are detrimental to the enjoyment of such areas.

Operation

13.4.12 The noise study undertaken within the scope of this Section is based upon “key development areas” across the site identified within the Illustrative Masterplan (ES Appendix 4.5), rather than a detailed layout. As a result, it is not possible to specifically conclude mitigation or enhancement measures at the present time as these would specifically be related to the building/site layouts proposed in the detailed designs that will be assessed as part of the future Tier assessments.

13.4.13 However, it is possible to identify generic measures that would be considered as part of future Tier assessments to control noise; these would require to be conditioned by the LPA to ensure that noise issues are suitably controlled going forward in the process. In addition, as a result of the duration of the construction of the proposed Development (19 years), heed would need to be taken, and wording incorporated to account for changing acoustic design advice.

13.4.14 Noise mitigation measures for each of the aspects of the proposed Development are further discussed below.

Residential Land Parcels

13.4.15 The following mitigation measures would require to be considered though the detailed design of any residential areas of the site, especially those to the north within influencing distances of the M20 and HS1 routes, and to the south around the Lympne Business Park:

- Appropriate façade mitigation measures (glazing and ventilation provision) to ensure that internal noise climates are acceptable.
- Layout considerations to ensure that noise is also controlled by layout design to avoid locating external sensitive areas and sensitive rooms in positions exposed to significant noise sources.
- Provision for acoustic screening where necessary either through optimum placement and design of intervening buildings (layout options) or specific acoustic fencing/bunding where necessary.

13.4.16 Consideration of these aspects would be undertaken as part of the future Tier assessments and specified and enforced through appropriate planning conditions controlling the residential aspects of the proposed Development. Reflecting on the noise and ground borne vibration present at the site it is not dissimilar to other residential development sites where, with the implementation of suitable design measures acceptable living conditions have been achieved that comply with current guidance standards, policy and legislation.

Retail/Commercial/Industrial

13.4.17 Noise associated with the retail/ commercial/ industrial activities proposed within the proposed Development has the potential to result in adverse effects on sensitive receptors in the vicinity, either proposed or existing. Measures would require to be implemented where necessary and appropriate at the detailed design phase to control noise, these would include:

- The use of layout provision. Building massing, orientation and positioning can be used as effective screening for noise generating uses;
- Any external fixed plant would require, as far as possible, to be located on façades not facing directly onto any sensitive residential receptors either existing or proposed, and would require acoustic treatment where necessary to control noise emissions;
- Noise generating activities should be screened by suitably robust and detailed acoustic fencing provision where deemed necessary;
- The construction of the building shells should be appropriately specified to control noise breakout into the environment from noisy activities undertaken within;
- Consideration of access routes and the proximity of these to sensitive receptors both proposed and existing; and
- Consideration of the location of service yards, timings of deliveries, along with the use classifications/activities permissible in proximity to existing or proposed sensitive receptors.

13.4.18 As the proposed Development is only at the outline planning stage with development areas identified and only potential use classes nominated, it is not possible to be specific about what the noise mitigation requirements would be in specific areas. Further assessment will be undertaken as part of the future Tier assessments when further details regarding uses is understood, and mitigation can be prescribed. Suitable noise limits based upon the prevailing noise climate should be specified within any appropriately worded planning permission to control noise.

13.4.19 This planning condition could be specified such to require a specific noise study be undertaken once an end user is identified for a plot to ensure that noise does not result in adverse impacts at either proposed or existing sensitive receptors. Any such

condition would be expected to reference the assessment methodology of *BS4142: 2014 +A1 2019.*

Schools, Medical Facilities, Dentists, Community Buildings

13.4.20 The following mitigation measures would be considered further as part of the future Tier assessments though the detailed design of these various types of buildings proposed for the site:

- The use of layout provision. Building massing, orientation and positioning can be used as effective screening for noise generating uses;
- Appropriate façade mitigation measures (glazing and ventilation provision) to ensure that internal noise climates are acceptable for the intended use of the building.
- Internal layout considerations of the building to ensure that noise is controlled by layout design to avoid locating external sensitive areas in positions exposed to noise sources.
- Provision for acoustic screening where necessary either through optimum placement and design of intervening buildings (layout options) or specific acoustic fencing/screening where necessary.

13.4.21 Consideration of these aspects would be specified and enforced through appropriate planning conditions. Acoustics would be considered as a key aspect of the detailed design to ensure that both internal and external noise levels are acceptable.

13.4.22 There are specific acoustic design standards relating to these types of buildings:

- BB93: Acoustic Design of Schools – Performance Standards, provides details of good acoustic design practices for educational buildings;
- HTM 08 01: Acoustics similarly provides acoustic design standards for medical facilities; and,
- BS8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings, provides acoustic design information for other buildings such as community facilities.

13.4.23 At the detailed design stage, the design of these buildings would draw upon appropriate advice at the time and comply with guidance contained within these documents.

13.5 Assessment of Residual and Cumulative Effects

13.5.1 The following section sets out the residual effects following the implementation of the embedded measures and additional mitigation set out above.

Consideration of demolition noise effects

13.5.2 In addition to the construction techniques anticipated for the general development of the site there are 89 existing properties that are scheduled for demolition located across the proposed Development site. Many of the properties to be demolished are isolated farms and outbuildings which are mostly single or two storey buildings; with the only exception being the racecourse grandstand structure. However, the majority of these structures are removed from receptors so would cause **no significant effects.**

13.5.3 These properties are listed in Table 4-1 of Chapter 4: The site and proposed Development.

13.5.4 Drawing 'Existing Buildings to be Demolished or Retained (ES Appendix 4.5) shows the location of buildings to be demolished. It has been established that many of the buildings to be demolished are located at a considerable distance away from any noise sensitive properties. However, there are some which have sensitive properties at closer distances with the closest being identified as around 50m away. The demolition work would therefore need to be considered carefully with regard to adverse noise impacts.

13.5.5 With regards to the buildings that are to be retained or have an option to be retained or demolished further consideration of these is made in the 'Assessment of Buildings to be Retained' section.

13.5.6 Table 13-34 provides an indication of sound pressure levels that may occur at set distances away from demolitions work, including 50m, the distance of the closest receptors. It is generally anticipated that each building can be demolished in one to two days during the daytime working hours so impacts will be of a short temporary duration confined to the daytime.

Table 13-34 Plant Noise Levels Associated with Demolition Works

Item	Plant	Sound Pressure Level in dB (A) at 10m	Sound Pressure Level (dB L_{Aeq})						
			20m	50m	100m	200m	300m	600m	1km
1	Tracked/wheeled 360 degree Excavators	85	79	71	65	59	55	49	45
2	Excavator mounted hydraulic breakers	92	86	78	72	66	62	56	52
3	Excavator mounted hydraulic crushers	82	76	68	62	56	52	46	42
4	Breaking up brick foundations – Breaker mounted on excavator	90	84	76	70	64	60	54	50
5	Dumping brick rubble – Tracked excavator (loading dump truck)	85	79	71	65	59	55	49	45
6	Breaking and spreading rubble – Tracked excavator	82	76	68	62	56	52	46	42
7	Breaking windows – Lump hammer	81	56	67	61	55	51	45	41
8	Dumpers	79	73	65	59	53	49	43	39
9	Skips & Skip trucks**	79**	64**	56**	50**	44**	40**	34**	30**

13.5.7 Appropriate limits from BS5228 for demolition activities would be as those quoted in Table 13-36 for construction activities.

13.5.8 Making an initial assessment based upon the ABC method of BS5228 the lowest ambient sound levels at the closest sensitive residential location 50m from a demolition site would permit a Category A level of $L_{Aeq,daytime}$ of 65dB. Taking account

of the small scale of demolition work at each site it is reasonable to assume that the above listed plant, typically include items 1, 2, 5 and 8 sequentially. With built in down times during the daytime work levels managed through the CoCP will be managed so that permitted limits determined by the BS5228 ABC method will not be exceeded.

13.5.9 Until detailed demolition methods are developed by the contractor, and plant and machinery selected, the impacts cannot be calculated in any more detail. Further assessment will be undertaken at the future Tier assessment stages and provided in the CoCP to conclude any mitigation measures that may be necessary.

13.5.10 It is possible, depending on the timing of the demolition of each building new noise sensitive receptors may have been constructed during earlier phases of the proposed Development and will also be considered as part of a future Tier assessment.

13.5.11 Although the information currently available is limited, it is considered likely that adverse significant effects can be avoided with the use of appropriate techniques and mitigation measures employed where necessary so there **are no significant effects.**

Consideration of demolition vibration effects

13.5.12 Many of the properties to be demolished are isolated buildings located some considerable distance from any vibration sensitive properties and the demolition work is unlikely to cause any major disturbance due to ground borne vibration during their demolition. In some instances, there are properties due for demolition that have sensitive properties in closer proximity to them that are to be retained. The demolition work would create only temporary adverse effects and would not expected to last more than a couple of days for each property to be demolished. At these locations the demolition work would be considered carefully with regard to potential vibration impacts, with the implementation of the CoCP there would be **no significant effects.**

Consideration of Construction noise and vibration effects

13.5.13 The construction noise and vibration assessment considers the following:

- Qualitative consideration of impacts of noise generated within the construction phase on sensitive receptors within the area. This includes impacts to both existing residential dwellings and earlier phases of the proposed Development itself; and
- Qualitative consideration of impacts of ground borne vibration generated within the construction phase on sensitive receptors within the area. This includes impacts to both existing residential dwellings and earlier phases of the proposed Development.

13.5.14 Chapter 4: The Site and Proposed Development of this ES identifies that construction works are expected to commence in 2023 with an assumed completion year of 2044. During this period the construction works hours would be typically

- 08:00 – 18:00 – Monday to Friday
- 08:00 – 13:00 – Saturday
- Work on Sundays and public holidays would only take place in exceptional circumstances and with the prior agreement of the LPA

13.5.15 Due to this being a Tier 1 assessment at an early, Outline Planning, stage of the proposed Development; detailed programming and methodologies of the demolition and construction works are not available. However, it is envisaged that the construction operations would potentially result in some degree of disturbance to the amenity of nearby existing sensitive receptors and potentially earlier completed phases of the proposed Development depending upon separation distances and other factors.

13.5.16 Construction works are expected to commence in 2023 and be completed in 2042 (2044 for the Framework Masterplan). However, construction activities would not be constant through this entire period, only occurring in discrete areas and for discrete periods following successful reserved matters planning applications for specific land parcels. As such the discussion herein is only relative to the periods where activity is occurring, outside of which construction noise and vibration would not be an issue.

13.5.17 A qualitative assessment of construction noise has been undertaken in line with the requirements of BS5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control Construction and Open Sites (Ref. 13.16). The assessment has been undertaken on the basis of identifying potential noise limits and control measures that could be implemented to control noise and vibration at the closest residential properties (existing or proposed).

13.5.18 Based on current information, potential worst-case noise levels are presented from a selection of the key construction plant that could be expected to undertake the tasks necessary to develop a site such as this, and noise levels are calculated back to different distances which are considered to reflect the potential locations of noise sensitive receptors.

13.5.19 Where necessary, within the scope of this assessment consideration has been given to cumulative construction impacts of the proposed Development with other schemes within the area. It is noted however that the other sites considered are smaller scale schemes when compared to the proposed Development, and therefore will have relatively short construction periods that are only likely to result in minor cumulative effects. Further consideration will be given at future Tier assessment stages when further information of other schemes can be considered in association with the proposed Development.

13.5.20 It is noted that the modelled noise levels presented within Table 13-35 do not take into account any attenuation due to screening (land features, buildings or constructed areas of the site) and have been based upon hard reflective ground between the source and receiver (water, concrete, bituminous surfaces) as such providing a worst case assessment. Given the nature of the existing ground cover in the area (a high percentage of soft ground) the predicted noise levels presented could therefore be slightly higher than those that would be experienced in practice. The figures presented are also based upon a 100% on-time for each plant item which would not occur for the majority of construction plant in reality. All predicted noise levels have primarily been based on typical plant noise levels taken from the Appendices of BS5228 (Ref. 13.16).

13.5.21 Furthermore, it is noted that the figures presented in Table 13-35 do not account for any implementation of BPM measures in the overall construction activities. BPM is a proven mechanism for controlling noise through the implementation of mitigation and general controls, and is proven in many situations to comfortably reduce cumulative noise from construction activities by up to 10dB(A) or more in certain instances.

13.5.22 In addition, the effects of soft ground attenuation and screening can further reduce construction noise levels by up to an additional 5-10dB(A) depending upon the specific geography of the area.

13.5.23 Until detailed construction methods are developed by the contractor, and plant and machinery selected, the impacts cannot be calculated in any more detail. Further assessment will be undertaken at a future Tier assessment stage and provided in the CoCP to conclude any mitigation measures that may be necessary.

13.5.24 It is possible, depending on the timing of the construction works that new noise sensitive receptors may have been constructed during earlier phases of the proposed Development and will also be considered as part of any future Tier assessment as appropriate.

Table 13-35 General Plant Noise Levels

Plant	Sound Pressure Level in dB (A) at 10m	Sound Pressure Level (dB L_{Aeq})						
		20m	50m	100m	200m	300m	600m	1km
Tracked/wheeled 360 degree Excavators	85	79	71	65	59	55	49	45
Excavator mounted hydraulic breakers	92	86	78	72	66	62	56	52
Excavator mounted hydraulic crushers	82	76	68	62	56	52	46	42
Dumpers	79	73	65	59	53	49	43	39
Concrete Crushing Plant	90	84	76	70	64	60	54	50
Mobile Craneage/ Tower Cranes	78	72	64	58	52	48	42	38
Eight-wheeler trucks	80*	74*	66*	60*	54*	50*	44*	40*
Air Compressors	80	74	66	60	54	50	44	40
Diamond cutting tools / saws	80	74	66	60	54	50	44	40
Hand Held Tools including breakers (pneumatic and hydraulic)	83	77	69	63	57	53	47	43
Power Tools including percussion drills, cutting disks, pipe-threaders	79	73	65	59	53	49	43	39
Hand /power tools	79	73	65	59	53	49	43	39

Plant	Sound Pressure Level in dB (A) at 10m	Sound Pressure Level (dB L_{Aeq})						
		20m	50m	100m	200m	300m	600m	1km
Wheel Washing Plant	63	57	49	43	37	33	27	23
Scaffold	No noise associated							
Mobile access platforms	78	72	64	58	52	48	42	38
Delivery trucks (drive by)	80*	74*	66*	60*	54*	50*	44*	40*
Skips & Skip trucks**	79**	64**	56**	50**	44**	40**	34**	30**
Forklift trucks	80	74	66	60	54	50	44	40
Sheet Piling	94	82	76	70	62	56	50	42

Table notes:

* Drive by maximum sound pressure level L_{pA} (Max), at speed in km/h as shown in BS5228.

** Empirical data established at 3.5m from skip loading vehicle.

Sensitive Receptors

13.5.25 Effects on specific identified receptors during the demolition and construction phase are expected to be relatively short-term in duration as a result of the changing operational areas as construction phasing progresses. However, the exact duration over which impacts might arise at any given receptor is not yet known and would not be concluded until detailed phasing of the construction programme is produced.

Construction Noise Limits

13.5.26 Referencing the measured ambient noise levels quantified as part of this study Table 13-36 below details the threshold levels at which significant effects would be expected to occur due to construction noise.

13.5.27 The noise limits have been calculated based on the ABC methodology described in BS5228 (Ref. 13.16). Once detailed construction methodology is known predictions would be made for noise levels of specific construction tasks and using the ABC Method compared against the determined permitted limits. A breach of these limits would dictate a need to put in place mitigation to reduce noise back to within acceptable levels which will be covered within the CoCP/S61 Agreement. It is considered in this assessment that limits based on this methodology will be achievable.

13.5.28 Given the hours of construction expected for the proposed Development, it is considered that typical works during the construction phase would only be undertaken during daytime hours. Therefore, only daytime levels are discussed and considered within Table 13-36 below.

Table 13-36 Plant Noise Levels Associated with General Construction Work

Assessment Location	Measurement Period	Average Measured $L_{Aeq, 1hr}$ of the Locality	$L_{Aeq, 1hr}$ Rounded to the nearest 5dB (BS5228 ABC Method only)	BS5228 Methodology
				"ABC Method"
NML1S	Daytime (08:00 – 18:00hrs)	59.7	60	65
NML2S	Daytime (08:00 – 18:00hrs)	61.8	60	65
NML3S	Daytime (08:00 – 18:00hrs)	56.9	55	65
NML4S	Daytime (08:00 – 18:00hrs)	50.0	50	65
NML5S	Daytime (08:00 – 18:00hrs)	44.0	45	65
NML6S	Daytime (08:00 – 18:00hrs)	46.7	45	65
NML7S	Daytime (08:00 – 18:00hrs)	66.4	65	70
NML8S	Daytime (08:00 – 18:00hrs)	45.8	45	65
NML9S	Daytime (08:00 – 18:00hrs)	54.0	55	65
NML10S	Daytime (08:00 – 18:00hrs)	50.6	50	65
NML1L	Daytime (08:00 – 18:00hrs)	67.4	65	70
NML2L	Daytime (08:00 – 18:00hrs)	48.2	50	65

Assessment Location	Measurement Period	Average Measured $L_{Aeq, 1hr}$ of the Locality	$L_{Aeq, 1hr}$ Rounded to the nearest 5dB (BS5228 ABC Method only)	BS5228 Methodology "ABC Method"
NML3L	Daytime (08:00 – 18:00hrs)	59.0	60	65
NML4L	Daytime (08:00 – 18:00hrs)	41.6	40	65
NML5L	Daytime (08:00 – 18:00hrs)	52.2	50	65
NML6L	Daytime (08:00 – 18:00hrs)	50.9	50	65

13.5.29 With reference to Table 13-36 above, due to the relatively low noise climate of the area, allowable construction noise limits calculated using BS5228 (Ref. 13.16) would, in the main, conform to the lower cut off limits of 65dB during the assumed construction hours. In areas where the baseline noise environment is raised compared to the majority of the site, such as at NML7S and NML1L, slightly higher construction levels would be permitted as calculated using BS5228 (Ref.13.6)

Anticipated Effects

13.5.30 Any element of the construction works that may have a significant adverse effect would be identified and considered further as part of the CoCP and any CoPA S61 agreement at future Tiers.

13.5.31 Based upon information currently available and the implementation of appropriate mitigation strategies, including BPM, significant adverse effects upon existing and future receptors that form part of the proposed Development site are not considered likely and as such there would be **no significant effects.** Mitigation would be agreed in detail for construction as part of the phase-specific CoCP completed by the specific construction parties relevant to each land parcel, when more detailed information is available as part of future Tier assessments.

Construction and Operational Phase - Road Traffic Assessment of Existing Network

13.5.32 The main effects of the proposed Development on the wider area would be changes in traffic flows and patterns resulting in changes in road traffic noise in the area. It is considered pertinent to consider the potential for, and resulting impacts of, any such changes associated with the proposed Development.

13.5.33 Calculations have been undertaken in accordance with the methodology of the Calculation of Road Traffic Noise (1998) to derive Basic Noise Levels (BNL) along identified road links for which data is available. The methodology utilises the total Annual Average Weekday Traffic (AAWT) flow numbers, the percentage of heavy vehicles (greater than 3.5 tonnes) and vehicle speeds over an 18hr period between 06:00 and 00:00 to predict an $L_{A10\ 18\text{-hour}}$ noise level for each link. Separate calculations are made for the "with Scheme" and "without Scheme" scenarios allowing the change in road traffic noise as a result of the proposed Development to be calculated.

13.5.34 In undertaking noise modelling in respect of the traffic assessment it was found that there was a good correlation between the baseline measurements obtained from the surveys and the baseline traffic data.

13.5.35 With reference to the DMRB LA111 assessment scale for Short term immediate effects provided in Table 13-7, the change in road traffic noise levels have been predicted for the following scenarios:

- 2024 Interim Year for 'Without Scheme (Do Minimum)' compared against 2024 'With Scheme (Do Something)' scenario;
- 2030 Interim Year for' Without Scheme (Do Minimum)' compared against 2030 'With Scheme (Do Something)' scenario (coinciding with peak construction year);
- 2037 Interim Year for 'Without Scheme (Do Minimum)' compared against 2037 'With Scheme (Do Something)' scenarios; and
- 2044 Completion Year for 'Without Scheme (Do Minimum)' compared against 2044 'With Scheme (Do Something)' scenarios.

13.5.36 Construction traffic is also included in the interim years 'With Scheme (Do Something)' scenarios include construction traffic

13.5.37 The effects of the predicted changes in road traffic noise are assessed using significance criteria defined within Table 13-6. As a worst case, the "short term" semantic scale has been used in the assessment.

13.5.38 Cumulative effects of the committed transport infrastructure schemes and other committed developments as defined within the Chapter 16: Transport are included in the traffic flows provided by the traffic team and therefore represented in the noise assessment. They are described further in and listed below:

Committed transport infrastructure/improvement schemes

- New M20 Junction 10A and associated changes to the surrounding road network, including M20 Junction 10;
- New signalised site access junction on A20 Hythe Road for Willesborough Lees development;
- Traffic calming proposals and new site access points through Sellindge Village proposed for the Sellindge residential development;
- Adjustments to the flare length on the A261 Hythe Road at the junction with A20 Ashford Road required for the Land East of Ashford Road development;
- A2034 Cheriton Road/ A20 Cherry Garden Avenue junction and link proposals for the Folkestone Seafront masterplan; and
- Nackington Road/ Old Dover Road and Old Dover Road/ St Lawrence Road/ The Drive proposals for the Mountfield Park development.

Committed Developments

- Former Rotunda Amusement Park, Marine Parade, Folkestone;
- Shorncliffe Garrison, Folkestone;
- Street Record, Hurricane Way, Hawkinge;
- Philbeach House, Tanners Hill, Hythe;
- Land Read Rhodes House, Sellindge;
- Remainder of land at Aerodrome, Hawkinge;
- Nickolls Quarry, Dymchurch Road, Hythe;
- Land adjacent The Surgery, Sellindge;

- Land at Hurricane Way, Hawkinge;
- Land at Cheesemans Green, Kingsnorth;
- Land at Chilmington Green, Ashford Road;
- Former Rowcroft and Templer Barracks, Ashford;
- Waterbrook;
- Land at Willesborough Lees;
- Eureka Park;
- Court Lodge Farm;
- Former Newton Works;
- Former Powergen Site, Ashford;
- Conningbrook, Willesborough;
- Plot 1, Hurricane Way, Hawkinge; and
- Land north-east of Willesborough Road, Kennington.

13.5.39 The changes in road traffic noise levels calculated along the local road network for the assessment years of 2024, 2030, 2037 and 2044 are presented within Table 13-37 to Table 13-40. The Magnitude of Impacts based upon the DMRB Short Term Classifications are also presented in these tables (as detailed in Table 13-7 and Table 13-8).

13.5.40 In addition, noise change contour plans were created to provide a visual interpretation of the changes in road traffic noise as a result of the proposed Development for each of the assessment years. This was achieved using the proprietary noise mapping software SoundPLAN version 8.0, to produce a 3-dimensional model of the road network. The model took account of traffic flows, speeds and composition and also the topography of the area around the road network to predict airborne sound levels (in accordance with CRTN) attributable to road traffic on the local network. Using these predicted levels, change contours were created that correlate with the magnitude of change banding defined in Table 13-7. These Change Contour Plans are presented as Figures 13.2, 13.3, 13.4 and 13.5 in ES Appendix 13.3 for the assessment years of 2024, 2030, 2037 and 2044 respectively.

Table 13-37 Change in traffic noise between 2024 Do Minimum Scenario and 2024 Do Something Scenario

Road Name	Link ID	2024 Do Min BNL (dBA)	2024 Do Something BNL (dBA)	2024 Change (dB)	DMRB Semantic Short-Term Classification
M20	12162-923-1862	79.6	79.7	0.0	No Change
M20	12173-1862-2546	79.4	79.4	0.0	No Change
M20 Motorway Slip Road	12680-1842-1843	71.0	70.9	0.0	No Change
M20 Motorway Slip Road	12685-1844-1845	68.7	69.0	0.3	Negligible Adverse
A20	12692-1849-3625	73.4	73.5	0.1	Negligible Adverse
A20	12697-1844-1849	74.6	74.7	0.1	Negligible Adverse
B2068	12704-1848-1849	68.5	68.5	0.0	No Change
A20	12753-1844-1863	72.6	72.7	0.0	No Change
A20	12758-1865-3015	68.9	68.9	0.0	No Change
A20	12771-1843-2545	71.6	71.7	0.2	Negligible Adverse
M20 Motorway Slip Road	12784-1862-1863	68.9	69.1	0.2	Negligible Adverse
A20	12795-1868-4089	74.6	74.6	0.0	No Change
B2068	12957-2544-5220	71.4	71.4	0.0	No Change
B2068	12975-1848-5220	71.6	71.6	0.0	No Change
M20 Motorway Slip Road	12982-2545-2546	68.5	69.0	0.5	Negligible Adverse
A20	12987-3015-3016	74.8	74.9	0.1	Negligible Adverse
A20	12988-3016-3017	67.5	67.5	0.0	No Change
Ashford Road	12997-1870-4033	68.3	68.2	-0.1	Negligible Beneficial
Ashford Road	13095-1796-3455	72.5	72.6	0.0	No Change
B2068	13109-1848-3625	68.7	68.7	0.0	No Change
Sandling Road	13153-4033-4034	64.6	64.6	0.0	No Change
A20	13226-3017-4089	66.7	66.3	-0.4	Negligible Beneficial
A20	13233-4722-4859	73.2	73.7	0.5	Negligible Adverse
A20	13246-1868-3455	73.3	73.3	0.0	No Change
A20	13248-3455-4722	65.7	65.7	0.0	No Change
Ashford Road	13362-1580-4033	66.5	66.4	-0.1	Negligible Beneficial
Hythe Road	13431-4036-4513	72.3	73.9	1.5	Minor Adverse
Minor Road (Aldington Rd to Hythe Rd)	13436-3333-4995	69.0	64.3	-4.7	Moderate Beneficial

Road Name	Link ID	2024 Do Min BNL (dBA)	2024 Do Something BNL (dBA)	2024 Change (dB)	DMRB Semantic Short-Term Classification
Ashford Road	13487-1796-4722	72.7	73.3	0.6	Negligible Adverse
M20	13504-1842-1845	79.3	79.3	0.0	No Change
M20	13526-1845-4728	79.7	79.7	0.0	No Change
Ashford Road	13561-1870-3017	70.1	69.9	-0.2	Negligible Beneficial
A20	13565-1865-4859	74.1	74.6	0.5	Negligible Adverse
Ashford Road	13584-5214-6334	73.9	74.7	0.7	Negligible Adverse
Stone Street	13598-6497-6502	52.0	52.0	0.0	No Change
Ashford Road	13671-5145-5629	73.5	72.0	-1.5	Minor Beneficial
Ashford Road	13673-4885-5145	73.5	72.0	-1.5	Minor Beneficial
Ashford Road	13680-4513-5213	74.6	74.7	0.1	Negligible Adverse
Station Road	14096-6492-6648	64.2	64.2	0.0	No Change
Hythe Road	14221-7036-10008	69.3	69.4	0.0	No Change
M20	14552-6963-7612	79.9	80.0	0.1	Negligible Adverse
M20	14553-7029-8121	80.1	80.1	0.0	No Change
Knoll Hill	14578-4920-10002	66.7	66.7	0.0	No Change
The Street	14580-6795-10003	61.0	61.0	0.0	No Change
Plain Road	14582-6815-10004	57.9	57.9	0.0	No Change
Swan Lane	14677-5022-10007	61.9	61.9	0.0	No Change
A20	14696-1865-10019	74.3	74.6	0.4	Negligible Adverse
A20	14697-2545-10019	74.2	74.6	0.4	Negligible Adverse
Junction 11 Services Access Road	14698-10018-10019	66.1	66.1	0.0	No Change
The Street	14710-10008-10026	59.8	59.8	0.0	No Change
Tesco Local Access Road	14711-10008-10027	66.1	66.1	0.0	No Change
Hythe Road	14747-6795-10049	73.5	73.4	-0.1	Negligible Beneficial
Hythe Road	14748-6648-10049	73.0	72.9	-0.1	Negligible Beneficial
Hythe Road	14750-6648-10050	72.0	71.9	-0.2	Negligible Beneficial
Aldington Road	14755-4997-10053	65.0	64.6	-0.4	Negligible Beneficial
Aldington Road	14756-4920-10053	69.5	68.9	-0.6	Negligible Beneficial
Aldington Road	14757-4997-10054	66.2	63.7	-2.5	Minor Beneficial

Road Name	Link ID	2024 Do Min BNL (dBA)	2024 Do Something BNL (dBA)	2024 Change (dB)	DMRB Semantic Short-Term Classification
Swan Lane	14767-10007-10059	61.5	61.5	0.0	No Change
Stone Street	14769-2544-10060	71.4	71.4	0.0	No Change
Stone Street	14774-6446-10065	64.5	65.7	1.1	Minor Adverse
Stone Street	14775-5762-10065	63.0	64.2	1.2	Minor Adverse
A20	14776-4922-10066	71.3	68.6	-2.7	Minor Beneficial
Aldington Road	14778-4995-10054	67.8	65.3	-2.4	Minor Beneficial
Lympne Hill	14779-5756-10067	63.7	63.7	0.1	Negligible Adverse
Lympne Hill	14780-4995-10067	68.8	68.9	0.1	Negligible Adverse
London Road	14781-3332-10068	74.3	74.4	0.1	Negligible Adverse
Sandling Road	14783-1870-10069	68.7	68.5	-0.2	Negligible Beneficial
Sandling Road	14784-1875-10069	63.8	63.6	-0.2	Negligible Beneficial
Hythe Road	14785-6815-10070	68.6	68.8	0.2	Negligible Adverse
Hythe Road	14786-10050-10070	72.0	71.8	-0.2	Negligible Beneficial
Church Road	14788-6648-10071	62.3	62.3	0.0	No Change
Ashford Road	14799-10051-10077	69.6	69.7	0.1	Negligible Adverse
Otterpool Lane	14802-4922-10078	71.5	69.0	-2.5	Minor Beneficial
Bad Munstereifel Road	14814-7045-10084	75.1	75.1	0.0	No Change
A20	4486-1843-3625	74.6	74.7	0.1	Negligible Adverse
A20	4562-1863-3015	74.8	74.9	0.1	Negligible Adverse
A20	5014-3016-4089	73.6	73.7	0.2	Negligible Adverse
Minor Road (Aldington Rd to Hythe Rd)	5213-3332-3333	65.8	60.8	-5.0	Moderate Beneficial
Minor Road (Aldington Rd to Hythe Rd)	5720-3333-4036	44.7	47.2	2.5	Minor Adverse
Hythe Road	5943-3332-4036	72.3	73.9	1.5	Minor Adverse
M20 Motorway Slip Road	600268-233-234	70.4	70.7	0.3	Negligible Adverse
M20 Motorway Slip Road	600269-235-236	70.6	70.9	0.3	Negligible Adverse
Hythe Road	600270-237-238	74.1	74.0	-0.1	Negligible Beneficial
Hythe Road	600271-239-240	71.4	71.5	0.2	Negligible Adverse
M20 Motorway Slip Road	600272-241-242	68.5	69.5	1.0	Minor Adverse

Road Name	Link ID	2024 Do Min BNL (dBA)	2024 Do Something BNL (dBA)	2024 Change (dB)	DMRB Semantic Short-Term Classification
M20 Motorway Slip Road	600273-243-244	70.8	70.6	-0.3	Negligible Beneficial
A2070	600274-245-246	78.4	78.3	-0.1	Negligible Beneficial
A2070	600275-243-245	72.8	72.8	0.0	No Change
A2070	600276-242-243	70.5	70.5	0.0	No Change
A2070	600277-240-242	72.0	72.4	0.4	Negligible Adverse
A2070	600278-237-240	72.2	72.6	0.3	Negligible Adverse
A2070	600279-235-237	72.4	72.5	0.1	Negligible Adverse
A2070	600280-234-235	69.7	69.6	-0.1	Negligible Beneficial
A2070	600281-234-245	72.7	72.7	0.1	Negligible Adverse
M20	600292-244-7029	80.1	80.1	0.0	No Change
M20	600293-241-6963	79.9	80.0	0.1	Negligible Adverse
Hythe Road	600297-238-6795	74.1	74.0	-0.1	Negligible Beneficial
M20	600299-233-2546	79.8	79.9	0.1	Negligible Adverse
M20	600300-233-244	79.0	79.1	0.1	Negligible Adverse
M20	600301-236-1842	79.7	79.7	0.0	No Change
M20	600302-236-241	79.3	79.2	-0.1	Negligible Beneficial
Bad Munstereifel Road	600303-246-10084	75.1	75.1	0.0	No Change
Bad Munstereifel Road	600305-246-7658	75.3	75.4	0.2	Negligible Adverse
Hythe Road	600307-10008-10085	71.5	71.7	0.2	Negligible Adverse
Hythe Road	600308-239-10085	71.4	71.5	0.2	Negligible Adverse
Honeysuckle Avenue	600309-10085-10086	58.4	58.4	0.0	No Change
St Katherine's Crescent (North)	600312-10087-10088	52.5	52.5	0.1	Negligible Adverse
Ashford Road	600313-10087-10089	67.2	67.7	0.5	Negligible Adverse
Ashford Road	600314-5022-10089	67.2	67.7	0.5	Negligible Adverse
St Katherine's Crescent (South)	600315-10089-10090	41.3	41.3	0.0	No Change
Ashford Road	600317-5022-10091	66.7	67.2	0.5	Negligible Adverse
Siegfried Close	600318-10091-10092	55.0	54.9	-0.1	Negligible Beneficial
Ashford Road	600319-6815-10093	69.1	69.2	0.2	Negligible Adverse
Ashford Road	600320-10087-10093	69.1	69.2	0.2	Negligible Adverse

Road Name	Link ID	2024 Do Min BNL (dBA)	2024 Do Something BNL (dBA)	2024 Change (dB)	DMRB Semantic Short-Term Classification
Ashford Road	600322-10051-10094	69.6	69.7	0.1	Negligible Adverse
Ashford Road	600323-10091-10095	67.0	67.5	0.5	Negligible Adverse
Ashford Road	600324-10094-10095	67.8	68.3	0.5	Negligible Adverse
Opposite Siegfried Close	600325-10095-10096	56.4	56.4	0.0	No Change
Stone Street	6643-4997-5762	62.4	63.6	1.2	Minor Adverse
Ashford Road	6679-5146-5629	73.5	72.0	-1.5	Minor Beneficial
Harman Avenue	6972-5762-5763	58.0	58.0	0.0	No Change
Stone Street	7422-5220-6497	52.0	52.0	0.0	No Change

Table 13-38 Change in traffic noise between 2030 Do Minimum Scenario and 2030 Do Something Scenario

Road Name	Link ID	2030 Do Min BNL (dBA)	2030 Do Something BNL (dBA)	2030 Change (dB)	DMRB Semantic Short-Term Classification
M20	12162-923-1862	79.9	80.1	0.2	Negligible Adverse
M20	12173-1862-2546	79.7	79.7	0.0	No Change
M20 Motorway Slip Road	12680-1842-1843	71.5	71.7	0.2	Negligible Adverse
M20 Motorway Slip Road	12685-1844-1845	69.4	70.4	1.0	Minor Adverse
A20	12692-1849-3625	74.0	74.7	0.6	Negligible Adverse
A20	12697-1844-1849	75.2	75.7	0.5	Negligible Adverse
B2068	12704-1848-1849	68.9	69.0	0.0	No Change
A20	12753-1844-1863	73.2	73.4	0.2	Negligible Adverse
A20	12758-1865-3015	69.2	69.2	0.0	No Change
A20	12771-1843-2545	72.2	72.9	0.7	Negligible Adverse
M20 Motorway Slip Road	12784-1862-1863	69.6	70.5	0.9	Negligible Adverse
A20	12795-1868-4089	75.2	75.8	0.6	Negligible Adverse
B2068	12957-2544-5220	71.8	71.8	0.0	No Change
B2068	12975-1848-5220	72.0	72.1	0.1	Negligible Adverse
M20 Motorway Slip Road	12982-2545-2546	68.8	69.7	1.0	Minor Adverse
A20	12987-3015-3016	75.5	76.1	0.6	Negligible Adverse
A20	12988-3016-3017	68.1	68.2	0.1	Negligible Adverse
Ashford Road	12997-1870-4033	68.7	68.6	-0.1	Negligible Beneficial
Ashford Road	13095-1796-3455	73.2	73.9	0.7	Negligible Adverse
B2068	13109-1848-3625	69.1	69.2	0.1	Negligible Adverse
Sandling Road	13153-4033-4034	64.6	64.6	0.0	No Change
A20	13226-3017-4089	67.0	66.5	-0.4	Negligible Beneficial
A20	13233-4722-4859	73.7	74.9	1.2	Minor Adverse
A20	13246-1868-3455	73.9	74.5	0.6	Negligible Adverse
A20	13248-3455-4722	65.9	65.6	-0.3	Negligible Beneficial
Ashford Road	13362-1580-4033	67.1	67.0	-0.1	Negligible Beneficial
Hythe Road	13431-4036-4513	73.0	75.0	2.0	Minor Adverse
Minor Rd (Aldington Rd to Hythe Rd)	13436-3333-4995	70.3	63.8	-6.4	Major Beneficial
Ashford Road	13487-1796-4722	73.3	74.8	1.5	Minor Adverse

Road Name	Link ID	2030 Do Min BNL (dBA)	2030 Do Something BNL (dBA)	2030 Change (dB)	DMRB Semantic Short-Term Classification
M20	13504-1842-1845	79.5	79.6	0.0	No Change
M20	13526-1845-4728	80.0	80.2	0.2	Negligible Adverse
Ashford Road	13561-1870-3017	70.6	70.5	-0.1	Negligible Beneficial
A20	13565-1865-4859	74.6	75.8	1.2	Minor Adverse
Ashford Road	13584-5214-6334	74.5	74.5	0.0	No Change
Stone Street	13598-6497-6502	54.7	55.1	0.4	Negligible Adverse
Ashford Road	13671-5145-5629	74.5	71.8	-2.7	Minor Beneficial
Ashford Road	13673-4885-5145	74.5	71.8	-2.7	Minor Beneficial
Ashford Road	13680-4513-5213	75.3	75.5	0.2	Negligible Adverse
Station Road	14096-6492-6648	64.2	64.2	0.0	No Change
Hythe Road	14221-7036-10008	70.0	70.3	0.3	Negligible Adverse
M20	14552-6963-7612	80.4	80.6	0.1	Negligible Adverse
M20	14553-7029-8121	80.5	80.5	0.1	Negligible Adverse
Knoll Hill	14578-4920-10002	66.7	66.7	0.0	No Change
The Street	14580-6795-10003	61.1	61.1	0.0	No Change
Plain Road	14582-6815-10004	57.9	57.9	0.0	No Change
Swan Lane	14677-5022-10007	62.2	62.2	0.0	No Change
A20	14696-1865-10019	74.7	75.6	0.9	Negligible Adverse
A20	14697-2545-10019	74.7	75.6	0.9	Negligible Adverse
Junction 11 Services Access Road	14698-10018-10019	66.1	66.1	0.0	No Change
The Street	14710-10008-10026	59.9	59.9	0.0	No Change
Tesco Local Access Road	14711-10008-10027	66.2	66.2	0.0	No Change
Hythe Road	14747-6795-10049	73.8	73.9	0.1	Negligible Adverse
Hythe Road	14748-6648-10049	73.3	73.4	0.1	Negligible Adverse
Hythe Road	14750-6648-10050	72.4	72.4	0.0	No Change
Aldington Road	14755-4997-10053	66.6	64.8	-1.8	Minor Beneficial
Aldington Road	14756-4920-10053	71.2	69.1	-2.1	Minor Beneficial
Aldington Road	14757-4997-10054	67.2	64.5	-2.7	Minor Beneficial
Swan Lane	14767-10007-10059	61.5	61.5	0.0	No Change
Stone Street	14769-2544-10060	71.8	71.8	0.0	No Change

Road Name	Link ID	2030 Do Min BNL (dBA)	2030 Do Something BNL (dBA)	2030 Change (dB)	DMRB Semantic Short-Term Classification
Stone Street	14774-6446-10065	64.2	66.2	2.0	Minor Adverse
Stone Street	14775-5762-10065	62.6	64.7	2.1	Minor Adverse
A20	14776-4922-10066	72.5	69.7	-2.8	Minor Beneficial
Aldington Road	14778-4995-10054	68.8	66.2	-2.6	Minor Beneficial
Lympne Hill	14779-5756-10067	64.3	64.8	0.5	Negligible Adverse
Lympne Hill	14780-4995-10067	69.4	70.0	0.5	Negligible Adverse
London Road	14781-3332-10068	75.2	75.3	0.2	Negligible Adverse
Sandling Road	14783-1870-10069	68.8	68.7	-0.1	Negligible Beneficial
Sandling Road	14784-1875-10069	63.9	63.8	-0.1	Negligible Beneficial
Hythe Road	14785-6815-10070	69.0	69.3	0.3	Negligible Adverse
Hythe Road	14786-10050-10070	72.4	72.3	-0.1	Negligible Beneficial
Church Road	14788-6648-10071	62.3	62.3	0.0	No Change
Ashford Road	14799-10051-10077	70.1	70.3	0.2	Negligible Adverse
Otterpool Lane	14802-4922-10078	72.5	69.5	-3.0	Minor Beneficial
Bad Munstereifel Road	14814-7045-10084	75.3	75.4	0.1	Negligible Adverse
A20	4486-1843-3625	75.2	75.7	0.5	Negligible Adverse
A20	4562-1863-3015	75.4	75.8	0.5	Negligible Adverse
A20	5014-3016-4089	74.3	75.1	0.8	Negligible Adverse
Minor Rd (Aldington Rd to Hythe Rd)	5213-3332-3333	67.0	60.3	-6.7	Major Beneficial
Minor Rd (Aldington Rd to Hythe Rd)	5720-3333-4036	44.7	45.6	0.9	Negligible Adverse
Hythe Road	5943-3332-4036	73.0	75.0	2.0	Minor Adverse
M20 Motorway Slip Road	600268-233-234	70.8	71.3	0.4	Negligible Adverse
M20 Motorway Slip Road	600269-235-236	71.1	71.5	0.4	Negligible Adverse
Hythe Road	600270-237-238	74.4	74.5	0.1	Negligible Adverse
Hythe Road	600271-239-240	72.2	72.4	0.2	Negligible Adverse
M20 Motorway Slip Road	600272-241-242	70.4	71.2	0.8	Negligible Adverse
M20 Motorway Slip Road	600273-243-244	71.6	71.4	-0.2	Negligible Beneficial
A2070	600274-245-246	79.3	79.3	0.0	No Change
A2070	600275-243-245	73.7	73.9	0.2	Negligible Adverse
A2070	600276-242-243	71.5	71.9	0.4	Negligible Adverse

Road Name	Link ID	2030 Do Min BNL (dBA)	2030 Do Something BNL (dBA)	2030 Change (dB)	DMRB Semantic Short-Term Classification
A2070	600277-240-242	73.3	73.9	0.6	Negligible Adverse
A2070	600278-237-240	73.1	73.5	0.4	Negligible Adverse
A2070	600279-235-237	73.4	73.5	0.1	Negligible Adverse
A2070	600280-234-235	71.0	70.9	-0.1	Negligible Beneficial
A2070	600281-234-245	73.5	73.6	0.1	Negligible Adverse
M20	600292-244-7029	80.5	80.5	0.1	Negligible Adverse
M20	600293-241-6963	80.4	80.6	0.1	Negligible Adverse
Hythe Road	600297-238-6795	74.4	74.5	0.1	Negligible Adverse
M20	600299-233-2546	80.0	80.3	0.3	Negligible Adverse
M20	600300-233-244	79.2	79.4	0.2	Negligible Adverse
M20	600301-236-1842	80.0	80.1	0.1	Negligible Adverse
M20	600302-236-241	79.5	79.5	-0.1	Negligible Beneficial
Bad Munstereifel Road	600303-246-10084	75.3	75.4	0.1	Negligible Adverse
Bad Munstereifel Road	600305-246-7658	75.1	75.1	0.0	No Change
Hythe Road	600307-10008-10085	72.3	72.5	0.2	Negligible Adverse
Hythe Road	600308-239-10085	72.2	72.4	0.2	Negligible Adverse
Honeysuckle Avenue	600309-10085-10086	58.4	58.4	0.0	No Change
St Katherine's Crescent (North)	600312-10087-10088	53.9	53.9	0.0	No Change
Ashford Road	600313-10087-10089	67.5	68.0	0.6	Negligible Adverse
Ashford Road	600314-5022-10089	67.5	68.1	0.6	Negligible Adverse
St Katherine's Crescent (South)	600315-10089-10090	43.0	43.0	0.0	No Change
Ashford Road	600317-5022-10091	67.0	67.6	0.6	Negligible Adverse
Siegfried Close	600318-10091-10092	57.2	57.2	0.0	No Change
Ashford Road	600319-6815-10093	69.4	69.7	0.3	Negligible Adverse
Ashford Road	600320-10087-10093	69.4	69.7	0.3	Negligible Adverse
Ashford Road	600322-10051-10094	70.1	70.3	0.3	Negligible Adverse
Ashford Road	600323-10091-10095	67.5	68.0	0.6	Negligible Adverse
Ashford Road	600324-10094-10095	68.3	68.9	0.5	Negligible Adverse
Opposite Siegfried Close	600325-10095-10096	56.4	56.4	0.0	No Change
Stone Street	6643-4997-5762	62.1	64.0	1.9	Minor Adverse

Road Name	Link ID	2030 Do Min BNL (dBA)	2030 Do Something BNL (dBA)	2030 Change (dB)	DMRB Semantic Short-Term Classification
Ashford Road	6679-5146-5629	74.5	71.8	-2.7	Minor Beneficial
Harman Avenue	6972-5762-5763	58.0	58.0	0.0	No Change
Stone Street	7422-5220-6497	54.7	55.1	0.4	Negligible Adverse

Table 13-39 Change in traffic noise between 2037 Do Minimum Scenario and 2037 Do Something Scenario

Road Name	Link ID	2037 Do Min BNL (dBA)	2037 Do Something BNL (dBA)	2037 Change (dB)	DMRB Semantic Short-Term Classification
M20	12162-923-1862	80.2	80.6	0.4	Negligible Adverse
M20	12173-1862-2546	79.9	80.0	0.1	Negligible Adverse
M20 Motorway Slip Road	12680-1842-1843	71.7	71.9	0.1	Negligible Adverse
M20 Motorway Slip Road	12685-1844-1845	69.5	71.4	1.9	Minor Adverse
A20	12692-1849-3625	74.2	75.3	1.1	Minor Adverse
A20	12697-1844-1849	75.3	76.3	0.9	Negligible Adverse
B2068	12704-1848-1849	69.1	69.3	0.2	Negligible Adverse
A20	12753-1844-1863	73.4	73.6	0.3	Negligible Adverse
A20	12758-1865-3015	69.4	69.5	0.0	No Change
A20	12771-1843-2545	72.3	73.9	1.6	Minor Adverse
M20 Motorway Slip Road	12784-1862-1863	69.7	71.3	1.6	Minor Adverse
A20	12795-1868-4089	75.4	76.4	1.0	Minor Adverse
B2068	12957-2544-5220	71.9	72.0	0.1	Negligible Adverse
B2068	12975-1848-5220	72.2	72.4	0.2	Negligible Adverse
M20 Motorway Slip Road	12982-2545-2546	69.1	69.9	0.8	Negligible Adverse
A20	12987-3015-3016	75.6	76.7	1.1	Minor Adverse
A20	12988-3016-3017	68.2	68.4	0.1	Negligible Adverse
Ashford Road	12997-1870-4033	68.9	69.2	0.4	Negligible Adverse
Ashford Road	13095-1796-3455	73.4	74.6	1.2	Minor Adverse
B2068	13109-1848-3625	69.3	69.4	0.2	Negligible Adverse
Sandling Road	13153-4033-4034	64.7	64.7	0.0	No Change
A20	13226-3017-4089	67.1	66.5	-0.6	Negligible Beneficial
A20	13233-4722-4859	73.9	75.6	1.7	Minor Adverse
A20	13246-1868-3455	74.1	75.1	1.0	Minor Adverse
A20	13248-3455-4722	66.1	65.5	-0.5	Negligible Beneficial
Ashford Road	13362-1580-4033	67.3	67.8	0.5	Negligible Adverse
Hythe Road	13431-4036-4513	73.2	75.3	2.1	Minor Adverse
Minor Rd (Aldington Rd to Hythe Rd)	13436-3333-4995	70.3	64.0	-6.3	Major Beneficial
Ashford Road	13487-1796-4722	73.5	75.6	2.0	Minor Adverse

Road Name	Link ID	2037 Do Min BNL (dBA)	2037 Do Something BNL (dBA)	2037 Change (dB)	DMRB Semantic Short-Term Classification
M20	13504-1842-1845	79.8	79.8	0.0	No Change
M20	13526-1845-4728	80.3	80.7	0.4	Negligible Adverse
Ashford Road	13561-1870-3017	70.7	70.6	-0.1	Negligible Beneficial
A20	13565-1865-4859	74.8	76.6	1.8	Minor Adverse
Ashford Road	13584-5214-6334	74.8	74.8	0.0	No Change
Stone Street	13598-6497-6502	55.1	56.1	1.0	Minor Adverse
Ashford Road	13671-5145-5629	74.7	72.3	-2.4	Minor Beneficial
Ashford Road	13673-4885-5145	74.7	72.3	-2.4	Minor Beneficial
Ashford Road	13680-4513-5213	75.5	75.7	0.2	Negligible Adverse
Station Road	14096-6492-6648	64.5	64.5	0.0	No Change
Hythe Road	14221-7036-10008	70.3	70.5	0.2	Negligible Adverse
M20	14552-6963-7612	80.8	81.0	0.2	Negligible Adverse
M20	14553-7029-8121	80.8	80.9	0.1	Negligible Adverse
Knoll Hill	14578-4920-10002	66.8	66.9	0.1	Negligible Adverse
The Street	14580-6795-10003	61.3	61.3	0.0	No Change
Plain Road	14582-6815-10004	58.0	58.0	0.0	No Change
Swan Lane	14677-5022-10007	62.3	62.4	0.1	Negligible Adverse
A20	14696-1865-10019	74.9	76.2	1.3	Minor Adverse
A20	14697-2545-10019	74.9	76.2	1.3	Minor Adverse
Junction 11 Services Access Road	14698-10018-10019	66.3	66.3	0.0	No Change
The Street	14710-10008-10026	60.2	60.2	0.0	No Change
Tesco Local Access Road	14711-10008-10027	66.4	66.4	0.0	No Change
Hythe Road	14747-6795-10049	73.9	74.8	0.9	Negligible Adverse
Hythe Road	14748-6648-10049	73.4	74.4	1.0	Minor Adverse
Hythe Road	14750-6648-10050	72.5	73.3	0.9	Negligible Adverse
Aldington Road	14755-4997-10053	66.8	64.5	-2.3	Minor Beneficial
Aldington Road	14756-4920-10053	71.4	69.1	-2.3	Minor Beneficial
Aldington Road	14757-4997-10054	67.4	65.6	-1.8	Minor Beneficial
Swan Lane	14767-10007-10059	61.6	61.6	0.0	No Change
Stone Street	14769-2544-10060	71.9	72.0	0.1	Negligible Adverse

Road Name	Link ID	2037 Do Min BNL (dBA)	2037 Do Something BNL (dBA)	2037 Change (dB)	DMRB Semantic Short-Term Classification
Stone Street	14774-6446-10065	64.3	66.1	1.9	Minor Adverse
Stone Street	14775-5762-10065	62.7	64.6	1.9	Minor Adverse
A20	14776-4922-10066	72.8	70.2	-2.5	Minor Beneficial
Aldington Road	14778-4995-10054	69.0	67.3	-1.7	Minor Beneficial
Lympne Hill	14779-5756-10067	64.6	65.9	1.3	Minor Adverse
Lympne Hill	14780-4995-10067	69.7	71.1	1.4	Minor Adverse
London Road	14781-3332-10068	75.3	75.7	0.4	Negligible Adverse
Sandling Road	14783-1870-10069	68.9	69.0	0.1	Negligible Adverse
Sandling Road	14784-1875-10069	64.0	64.0	0.1	Negligible Adverse
Hythe Road	14785-6815-10070	69.0	70.3	1.2	Minor Adverse
Hythe Road	14786-10050-10070	72.4	73.2	0.8	Negligible Adverse
Church Road	14788-6648-10071	62.6	62.6	0.0	No Change
Ashford Road	14799-10051-10077	70.1	71.2	1.1	Minor Adverse
Otterpool Lane	14802-4922-10078	72.6	69.5	-3.1	Moderate Beneficial
Bad Munstereifel Road	14814-7045-10084	75.7	75.9	0.3	Negligible Adverse
A20	4486-1843-3625	75.4	76.3	0.9	Negligible Adverse
A20	4562-1863-3015	75.5	76.4	0.8	Negligible Adverse
A20	5014-3016-4089	74.5	75.8	1.4	Minor Adverse
Minor Rd (Aldington Rd to Hythe Rd)	5213-3332-3333	67.1	60.5	-6.6	Major Beneficial
Minor Rd (Aldington Rd to Hythe Rd)	5720-3333-4036	44.7	44.7	0.0	No Change
Hythe Road	5943-3332-4036	73.1	75.3	2.1	Minor Adverse
M20 Motorway Slip Road	600268-233-234	71.0	71.6	0.6	Negligible Adverse
M20 Motorway Slip Road	600269-235-236	71.3	71.8	0.5	Negligible Adverse
Hythe Road	600270-237-238	74.5	75.3	0.8	Negligible Adverse
Hythe Road	600271-239-240	72.2	72.3	0.1	Negligible Adverse
M20 Motorway Slip Road	600272-241-242	71.0	72.2	1.2	Minor Adverse
M20 Motorway Slip Road	600273-243-244	71.9	72.1	0.2	Negligible Adverse
A2070	600274-245-246	79.7	80.0	0.3	Negligible Adverse
A2070	600275-243-245	74.0	74.5	0.6	Negligible Adverse
A2070	600276-242-243	71.7	72.4	0.7	Negligible Adverse

Road Name	Link ID	2037 Do Min BNL (dBA)	2037 Do Something BNL (dBA)	2037 Change (dB)	DMRB Semantic Short-Term Classification
A2070	600277-240-242	73.6	74.6	0.9	Negligible Adverse
A2070	600278-237-240	73.4	74.1	0.7	Negligible Adverse
A2070	600279-235-237	73.6	74.1	0.4	Negligible Adverse
A2070	600280-234-235	71.3	71.7	0.4	Negligible Adverse
A2070	600281-234-245	73.8	74.3	0.5	Negligible Adverse
M20	600292-244-7029	80.8	80.9	0.1	Negligible Adverse
M20	600293-241-6963	80.8	81.0	0.2	Negligible Adverse
Hythe Road	600297-238-6795	74.5	75.3	0.8	Negligible Adverse
M20	600299-233-2546	80.3	80.6	0.3	Negligible Adverse
M20	600300-233-244	79.5	79.6	0.1	Negligible Adverse
M20	600301-236-1842	80.3	80.4	0.1	Negligible Adverse
M20	600302-236-241	79.8	79.7	-0.1	Negligible Beneficial
Bad Munstereifel Road	600303-246-10084	75.7	75.9	0.3	Negligible Adverse
Bad Munstereifel Road	600305-246-7658	75.5	75.5	0.0	No Change
Hythe Road	600307-10008-10085	72.4	72.5	0.1	Negligible Adverse
Hythe Road	600308-239-10085	72.2	72.3	0.1	Negligible Adverse
Honeysuckle Avenue	600309-10085-10086	58.5	58.4	0.0	No Change
St Katherine's Crescent (North)	600312-10087-10088	53.9	53.9	0.0	No Change
Ashford Road	600313-10087-10089	67.6	69.0	1.5	Minor Adverse
Ashford Road	600314-5022-10089	67.6	69.0	1.5	Minor Adverse
St Katherine's Crescent (South)	600315-10089-10090	43.0	43.0	0.0	No Change
Ashford Road	600317-5022-10091	67.1	68.7	1.6	Minor Adverse
Siegfried Close	600318-10091-10092	57.2	57.2	0.0	No Change
Ashford Road	600319-6815-10093	69.5	70.6	1.1	Minor Adverse
Ashford Road	600320-10087-10093	69.5	70.6	1.1	Minor Adverse
Ashford Road	600322-10051-10094	70.1	71.2	1.2	Minor Adverse
Ashford Road	600323-10091-10095	67.5	69.0	1.5	Minor Adverse
Ashford Road	600324-10094-10095	68.3	69.8	1.5	Minor Adverse
Opposite Siegfried Close	600325-10095-10096	56.4	56.4	0.0	No Change
Stone Street	6643-4997-5762	62.3	63.6	1.3	Minor Adverse

Road Name	Link ID	2037 Do Min BNL (dBA)	2037 Do Something BNL (dBA)	2037 Change (dB)	DMRB Semantic Short-Term Classification
Ashford Road	6679-5146-5629	74.7	72.3	-2.4	Minor Beneficial
Harman Avenue	6972-5762-5763	58.0	58.0	0.0	No Change
Stone Street	7422-5220-6497	55.1	56.1	1.0	Minor Adverse

Table 13-40 Change in traffic noise between 2044 Do Minimum Scenario and 2044 Do Something Scenario

Road Name	Link ID	2044 Do Minimum BNL (dBA)	2044 Do Something BNL (dBA)	2044 Change (dB)	DMRB Semantic Short-Term Classification
M20	12162-923-1862	80.3	80.8	0.5	Negligible Adverse
M20	12173-1862-2546	80.1	80.1	0.1	Negligible Adverse
M20 Motorway Slip Road	12680-1842-1843	71.9	71.8	-0.1	Negligible Beneficial
M20 Motorway Slip Road	12685-1844-1845	69.6	71.9	2.3	Minor Adverse
A20	12692-1849-3625	74.3	75.7	1.3	Minor Adverse
A20	12697-1844-1849	75.4	76.5	1.1	Minor Adverse
B2068	12704-1848-1849	69.2	69.4	0.2	Negligible Adverse
A20	12753-1844-1863	73.5	73.7	0.2	Negligible Adverse
A20	12758-1865-3015	69.6	69.6	0.1	Negligible Adverse
A20	12771-1843-2545	72.3	74.4	2.0	Minor Adverse
M20 Motorway Slip Road	12784-1862-1863	69.8	71.7	2.0	Minor Adverse
A20	12795-1868-4089	75.5	76.8	1.3	Minor Adverse
B2068	12957-2544-5220	72.0	72.1	0.1	Negligible Adverse
B2068	12975-1848-5220	72.3	72.5	0.2	Negligible Adverse
M20 Motorway Slip Road	12982-2545-2546	69.4	70.1	0.7	Negligible Adverse
A20	12987-3015-3016	75.7	77.1	1.3	Minor Adverse
A20	12988-3016-3017	68.3	68.6	0.3	Negligible Adverse
Ashford Road	12997-1870-4033	68.9	69.5	0.7	Negligible Adverse
Ashford Road	13095-1796-3455	73.5	74.9	1.5	Minor Adverse
B2068	13109-1848-3625	69.4	69.6	0.2	Negligible Adverse
Sandling Road	13153-4033-4034	64.8	64.8	0.0	No Change
A20	13226-3017-4089	67.2	67.0	-0.3	Negligible Beneficial
A20	13233-4722-4859	74.1	76.1	1.9	Minor Adverse
A20	13246-1868-3455	74.1	75.4	1.2	Minor Adverse
A20	13248-3455-4722	66.2	65.8	-0.4	Negligible Beneficial
Ashford Road	13362-1580-4033	67.4	68.3	0.9	Negligible Adverse
Hythe Road	13431-4036-4513	73.3	75.5	2.1	Minor Adverse
Minor Rd (Aldington Rd to Hythe Rd)	13436-3333-4995	70.2	64.2	-6.0	Major Beneficial
Ashford Road	13487-1796-4722	73.7	76.0	2.3	Minor Adverse

Road Name	Link ID	2044 Do Minimum BNL (dBA)	2044 Do Something BNL (dBA)	2044 Change (dB)	DMRB Semantic Short-Term Classification
M20	13504-1842-1845	80.0	80.0	0.0	No Change
M20	13526-1845-4728	80.4	81.0	0.6	Negligible Adverse
Ashford Road	13561-1870-3017	70.8	70.9	0.0	No Change
A20	13565-1865-4859	75.0	77.1	2.0	Minor Adverse
Ashford Road	13584-5214-6334	75.0	74.8	-0.2	Negligible Beneficial
Stone Street	13598-6497-6502	55.2	56.6	1.4	Minor Adverse
Ashford Road	13671-5145-5629	74.8	72.4	-2.4	Minor Beneficial
Ashford Road	13673-4885-5145	74.8	72.4	-2.4	Minor Beneficial
Ashford Road	13680-4513-5213	75.5	75.7	0.2	Negligible Adverse
Station Road	14096-6492-6648	64.7	64.8	0.0	No Change
Hythe Road	14221-7036-10008	70.4	70.7	0.3	Negligible Adverse
M20	14552-6963-7612	81.1	81.2	0.1	Negligible Adverse
M20	14553-7029-8121	81.0	81.0	0.0	No Change
Knoll Hill	14578-4920-10002	66.8	67.0	0.2	Negligible Adverse
The Street	14580-6795-10003	61.5	61.5	0.0	No Change
Plain Road	14582-6815-10004	58.0	58.0	0.0	No Change
Swan Lane	14677-5022-10007	62.4	62.6	0.2	Negligible Adverse
A20	14696-1865-10019	75.1	76.6	1.5	Minor Adverse
A20	14697-2545-10019	75.1	76.6	1.5	Minor Adverse
Junction 11 Services Access Road	14698-10018-10019	66.4	66.4	0.0	No Change
The Street	14710-10008-10026	60.4	60.4	0.0	No Change
Tesco Local Access Road	14711-10008-10027	66.7	66.7	0.0	No Change
Hythe Road	14747-6795-10049	74.0	75.2	1.2	Minor Adverse
Hythe Road	14748-6648-10049	73.5	74.9	1.4	Minor Adverse
Hythe Road	14750-6648-10050	72.5	73.8	1.3	Minor Adverse
Aldington Road	14755-4997-10053	66.8	65.1	-1.7	Minor Beneficial
Aldington Road	14756-4920-10053	71.4	69.9	-1.5	Minor Beneficial
Aldington Road	14757-4997-10054	67.3	66.3	-1.0	Negligible Beneficial
Swan Lane	14767-10007-10059	61.7	61.7	0.0	No Change
Stone Street	14769-2544-10060	72.0	72.1	0.1	Negligible Adverse

Road Name	Link ID	2044 Do Minimum BNL (dBA)	2044 Do Something BNL (dBA)	2044 Change (dB)	DMRB Semantic Short-Term Classification
Stone Street	14774-6446-10065	64.1	66.4	2.3	Minor Adverse
Stone Street	14775-5762-10065	62.5	64.8	2.2	Minor Adverse
A20	14776-4922-10066	72.9	70.6	-2.3	Minor Beneficial
Aldington Road	14778-4995-10054	69.0	68.0	-0.9	Negligible Beneficial
Lympne Hill	14779-5756-10067	64.6	66.6	2.0	Minor Adverse
Lympne Hill	14780-4995-10067	69.8	71.8	2.0	Minor Adverse
London Road	14781-3332-10068	75.4	75.9	0.5	Negligible Adverse
Sandling Road	14783-1870-10069	69.0	69.1	0.1	Negligible Adverse
Sandling Road	14784-1875-10069	64.1	64.2	0.1	Negligible Adverse
Hythe Road	14785-6815-10070	69.0	70.6	1.6	Minor Adverse
Hythe Road	14786-10050-10070	72.4	73.6	1.3	Minor Adverse
Church Road	14788-6648-10071	62.8	62.8	0.0	No Change
Ashford Road	14799-10051-10077	70.1	71.5	1.4	Minor Adverse
Otterpool Lane	14802-4922-10078	72.7	70.1	-2.5	Minor Beneficial
Bad Munstereifel Road	14814-7045-10084	75.8	76.3	0.5	Negligible Adverse
A20	4486-1843-3625	75.5	76.6	1.1	Minor Adverse
A20	4562-1863-3015	75.6	76.6	1.0	Minor Adverse
A20	5014-3016-4089	74.5	76.1	1.6	Minor Adverse
Minor Rd (Aldington Rd to Hythe Rd)	5213-3332-3333	67.0	60.7	-6.2	Major Beneficial
Hythe Road	5943-3332-4036	73.3	75.5	2.2	Minor Adverse
M20 Motorway Slip Road	600268-233-234	71.1	71.8	0.7	Negligible Adverse
M20 Motorway Slip Road	600269-235-236	71.4	71.9	0.5	Negligible Adverse
Hythe Road	600270-237-238	74.6	75.7	1.1	Minor Adverse
Hythe Road	600271-239-240	72.2	72.4	0.1	Negligible Adverse
M20 Motorway Slip Road	600272-241-242	71.5	72.5	1.0	Minor Adverse
M20 Motorway Slip Road	600273-243-244	72.3	72.1	-0.2	Negligible Beneficial
A2070	600274-245-246	80.1	80.3	0.2	Negligible Adverse
A2070	600275-243-245	74.2	74.8	0.5	Negligible Adverse
A2070	600276-242-243	71.9	72.8	0.9	Negligible Adverse
A2070	600277-240-242	74.0	74.9	1.0	Minor Adverse

Road Name	Link ID	2044 Do Minimum BNL (dBA)	2044 Do Something BNL (dBA)	2044 Change (dB)	DMRB Semantic Short-Term Classification
A2070	600278-237-240	73.7	74.4	0.7	Negligible Adverse
A2070	600279-235-237	73.8	74.3	0.4	Negligible Adverse
A2070	600280-234-235	71.6	72.0	0.4	Negligible Adverse
A2070	600281-234-245	74.0	74.5	0.5	Negligible Adverse
M20	600292-244-7029	81.0	81.0	0.0	No Change
M20	600293-241-6963	81.1	81.2	0.1	Negligible Adverse
Hythe Road	600297-238-6795	74.6	75.7	1.1	Minor Adverse
M20	600299-233-2546	80.5	80.7	0.2	Negligible Adverse
M20	600300-233-244	79.7	79.8	0.1	Negligible Adverse
M20	600301-236-1842	80.5	80.5	0.0	No Change
M20	600302-236-241	80.0	79.8	-0.1	Negligible Beneficial
Bad Munstereifel Road	600303-246-10084	75.8	76.3	0.5	Negligible Adverse
Bad Munstereifel Road	600305-246-7658	75.5	75.9	0.4	Negligible Adverse
Hythe Road	600307-10008-10085	72.4	72.5	0.1	Negligible Adverse
Hythe Road	600308-239-10085	72.2	72.4	0.1	Negligible Adverse
Honeysuckle Avenue	600309-10085-10086	58.5	58.5	0.0	No Change
St Katherine's Crescent (North)	600312-10087-10088	53.9	54.1	0.2	Negligible Adverse
Ashford Road	600313-10087-10089	67.5	69.2	1.7	Minor Adverse
Ashford Road	600314-5022-10089	67.6	69.2	1.7	Minor Adverse
St Katherine's Crescent (South)	600315-10089-10090	43.0	40.3	-2.8	Minor Beneficial
Ashford Road	600317-5022-10091	67.1	68.9	1.9	Minor Adverse
Siegfried Close	600318-10091-10092	57.2	57.2	0.0	No Change
Ashford Road	600319-6815-10093	69.5	70.8	1.4	Minor Adverse
Ashford Road	600320-10087-10093	69.5	70.8	1.4	Minor Adverse
Ashford Road	600322-10051-10094	70.1	71.5	1.5	Minor Adverse
Ashford Road	600323-10091-10095	67.5	69.2	1.7	Minor Adverse
Ashford Road	600324-10094-10095	68.3	70.0	1.7	Minor Adverse
Opposite Siegfried Close	600325-10095-10096	56.4	56.4	0.0	No Change
Stone Street	6643-4997-5762	62.3	64.0	1.7	Minor Adverse
Ashford Road	6679-5146-5629	74.8	72.4	-2.4	Minor Beneficial

Road Name	Link ID	2044 Do Minimum BNL (dBA)	2044 Do Something BNL (dBA)	2044 Change (dB)	DMRB Semantic Short-Term Classification
Harman Avenue	6972-5762-5763	58.2	58.2	0.0	No Change
Stone Street	7422-5220-6497	55.2	56.6	1.4	Minor Adverse

13.5.41 From the predictions presented in Tables 13-38 to 13-41, an assessment of the Magnitude of Change made in accordance with the DMRB LA111 Short-term Classification provided in Table 13-7 has determined that adverse impacts are generally low for all the assessments presented. These effects for all assessment years range from at worst Negligible adverse to Minor adverse in the short-term classification.

13.5.42 For some links No Change, Minor Beneficial, Moderate Beneficial and in one instance at link 5213-3332-3333/13436-3333-4995 Minor Road (Aldington Road to Hythe Road), major beneficial impacts are expected as a result of the proposed changes to the network. These generally occur in situations where traffic flows on some existing roads fall as new or improved roads within the proposed Development provide an alternative route.

13.5.43 With reference to Table 13-9 it is concluded that with the greatest magnitude of change classified as minor adverse there are **no significant adverse effects** on the existing road network. However, some links are demonstrated to result in moderate beneficial impacts and in one instance major beneficial. In the longer term the effects upon sensitive receptors are diminished to some extent and is reflected in the DMRB long term classifications. With the DMRB short term classifications providing the worst-case assessment it follows that there would also be **no significant adverse effects** in the long term.

13.5.44 With reference to the guidance provided by the NPPF (Ref.13.26) it advises that the planning process should: “Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.”

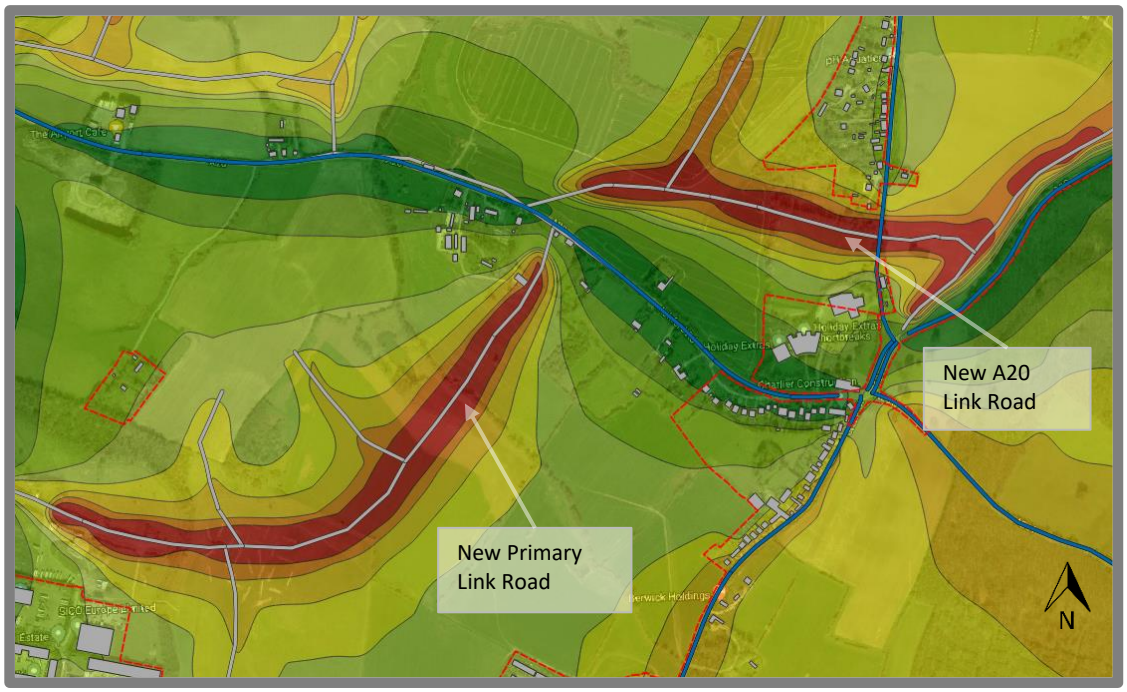
Operational Phase - Assessment of Realigned Section of A20 Ashford Road and New Primary Link Road

13.5.45 The proposed Development proposals include the realignment of a section of the A20 Ashford Road over a stretch of approximately 1.2km where it crosses Stone Street and a new primary link road within the proposed Development site. Both these roads are shown in Image 13-1.

13.5.46 Consideration has been given to potential impacts of these new roads upon existing receptors either side of these roads to identify any that may be subject to significant effects.

13.5.47 An assessment of the Magnitude of Change, made in accordance with the DMRB LA111 Short-term Classification has been undertaken based upon the $L_{A10,18\text{-hour}}$ levels for the ‘with’ and ‘without’ scheme scenarios. A Noise Change Contour Plan that correlates with the DMRB short term Magnitude of Change categories of 2044 providing the worst-case situation is shown in Image 13-1.

Image 13-1 Noise Contour Plan showing Magnitude of Change attributable to new A20 and Primary Road Link for 2044 between 'with' and 'without' scheme



13.5.48

Key

Change in road traffic noise level ($dB L_{A10,18hr}$)		Magnitude of Change - Short Term
-10.0		Major Beneficial
-5.0	-10.0	Major Beneficial
-3.0	-5.0	Moderate Beneficial
-1.0	-3.0	Minor Beneficial
0.0	-1.0	Negligible Beneficial
0.0		No Change
0.0	1.0	Negligible Adverse
1.0	3.0	Minor Adverse
3.0	5.0	Moderate Adverse
5.0	10.0	Major Adverse
10.0		Major Adverse

13.5.49 In consideration of the A20 link there are no existing residential properties with a magnitude greater than negligible adverse along the route of the new realigned section of road. Similarly, the new primary link road passes through agricultural land. Refer to the section 'Assessment of Buildings to be Retained' with regards to effects on existing buildings which may be retained.

13.5.50 For these new road links, consideration has also been given to the absolute noise levels in the worst-case year of 2044 following completion of the proposed Development. This has been considered in order to determine whether any residential properties would qualify for compensation in accordance with the Noise Insulation Regulations.

13.5.51 In line with the Noise Insulation Regulations (NIR) the assessment has been undertaken to determine whether any residential properties within 300m of the realigned road are likely to meet the criteria provided in ES Appendix 13.1 to qualify for compensation. The four criteria that must all be met to qualify for compensation are:

- The building must be a residential dwelling, within 300m of the highway and occupied before the opening or first use of the new or altered highway.

- Within 15 years of the date of the new or altered highway being first opened will reach 68 dB $L_{A10, 18hour}$.
- Traffic noise in the 15 year period will be at least 1.0 dB(A) higher than before work on the new or altered highway began.
- When noise from the use of the new or altered highway is added to noise from other highways in the vicinity, the total noise level is increased by at least 1.0 dB(A) within the 15 year period.

13.5.52 A noise contour plan showing absolute noise levels for 2044 with the new A20 and Primary road links has been created which is shown in Image 13-2.

Image 13-2 Noise Contours showing absolute noise level contours attributable to new A20 and Primary Road Link for 2044

13.5.53 Based upon this assessment, it has been assessed that no existing properties are likely to meet all qualifying criteria under the NIR. Therefore, no properties around the realignment are anticipated to qualify for insulation/compensation.

13.5.54 The exact time the A20 and Primary link roads will be completed is not currently known. The NIR state that the assessment should be based upon the traffic conditions 15 years after opening. Due to the uncertainty of the precise year that the road would open, the assessment has been based upon traffic data for the year 2044 which represents a worst-case that takes account of the uncertainty in the build out schedules. Using traffic data for 2044 is likely to consider higher flows than one based upon 15 years after opening due to year on year traffic growths.

13.5.55 With regard to new residential properties built within the 300m buffer zone, it is assumed that the realigned road would be built prior to or at the same time as occupancy of the new dwellings and therefore these dwellings would not meet the first criterion required for compensation.

Assessment of Buildings to be Retained

13.5.56 There are a number of existing buildings and structures within the application site boundary of the proposed scheme in which their future falls into three categories. These are:

- Existing buildings that are to be demolished;
- Existing buildings that are to be retained; or
- Existing buildings that have an option to either be retained or demolished with a decision made at a future date (Tier 2).

13.5.57 Further details of this are set out in the Development Specification (ES Appendix 4.1). This document includes a schedule in Appendix 3 detailing within which of the above categories each of the existing properties fall.

13.5.58 With regards to the first category, demolition, the potential for temporary adverse noise and vibration effects resulting from the demolition works on sensitive receptors in the vicinity of the buildings to be demolished is considered in ‘Consideration of demolition noise effects’ and ‘Consideration of demolition vibration effects’ .

13.5.59 This section considers the likely effects resulting from the buildings that are, or have an option, to be retained. Table 13-42 below provides an assessment comment for each building. Further assessment will be required for the identified building in Table 13-42 to undertake an assessment using the Noise Insulation Regulations (NIR) to determine any qualification for mitigation at future assessment tier levels when more detail of the proposed development close to the retained buildings is available.

Table 13-42 Assessment of Noise Effects of Buildings designated to be Retained and Buildings to be Retained or Demolished (assuming they are retained)

ID (see plan 1018)	Existing Building Address	Building Details	No. of Buildings	Existing Use	Status within OPA Application	Proposed uses	Noise sensitive	Assessment Comment
1	Hillhurst Farm	Two storey brick and slate farmhouse	1	Dwelling house (C3) and sui generis	Retained	E(g)	Yes	Present noise environment likely to be dominated by the HS1 railway lines and M20 to the north. Localised development may provide some screening against this. Further assessment of proposed business park at future tier level will include mitigation measures as necessary to avoid significant effects
2	Hillhurst Farm outbuildings	Single storey brick and slate out building	1	Sui generis	Retained	E(g)	No	N/A
4	Stone Street, near Newingreen Junction	Single storey sheds	3	Sui generis	Retained or Demolished	As existing use if retained.	No	N/A
5	Benham Business Park	Single storey sheds	8	Sui generis	Retained or Demolished	As existing use if retained.	No	N/A

ID (see plan 1018)	Existing Building Address	Building Details	No. of Buildings	Existing Use	Status within OPA Application	Proposed uses	Noise sensitive	Assessment Comment
6	Benham Water Farm	Detached house	1	C3 Residential	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto realigned A20 Ashford Road.
9	Farm Cottage	Two storey brick and stone detached property	1	Dwelling house (C3)	Retained or demolished	C3	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto realigned A20 Ashford Road.
16	Tollgate Cottage	Detached property	1	Dwelling house (C3)	Retained	C3 or E(g)	Yes	Present noise environment likely to be dominated by the HS1 railway lines and M20 to the north. Localised development may provide some screening against this potentially marginally improving the existing situation.
16A	Tollgate Cottage garage	Garage	1	Garage associated with cottage.	Retained or demolished	As existing if retained	No	N/A

ID (see plan 1018)	Existing Building Address	Building Details	No. of Buildings	Existing Use	Status within OPA Application	Proposed uses	Noise sensitive	Assessment Comment
17	Westenhanger Station	Two storey brick and slate building	1	Business (E)	Retained	E(g)	No	N/A
18	Airport Service Station, Main Road, Sellindge, Ashford TN25 6DA	Detached property and outbuildings	3	Restaurant and café (A3) and sui generis	Retained or Demolished	As existing use if retained.	No	N/A
20	Whiteways - Ashford Road, Newingreen Hythe, Kent, CT21 4JD	Two detached properties and outbuildings	5	Dwelling house (C3) and sui generis	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto new primary link road and realigned section of A20 Ashford Road.
21	Boleh, Ashford Road, Newingreen Hythe, (CT21 4JD)	Detached house	1	Dwelling house (C3)	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto new primary link road and realigned section of A20 Ashford Road.

ID (see plan 1018)	Existing Building Address	Building Details	No. of Buildings	Existing Use	Status within OPA Application	Proposed uses	Noise sensitive	Assessment Comment
22	Red House Farm, Ashford Road, Newingreen Hythe (CT21 4JD)	Main House	1	Dwelling house (C3)	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto new primary link road and realigned Section of A20 Ashford Road.
25	Cydonia, Ashford Road, Newingreen Hythe (CT21 4JD)	Detached bungalow and annexe	2	Dwelling house (C3)	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto new primary link road and realigned section of A20 Ashford Road.
26	Cob Tree Cottage, Ashford Road	Semi-detached property	1	Dwelling house (C3)	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto new primary link road and realigned A20 Ashford Road.
27	2 Franks Villas, Ashford Road, Newingreen Hythe (CT21 4JD)	Semi-detached property	1	Dwelling house (C3)	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto new primary link road and realigned A20 Ashford Road.

ID (see plan 1018)	Existing Building Address	Building Details	No. of Buildings	Existing Use	Status within OPA Application	Proposed uses	Noise sensitive	Assessment Comment
28	Quorum (Ivy Cottage), Ashford Road, Newingreen Hythe, (CT21 4JD)	Detached property	2	Dwelling house (C3)	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto new primary link road and A20 Ashford Road.
29	Craylands, Ashford Road, Newingreen Hythe, Kent CT21 4JD	Detached property and garage/outbuilding	2	Dwelling house (C3) and sui generis	Retained or Demolished	As existing use if retained.	Yes	Potential for some increase on some facades in noise due to new primary link road but noise from primary link road countered by some decrease in noise from road traffic using the existing A20 Ashford Road. Further assessment to be carried out at future tier stage based upon Noise Insulation Regulations (NIR) to any qualification for mitigation.
33	Elms Farm, Newingreen Hythe, Kent CT21 4JB	Detached property	2	Dwelling house (C3)	Retained or Demolished	C3	Yes	Potential for some increase on some facades in noise due to new primary link road but noise from primary link road countered by some decrease

ID (see plan 1018)	Existing Building Address	Building Details	No. of Buildings	Existing Use	Status within OPA Application	Proposed uses	Noise sensitive	Assessment Comment
								in noise from road traffic using the existing A20 Ashford Road. Further assessment to be carried out at future tier stage based upon Noise Insulation Regulations (NIR) to any qualification for mitigation.
34	1& 2, Barrow Hill Farm Cottage, Main Road, Sellindge, Ashford TN25 6DA	Semi-detached property	2	Dwelling house (C3)	Retained or Demolished	As existing use if retained.	Yes	Noise from change in traffic predicted to fall due to traffic being diverted onto new primary link road and realigned A20 Ashford Road.
35	Westenhanger Castle Barn	Barns	1	Not currently used apart from storage	Retained	As existing	No	N/A
36	Westenhanger Castle House	Grade 1 listed Manor House	1	Weddings and conferences.	Retained	As existing	Yes	Existing noise climate dominated by noise of trains using HS1 lines and road traffic from the M20 motorway.

ID (see plan 1018)	Existing Building Address	Building Details	No. of Buildings	Existing Use	Status within OPA Application	Proposed uses	Noise sensitive	Assessment Comment
								Noise climate expected to be little changed as a result of the development.
37	Westenhanger Castle outbuilding WC	Toilet block	1	WC block for weddings and conferences.	Retained or Demolished	As existing use if retained.	No	N/A
N/A = not identified as a sensitive receptor								

Site Suitability - Noise Assessment

Introduction

13.5.60 This section of the Chapter considers the monitored noise levels in order to determine the suitability of the application site for the proposed sensitive end uses; namely residential, educational and mixed-use provision.

Residential Assessment

13.5.61 To assist in the understanding of any potential implications of noise on residential development, consideration has been given to the ProPG Stage 1 risk based assessment criteria. In applying this methodology, potential impacts are considered across the land to be developed without any mitigation provision or scheme layout in place thus providing a worst-case scenario.

13.5.62 In order to demonstrate this visually, the noise levels monitored around the application site have been combined with predicted traffic noise levels to construct a 3-dimensional noise model. This exercise was undertaken within the SoundPLAN 8.0 proprietary noise mapping software; with separate consideration given to daytime and night-time levels.

13.5.63 The output of the noise model for the daytime and night-time periods are presented in Figure 13.6 ProPG Residential Site Suitability (Daytime) and 13.7 ProPG Residential Site Suitability (Night-time) in ES Appendix 13.3. For ease of reference the coloured scale within the drawings correlates with the ProPG daytime and night-time risk levels (reference Table 13-12). Areas within the proposed Development site proposed for residential development are shown on the Development Areas and Movement Corridors Parameter Plan (ES Appendix 4.2).

13.5.64 The noise contours were created based upon:

- The noise survey data using the measured L_{Aeq} values;
- The L_{A10} values derived from 2018 base year traffic flows; and,
- Line source noise representing the noise contribution from the railway immediately south of the M20 motorway.

13.5.65 With reference to Figures 13.6 and 13.7, in ES Appendix 13.3 the noise contour banding defined in the key for each figure correlates with the incremental risk presented in Table 13-11 taken from the ProPG assessment methodology.

13.5.66 Giving consideration to the daytime situation, with reference to Figure 13.6 in ES Appendix 13.3, it was determined that the majority of the site is shaded green or yellow (levels that are below 60dB $L_{Aeq,daytime}$); As such, this is considered to be a Negligible/Low risk. For the night-time situation (Figure 13.7, in ES Appendix 13.3) the greatest portion of the site that is proposed for residential development is shaded yellow with levels that are below 50dBA $L_{Aeq,night\text{-}time}$. These areas are considered to be low risk. The significance in these areas is considered to represent a NOEL whilst Planning Practice Guidance for Noise suggests these levels would not be noticeable.

13.5.67 Along the northern boundary of the site existing noise levels are elevated in comparison with the rest of the site by both road and rail traffic using the M20 motorway and the HS1 rail link respectively. The worst-case situation occurs along the western part of the northern boundary where the M20 is closest to the northern site boundary and the levels are demonstrated to represent a medium risk under the ProPG. The area of medium risk increases and has a larger extent during the night-time situation, shown on Figure 13.7, in ES Appendix 13.3. These areas are considered to represent an area where noise levels are defined as LOAEL/exceed

LOAEL whilst the *Planning Practice Guidance – Noise* suggests the situation could be noticeable and disruptive, potentially increasing to intrusive, at the boundary. Consideration of mitigation is therefore required in this area relating to the M20 and HS1. An acceptable sound environment would be achieved in this area through a combination of off-setting residential buildings back from the boundary line, consideration of the layout and design of residential buildings so that the buildings provide shielding for amenity space from noise from the M20 and railway lines and enhanced glazing so that a good internal sound environment is achieved within residential buildings. Further consideration would be given to these aspects as part of future Tier assessments.

13.5.68 The other area where levels are elevated occurs along the corridor of the A20 as it cuts through the site and along the B2067. These corridors of elevated noise levels are directly attributable to the primary roads within the site and are indicated on Figures 13.6 for the daytime and 13.7 for the night-time; with the night-time situation presenting the worst-case situation. Levels along these primary road corridors are mostly raised to the medium risk category and would represent LOAEL and be considered as noticeable, disruptive/intrusive, according to the *Planning Practice Guidance – Noise*. Along these road corridors a very narrow strips of land immediately adjacent to the road edge potentially demonstrates a high risk banding from the ProPG; and therefore further consideration for these areas is given in the following paragraphs.

13.5.69 Overall, the vast majority of the site is likely to be acceptable from a noise perspective providing a good acoustic design process is followed, and demonstrated within the scope of an Acoustic Design Strategy.

13.5.70 It is therefore concluded that the application site is suitable for residential development based upon noise assessment presented within the scope of this chapter. As a result of this assessment no specific noise mitigation measures are proposed for the majority of the site, although it is considered that suitable mitigation measures can be developed based around the site layout, building heights and orientation for individual building phases. With any reserved matters application it would be prudent to contain an Acoustic Design Strategy as specified within the ProPG and to undertake a full detailed noise assessment based upon the exact specifics of the design for the phase being progressed; this would specifically need to consider the peripheral areas of the site adjacent to existing noise sources, and along the primary road links proposed within the proposed Development.

13.5.71 As individual phases are developed layout provision would accommodate off-set of buildings from key noise sources especially those around the northern boundary and along the primary road corridors. In combination, mitigation measures would also include enhanced glazing for residential buildings and street layouts whereby new buildings provide shielding to other new buildings and sensitive external living spaces within the proposed Development.

13.5.72 Consideration of the potential for changes in road traffic noise levels has been made within a previous section of this chapter. It is concluded that the potential changes in road traffic noise would be predominantly “Negligible”, or at worst “Minor Adverse”. Consideration of the magnitude of these potential changes in road traffic noise would not be considered to result in a significant change in the conclusions and there would be **no significant effects.**

13.5.73 With the inclusion of commonly adopted mitigation options for residential development and embedded design measures including the layout and orientation of buildings it is concluded that residual impacts would be acceptable with regard to the criteria of the ProPG, and a suitable level of amenity could be achieved. Detailed

studies and consideration would be necessary during the future Tier works to suitably demonstrate and conclude this.

Site Suitability - Potential Impacts from Existing Lympne Industrial Estate.

13.5.74 The Lympne Industrial Estate is an operating industrial site located on the east side of Otterpool Lane with some business units within it operating on a 24-hour basis. The east side of the industrial estate forms a boundary with the proposed Development. There is a substantial earth bund extending along the eastern border of the business park which is approximately two metres high and is to be retained.

13.5.75 With reference to Figure 13.1, in ES Appendix 13.3, Noise Monitoring Locations, measurements were quantified at monitoring location NML06S immediately east of the earth bund.

13.5.76 Observations made during the survey at this location reported that the main source of noise created from the Industrial Estate was HGV activity along industrial estate roads. Secondary to this noise from occasional impact activity associated with personnel moving goods and equipment around the yard areas was evident, but not considered dominant.

13.5.77 With reference to the ProPG Residential Site Suitability Figures 13.6 and 13.7, in ES Appendix 13.3, for day and night-time respectively consideration has been made of the ProPG Stage 1 assessment methodology in respect of the land around Lympne Industrial Estate, especially as a result of the dominance of the HGV noise on the Lympne Industrial Estate roads. During the daytime, the site falls within the **low or medium risk banding**. For the more sensitive night-time period a **low/medium risk banding** with a medium risk corridor around the northwest corner of the industrial estate is evident, however this band is not attributable to the industrial estate, but to road traffic using Otterpool Lane. Furthermore, the measured ambient noise levels in the vicinity of the Industrial Estate $L_{Aeq,T}$ is 52 dB which is below the 55 $L_{Aeq,T}$ ambient noise level that the WHO considered acceptable for external residential amenity.

13.5.78 Consideration has also been given to potential effects from impact noise associated with the yard activity observed during the survey. The highest L_{Amax} value recorded during the night-time period of the survey was L_{Amax} 62dB. With commonly adopted mitigation measures such as enhanced glazing it is anticipated that suitable resting conditions can be achieved within new residential buildings close to the industrial estate.

13.5.79 Residential buildings immediately surrounding the industrial estate are anticipated to be two and/or two and a half storeys high. Particular attention would be given to the design of upper storeys of residential buildings located close to the Industrial Estate, upper storeys of these residential buildings would not benefit from the earth bund at ground floor level.

13.5.80 Further consideration of any potential adverse impacts from activity from the industrial estate will require to be undertaken at future Tier stages once the design and layout of the residential development close to the industrial estate is known. It is anticipated that appropriate mitigation such as enhanced glazing and ventilation strategies for the residential dwellings will achieve an acceptable noise environment for living conditions and therefore would result in **no significant effects.**

Consideration of the proposed Business Park

13.5.81 NML03L monitoring location was situated on the northern boundary next to the adjacent local and HS1 railway lines and M20 beyond where noise levels were found to be high owing to these prominent noise sources.

13.5.82 Generally, commercial developments are much less sensitive to external noise levels than residential developments hence there is less specific guidance relating to the assessment of impacts for such land uses. BS 8233:2014 recommends appropriate internal noise levels for various types of commercial/ light industrial activities.

13.5.83 It is anticipated that the existing noise levels on the site would not generally be prohibitive to commercial development although should office-type developments be proposed then appropriate mitigation measures will need to be considered as part of future Tier assessments (e.g. appropriate acoustic specifications for glazing/building facades, appropriate ventilation strategies to minimise break-in noise). With the adoption of these measures there would be **no significant effects.**

The control of impacts of new commercial activities on new sensitive receptors

13.5.84 A secondary issue will be to ensure that noise from any new commercial/ light industrial classed as E(g) uses is controlled relating to impacts on new proposed dwellings within the proposed Development. This would include from sources such as unit activities, service yards, HGV and vehicle activities, car parking and plant services; at this stage these specifics are not defined. Noise associated with these aspects would need to be designed/controlled sufficiently so as not to adversely impact on new residential receptors proposed within the proposed Development. By definition in The Town and Country Planning (Use Classes) (Amendment) (England) Regulations 2020 (Ref 13.29), business uses within what was Use Class B1(a) and is now Class E(g) are those *'being a use, which can be carried out in any residential area without detriment to the amenity of that area by reason of noise, vibration. smell, fumes, smoke, soot, ash, dust or grit.'*

13.5.85 Impacts associated with commercial/ light industrial activities require to be considered in line with the methodology of BS 4142:2014 *Methods for rating and assessing industrial and commercial sound.* Assessment in accordance with BS4142 would require more specifics of the activities in question than are available supporting this assessment, and as such would be undertaken as part of future Tier assessments when more specifics are available relating to end users and layouts.

13.5.86 Noise associated with any commercial/ light industrial development of Class E(g) uses at the site would need to be controlled as far as practically possible to a cumulative level which is no higher than the existing background noise climate (LA90 +/-0dB) at the nearest noise sensitive receptors (proposed) without the source under consideration.

13.5.87 Good planning relating to the layout of the site will be imperative to controlling the noise impact of commercial land uses on nearby proposed (and existing) residential receptors. Noise limits will need to be imposed on new commercial uses to control the noise impacts on new sensitive receptors. Appropriate noise limits would need to be determined as part of the future Tier assessment in consultation with the Local Planning Authority but would usually require noise to be controlled to a level no higher than that of the existing background level (LA90 +/-0dB). This could be secured by way of a planning condition.

13.5.88 Specific noise studies should be undertaken at future Tier levels, once end users are identified for a given plot to ensure that noise does not result in adverse impacts at sensitive receptors.

13.5.89 Accordance with a condition of this nature would provide a commensurate level of protection for future residents of the Development and ensure that noise is fully controlled within the interaction of the non-residential elements of the Development and the sensitive residential aspects. As such adherence to this limit would ensure residual impacts would be acceptable

Assessment of Proposed Business Park

13.5.90 With reference to the Parameter Plans (ES Appendix 4.2) and the Illustrative Masterplan (ES Appendix 4.5) a business park is proposed in the north eastern corner of the proposed Development. The access link to the M20 would avoid any road traffic including HGVs associated with companies in the business park from travelling though residential areas of the proposed Development

13.5.91 The proposed area designated as a business park will be adjacent to other areas designated for residential use which will require further consideration as part of the future Tier assessments once residential and business unit layouts are known.

13.5.92 As part of this Tier 1 assessment it is not possible to fully consider the potential for impacts from the commercial/industrial uses without understanding potential layouts and end user activities. Noise generated from B1 (light industrial) and B2 (general industry) can vary significantly with regard to the levels and types of noise generated and therefore careful consideration will be necessary with regard to the provision of these uses in close proximity to proposed residential uses.

13.5.93 With further consideration as part of future Tier assessment in which suitable control measures are considered in combination with good design and orientation of the business units impacts can be controlled so that there would be **no significant effects.**

Education Facilities

13.5.94 Schools have a high sensitivity to noise and require a good acoustic noise environment to facilitate learning. Appropriate noise guidance for schools is contained within BB93 (2015) and supported by external noise guidance contained within the accompanying document “Acoustics of Schools: A Design Guide”.

13.5.95 Acoustics of Schools: A Design Guide specifies an outdoor noise level for new schools of 60dB $L_{Aeq,}$ 30min set at the boundary of any external premises used for formal and informal outdoor teaching, and recreational areas.

13.5.96 As no detailed design information is presented within the Illustrative Masterplan (ES Appendix 4.5) relating to the exact location, layout, or design of the proposed schools, mitigation measures would need to be incorporated into the design of the schools to ensure that the criteria of BB93 is achieved as part of the future Tier assessments.

13.5.97 The Illustrative Masterplan (ES Appendix 4.5) indicates seven new primary schools and one new secondary school to be located across the proposed Development. There are reserved proposals for a second Secondary School should there be a requirement for this with the designated area to be determined. The likely worst affected of any of these relating to noise is the proposed school in the northern portion of the site which is around 275m from the railway lines and around 440m from the M20 motorway. With reference to Figure 13.6, in ES Appendix 13.3, noise across this provision is anticipated to be between $L_{Aeq,16hour}$ 50dB - 60dB and therefore would be acceptable with regard to the appropriate guidance. At future Tier assessment stages mitigation measures will be included in the school’s design as appropriate to achieve levels which meet the BB93 requirements.

13.5.98 The other five proposed schools are in the vicinity of the A20 and adjacent to primary road links within the proposed Development. Based upon the noise levels within the noise contour band forming a corridor flanking the A20, as detailed on Figure 13.6, in ES Appendix 13.3, it is concluded that mitigation measures should be included in the school designs to achieve levels which meet the BB93 requirements.

13.5.99 Overall, based upon the noise levels measured at the site, it is considered possible to achieve acceptable noise levels relative to appropriate educational guidance at all

of the school site boundaries; however, there is a high potential that this would need mitigation to be implemented as appropriate, considered through the future Tier assessments and based upon the detailed proposals for the schools. With the implementation of commonly adopted mitigation measures it is considered that there would not be **no significant effects.**

13.5.100 In addition to the requirement for educational facilities to have a good acoustic environment conducive to learning there is also a potential for these facilities themselves to create noise that has the potential for adverse effects on neighbouring noise sensitive receptors. Such noise can be created by heating, ventilation and air-conditioning services and noise resulting from players using sports pitches. Sports pitches may be designed with artificial surfaces and flood lighting which would potentially extend their use into evening periods throughout the year. The potential adverse effects can typically be controlled to acceptable levels through the good design of the design and layout of the educational buildings and the inclusion of acoustic screening of sports pitches where necessary. As part of future Tier assessments the heating ventilation and air-conditioning systems will be considered applying the methodology set out in BS4142: 2014 (Ref. 13.23) and sports pitches can be designed applying the principles provided in BB93 (Ref. 13.25) and the Sports Council (13.30).

Health Centres

13.5.101 The precise locations of the health centres are not presently known or identified on the Illustrative Masterplan (ES Appendix 4.5) but is indicated to be in within the mixed-use local centres.

13.5.102 As such it is not possible to fully consider the potential for impacts from ambient noise levels upon such facilities as part of the Tier 1 assessment due to the lack of available information.

13.5.103 The guidance document HTM08-01 Heath Technical Memorandum sets out design standards that should be adhered to in order to enable the appropriate use of such facilities.

13.5.104 Considering the noise levels indicated on Figure 13.6 and Figure 13.7, in ES Appendix 13.3, the mixed-use areas indicated for health care facilities would accord with the broad design criteria in HTM08-01 subject to suitable off-set and/or screening from the A20 or other Primary link roads. A more detailed assessment will require to be undertaken as part of the future Tier 2 and Tier 3 assessment once more detail on the healthcare facilities are available, including location, layout and design.

Public Open Space

13.5.105 Assessment and consideration of noise associated with areas of public open space is considered in accordance with the external guidance of both the WHO Guidelines for Community Noise and BS8233. Within BS8233 a level of between 50dB LAeq, T and 55dB LAeq,T is considered to be acceptable for external amenity depending on the local noise environment. With reference to Figure 13.6 ProPG Residential Site Suitability (Daytime), in ES Appendix 13.3, and the parameter plans (ES Appendix 4.2) there is provision of public open space that are within these guidelines.

13.5.106 With reference to the Open Space and Vegetation parameter plan (ES Appendix 4.2) that indicates substantial areas of public open space across the site. Taking account of Policy SS8 (2)ii of the Core Strategy Review 2022 the proposed public open space areas will include some mitigation. This will be considered in greater detail as part of the Tier 2 and Tier 3 ass 2022essment and will comprise of soil material that will be formed to create small, localised buffers from the road and rail noise that is more prevalent towards the northern part of the site to form tranquil pockets.

13.5.107 It is considered that with the mitigation measures proposed there are **no significant effects.**

Site Suitability – Ground Borne (Train Induced) Vibration Assessment

13.5.108 As a result of the proximity of the railway lines to the northern part of the proposed Development, a ground borne vibration survey was undertaken to quantify and assess the potential for any vibration implications on the proposed Development within this area of the site.

13.5.109 At the two monitoring locations close to the railway, the vibration surveys captured pass-by levels of the various trains that operate on the line including local commuter trains, HS1 high speed services, considering Javelin local, Eurostar and freight services.

13.5.110 Table 13-41 and Table 13-42 below summarise the ground borne vibration assessment in accordance with BS6472. Additionally, the table also indicates the effect level that corresponds to the measured ground borne vibration level.

Table 13-41 BS6472 Vibration Dose Value Thresholds

Location	Date	Time Period	VDV (X-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOEL	VDV (Y-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOEL	VDV (Z-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOEL
VML1	5th Oct 2018	Daytime (11:15 – 23:00)	0.005414	YES	0.006979	YES	0.038440	YES
		Night (23:00 – 07:00)	0.004470	YES	0.004412	YES	0.026060	YES
	6th Oct 2018	Daytime (07:00 – 23:00)	0.135300	YES	0.175000	YES	0.159000	YES
		Night (23:00 – 07:00)	0.002866	YES	0.003338	YES	0.019830	YES
	7th Oct 2018	Daytime (07:00 – 23:00)	0.014870	YES	0.010410	YES	0.026030	YES
		Night (23:00 – 07:00)	0.003146	YES	0.004067	YES	0.026690	YES
	8th Oct 2018	Daytime (07:00 – 23:00)	0.158400	YES	0.158400	YES	0.158600	YES
		Night (23:00 – 07:00)	0.003774	YES	0.004818	YES	0.031440	YES
	9th Oct 2018	Daytime (07:00 – 11:15)	0.005414	YES	0.006979	YES	0.038440	YES

Table 13-42 Vibration assessment for VML2 (VDV – Vibration Dose Value)

Date	VDV (X-axis) ($mm/s^{-1.75}$) Estimated 16hr VDV	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL	VDV (Y-axis) ($mm/s^{-1.75}$) Estimated 16hr VDV	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL	VDV (Z-axis) ($mm/s^{-1.75}$) Estimated 16hr VDV	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL	Comment – noted train type in period
10/05/2018 11:07	0.00778	YES	0.01023	YES	0.04430	YES	11:07 Javelin HST Commuter Train, 11:10 commuter Train
10/05/2018 11:12	0.00789	YES	0.01023	YES	0.04430	YES	11:13 Commuter Train
10/05/2018 11:17	0.00807	YES	0.01023	YES	0.04430	YES	11:20 Commuter train
10/05/2018 11:22	0.00833	YES	0.01030	YES	0.04452	YES	11:22 Javelin HST 11:23 Commuter Train
10/05/2018 11:27	0.00835	YES	0.01030	YES	0.04453	YES	11:30 Eurostar 11:31 Javelin HST
10/05/2018 11:32	0.00836	YES	0.01030	YES	0.04453	YES	11:34 Eurostar
10/05/2018 11:37	0.00836	YES	0.01030	YES	0.04453	YES	11:41 Javelin Train
10/05/2018 11:42	0.00839	YES	0.01032	YES	0.04476	YES	11:45 Freight
10/05/2018 11:47	0.00864	YES	0.01032	YES	0.04476	YES	11:50 Eurostar
10/05/2018 11:52	0.00864	YES	0.01032	YES	0.04476	YES	Javelin Train
10/05/2018 11:57	0.00865	YES	0.01032	YES	0.04476	YES	11:58 Eurostar
10/05/2018 12:02	0.00971	YES	0.01032	YES	0.04476	YES	12:03 Eurostar

13.5.111 The measured vibration levels were found to be low in all cases associated with all of the train types witnessed, with all measurements not exceeding the lowest criteria relative to adverse comment from BS6474 during either the daytime or night-time periods.

13.5.112 The ground borne vibration assessment concludes that vibration levels created by passing trains are well below the levels at which there is a “low probability of adverse comment” due to vibration and based upon the effect levels specified in this Section would be below NOEL.

13.5.113 As such, the survey did not identify that ground borne vibration generated by the passage of trains that would be problematic at the site providing a similar stand-off distance to that used in the survey was maintained (survey at 5m from the railway boundary fence). Should this be the case once the detailed design is concluded, then no specific mitigation measures for ground borne vibration are considered necessary.

13.5.114 However, care would be taken at future Tier assessment stages in the detailed design of the buildings to ensure that transfer effects are controlled between the substrate and the founding elements, along with measures to ensure that vibration levels are not amplified within buildings due to poor construction techniques and design. Taking this approach it is anticipated there would be no significant effects.

Cumulative Effects

Cumulative effects with other developments

13.5.115 Within the scope of this assessment limited consideration has been given to cumulative construction impacts of the proposed Development with other proposed Development within the area. Other road improvement works and development sites are smaller in scale when compared to the proposed Development site and as such will have relatively short construction periods that are only likely to result in minor cumulative effects.

13.5.116 Consideration has also been given to cumulative effects with regards to the operational phase of the proposed Development. As a result of the nature of the proposed Development this has been limited to consideration within the off-site traffic noise assessment. The traffic data provided includes all cumulative developments identified in Section 13.5. In conclusion impacts during the operational phase resulting from changes in traffic as a result of cumulative effects range between No Change and Minor Adverse and therefore it is anticipated that there would be **no significant adverse effects.**

Cumulative effects with the Permitted Waste Facility (PWF) or 800 Residential Units plus School

13.5.117 The assessment provides the worst case predicted cumulative impact between two proposed land uses, these are:

- Scenario 1 - PWF site is replaced with 800 residential units and a primary school; or
- Scenario 2 - The site is developed with the PWF

13.5.118 During the construction phase of Scenario 1 the construction approach would be the same as for the rest of the residential development with the assessment described in the ‘Consideration of construction noise and vibration effects,’ in Section 13.5. Therefore, similarly to the construction of the rest of the development and taking account that the work would be subject to controls as dictated by the applicant’s CoCP it is concluded that in relation to construction of Scenario 1 there would be **no significant cumulative effects.**

13.5.119 During the construction phase noise emissions associated with the construction of the Scenario 2, Permitted Waste Facility work would be subject to controls as dictated by the applicant's CoCP, therefore during construction would be no **significant cumulative effects.**

13.5.120 The transport planning team produced estimates of traffic (including light and heavy vehicles) that the two differing land uses would induce.

13.5.121 The traffic data for the scenario 1 land use was assessed as part of the overall Operational Traffic Assessment reported in the Operational Phase – Road Traffic Assessment of Existing Network, Section, 13.5. The assessment concluded that there were **no significant effects** as a result of traffic noise that included the scenario land use.

13.5.122 Scenario 2 was considered as part of the sensitivity test in which the methodology is described in Section Sensitivity Testing for Road Traffic in Construction Peak/Interim Build Out and Operational Phase.

13.5.123 It is recognised that the distribution of traffic throughout the week would be different when compared with the original housing scenario. It is likely there would be a peak in traffic at weekends when households make the greatest use of such facilities. Flows would also be restricted to the opening hours of the facility so there would be negligible traffic associated with the facility during the night-time thus eliminating any sleep disturbance due to noise.

13.5.124 The sensitivity assessment that includes the scenario 2 land use concluded that there were **no significant effects** as a result of traffic noise that included this scenario land use.

13.5.125 Based on a study and observations of waste transfer sites it is anticipated that there would be some noise associated with the use of the Permitted Waste Facility, most notably with impact noise resulting from waste material being off-loaded into skips and the removal of skips and containers. It is not anticipated there would be significant ground borne vibration as a result of the operation of the facility. In consideration of the potential for noise from the use of the Anaerobic Digestion Facility a study of the processes involved are likely to be relatively quiet. The planning application for the PWF and Anaerobic Digestion Facility states that the development of the facility would seek to adopt a 250m buffer zone should the Permitted Waste Facility site be realised. This would mean any sensitive receptors would be at a distance of in excess of 250m from the facility. Taking this into consideration and the likely noise levels it is concluded that there would be **no significant cumulative effects.**

Cumulative effects with the Framework Masterplan

13.5.126 The Framework Masterplan has been included intrinsically within the assessment set out above.

13.6 Monitoring

13.6.1 It is not anticipated that monitoring would be required in relation to noise and vibration.

13.7 Assessment Summary

Residual Effects from Construction

13.7.1 As a result of the outline nature of the application, and the level of information available within the regulatory plans upon which to base a detailed assessment, the consideration of residual effects cannot be concluded at this stage in this Tier 1

assessment but will be carried out as part of the future Tier assessments and the CoCP based upon more detailed design information once it becomes available.

13.7.2 Specific consideration of residual noise effects requires the re-assessment of the noise impacts once construction methodologies have been determined, and to take account of the inclusion of the effects of any mitigation strategies proposed. As the planning application is in outline, detailing potential areas for the proposed Development, the detailed level of information necessary to specifically conclude noise mitigation and residual impacts is not available. However, through the scope of this study, and inclusive of the effects of appropriate mitigation **no significant adverse effects** have been identified at this preliminary stage.

Residual Effects from Operation

13.7.3 The assessment of the operational stage of the proposed Development has determined that the noise climate of the area is demonstrated to not be prejudicial to the type of development proposed, and that with specific consideration of acoustic issues during the detailed design phase of each aspect, residual noise effects, assessed further as part of the future Tier assessments, will be controlled to acceptable levels and as such there would be **no significant adverse effects.**

13.7.4 Therefore, it is concluded that with appropriate planning conditions in relation to the investigation and implementation of appropriate acoustic control measures within the detailed design of the proposed Development, acceptable residual effects would be achieved once the site is operational and therefore **no Significant adverse effects** at the operational stage are anticipated.

13.7.5 In principle with the application of normal design principles there is no reason why an acceptable noise climate would not be achieved (both in terms of the users of the new development and the impact of the development on existing residents etc. Similarly, ground borne vibration would also be controlled to within acceptable limits with the application of design principles.

Summary

13.7.6 Table 13-43 provides an assessment summary with respect to noise and vibration, including the potential significant effect with embedded design measures in place, and additional measures required to reach the residual significance of effect.

Table 13-43 Assessment Summary

Receptor	Embedded Design Measures	Potential Significant Effects (pre-mitigation)?	Phase	Additional Mitigation	Mitigation Delivery Mechanism	Residual Effects Significance
Existing residential properties within 300m of identified buildings scheduled for **demolition**	Working hours restricted to daytime working weekdays and Saturday morning at weekends Demolition work to be assessed and controlled through future Tier assessments and the outline CoCP (ES Appendix 4.17) and potential effects of various techniques to be carefully considered with regards to noise. Mitigation in the form of Best Practicable Means to be adopted as appropriate.	Temporary adverse **noise** from demolition works = **Not Significant**	C	No additional mitigation required	N/A	**Not significant**
Existing residential properties within 300m of identified buildings scheduled for **demolition**	None	Temporary adverse **vibration** from demolition works = **Not Significant**	C	Construction methods and plant not anticipated to create perceptible levels of vibration. No additional mitigation required	N/A	**Not Significant**
Existing residential buildings within 300m of **construction work**	Working hours restricted to daytime working weekdays and Saturday morning at weekends Construction work to be assessed and controlled through future Tier assessments and the Outline CoCP (ES Appendix 4.17) and potential effects of various techniques to be	Temporary adverse **noise** from construction works = **Not Significant**	C	No additional mitigation required	N/A	**Not Significant**

Receptor	Embedded Design Measures	Potential Significant Effects (pre-mitigation)?	Phase	Additional Mitigation	Mitigation Delivery Mechanism	Residual Effects Significance
	carefully considered with regards to noise. Mitigation in the form of BPM to be adopted as appropriate					
Existing residential buildings within 300m of **construction work**	Working hours restricted to daytime working weekdays and Saturday morning at weekends Construction work to be assessed and controlled through future Tier assessments and the Outline (CoCP) and potential effects of various techniques to be carefully considered with regards to vibration. Alternative techniques / mitigation to be adopted as appropriate and the implementation of BPM.	Temporary adverse effects from **ground borne vibration** during construction phase = **Not Significant**	C	No additional mitigation required	N/A	**Not Significant**
Existing and proposed residential properties potentially affected by **traffic noise** resulting from change in traffic on local network for interim assessment years including construction traffic and final completion year post construction	None	Permanent adverse effects from **traffic noise** on the local road network local to the site = **Not Significant**	C & O	No additional mitigation required	N/A	**Not Significant**
Existing residential properties in vicinity of realigned A20 and primary access road potentially affected by **traffic noise**	None	Permanent adverse effects from **traffic noise** on the new section of realigned A20 Ashford Road	O	None required, no significant effects identified	N/A	**Not Significant**

Receptor	Embedded Design Measures	Potential Significant Effects (pre-mitigation)?	Phase	Additional Mitigation	Mitigation Delivery Mechanism	Residual Effects Significance
		and new primary access road = **Not Significant**				
Existing buildings within the red line boundary located across the site that are to be retained or have an option to be retained or demolished (assuming they are to be retained.)	None	Small number of residential properties identified that have potential to be adversely affected by noise from increase in road traffic noise	O	Further assessment to be undertaken at Future Tier stage to determine any qualification for mitigation in accordance with Noise Insulation Regulations (NIR).	Assessment based upon Noise Insulation Regulations (NIR) as part of future Tier assessments	**If qualifying mitigation / compensation would be provided**
Site suitability - New residential properties and hotel	None – site considered without development that could provide screening to other parts of the proposed development so as to provide the worst—case assessment	Permanent adverse effects from **noise** created by the prevailing noise climate of the area and future changes as a result of the proposed Development = **Potentially Significant** in some instances without due regard to good design and layout	O	Noise to be considered through future Tier assessments and an appropriate Acoustic Design Strategy (ADS) supporting the detailed design to be produced. Issues to be covered include façade mitigation, layout considerations, acoustic screening (bunds/fences) and buffer zones	Planning condition	**Not Significant**
Site suitability - New residential properties and hotel	Maintain buffer distance from active railway lines of no less than 5m from railway boundary fence	Permanent adverse effects from **ground borne vibration** created	O	Ground Borne vibration levels monitored to be low	Planning condition	**Not Significant**

Receptor	Embedded Design Measures	Potential Significant Effects (pre-mitigation)?	Phase	Additional Mitigation	Mitigation Delivery Mechanism	Residual Effects Significance
	Site considered without development that could provide screening to other parts of the proposed development so as to provide the worst—case assessment	by trains using the railway lines.. = **Not Significant**		so no further measures required.		
Site suitability - New residential properties	None – site considered without development that could provide screening to other parts of the proposed development so as to provide the worst—case assessment	Permanent adverse effects from **noise** associated with industrial activity/HGV movements at the Lympne Industrial Estate = **Potentially Significant** in some instances without due regard to good design and layout	O	Existing noise bund provides mitigation for external amenity space and internal rooms of proposed dwellings at ground floor level. Consideration of enhanced glazing to upper floors of new dwellings during future Tier assessments to achieve internal levels compliant with BS8233. Further assessment during future Tier stages when layouts are available	Planning condition	**Not Significant**
Site suitability - New residential properties and existing residential properties	Location of business park close to the M20 thus containing associated traffic traveling between the business park and the wider road network via the M20.	Permanent adverse effects from noise sources created by newly created businesses if located such that associated traffic would impact upon residential areas =	O	Consideration of potential noise effects against BS4142 methodology as part of the future Tiers. Requirement for premises layout, activity profiles and proximity of receptors to conclude any mitigation.	Planning condition	**Not Significant**

Receptor	Embedded Design Measures	Potential Significant Effects (pre-mitigation)?	Phase	Additional Mitigation	Mitigation Delivery Mechanism	Residual Effects Significance
		Potentially Significant				
Site Suitability Education provision	The size and flexibility of the proposed development will allow the education facilities to be well located in areas that will not have a detrimental sound environment	Permanent adverse effects on learning caused by poor acoustics of new education buildings and noise in the environment = **Potentially Significant**	O	Consideration of location and orientation on buildings and potential noise effect. Design to follow acoustic guidance of BB93 as part of the future Tier assessments	Planning condition	**Not Significant**
Site Suitability Education provision	The size and flexibility of the proposed development will allow education facilities to be designed and have layouts that will minimise adverse effects of noise created by the facilities	Permanent adverse effects on neighbouring noise sensitive receptors resulting from noise caused by heating, ventilation and air-conditioning systems and from the use of all weather sports pitches with flood lighting	O	Heating, ventilation and air-conditioning systems will be assessed following the methodology set out in BS4142:2014 Sports pitches to be designed in accordance with BB93 and guidance provided by Sport England	Planning Condition	**Not Significant**
Site Suitability Health provision	The size and flexibility of the proposed development will allow health centres to be well located in areas that will not have a detrimental sound environment when working at/attending these facilities	Permanent adverse effects on patient well being caused by poor acoustics of new health buildings and noise	O	Consideration of location and orientation on buildings and potential noise effect. Design to follow acoustic guidance of HTM08-01 as part of the future Tiers.	Planning condition	**Not Significant**

Receptor	Embedded Design Measures	Potential Significant Effects (pre-mitigation)?	Phase	Additional Mitigation	Mitigation Delivery Mechanism	Residual Effects Significance
		in the environment = **Not Significant**				
Site Suitability Public Open Space	The proposed development has considerable provision of open space across the site with most of it away from roads where there will be a good sound environment to enable to enjoyment of this facility	If poorly located without due regard for the sound environment adverse detrimental effects in the enjoyment of the use of these facilities = **Significant**	O	There will be provision of accessible Public Open Space that will be located where noise levels meet WHO guidelines.	Planning condition	**Not Significant**
Phase: Construction =C, Operation=O						

13.8 References

Reference	Title
Ref 13.1	The Town & Country Planning (Environmental Impact Assessment) Regulations 2017
Ref 13.2	The Control of Pollution Act 1974
Ref 13.3	The Environmental Protection Act 1990
Ref 13.4	The Noise Insulation Regulations 1975
Ref 13.5	The Building Regulations 2010
Ref 13.6	Ministry of Housing, Communities & Local Government, National Planning Policy Framework (NPPF) 2021
Ref 13.7	Department for Environment, Food & Rural Affairs, Noise Policy Statement for England 2010
Ref 13.8	Department for Environment, Food & Rural Affairs, Planning Practice Guidance: Noise 2019
Ref 13.9	Folkestone and Hythe District Council (F&HDC) Emerging Core Strategy Review 2022
Ref 13.10	Guideline for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment (IEMA) 2014
Ref 13.11	World Health Organisation (WHO): Guidelines for Community Noise 2000
Ref 13.12	World Health Organisation (WHO) Night Noise Guidelines for Europe 2009
Ref 13.13	World Health Organisation (WHO) Guidelines for the European Region 2018;
Ref 13.14	BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures
Ref 13.15	BS 7445-2:1991 Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use
Ref 13.16	BS 8233:2014: Guidance on sound insulation and noise reduction for buildings
Ref 13.17	BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites; Part 1 Noise
Ref 13.18	BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites; Part 2 Vibration
Ref 13.19	Calculation of Road Traffic Noise (CRTN) 1988
Ref 13.20	Design Manual for Roads and Bridges (DMRB) Sustainability and Environmental Appraisal LA111 Noise and Vibration. November 2019
Ref 13.21	BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground borne vibration

Reference	Title
Ref 13.22	BS 6472-1:2008: Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting
Ref 13.23	BS 4142:2014 Methods for rating and assessing industrial and commercial sound
Ref 13.24	Professional Practice Guidance on Planning and Noise – New Residential Development (ProPG), Institute of Acoustics, Chartered Institute of Environmental Health and the Association of Noise Consultations 2017
Ref 13.25	Department for Education & the Education Funding Agency Building Bulletin 93 (BB93) Acoustic Design of Schools: Performance Standards 2015
Ref 13.26	Department of Health and Social Care, Health Technical Memorandum 08-01 (HTM08-01): Acoustics 2013
Ref 13.27	*Converting the UK traffic noise index $L_{A10,18hour}$ to EU noise indices for noise mapping,* by P G Abbott and P M Nelson (TRL Limited) 2002
Ref.13.28	The Environment Act 2021
Ref. 13.29	The Town and Country Planning (Use Classes) (Amendment) (England) Regulations 2020
Ref. 13.30	Sport England, Design and Cost Guidance

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