

## 9.0 NOISE

### Introduction

- 9.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of Noise.
- 9.2 This chapter has been prepared by Sharps Redmore Acoustic Consultants (refer to Appendix 1.2: Statement of Expertise). The author has experience in providing acoustics services and production of reports for a variety of residential and commercial projects at planning phase. The author has previously provided chapters for industrial and residential developments and is a full member of the Institute of Acoustics and of the Chartered Institute of Environmental Health.

### Policy Context

National Planning Policy Framework<sup>i</sup>

- 9.3 Published in July 2021, the National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. Reference to noise is made in in Section 16: Conserving and enhancing the natural environment, paragraph 170 of the NPPF, which states that:

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

*[...]*

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

- 9.4 Noise is also referenced within the ground conditions and pollution sub-section within Section 15: Conserving and enhancing the natural environment:

*"180. 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:*

*Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life; Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.”*

#### Noise Policy Statement for England<sup>ii</sup>

- 9.5 Reference is made in the NPPF to the Department for Environment, Food and Rural Affairs (DEFRA) 2010 *Noise Policy Statement for England* (NPSfE).
- 9.6 The NPSfE is intended to apply to all forms of noise other than that which occurs in the workplace, and includes environmental noise and neighbourhood noise in all forms.
- 9.7 The NPSfE advises that the effect of noise should be assessed on the basis of negative and significant negative effect, but does not provide any specific guidance on assessment methods or limit sound levels.
- 9.8 This lack of numeric limit sound levels is a direct consequence of the advice also contained in the NPSfE which is that it is not possible to have “*a single objective noise-based measure that is applicable to all sources of noise in all situations*”.
- 9.9 It further advises that the sound level at which a negative effect occurs is “*likely to be different for different noise sources, for different receptors and at different times*”. In the absence of specific guidance within the NPPF and NPSfE for the assessment of environmental noise, it is considered appropriate to base assessment on LPA requirements, current British Standards and national and international guidance (as described later in this Chapter). However, one noteworthy advisory point in the NPSfE is the need to place into context any general requirements that increases in ambient noise should be ‘minimised’. In this regard the NPSfE states:

*“Of course, taken in isolation and to a literal extreme, noise minimisation would mean no noise at all. In reality, although it has not always been stated, the aim has tended to be to minimise noise as far as is reasonably practical... the application of the NPSfE should enable noise to be considered alongside other relevant issues and not to be considered in isolation. In the past, the wider benefits of a particular policy, development or other activity may not have been given adequate weight when assessing the noise implications”.*

### Planning Practice Guidance<sup>iii</sup>

- 9.10 The online Planning Practice Guidance (PPG) for noise provides guidance on the consideration of noise in planning and cross-refers to both the NPPF and the NPSFE. It also provides guidance on the assessment of noise and sets out the concept of “Observed Effect Levels”, which are used in the World Health Organisation (WHO) Guidelines (discussed below), and the considerations in mitigation of noise and protection of tranquil areas. The PPG does not contain specific technical guidance, this being set out in the documents it refers to (i.e. the NPSFE, NPPF and WHO Guidelines), which are referred to and applied in the assessments that follow.

### Regional Planning Policy

#### *London Plan 2021<sup>iv</sup>*

- 9.11 Policy D14 Noise of the recently adopted London Plan states that in order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by: 1) avoiding significant adverse noise impacts on health and quality of life, 2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change, 3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses and 4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity).

### Local Planning Policy

#### *London Borough of Richmond upon Thames Local Plan<sup>v</sup>*

- 9.12 Richmond Local Plan contains the following policy: Policy LP 8 Amenity and Living Conditions: All development will be required to protect the amenity and living conditions for occupants of new, existing, adjoining and neighbouring properties. Essentially, local policies do not provide any additional or alternative assessment methodologies, guidance, or thresholds beyond those set out in the national and international standards.

### Legislative Context

- 9.13 The applicable legislative framework is summarised as follows:

- 9.14 Part III of the *Environmental Protection Act 1990*<sup>vi</sup> which requires local authorities to serve abatement notices where the noise is emitted from any premises, or vehicles, machinery and equipment in the street, that constitutes a statutory nuisance;
- 9.15 Part III of the *Control of Pollution Act 1974*<sup>vii</sup>, which gives local authorities the power to control noise from construction sites either by prior consent (section 61) or by service of notice (section 60); and
- 9.16 Additional statutory powers to control noise exist outside the planning system. The granting of planning permission does not remove the need to comply with these controls.

#### Relevant Guidance

- 9.17 With the above in mind, it is possible to apply objective standards to the assessment of noise and the effect produced by the introduction of a certain noise source on existing receptors, and the impact of noise on new receptors (i.e. new residential properties). This may be determined by several methods, as follows:
- i) The effect may be determined by reference to guideline noise values. British Standard (BS) 8233:2014<sup>viii</sup> and WHO 'Guidelines for Community Noise'<sup>ix</sup> contain such guidelines;
  - ii) Alternatively, the impact may be determined by considering the change in noise level that would result from the Development, in an appropriate noise index for the characteristic of the noise in question. There are various criteria linking change in noise level to effect. This is the method that is suited to, for example, the assessment of noise from road traffic because it is capable of displaying impact to all properties adjacent to a road link irrespective of their distance from the road; and
  - iii) Comparison of the resultant noise level against the background noise level (LA90) of the area. This is the method employed by BS 4142:2014<sup>x</sup> to determine the significance of impacts from industrial and commercial sound.

#### *BS 4142*

- 9.18 In BS 4142:2014 the scope of the Standard is quoted as describing "methods for rating and assessing sound of an industrial and/or commercial nature." This Standard compares the new resultant noise level with the baseline (existing) background noise level (LA90).
- 9.19 The Standard covers sound from industrial and manufacturing processes, sound from fixed installations which comprise mechanical and electrical plant and equipment, sound from loading and unloading of goods and materials at industrial and/or commercial premises and

sound from mobile plant that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

9.20 BS 4142 establishes the “significance” as follows:

- i) Establish the background noise levels in terms of the index LA90 at the receptor locations of interest;
- ii) Establish the specific noise level of the source being assessed, in terms of LAeqT (T = 1 hour for day or 15 minutes for night) at the receptor location of interest;
- iii) Add a correction factor to the specific noise level if the source noise has characteristics such as tonality, impulsivity or intermittency. The resultant noise level is called the rating noise level; and
- iv) Compare the rating noise level with the background noise level; the greater the difference between the two, the greater the magnitude of the impact, depending on the context in which the impact occurs. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on context. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context. Where the rating level does not exceed the background level, this is an indication of the specific sound source having a low impact, depending on the context.

9.21 The general intent of the planning system is to ensure that a development does not result in “significant environmental impact”. The avoidance of significant impact is achieved, in our judgement, by compliance with the BS 4142 criterion of +5 dB.

#### *Change in Noise Level*

9.22 Changes in noise levels of less than 3 dBA are not generally perceptible under normal conditions and changes of 10 dBA are equivalent to a doubling of loudness. This is widely accepted to encompass changes in noise levels in the index LAeqT, and/or LA10, 18h.

#### *Guideline Noise Values*

9.23 There are a number of guidance documents that contain recommended guideline noise values. These are discussed below.

- 9.24 BS 8233:2014<sup>xi</sup> is principally intended to assist in the design of new dwellings; however, the Standard does state that it may also be used in the assessment of noise from new sources being brought to existing dwellings.
- 9.25 For outdoor areas (i.e. gardens/terraces and balconies), BS 8233:2014 recommends that it is desirable that that external noise levels do not exceed an upper guideline value of 55 dB LAeqT. However, the document recognizes that these guidelines are not achievable in all circumstances and in higher noise areas a compromise might be warranted, particularly near major road networks or transport infrastructure. In such circumstances, development should be designed to achieve the lowest practicable levels in external amenity spaces.
- 9.26 BS 8233:2014 is consistent with advice contained in the WHO document Guidelines for Community Noise. This document was published in 2000. WHO guidance is referenced in the NPSFE.
- 9.27 The WHO advice is the most useful, comprehensive, and pertinent advice in this case, because it is not specific to the circumstances of the assessment. Instead, it provides guidance on acceptable levels in, for example, schools, dwellings and offices.
- 9.28 The WHO guideline values are appropriate to what are termed 'critical health effects'. This means that the limits are at the lowest noise level that would result in any psychological, physiological or sociological effect. They are, as defined by NPSFE, set at the Lowest Observed Adverse Effect Level (LOAEL), but do not define the level above which effects are significant (the Significant Observed Adverse Effect Level, or SOAEL). Whilst the NPSFE acknowledges that "it is not possible to have a single objective noise-based measure that defines SOAEL", it is considered that compliance with the LOAEL should, therefore, be seen as a robust aim.
- 9.29 Table 9.1 below shows the WHO Lowest Observed Adverse Effect Level (LOAEL) guideline values.

**Table 9.1: World Health Organisation Guideline Values**

Value	Guidance	Location
L <sub>AeqT</sub> = 55 dB	Few seriously annoyed, Daytime and evening.	Continuous noise, outdoor living areas
L <sub>AeqT</sub> = 50 dB	Few moderately annoyed, Daytime and evening.	Continuous noise, outdoor living areas
L <sub>AeqT</sub> = 35 dB	Acceptable level to avoid speech interference, daytime and evening.	Continuous noise, Dwellings, indoors
L <sub>AeqT</sub> = 45 dB	To avoid sleep disturbance, window open at night.	Continuous noise, outside bedrooms, outdoor values
L <sub>AeqT</sub> = 30 dB	To avoid sleep disturbance at night.	Continuous noise, Bedrooms, indoors

Value	Guidance	Location
$L_{AMAX} = 60$ dB	To avoid sleep disturbance, window open at night.	Noise peaks, outside bedrooms, Outdoor values
$L_{AMAX} = 45$ dB	To avoid sleep disturbance at night.	Noise peaks, Bedrooms, indoors

9.30 For  $L_{AeqT}$  criteria the time base (T) given in the documents is 16 hours for daytime limits and 8 hours for night time limits.

### Assessment Methodology

#### Scope of Assessment

- 9.31 Many development proposals require a noise impact assessment, which is generally considered as the difference in the acoustic environment before and after the implementation of the proposals. The change in noise levels is considered as the magnitude of change. This includes any change in noise level and in other characteristics/features; and the relationship of the resulting noise level to any standard benchmarks (either increase or decrease, i.e. detrimental or beneficial).
- 9.32 The consequences of the noise impact can lead to different noise effects on neighbouring receptors, such as annoyance, sleep disturbance, alteration of the character of an acoustic environment, etc.
- 9.33 Residential developments and sports hall use are not inherently noisy and do not generate significant noise on operation, beyond traffic generation. The potential noise sources identified for assessment were considered in the EIA Scoping Report (refer to Appendix 2.1) submitted to the London Borough of Richmond upon Thames (LBRuT) and include:
- Construction noise;
  - Baseline noise conditions in the study area; and
  - Noise environment for future residents.
- 9.34 Vibration affecting the Development, or from operation of the Development is not considered to be of any significant concern and did not form part of the scope of this assessment. It is therefore not considered further in this chapter.

*Baseline Noise Surveys*

9.35 Noise surveys have been undertaken at a number of locations around the Site. The locations were selected to represent the baseline noise environment affecting the Development and that at the surrounding sensitive receptors. The measurement locations used were as follows (refer also to Figure 9.1):

- Position 1 – Approximately 10m from the carriageway of the A316 Chertsey Road to the north of the Site;
- Position 2 – Langhorn Drive, immediately to the west of the Site;
- Position 3 – Craneford Way, immediately to the south of the Site;
- Position 4 – Court Way, approximately 175m to the east of the Site; and
- Position 5 – Recycling Centre end of Langhorn Drive, approximately 275m to the south west of the Site.

9.36 The purpose of the noise surveys is to establish the baseline environment as it exists now and the measurement locations were chosen based on professional opinion and judgment.

9.37 The monitoring was undertaken on the 8<sup>th</sup> March 2021. The weather was cold and clear with light winds during all surveys. Conditions were considered suitable for environmental noise monitoring. Noise levels were measured using a Norsonic type 1 NOR 140 sound level meters. All instruments were calibrated at the beginning and the end of the survey periods and no significant drift was noted. All equipment is laboratory calibrated to a traceable source by a UKAS accredited laboratory on a 2-year cycle.

9.38 For the assessment of changes in road traffic noise on the wider network, the baseline has been established by the future baseline traffic flows, with impacts being determined by assessing future, with Development, traffic flows. This impact is assessed by consideration of the change in level as opposed to the absolute level that exists now or will exist with the operational Development. Minor increases in road traffic consistent with this type of development will have no overall significance or impact to noise.

*Assessment Methodologies**Sensitive Receptors*

9.39 The purpose of the noise surveys is to establish the baseline environment as it exists now and the measurement locations were chosen based on professional opinion and judgment.



9.40 The sensitive receptors have been determined as the existing residential dwellings within the proximity of the Site. These are at Langhorn Way, Craneford Way, and Court Way. The nearest existing noise sensitive properties are located approximately 100m to the boundary of the Site. The closest residential properties are located to the south and east of the Site at Craneford Way and Egerton Road. These are residential receptors which are considered to be of moderate sensitivity. The future receptors in the early phases of the Development are also considered to be of moderate sensitivity, per the criteria set out as follows.

#### *Assessing Significance*

9.41 The significance of potential noise effects has been determined with criteria developed from best practice techniques and expert knowledge. Effect significance is derived from measures of the magnitude of the effect and the sensitivity of the receiving environment.

9.42 There are no published standard criteria for determining the significance of noise effects. There are however several regulations, guidelines and standards which relate to noise produced from different sources including roads and railways, industrial sites, construction operations and occupational exposure, as discussed above.

9.43 In determining whether an effect on a receptor is significant, reference has therefore been made to a wide range of criteria relating to the nature of the receptors, expected duration of exposure and the predicted increase in noise level over and above baseline noise levels or recommended noise values. These significance criteria apply to the construction and operation phases of the Development.

#### *Sensitivity of Receiving Environment*

9.44 The sensitivity of the receiving environment is classified as follows:

<b>High</b>	Receptors of greatest sensitivity to noise such as World Heritage Sites and tranquil areas;
<b>Medium</b>	Noise sensitive receptors such as dwellings, hospitals, schools, places of quiet recreation; and
<b>Low</b>	Receptors with low sensitivity to noise such as offices, other workplaces and play areas.

#### *Magnitude*

9.45 The magnitude of noise effects can be classified as follows:

<b>Major</b>	Greater than 10 dBA change in sound level or sound produced in excess of 10 dBA above the baseline levels or recommended noise guideline values;
<b>Moderate</b>	Greater than 5 and less than 10 dBA change in sound level or sound produced between 5 and 10 dBA above baseline levels or recommended noise guideline values;
<b>Minor</b>	Greater than 3 and less than 5 dBA change in sound level or sound produced between 3 and 5 dBA above baseline levels or recommended noise guideline values; and
<b>Negligible</b>	Less than 3 dBA change in sound level or sound level produced less than 3 dBA above the baseline levels or recommended noise guideline values.

#### *Duration*

9.46 Noise effects can vary in duration and are classified as follows:

<b>Short term</b>	The period over which the effect is experienced is temporary and lasts for the period of construction or less;
<b>Medium term</b>	The effect occurs for longer than the full period of construction; and
<b>Long term</b>	The effect remains for a substantial time, perhaps permanently, after construction.

#### *Significance Matrix*

9.47 Using the classifications of magnitude and sensitivity set out in the preceding paragraphs, the following matrix (Table 9.2) has been applied in assessing the likely significance of noise effects. Effects can be classed as adverse or beneficial. All effects are assessed as far as possible, with minor effects being considered as of marginal significance, and moderate and major effects being considered significant for the purposes of this ES.

**Table 9.2: Noise Significance Matrix**

Magnitude	Sensitivity of receptor		
	High	Moderate	Low
Major	Major Adverse/Beneficial	Major-Moderate Adverse/Beneficial	Moderate-Minor Adverse/Beneficial
Moderate	Major-Moderate Adverse/Beneficial	Moderate-Minor Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate-Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial-Negligible
Negligible	Negligible	Negligible	Negligible

#### Limitations and Assumptions

- 9.48 All noise predictions are, necessarily, limited by the extent of knowledge at any particular point in time. Construction noise calculations to the level of detail required, for example, by the Control of Pollution Act 1974 cannot be undertaken at this stage because the level of detail of contractors plant needed is not available at the planning stage. A series of assumptions on the plant (based on the information included in ES Chapter 5: Construction Methodology and Phasing) are therefore set out in the assessment that follows and example calculations have been undertaken to inform a quantitative assessment. Computer modelling is based on a series of assumptions, albeit these are derived from expert knowledge and calibrated software, along with actual measurements on-site. In most cases, a set of typical worst-case assumptions is made, so as to reflect a robust assessment position ensuring that the likely significant effects are assessed at the planning stage. These assumptions are set out in detail as each aspect is assessed in the following sections.
- 9.49 SoundPLAN modelling has been used to demonstrate noise levels impinging upon the Site. These are based on road traffic data and provide robust assessment given the reduced traffic noise due to restrictions associated with the Covid 19 pandemic at the time of writing.

### **Baseline Conditions**

#### *Noise Measurements*

- 9.50 The noise climate of the area generally is as would be expected for this location, and is dominated by distant road traffic noise during the day and night from the A316 Chertsey Road together with local road traffic and school activity, although this is significantly screened by existing residential properties and other buildings, including existing college buildings to the north of the Site.  $L_{Amax}$  levels measured during daytime, have been assumed as worst-case scenario for night time as road traffic is still the significant noise source and this controls the background noise climate through the night as indicated by the traffic flow data used for the production of SoundPLAN modelling and shown at Appendix 9.1.
- 9.51 Consideration has been given to aircraft noise from Heathrow airport sited approximately 7km to the west of the Site. Noise exposure from Heathrow is presented in the form of noise contours and published each year by the Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority<sup>xii</sup>. Noise contours are shown at Appendix 9.2. Noise contours are shown plotted at levels from 57 to 72dBA in 3dB steps. The 57dBA daytime level is representative of the approximate on set of significant community annoyance with a figure of 48dBA for night time. The Site lies outside of both the lowest measured 57dBA contour and the 48dBA contour and it is considered that noise impact from aircraft noise from Heathrow is not significant.

- 9.52 The results of the baseline noise surveys are summarised below. A plan of the measurement locations are presented at Figure 9.1 and summarised in Table 9.3 below referencing monitoring positions as described in paragraph 9.35.

**Table 9.3: Baseline Noise Survey Results**

Location	Daytime L <sub>Aeq,T</sub> dB	Daytime L <sub>A90</sub> dB	Night time L <sub>Amax</sub> dB*
MP1	65	56	82
MP2	57	51	66
MP3	50	36	76
MP4	52	35	71
MP5	53	44	68

- 9.53 The noise levels shown are snapshots of the existing baseline conditions. Given the restrictions associated with the Covid-19 pandemic at the time of writing, these are to provide validation to the models created using traffic data. Traffic data is considered a more robust assessment, particularly at a time when normal traffic noise would be reduced.

#### *Noise Modelling*

- 9.54 SoundPLAN computer modelling has been undertaken of the existing (2021) baseline noise environment and the likely impact on the Development. The daytime and night time baseline model results are shown in Appendix 9.1. The models were set up using traffic flow information obtained from RGP Transport Planners, from the Outline planning consent (Planning Reference: 15/3038/OUT). The results have informed the development of the mitigation strategy. The models are 3-dimensional and take account of topography, intervening ground conditions, road gradients and atmospheric/screening conditions.

#### Future Baseline

- 9.55 The predominant noise source in the area is distant road traffic noise from the A139. It is not considered that there will be any significant difference to future baseline levels without the Development.

### **Likely Significant Effects**

#### Construction Phase

- 9.56 As discussed above regarding Limitations and Assumptions, it is not possible at this stage to undertake a full construction noise assessment, beyond adopting a reasonable limit for

construction noise and exercising professional judgement and experience as to likely noise levels and effects.

- 9.57 The assumed fixed and mobile plant and equipment associated with the Development include; excavators, breakers, crushers, dumpers, concrete crushing plant, mobile and tower cranes, compressors, piling rigs (if necessary), power tools and a variety of delivery vehicles (see Chapter 5: Construction Methodology and Phasing for more information).
- 9.58 Table 9.4 provides a list of noise levels that would be expected from various construction plant likely to be associated with the Development with the given sound power levels and percentage on time that the plant is assumed to be working.

**Table 9.4: Plant used for Typical Residential and Road Build**

Type of Equipment	Sound power level	On-time
<b>Main Development Construction</b>		
Tracked/wheeled 360 degree excavators	108 dBA	75%
Excavator mounted hydraulic breakers	114 dBA	50%
Dumpers	103 dBA	25%
Mobile cranes	105 dBA	75%
Hand held tools including breakers (pneumatic and hydraulic)	111 dBA	50%
Power tools including percussion drills, cutting disks, pipe-threaders	103 dBA	50%
Piling equipment	111 dBA	75%
Wheel washing plant	96 dBA	25%
Scaffold	103 dBA	50%
Mobile access platforms	106 dBA	25 %
Delivery trucks	105 dBA	25%
Skips / Skip trucks	106 dBA	25%
Forklift trucks	99 dBA	75 %
Ready mix concrete wagons	111 dBA	50%
Concrete placing booms & pumps	109 dBA	50%
Road sweepers	104 dBA	100%

- 9.59 Calculations of expected noise levels from typical construction activities have been undertaken and are contained in Appendix 9.1 (which are based on the assumption that the receiver is at 100m from the centre of construction activity). The calculations are, at this stage, based on a series of worst-case assumptions and unmitigated source noise. The results show levels of approximately 62 to 66 dB  $L_{Aeq,T}$  for different phases of the Development. These levels will vary across the Site, depending on the phasing and duration of activities and location of both sources and receivers. Such levels would equate to a **minor adverse** effect on all receptors, given the existing ambient levels as shown in Table 9.4 above.

*Construction Road Traffic Noise*

- 9.60 The predicted change in noise level on the principal roads as a result of traffic generated during the peak period of the construction phase will be negligible, given the current existing traffic flows and proposed Site access. Noise changes are calculated based on the effect of the change in overall traffic flow. Data included in ES chapter 5: Construction Methodology and Phasing indicates that the maximum construction trips to be 40 HGV movements per day and 8-10 light vehicles for the RDZ planning application. The construction trips associated with the RuTC and RTS Sports Halls planning application are expected to be the same.
- 9.61 Given the existing number of vehicles using Langhorn Drive for access to the recycling centre, the cumulative low number of construction vehicles anticipated with both residential and sports hall developments and the principal route to and from the Site via Langhorn Drive and the A316. The likely change is shown below in table 9.5.

**Table 9.5: Traffic Flows and Predicted Change in Noise Level From Construction vehicles**

Road Segment	Traffic Flows (AADT)		Change in noise level dB
	Base Flow	+Construction Vehicles	
Langhorn Drive	1335	1435	+0.2dB

- 9.62 The likely effect of construction traffic on noise levels will be considerably below 3dB and insignificant

Operational Phase

*Suitability of the Site for Residential Development*

- 9.64 Noise modelling results are shown in Appendix 9.1. The models show that, in respect of road traffic noise, the Site experiences low noise levels due to its location and screening by existing buildings. Consideration will be given to construction and window and ventilation systems (designed in mitigation) at detailed design stage to achieve acceptable internal levels in accordance with the criteria and guidance in BS 8233:2014, although it is not considered that any novel or onerous acoustic treatment will be required for the Development. Any noise effects are considered to be **negligible**.

*Noise from Mechanical Services Plant – Existing Receptors*

- 9.65 As outlined in Chapter 3, the mechanical services plant for the Development will comprise Air Source Heat Pumps (ASHPs). Fixed plant will also be associated with the RuTC and RTS Sports Halls planning application, further details of which will be supplied by the Energy Assessment for the Sports Hall. However, plant noise control limits would be set to not exceed background levels (to be secured via planning condition) which will render any noise effects at existing receptors **negligible**.

*Noise from Mechanical Services Plant – Proposed Receptors*

- 9.66 Since these receptors are part of the overall Development, it is not appropriate to set limits against a background noise level for these receptors, as they do not currently exist and residents are not accustomed to any particular background noise level. It is recommended, therefore, that plant noise should not exceed 45 dB  $L_{Aeq,1Hr}$  at these external areas. Noise control limits introduced to control emissions relative to the background levels at existing receptors will mean that this noise limit will easily be achieved at the proposed residences, meaning that the effects will therefore be **negligible**.

*Noise from Operational Road Traffic*

- 9.67 In assessing the change in noise level as a result of the traffic generated by the Development, reference has been made to traffic data supplied by the Project Transport Consultant (RGP) and described in more detail in Chapter 7: Transport and Access. Base flows are based on AADT traffic for 2019 (from the Outline planning consent (Planning Reference: 15/3038/OUT)) whilst development flows are based on 2019 plus Development traffic. This includes reference to development flows associated with the RuTC and RTS Sports Halls planning application.
- 9.68 The increase in road traffic noise can be made by comparing the base traffic flows without Development and the base + full Development by means of the following formula in the Calculation of Road Traffic Noise (CRTN)<sup>12</sup>:

$$\text{Change in noise level} = 10 \log (\text{future traffic flow}/\text{base traffic flow}) \text{ dB}$$

- 9.69 An assessment of the change in noise level resulting from increased traffic on the A316 Chertsey Road and Langhorn Drive has been carried out. The results of the assessment are shown in Table 9.6 below:

**Table 9.6: Traffic Flows and Predicted Change in Noise Level**

Road Segment	Traffic Flows (AADT) 2019		Change in noise level dB
	Base Flow	Base + Development	
1. A316 Chertsey Road	44602	47097	+0.3 dB
2. Langhorn Drive	1335	3246	+3.8 dB

- 9.70 As shown above, in relation to existing noise sensitive receptors, the increased in traffic as a result of the Development along Chertsey Road will be less than 3 dBA. Therefore, the effect is considered to be of **negligible** significance.
- 9.71 The increase in traffic along Langhorn Drive, whilst marginally above what is considered discernible at a 3dB rise, will not affect the existing residential dwellings to the south of the access to the Site on Langhorn Drive as this increase in traffic will not pass these dwellings, and can again be considered as **negligible** significance for these receptors.

### Mitigation Measures

#### Construction Phase

##### *Construction Noise*

- 9.72 Noise from construction activity at the Site would be controlled by the following best practice measures:
- Determine the likely extent of construction works (where, when, duration);
  - Determine noise emission levels by reference to BS 5228;
  - Agree noise amelioration measures with LBRuT (amelioration and management control) and/or noise limits;
  - Agreed hours of construction working and construction traffic routes;
  - Obtain prior consent under the Control of Pollution Act 1974 where necessary and/or appropriate;
  - The issuing of a construction method statement, detailing how the work will be carried out, equipment used and mitigation measures to be carried including the protection of utility services during any piling operations;
  - Use of hoarding around the Site to assist in the screening of noise;
  - Hydraulic demolition and construction methods to be used in preference to percussive techniques where practical;
  - All plant and equipment to be properly maintained, silenced where appropriate and operated to prevent excessive noise and switched off when not in use and where practicable;



- Plant will be certified to meet the current legislation and Noise and Vibration Control on Construction Sites (BS 5228) standards;
- All trade contractors to be made familiar with current noise legislation and guidance in BS 5228 which will form a prerequisite of their appointment;
- Loading and unloading of vehicles, dismantling of equipment such as scaffolding or moving equipment of materials around the Site will be conducted in such a manner as to minimise noise generation;
- Deviation from approved method statements will be permitted only with prior approval from the Principle contractor and other relevant parties. This will be facilitated by formal review before any deviation is undertaken;
- Noise complaints will be reported to the Contractor and immediately investigated; and
- Where possible, plant and equipment to be switched off when not in use.

9.73 The Principal Contractor will take note of, and act on, the advice in BS 5228. Equipment such as breakers and compressors and mobile plant such as excavators and road works equipment, will be expected to conform with the appropriate EC directive noise limit. Best practice techniques and machinery will be employed at all times. Construction phase mitigation measures have been incorporated into the outline Construction Environmental Management Plan (CEMP) submitted as part of the RDZ planning application (Appendix 5.1) and the CELMPs submitted as part of the RuTC and RTS Sports Halls planning application (Appendix 5.2 and 5.3). The CEMP will be secured by planning conditions on the future permission, which will require further details to be submitted for approval by way of a detailed CEMP prior to construction of the Development.

9.74 Mitigation measures will include, for example, localised screening, zoning of equipment/activities, reducing working hours for individual items of equipment and reducing the amount of plant used as described within the outline CEMP and CELMPs submitted as part of the application (refer to Appendix 5.1 to 5.3). This will be secured by planning condition on the future permission by way of a detailed CEMP to be prepared prior to the construction works.

9.75 In day-to-day operations, it is assumed that no activity will be undertaken outside these hours which could be expected to give rise to noise noticeably above current prevailing background noise levels at nearby properties. To allow for short term noisy operations, any one hour period during the working day should not exceed 75 dB  $L_{Aeq,1hr}$  on the Site boundary.

9.76 It is expected that noise levels will vary across the Site, depending on the phasing and duration of activities and location of both sources and receivers (refer to chapter 5 Construction

Methodology and Phasing). Based on a series of mitigation measures including, for example, localised screening, zoning of equipment/activities, reducing working hours for individual items of equipment and reducing the amount of plant used, it is envisaged, that given the control measures available noise levels will comply with current guidelines and legislation.

#### Operational Phase

##### *Suitability of the Site for the Proposed Residential Development*

- 9.77 Across the entire Development, thermal double-glazing would be provided as a matter of course to meet the thermal requirements of the Building Regulations. Thermal double-glazing, with different pane thicknesses would provide sufficient acoustic protection (typical sound reduction performance of 30 dB  $R_{w}(C_{TR})$ ).
- 9.78 It should be noted that the advice above is based on the worst-case assessment to demonstrate that an acceptable internal environment can be achieved and should not be used for design or procurement purposes. Modelling of a final layout and design specifications for acoustic treatment will be undertaken at the detailed design stage. It is not possible to provide exact specifications or calculations at this stage, as the nature of the Development precludes such calculations (which would require details of, room sizes, window sizes and internal layouts). In all cases, however, a mitigation strategy will be delivered to ensure internal levels within dwelling and external levels are within the BS 8233:2014 standards. Approval of the details of such matters will be required by planning condition.

#### **Residual Effects**

##### Construction Phase

##### *Construction Noise*

- 9.79 The calculations in Appendix 9.1 show that construction noise levels are expected to generally be within the guideline values. The calculations are, necessarily at this stage, based on a series of assumptions. As such, the residual, effect from construction noise has been assessed as short term and of **minor adverse** significance.
- 9.80 The residual effect of minor adverse is likely to be an over-estimation, but is considered robust under the circumstances as it tests a worst-case scenario. General mitigation measures are detailed and there is, of necessity, an element of professional judgement in deriving the residual effect.

- 9.81 Construction traffic has been assessed as having a **negligible** effect.

Operational Phase

*Suitability of the Site for Residential Development*

- 9.82 Given the predicted levels from SoundPLAN models data from validation survey, the Site will comply with guidelines for internal levels without the need for novel or onerous acoustic treatment and will provide external amenity area with noise levels within the relevant guidelines. The residual effect would be **negligible**.

*Road Traffic Noise Effects*

- 9.83 The residual effect of increases in road traffic as a result of the Development would be **negligible** given the negligible increase in numbers of vehicles associated with the Development along Chertsey Road or past existing receptors on Langhorn Drive.

**Cumulative Effects**

Construction Phase

*Construction Noise*

- 9.84 Unless construction on other sites is taking place simultaneously and in similarly close proximity to receptors, noise from separate construction areas is unlikely to result in cumulative effects. The list of cumulative schemes set out in Chapter 2 EIA Methodology has been reviewed. Works associated with the proposed scheme at Norcutt Road Twickenham (Ref: 19/2789/FUL), located approximately 300m south of the Site. Assuming there are similar mitigation measures, such as the implementation of CEMPs, these would not contribute significantly. Other developments are further from the nearest receptors and construction noise from those developments, again, assuming similar mitigation measures, such as the implementation of CEMPs, would not contribute significantly. The residual cumulative effects of construction noise are considered to be **minor to moderate adverse**.

Operational Phase

- 9.85 The assessment of noise impacts from Development generated traffic already allows for cumulative developments, being based on traffic predictions incorporating cumulative

schemes. On that basis the cumulative effects from the operational phase are considered to be **negligible**.

### **Summary**

- 9.86 A noise and vibration assessment has been undertaken to predict future noise and vibration levels during peak construction and during operation of the Development. A series of desk-based and field-based surveys have been undertaken to establish the current and future noise baseline and the changes associated with the Development, which considers the construction and operational traffic level changes.
- 9.87 A series of noise monitoring locations were identified, which were considered to best represent key noise sensitive receptors such as existing residential properties and education establishments. From these locations, surveys were undertaken to establish the noise climate of the area around the Site.
- 9.88 A series of noise models were established to predict future baseline levels, based on the current noise climate. Given previous Covid restrictions the time of the survey these have been based on traffic data supplied for the previous outline planning consent for the Site (Planning Reference: 15/3038/OUT) and validated by survey. To simulate the likely noise exposure on the Development, the traffic data was applied to the noise model. The outcome of the construction calculations and operational noise modelling exercises revealed that, with mitigation in place (such as the use of plant and machinery with sound reduction appliances fitted, limited Site working hours, and best practice measures during construction and during operation) dwellings will meet the appropriate standards for resting and sleeping and will also meet the recommended noise levels for outdoor areas during the daytime.
- 9.89 Table 9.7 and Table 9.8 contain a summary of the likely significant effects of the Development.

**Table 9.7: Table of Significance – Noise: RDZ planning application**

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/Moderate/ Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Min or) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
<b>Construction</b>											
Construction Noise	Temporary	Minor Adverse	Management measures, legislative and local authority controls such as Good Practice, compliance with requirements of BS 5228:2008.  Submission of outline CEMP (Appendix 5.1). Measures will be secured by planning conditions on the future permission, which will require further details to be submitted for approval by way of a detailed CEMP prior to construction of the Development.							X	Minor Adverse
Construction road Traffic Noise	Temporary	Negligible	Predicted increase of 0.2dBA. Considerably below a 3dB change. No mitigation required						X	X	Negligible
<b>Completed Development</b>											
Suitability of the Site for residential Development	Permanent	Negligible	Localised mitigation, double glazing, plant noise condition not to exceed background level at existing receptors or above 45dB L <sub>Aeq</sub> at future residents.							X	Negligible
Noise from Mechanical Services Plant – Existing Receptors	Permanent	Negligible	Plant noise condition not to exceed current background level							X	Negligible
Noise from Mechanical Services Plant – Proposed Receptors	Permanent	Negligible	Plant noise condition not to exceed current background level or above 45dB L <sub>Aeq</sub> at future receptors							X	Negligible
Road traffic noise	Permanent	Negligible	None Required.						X	X	Negligible
<b>Cumulative Effects</b>											
Construction	Temporary	Moderate Adverse	Management measures, legislative and local authority controls such as the Control of Pollution Act 1974 and Environmental Protection Act 1990.							X	Minor-Moderate Adverse
Operation (existing road traffic network)	Permanent	Negligible	None Required.						X		Negligible

**Table 9.8: Table of Significance – Noise: RuTC and RTS Sports Halls planning application**

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
<b>Construction</b>											
Construction noise	Temporary	Minor Adverse	Management measures, legislative and local authority controls such as Good Practice, compliance with requirements of BS 5228:2008.  Submission of outline CEMP (Appendix 5.1). Measures will be secured by planning conditions on the future permission, which will require further details to be submitted for approval by way of a detailed CEMP prior to construction of the Development.							X	Minor Adverse
<b>Completed Development</b>											
Noise from Mechanical Services Plant – Existing Receptors	Permanent	Negligible	Plant noise condition not to exceed current background level							X	Negligible
Noise from Mechanical Services Plant – Proposed Receptors	Permanent	Negligible	Plant noise condition not to exceed current background level or above 45dB L <sub>Aeq</sub> at future receptors							X	Negligible
Road traffic noise	Permanent	Negligible	None Required.						X	X	Negligible
<b>Cumulative Effects</b>											
Construction	Temporary	Moderate Adverse	Management measures, legislative and local authority controls such as the Control of Pollution Act 1974 and Environmental Protection Act 1990.							X	Minor-Moderate Adverse
Operation (existing road traffic network)	Permanent	Negligible	None Required.						X		Negligible

**\* Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

## REFERENCES

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- <sup>i</sup> CLG (July 2021) *National Planning Policy Framework*
- <sup>ii</sup> Department for Environment, Food and Rural Affairs (2010), *Noise Policy Statement for England (NPSFE)*
- <sup>iii</sup> UK Government Online Planning Practice Guidance Note Noise July 2019
- <sup>iv</sup> London Plan 2021
- <sup>v</sup> London Borough of Richmond upon Thames Local Plan. Policy LP8
- <sup>vi</sup> Environmental Protection Act 1990
- <sup>vii</sup> Control of Pollution Act 1974
- <sup>viii</sup> British Standard 8233 (2014) *Guidance on sound insulation and noise reduction for buildings*
- <sup>ix</sup> World Health Organisation Guidelines for Community noise
- <sup>x</sup> BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*
- <sup>xi</sup> British Standards Institute (2014) BS8233:2014 Guidance on sound insulation and noise reduction for buildings (BS8233)
- <sup>xii</sup> Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority (CAA)