

12. NOISE & VIBRATION

Introduction

- 12.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of Noise & Vibration. This chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the Site and surrounding area; the mitigation measures required to prevent, reduce or offset any likely significant adverse effects; and the likely residual effects after these measures have been adopted.
- 12.2 An assessment of the likely significant effects of the Development with respect to noise has been undertaken, including for both the construction phase (temporary) effects and operational phase (permanent) effects. The likely significant effects of vibration during the construction phase (temporary) on residential receptors has also been considered.
- 12.3 A separate noise impact assessment report has been undertaken by 24 Acoustics (reference R6930-3 Rev 2), provided in Appendix 12.1, which assesses the impact of existing transportation and industrial noise sources upon the Development.

Policy Context

National Planning Policy Frameworkⁱ and Noise Policy Statement For Englandⁱⁱ

- 12.4 The main national guidance document for Local Planning Authorities is the National Planning Policy Framework (NPPF) which was updated in February 2019.
- 12.5 Paragraph 180 of the National Planning Policy Framework (NPPF) states that planning policies and decisions should:
- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life; and
 - 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.
- 12.6 The NPPF also refers to the Noise Policy Statement for England (NPSE) which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision to '*promote good health and a*

good quality of life through the effective management of noise within the context of Government policy on sustainable development' which is supported by the following aims:

- Avoid significant adverse impacts on health and quality of life; and
- Mitigate and minimise adverse impacts on health and quality of life

12.7 The NPSE defines the concept of a '*significant observed adverse effect level*' (SOAEL) as '*the level above which significant adverse effects on health and quality of life occur*'. The following guidance is provided within the NPSE:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

12.8 The Planning Practice Guidance (PPG)ⁱⁱⁱ is written to support the NPPF with more specific planning guidance. The PPG reflects the NPSE and states that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. It also states that opportunities should be taken, where practicable, to achieve improvements to the acoustic environment. The NPPG states that noise can over-ride other planning concerns but should not be considered in isolation from the other economic, social, and environmental dimensions of the proposed development.

12.9 The PPG expands upon the concept of SOAEL (together with Lowest Observable Adverse Effect Level (LOAEL) and No Observed Effect Level (NOEL)) as introduced in the NPSE and provides a table of noise exposure hierarchy for use in noise impact assessments in the planning system.

12.10 In general terms, it is considered that a noise impact with an effects level which is lower than SOAEL is acceptable (providing the effect is mitigated to a minimum). There is currently, however, a major discontinuity between the above guidance and objective technical criteria for use in planning noise impact assessments.

Local Planning Policy

Arun Local Plan

12.11 The Arun Local Plan 2011-2031^{iv} includes the following policies which are relevant for assessing noise impacts from new development.

12.12 Policy D DM1: 'Aspects of form and design quality' states that, when considering applications for development, Arun District Council (ADC) will have regard to the impact of the development as follows:

"Have minimal impact to users and occupiers of nearby property and land. For example, by avoiding significant loss of sunlight, privacy and outlook and unacceptable noise and disturbance."

12.13 Policy QE SP1: 'Quality of the Environment' states:

"The Council requires that all development contributes positively to the quality of the environment and will ensure that development does not have a significantly negative impact upon residential amenity, the natural environment or upon leisure and recreational activities enjoyed by residents and visitors to the District."

12.14 Policy QE DM1: 'Noise Pollution' requires the following to support proposals for new noise generating development:

"A noise report which provides accurate information about the existing noise environment, and the likely impact of the proposed development upon the noise environment. The report must also demonstrate that the development meets appropriate national and local standards for noise, as set out in Annex 1 of the Planning Noise Advice Document: Sussex, and any mitigation measures required to ensure noise is managed to an acceptable level."

Legislative Context

IEMA Guidelines for Environmental Noise Impact Assessment: 2014

12.15 The IEMA Guidelines^v consider the process of assessing noise impacts and are relevant for developments where an EIA is required. The Guidelines consider the main steps of a noise impact assessment for EIA purposes, i.e. scoping, baseline studies, noise prediction, assessment, mitigation and reporting.

British Standard 5228:2009+A1:2014

- 12.16 British Standard 5228^{vi} is the relevant standard for assessing noise and vibration during the construction of the Development.
- 12.17 British Standard 5228 Parts 1 and 2 provide detailed advice on the assessment of noise and vibration from construction sites. Part 1 of the standard addresses noise and Part 2 addresses vibration.
- 12.18 BS 5228 Parts 1 and 2 make reference to a number of factors which are likely to affect the significance and acceptability of noise and vibration from construction sites. These are :
- Site location;
 - Existing ambient noise levels / existing ambient vibration levels;
 - Duration of site operations;
 - Hours of work;
 - Attitude of the site operator;
 - Noise characteristics / vibration characteristics; and
 - The effect of vibration on adjacent buildings.

BS 5228: Part 1 - Noise

- 12.19 Part 1 of BS 5228 provides guidance concerning methods of predicting and measuring noise from construction activities, and assessing the impact on those exposed to construction noise .
- 12.20 It is generally recognised that for industrial noise the likelihood of complaints is related to the difference between the noise from the industrial source and the existing background noise level. BS 5228, however, recognises that this relationship between response and noise level differences may well be different for construction noise activities, and a greater difference may be tolerated when it is known that the operations are of a relatively short duration. It would be anticipated that the longer the construction activities are scheduled for, the closer the perception of a construction site to a permanent industrial facility, particularly if the construction activities take place at night. It is therefore important to consider the duration of the proposed works in addition to the hours of construction working within the context of the development area.
- 12.21 With respect to hours of work, BS 5228 makes reference to the fact that noise levels generated during the evening (19.00 to 23.00) may need to be lower than the daytime (07.00 to 19.00)

period (a figure of 10 dB is quoted) and also that for any night-time operations (23.00 to 07.00) levels should be quieter still.

BS 5228: Part 2 - Vibration

- 12.22 Part 2 of BS 5228 provides guidance on the control of vibration from construction activities, and assessing its impact on those exposed to it.
- 12.23 The standard does not recommend absolute criteria for vibration, but advises that the peak particle velocity (PPV) descriptor should be used as an indicator of both human response and effects on buildings. Table 12.1 below is reproduced from BS 5228 and provides guidance on the effects of vibration levels in terms of human response.

Table 12.1: Guidance on Effects of Vibration Levels – Human Response

Vibration Level (PPV)	Examples of receptor
0.14 mm/s	Vibration might just be perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 mm/s	Vibration might just be perceptible in residential environments.
1 mm/s	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.
10 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

Calculation of Road Traffic Noise and Design Manual for Roads and Bridges

- 12.24 The Department of Transport Publication 'Calculation of Road Traffic Noise'^{vii} (CRTN) provides guidance and methodology for the assessment and prediction of noise levels from road traffic.
- 12.25 The Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 – HD213/11 Noise and Vibration^{viii} (DMRB) provides a method for the assessment of road traffic effects by assessing the change in the $L_{A10,18hr}$.

British Standard 4142:2014

- 12.26 British Standard 4142^{ix} provides a methodology for the assessment of industrial (or industrial-related/ commercial) noise at (the exterior of) residential properties. The standard advocates a comparison between the prevailing typical L_{A90} background noise level and the L_{Aeq} source noise level. If the source noise level is tonal or intermittent or otherwise distinctive in nature a rating correction is applied to the source noise level to become the rating level.

- 12.27 The difference between the rating level and the background level determines the significance of the noise impact, depending upon the context.

Assessment Methodology

Consultation

- 12.28 Arun District Council's Scoping Opinion (refer to Appendix 2.2) has confirmed that noise and vibration impacts should be scoped in, as outlined in the Environmental Impact Assessment Scoping Report dated November 2018 (refer to Appendix 2.1).
- 12.29 The scoping consultation response from Arun District Council's Environmental Health Officer (EHO) (Fiona Fitzgerald) by email dated 25th January 2019 confirms that noise and vibration should be included within the ES. The EHO has raised concerns regarding the potential noise impact of current and proposed commercial/industrial sites on existing and proposed residential properties. These concerns have been considered within this noise and vibration chapter and within the separate noise impact assessment report undertaken by 24 Acoustics.
- 12.30 24 Acoustics has discussed and agreed the general scope, criteria and methodology adopted in this ES chapter (and the separate noise impact assessment report) with Fiona Fitzgerald from ADC.

Baseline Noise Surveys

- 12.31 Baseline conditions have been determined at the Site by noise measurement. Ambient noise surveys were undertaken on site between 4th and 11th July 2018. The following instrumentation was used during the surveys:

2 x Rion precision sound level meter	Type NL-52;
2 x Rion precision sound level meter	Type NL-32;
Norsonic precision sound level meter / real-time analyser	Type 118; and
Brüel and Kjær acoustic calibrator	Type 4231.

- 12.32 Calibration of all instrumentation was checked before and on completion of the measurements and no drift in calibration level was observed. The calibration of all equipment is traceable to National Standards.
- 12.33 The weather throughout the survey period was generally dry with wind speeds less than 5 m/s.

12.34 The noise monitors were fitted with environmental wind shields. The meters were configured to monitor in 5 minute sample periods and were set up to measure and store overall A-weighted statistical parameters including the L_{Aeq} , L_{A90} , and $L_{Amax,f}$ sound pressure levels. Noise measurements were made in accordance with BS 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use'.

12.35 The measurement locations are described below and can be seen in Figure 12.1.

- Location 1 – On the south-western boundary of the Site facing Yapton Road, at a height of approximately 2.5m above ground level;
- Location 2 – On the northern Site boundary facing Ford Lane, at a height of approximately 2.5m above ground level;
- Location 3 – In the south-east corner of the Site, at a height of approximately 1.5m above ground level; and
- Location 4 – On the western Site boundary, at a height of approximately 1.5m above ground level.

Construction Noise and Vibration

Noise and Vibration from General Construction Activity

12.36 At this stage, detailed construction methodologies (including piling details) and plant lists are not available. The assessment therefore concentrates on the potential noise impacts in line with BS 5228 for such works and methods of mitigation. The details of the likely construction activities taking place on the Site have been provided in Chapter 5: Construction Methodology and Phasing.

12.37 Detailed assessments of construction noise and vibration will be undertaken when the construction and piling methods are finalised.

Noise from Construction Vehicles

12.38 Noise from construction vehicles has also been considered based on details of HGV movements as provided in Chapter 5. The assessment of noise from construction vehicles will depend on the vehicle type, routes, time of day and number of movements.

Operational Traffic Noise

12.39 The increase in noise level from road traffic, as a result of the projected future traffic flows has been assessed in accordance with the guidance of CRTN and the DMRB. The calculations have been based upon the baseline and projected flows provided by the project transportation consultants i-Transport (refer to Appendix 10.1) for the following scenarios:

- Baseline year (2017) – The current baseline prior to the Development;
- 2024 Baseline without the Development – The future baseline including committed developments, without the Development;
- 2024 Baseline with the Development (Full Buildout) - The future 2024 baseline including committed developments, with the whole of the Development;
- 2031 Baseline without the Development - The future 2031 baseline including committed developments, without the Development;
- 2031 Baseline with the Development - The future 2031 baseline including committed developments, with the whole of the Development.

12.40 The above scenarios have been selected in order to assess the increase in noise level from road traffic due to the Development, compared to the current (2017) baseline. The 2024 scenario with Full Buildout has been selected to show a worst-case scenario for 2024, with the whole of the Development completed. The future baseline scenarios include committed developments, to allow cumulative effects to be assessed.

12.41 In relation to traffic noise, the DMRB rates impacts through consideration of the change in $L_{A10,18hr}$ for the short and long-term as reproduced in Tables 12.2 and 12.3 below.

Table 12.2: Classification of Magnitude of Noise Impacts in the Short-term

Predicted Change in $L_{A10,18hr}$	Magnitude of Impact
0	No change
0.1 – 0.9	Negligible
1 – 2.9	Minor
3 – 4.9	Moderate
5+	Major

Table 12.3: Classification of Magnitude of Noise Impacts in the Long-term

Predicted Change in $L_{A10,18hr}$	Magnitude of Impact
0	No change
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate
10+	Major

Operational Commercial Noise

- 12.42 At this stage, the potential noise sources, their locations and operating hours for the B1 employment uses, and the retail/commercial (class A1-A5) uses within the local centre, are not yet defined. The assessment therefore considers the potential impacts of commercial noise sources, associated with the employment and retail/commercial uses, in accordance with BS 4142 and associated mitigation measures that may be required.
- 12.43 Detailed assessments of noise impacts from proposed commercial sources, in accordance with BS 4142, will be undertaken at a later stage when the employment use proposals are further defined.

Sensitivity of Receptors

- 12.44 Existing noise sensitive receptors have been identified from plans of the surrounding area and during Site visits. The nearest noise sensitive receptors are shown in Figure 12.2 and described below:

Receptor A – Properties to the north of Ford Lane;
 Receptor B - Properties to the south of Ford Lane;
 Receptor C - Properties off Yapton Road and Rollaston Park; and
 Receptor D – Properties off Horsemere Green Lane;
 Receptor E – Properties on Nelson Row, off Ford Lane; and
 Receptor F – Properties on Rodney Crescent, off Ford Lane.

- 12.45 Future noise sensitive receptors, within the Development itself, will also be considered for when residents are occupying the first phases of the Development and construction work is still ongoing.

Value of Receptor Sensitivity

- 12.46 The sensitivity of the identified receptors has been based on the relative importance, using the scale in Table 12.4.

Table 12.4: Methodology for Determining Impact Sensitivity

Sensitivity	Examples of receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Moderate	The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.

Low	The receptor/resource is tolerant of change without detriment to its character, is of low or local importance.
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- 12.47 Based on the methodology in Table 12.4, it is considered that the existing noise sensitive receptors considered herein are of low sensitivity as they are of local importance.

Significance Criteria

- 12.48 The significance of noise effects has been determined based on the magnitude of the impacts and sensitivity of the receptors. As all noise sensitive receptors are of low sensitivity, the effect significance has been determined based on Table 12.5 below.

Table 12.5: Effect Significance Matrix for Low Sensitivity Receptors

Magnitude of Impact	Effect Significance
Negligible	Negligible
Minor	Minor Adverse - Negligible
Moderate	Minor Adverse
Major	Moderate - Minor Adverse

- 12.49 Noise effects that are moderate to minor adverse are considered significant in EIA terms.

Limitations and Assumptions

Baseline Noise Surveys

- 12.50 Comprehensive noise surveys have been undertaken to minimise uncertainty of ambient noise levels at the Site. Calibration of all instrumentation was checked before and on completion of the surveys and no drift in calibration level was observed. The calibration of all equipment is traceable to National Standards.

Noise from General Construction Activity

- 12.51 Indicative information on the types of plant that are likely to be used has been provided in ES Chapter 5: Construction Methodology and Phasing. Although BS 5228 provides methods for predicting the likely noise levels from construction works, they are based on detailed information including the type and number of each plant item, their location and the length of time they are in operation. As there is no detailed information currently available regarding the specific construction plant and techniques that will be in operation on the Site during the construction period, accurate prediction is not possible at this stage.

Operational Commercial Noise

- 12.52 Although BS 4142 provides a method for predicting the likely noise impact of commercial sources, this requires detailed information including the locations and types of noise sources and their operating hours. As there is no detailed information currently available for the employment and retail/commercial uses regarding the potential noise sources, their locations and operating hours, accurate prediction of the commercial noise impacts is not possible at this stage.

Baseline Conditions

Noise Survey Results

- 12.53 The results of the unattended (long-term) noise monitoring are presented graphically in Figures 12.3, 12.4, 12.5 and 12.6 and are summarised in Table 12.6.

Table 12.6: Ambient Noise Survey Results, Locations 1 to 4

Location	Daytime Level (07:00 - 23:00) dB L _{Aeq, 16 hour}	Night-time Level (23:00 - 07:00) dB L _{Aeq, 8 hour}
Location 1	67	59
Location 2	65	58
Location 3	47	43
Location 4	47	40

- 12.54 It was observed during the noise surveys that the dominant noise sources at the measurement locations were road traffic using Yapton Road and Ford Lane.

Future Baseline

- 12.55 Calculations of the change in road traffic noise level from the 2017 Baseline case, as a result of the additional vehicle movements projected for the future scenarios without the Development are shown in Table 12.7.

Table 12.7: Change in Road Traffic Noise – Without Development

Scenario	Predicted Change in L _{A10,18hr} From 2017 Baseline
2024 Baseline without the Development	1.0 dB
2031 Baseline without the Development	1.1 dB

Likely Significant Effects

Construction Phase

- 12.56 The assessment is based on the methodology described above and the likely activities described in ES Chapter 5: Construction Methodology & Phasing. Construction activities are temporary and the level of noise generated will vary considerably throughout the duration of the works. Depending on the proximity of works to noise sensitive receptors, construction noise has the potential to give rise to short-term noise effects of varying significance.

Noise from General Construction Activity

- 12.57 There are limitations as identified, such that accurate prediction of noise levels from general construction activity, under BS 5228, is not possible at this stage.
- 12.58 Nevertheless, it is anticipated that construction noise (assessed under BS 5228) may give rise to a short-term noise effect during periods where particularly noisy activity is taking place at the closest points to nearby existing and future noise-sensitive properties as identified in Figure 12.2. There is therefore potential for a short-term, adverse effect of minor significance, although the impact will reduce as workings move away from sensitive receptors. For the majority of the time, when workings are more distant from noise-sensitive properties, it is anticipated that any effects will not be significant and are therefore considered negligible.
- 12.59 Based on the above, as a worst-case there is the potential for temporary, minor adverse effects from construction noise.

Noise from Construction Vehicles

- 12.60 Noise from construction vehicles also has the potential for a short-term, adverse effect of minor significance, depending on the vehicle type, routes, time of day and number of movements.
- 12.61 As per the indicative volumes of peak construction traffic given in Chapter 5, HGV movements would be dispersed across the working day outside of the AM and PM peak periods. The arrival and departure of light vehicles would be concentrated during the morning and evening periods, but would be less than the predicted levels of traffic during the operational phase of the Development.
- 12.62 Based on the above, as a worst-case there is the potential for temporary, minor adverse

effects due to noise from construction vehicles.

Vibration from General Construction Activity

- 12.63 Construction vibration will be considered once the piling method for the construction works has been identified. Depending on the piling method, and subject to good management, vibration from construction is not likely to be significant at the nearest sensitive properties.

Operational Phase

Traffic Noise Impact

- 12.64 Calculations of the change in road traffic noise level from the 2017 Baseline case, as a result of the additional vehicle movements projected for the future scenarios with the Development are shown in Table 12.8.

Table 12.8: Change in Road Traffic Noise – With Development

Scenario	Predicted Change in $L_{A10,18hr}$ From 2017 Baseline
2024 with Development (Full Buildout)	1.5 dB
2031 with the Development (Full Buildout)	1.5 dB

- 12.65 The maximum anticipated increase in traffic noise levels due to the Development along with the 2031 Baseline, which includes committed developments, is 1.5 dB $L_{A10,18hr}$. As assessed in accordance with Tables 12.2, 12.3 and 12.5, this is considered a minor adverse effect in the short-term and a negligible effect in the long-term.

Commercial Noise Impact

- 12.66 There are limitations as identified, such that accurate prediction of noise impacts from proposed commercial sources, under BS 4142, is not possible at this stage.
- 12.67 The proposed Land Use and Density parameter plan (refer to Figure 3.1) shows that the B1 employment land use will be located close to existing noise sensitive receptors (receptor B, receptor E and receptor F as shown on figure 12.2). The retail/commercial uses associated with the local centre will be located close to existing noise sensitive receptors (receptor C as shown on figure 12.2).
- 12.68 Depending on the Site layout of the B1 employment land use, the layout of the local centre and operating hours, there is the potential for moderate to minor adverse effects due to

operational noise from commercial sources. Noise mitigation measures must therefore be considered.

Mitigation Measures

Construction Phase

- 12.69 Construction noise will be controlled to acceptable levels by implementation of appropriate best practice measures, following the general recommendations of BS 5228. Construction noise may also be controlled by way of limiting hours of work.
- 12.70 A Construction Environmental Management Plan (CEMP) will be developed to ensure that construction noise levels are minimised, and this is expected to be enforced via a planning condition.
- 12.71 Mitigation measures to control construction noise and vibration are likely to include the following:
- All plant items will be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise. All plant items should be sited so that the noise effects at nearby noise-sensitive properties are minimised;
 - Where appropriate, plant items will be fitted with silencers or acoustic enclosures;
 - Hoarding will be erected around the construction works to shield residential properties from noisy activities;
 - Deliveries will be scheduled to arrive during daytime hours only and vehicles will be routed so as to minimise disturbance to local residents. Delivery vehicles will be prohibited from waiting within the site or on the public highway with their engines running;
 - If necessary, operating times of particularly noisy activities may be reduced;
 - Good communication will be maintained with the occupants of nearby residential properties to inform them of works progress;
 - Construction vibration will be considered whenever the piling method for the construction works has been identified.
- 12.72 A Construction Traffic Management Plan (CTMP) will also be provided, which will include measures to control the noise impact from construction vehicles.

Operational Phase

Traffic Noise Impact

- 12.73 Based on the significance of the effects as determined, i.e. short-term, minor adverse effect and long-term, negligible effect, no mitigation measures are required for traffic noise.

Commercial Noise Impact

- 12.74 Mitigation measures to control the potential impacts of noise from commercial sources are likely to include the following:

- Consideration will be given to the Site layout and location of commercial sources, i.e. siting noisier types of use (e.g. class B1c industrial processes) further away from residential properties, with other uses (e.g. class B1a offices) to provide buffer zones and/or acoustic screening;
- Setting of appropriate limits for noise emissions from commercial uses, in accordance with BS 4142;
- If necessary, restrictions on hours of operation for certain types of commercial uses, including vehicle movements and delivery activities;
- Use of acoustic barrier/bunds around the commercial uses, including acoustic screening; and
- Where appropriate, attenuation of fixed plant items e.g. with silencers, acoustic enclosures or localised acoustic screening.

Residual Effects

Construction Phase

- 12.75 Implementation of the mitigation measures described in paragraph 12.70 above will ensure that any noise and vibration impacts associated with construction workings will be negligible for the majority of the duration of the workings.

Operational Phase

Commercial Noise Impact

- 12.76 With implementation of the mitigation measures described above in paragraph 12.74, and

subject to detailed design of the employment uses, local centre and Site layout, the potential noise impacts from proposed commercial sources will be minor adverse to negligible.

Cumulative Effects

- 12.77 The list of cumulative developments in the vicinity of the Development is included in Chapter 2 and shown on Figure 2.1.

Construction Phase

- 12.78 Committed developments with the potential for cumulative effects from construction noise have been identified, as listed in Table 12.9.

Table 12.9: Committed Developments

Scheme Name & Application No.	Scheme Details	Status
Land off Burndell Road, Yapton Ref: Y/19/16/OUT	Outline application for the development of a maximum of 108 No. residential dwellings, vehicular access from Burndell Road, public open space, ancillary works & associated infrastructure.	(Appealed – APP/C3810/V?16/31582 61)
Land south of Burndell Road, Yapton Ref: F/7/15/OUT	Outline application for residential development comprising 45 dwellings.	Approved
Arun DC Secondary School Site (location to be confirmed)	A new 10 form entry secondary school to accord with Policy INF SP2 of the recently adopted ADC Local Plan.	TBC

- 12.79 It is noted that the size and scale of the above cumulative developments is relatively small compared to the Development.
- 12.80 The cumulative effects of noise will be most significant during periods where particularly noisy activity is taking place within both the Development and committed developments at the closest points of the construction workings to nearby noise-sensitive properties, which would be a short-term, minor adverse effect. This would only occur if the programmes and local phasing of both developments were to coincide. For the majority of the time, when workings are more distant from noise-sensitive properties, it is anticipated that any cumulative effects will not be significant and any effect will be negligible.
- 12.81 The remaining committed developments are sufficiently distant from the Development, so that there will be no cumulative impact from construction noise, and these are not considered

further.

Operational Phase

Traffic Noise Impact

- 12.82 The cumulative effect of traffic noise associated with all committed developments is considered below.
- 12.83 The results presented in Table 12.8 have been based on the future baseline scenarios, which include the traffic growth associated with the committed developments.
- 12.84 The maximum anticipated increase in traffic noise levels due to the Development along with the 2031 Baseline, which includes committed developments, is 1.5 dB $L_{A10,18hr}$. As assessed in accordance with Tables 12.2, 12.3 and 12.5, this is considered a minor adverse effect in the short-term and a negligible effect in the long term.

Summary

Methodology

- 12.85 A review of construction noise and vibration has been undertaken and recommendations made for appropriate management of noise and vibration during the construction period. The impact of increased levels of traffic noise due to the Development (along with other committed developments) has been determined. The potential impact of noise from commercial sources associated with the proposed employment use and local centre has been reviewed.
- 12.86 Where necessary, recommendations have been made for mitigation measures.

Baseline Conditions

- 12.87 Baseline conditions have been determined at the Site by noise measurement. The future baseline conditions for the assessment of road traffic noise have been assessed based on traffic flow data from the project transport consultants.

Likely Significant Effects

- 12.88 The effect of construction activities, including potential cumulative effects from committed developments, whilst not quantitatively assessed are considered to be minor adverse in the

short-term and negligible for the majority of the time.

- 12.89 The effect of increases in traffic noise levels, including cumulative effects from committed developments, would result in a minor adverse effect in the short term and a negligible effect in the long term.
- 12.90 The effect of commercial noise sources has the potential for moderate to minor adverse effects. Noise mitigation measures will therefore be required.

Mitigation Measures

- 12.91 A construction environmental noise management plan (CEMP) will be developed to ensure that construction noise levels are minimised. This may be enforced via a planning condition.
- 12.92 The detailed design of the employment uses and Site layout will include noise mitigation measures as required.

Residual Effects

- 12.93 Good management of construction noise and vibration and the proposed mitigation measures will result in a negligible residual effect.
- 12.94 Subject to detailed design of the employment uses and site layout, implementation of the proposed mitigation measures will result in a potential minor adverse to negligible effect from proposed commercial sources.
- 12.95 Table 12.10 contains a summary of the likely significant effects of the Development.

Table 12.10: Table of Significance – Noise & Vibration

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	D	L	
Construction											
Construction Noise	Temporary	Minor Adverse	Good management of construction noise and mitigation measures as specified in Para 12.71							*	Negligible
Construction Vibration	Temporary	Minor Adverse	Good management of construction vibration if impact piling method is required							*	Negligible
Completed Development											
Traffic Noise	Permanent	Minor Adverse to Negligible	None required							*	Minor Adverse to Negligible
Commercial Noise	Permanent	Moderate to Minor Adverse	Site layout (subject to detailed design) and implementation of mitigation measures as specified in Para 12.74							*	Minor Adverse to Negligible
Cumulative Effects											
Construction											
Construction Noise	Temporary	Minor Adverse	Good management of construction noise and mitigation measures as specified in Para 12.71							*	Negligible
Operation											
Traffic Noise	Permanent	Minor Adverse to Negligible	None required							*	Minor Adverse to Negligible

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; D = District; L = Local

REFERENCES

- ⁱ CLG (February 2019) *National Planning Policy Framework*
- ⁱⁱ DEFRA (2010) *Noise Policy Statement for England*,
- ⁱⁱⁱ CLG (March 2014) *National Planning Practice Guidance*
- ^{iv} Arun District Council (July 2018) *Local Plan 2011-2031*
- ^v IEMA (2014) *Guidelines for Environmental Noise Impact Assessment*
- ^{vi} British Standards Institution (2009 + A1:2014) *British Standard 5228: Code of practice for noise and vibration control on construction and open sites. Parts 1 & 2*
- ^{vii} Department of Transport (1988) *Calculation of Road Traffic Noise*
- ^{viii} Department of Transport (2011) *Design Manual for Roads and Bridges (HD 213/11, Volume 11, Section 3, Part 7)*
- ^{ix} British Standards Institution (2014) *British Standard 4142: Methods for Rating and Assessment Industrial and Commercial Sound*
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