13 NOISE AND VIBRATION

13.1 INTRODUCTION

13.1.1 This chapter addresses the likely significant environmental effects of the construction and operational phases of the Application Site on the noise and vibration climate of the surrounding area based on the changes to the masterplan since the ES submission. This chapter has been produced for the Supplementary Environmental Information (SEI) report to compliment the ES.

13.2 LEGISLATION AND PLANNING POLICY CONTEXT

13.2.1 Since the completion of the ES in 2018 there have been updates to the National Planning Policy Framework (NPPF) and Planning Practice Guidance Updates to these policies have been included below for completeness. However, the changes do not affect the assessment methodology or conclusions.

National Planning Policy Framework (2019)

13.2.2 The revised National Planning Policy Framework (NPPF) was published in February 2019. In respect of noise, paragraph 170 states that in relation to conserving and enhancing the natural environment:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by…*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of … noise pollution."*

13.2.3 In relation to ground conditions and pollution, paragraph 180 states that:

> *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so, they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and quality of life;*
>
> *b) Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason…"*

Planning Practice Guidance (2019)

13.2.4 The National Planning Practice Guide (PPG) was launched on 6th March 2014 (latest update – July 2019) and provides additional guidance and interpretation of the Government's strategic policies outlined within the NPPF in a regularly updated, web-based resource.

13.2.5 The PPG provides guidance on the effects of noise exposure, relating these to people's perception of noise, and linking them to the NOEL and, as exposure increases, the LOAEL and SOAEL.

13.2.6 As exposure increases above the LOAEL, the noise begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. As the noise exposure increases, it will then at some point cross the SOAEL boundary.

13.2.7 The LOAEL is described in PPG (Paragraph: 005 Reference ID: 30-005-20190722) as the level above which **"noise starts to cause small changes in behaviour and/or attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise)."**

13.2.8 PPG identifies the SOAEL (Paragraph: 005 Reference ID: 30-005-20190722) as the level above which **"noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is predicted to be above this level the planning process should be used to avoid this effect occurring, for example through the choice of sites at the plan-making stage, or by use of appropriate mitigation such as by altering the design and layout. While such decisions must be made taking account of the economic and social benefit of the activity causing or affected by the noise, it is undesirable for such exposure to be caused."**

13.3 BASELINE CONDITIONS

13.3.1 There are no changes to the baseline conditions detailed in Section 13.4 of the 2018 ES.

13.4 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

13.4.1 This section identifies the potential effects of the new masterplan layout compared to the ES submission. The effects are identified separately for the construction and post-completion stages.

Construction Stage

13.4.2 .The proposed changes to the masterplan will not change the construction and demolition assessment detailed in the ES. As the construction traffic is unchanged, the construction stage assessment presented in the ES remains valid

Post Completion Phase

13.4.3 We have reviewed the proposed masterplan with the transport consultant and confirmed there will be no change to the predicted traffic flows upon which the assessment was based. Therefore, the assessment in relation to transportation noise presented in the ES remains valid. The assessment undertaken for the existing substation would also remain valid.

13.4.4 The proposed changes to the masterplan include the relocation of the Sports Park from the south west of the masterplan to the south of Parcel 17. The relocation places the Sports Park in the vicinity of existing dwellings.

13.4.5 An assessment of noise from the proposed sports park has therefore been undertaken in order to assess the potential noise impact on existing noise sensitive receptors.

Noise Sensitive Receptors

13.4.6 For the purposes of the assessment the nearest noise sensitive receptors to parcel 17 are considered to be located as detailed in Table 13.20 below.

Table 13.20: Nearest Receptors to Parcel 17

Receptor	Distance to boundary of the Sport Park
A - Existing dwellings along Wellesley Close, west of the proposed Sports Park	15 m
B - Existing dwellings at Heyford Leys Camping Park, east of the Sports Park	45 m

Assessment Criteria

13.4.7 There is no recognised assessment methodology specifically applicable to the assessment of noise from sports pitches. However, the IEMA Guidelines for Environmental Noise Impact Assessment (2014) detail an assessment process applicable to a wide range of potential environmental noise sources where a specific assessment method either does not exist or is not considered to be appropriate.

13.4.8 The guidelines suggest that by defining the sensitivity of receptors, the change in noise environment as a result of the source under consideration, and considering the type of noise, an assessment of the potential noise impact can be undertaken.

13.4.9 In this instance the assessment considers the relative change between the existing ambient noise level (i.e. without the sport areas present) and the future ambient noise level (i.e. with the sport areas present).

13.4.10 The classification of magnitude of noise impacts are given in the following table, and equate to the Planning Practice Guidance effect levels. Advice contained in the Guidelines on Noise Impact Assessment from the Institute of Environmental Management and Assessment (IEMA) amongst other sources has been used in order to produce the guidance contained in Table 13.21.

Table 13.21: Effect of Change in Sound Levels

Change in Sound Level (dB)	Magnitude of Impact	Perception from Increase	Increasing Effect Level
0	No Change	Not Noticeable	No Observed Effect
0.1-2.9	Negligible	Noticeable and not intrusive	No Observed Adverse Effect
3-4.9	Minor	Noticeable and intrusive	Lowest Observed Adverse Effect
5-9.9	Moderate	Noticeable and disruptive	Significant Observed Adverse Effect
10+	Major	Noticeable and very disruptive	Unacceptable Adverse Effect

Assessment Methodology

13.4.11 Finalised details are not available, however the intention is for the Sports park to include provision for cricket in summer and rugby/football during the winter with hockey also to be included for. Whilst operational timings have not been fixed, the assessment has assumed daytime/evening use only and no night-time use. Operating periods have been assumed to be from 09:00 till 21:00.

13.4.12 The use will be formal with booking of the pitches required.

13.4.13 The assessment has assumed that two pitches are in use concurrently and would be located adjacent to the eastern and western boundaries of the sports park. This is considered to be worst-case.

13.4.14 Sound source data from Stantec's in house library of an organised football match being played in a park with a few spectators has been used to inform the assessment. Based on the measured sound levels, each pitch is considered to produce a sound level of 56 dB(A) at 10 m from the edge of the sport field.

13.4.15 Measured sound levels have been corrected for distance in order to obtain the sound level at the identified receptors.

13.4.16 The calculations assess the change in ambient noise levels based on the baseline survey data measured at LT6 from the ES which is considered to be representative of the nearest receptors to the proposed Sports Park. The lowest $L_{Aeq,1hr}$ between 09:00 and 21:00 has been used to inform the assessment.

Assessment

13.4.17 Table 13.22 presents the change in ambient sound levels at existing noise sensitive receptors due to the use of the Sports Park.

Table 13.22: Summary of Assessment Results: Sport Park in Operation

Calculation Description	**Sound Level/ Attenuation (dB)**	
	Receptor A	Receptor B
Calculated Sound Level from Sports Pitches at Receptor ($L_{Aeq,1hour}$	54.0	47.0
Existing Ambient Sound Level at Receptor ($L_{Aeq,1\ hour}$)	51.0	51.0
Cumulative Sound Level at Receptor ($L_{Aeq,1\ hour}$)	55.8	52.5
Change in Sound Level at Receptor	+4.8	+1.5
Description Effect	Minor – Observed Adverse Effect	Negligible – No Observed Adverse Effect

13.4.18 Based on the assessment detailed above the change in ambient noise levels are likely to be negligible and fall below observed adverse effect levels for receptors east of the Sports Park. For receptors to the west along Wellesley Close, minor impacts could occur and therefore further mitigation measures have been outlined below.

13.5 MITIGATION AND ENHANCEMENT

Construction Stage

13.5.1 As there are no predicted changes to the assessment of effects, no further mitigation measures are required to those stated in the 2018 ES.

Operational Phase

13.5.2 For the Sports Park minor impacts have been determined. However, it should be noted that in the absence of finalised details the calculations have assumed a worst case with activities occurring on the boundaries of the Sports Park. In practice, the main activities will tend to take place towards the central area of each pitch, away from the Site boundary, which will further mitigate operational noise at the nearest noise sensitive receptors.

13.5.3 To further reduce the impacts the following measures should be considered during the detailed design to limit noise impacts on nearby receptors:

- Use of acoustic barriers or landscaped bunding located on the perimeter of the pitches to attenuate noise to nearby receptors;

- Entrance, access routes and spectator areas where people will tend to congregate should be located away from nearby housing;

- A management plan should be developed which details management measures to control noise. This should include a means of reporting complaints along with measures to reduce noise (e.g. requesting that participants consider noise when entering and leaving, etc.)

13.5.4 Incorporation of the above measures has the potential to reduce the noise impacts from the Sports Park to below the LOAEL resulting in negligible significance.

13.6 CUMULATIVE AND IN-COMBINATION EFFECTS

13.6.1 The transport consultant has confirmed there will be no change to the predicted traffic flows utilised in the cumulative assessment within the 2018 ES. Therefore, the cumulative and in combination effects remains as presented in the 2018 ES.

13.7 SUMMARY

Conclusion

13.7.1 The amendments to the proposed development are unlikely to result in changes to the likely significant effects. Therefore, noise and vibration effects of the proposed development remain as reported in the 2018 ES.

13.7.2 The change of location of the Sports Park, through incorporation of appropriate mitigation measures is unlikely to result in significant adverse effects and therefore should be considered an acceptable change to the masterplan.

13.7.3 An updated summary of effects table is set out below.

Table 13.19a Summary of Effects

Potential effect	Significance (pre-mitigation)	Mitigation measure	Significance of residual effect
Construction stage			
Demolition and Construction Noise	**Minor - Moderate**	Proposed CEMP	**Negligible**
Demolition and Construction Vibration	**Minor - Moderate**	Proposed CEMP	**Negligible**
Demolition and Construction Traffic Noise	**Minor - Moderate**	Proposed CEMP	**Negligible**
Operational stage			
External Amenity Area Noise Levels	**Negligible - minor**	It is recommended that gardens and external amenity area are placed at the rear of the dwellings such that the dwellings provide shielding from road traffic noise. The layout of the buildings and the orientation should be considered as the masterplan progresses in order to ensure gaps between dwellings are reduced such that no garden area has a line-of-sight/overlooks the roads.	**Negligible**
Internal Ambient Noise Levels	**Negligible (with appropriate design considerations)**	Planning Condition – compliance with required standards at the detailed design stage (with external building fabric calculations undertaken as required) to ensure internal ambient noise levels meet the required levels.	**Negligible**
The Change in Noise Levels due to the Increase in Road Traffic Noise	**Negligible**	None	**Negligible**
Plant Noise Emissions	**Minor**	Planning Condition - Proposed Plant should be designed to meet background noise levels at 1m from the closest noise sensitive receptor	**Negligible**

Noise Associated with Potential Commercial Uses	**Minor**	Planning Condition - Plant would be selected, located and attenuated in accordance with the requirements of the local authority. It is likely that a combination of the following environmental noise control techniques would be implemented: •Enclosing noisy plant within the building envelope; •Selecting suitably quiet 'low noise' plant; •Positioning air intake/discharge louvres away from noise sensitive receptors; •Orientating air intake/discharge louvres away from noise sensitive receptors; •Attenuation of air intake/discharge louvres with duct mounted attenuators; and •Sound insulating plant housings/enclosures.	**Negligible**
Noise Impact on Future Schools	**Negligible**	School sites are assessed at the detailed design stage when location and design of building and playground/outdoor teaching areas are known. The assessment is based on the guidance provided in Building Bulletin 93 (BB 93). It should be noted that BB 93 is part of the building regulations (Approved Document E, Requirement E4) and therefore it is a matter for the building control.	**Negligible**
Noise Impact on Existing Dwellings due to the Sports Park	**Minor**	• Use of acoustic barriers or landscaped bunding located on the perimeter of the pitches to attenuate noise to nearby receptors; • Entrance, access routes and spectator areas where people will tend to congregate should be located away from nearby housing; • A management plan should be developed which details management measures to control noise. This should include a means of reporting complaints along with	**Negligible**

		measures to reduce noise (e.g. requesting that participants consider noise when entering and leaving, etc.)	