

10 Noise and Vibration

10.1 Introduction

10.1.1 This Chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development on noise and vibration. It will describe; the assessment methodology and the baseline conditions relevant to the assessment; a summary of the likely significant effects pre-mitigation, the additional mitigation measures required to avoid, prevent, reduce or offset any likely significant adverse effects, and reports on the likely residual effects after these measures have been employed.

10.2 Assessment methodology

Scope of the Assessment

10.2.1 The elements shown in Table 10.1 were considered, based on professional judgement, to have the potential to give rise to likely significant effects during construction and/or during operation. They have therefore been considered within the ES.

Table 10.1 Elements scoped into the assessment

Element scoped in	Construction	Operation	Justification
Construction Noise	✓		Construction activities (plant, piling, material handling, haul routes) have the potential to cause elevated noise levels at nearby receptors.
Construction Vibration	✓		Certain construction activities (e.g., piling, compaction) could generate perceptible vibration affecting sensitive receptors and building structures.
Existing Environmental Noise and Vibration Affecting the Proposed Development*		✓	Road traffic, rail, and nearby commercial sources may influence internal noise levels and occupant amenity.
Operational Traffic Noise		✓	Additional road traffic generated by the development could increase noise levels on surrounding roads.
* Note - Existing environmental noise affecting the Proposed Development, arising from surrounding road networks, commercial activities, and rail infrastructure, have been assessed through a standalone Noise assessment. The findings of the assessment are reported in full in 23255-1 – Arborfield Parcels W, Y and Z - Crest Nicholson Operations Ltd Chiltern - ProPG & BS4142 – DW BF – 250923 (Appendix 10.1).			

- 10.2.2 Similarly, based on professional judgement, the elements shown in Table 10.2 were considered appropriate to scope out of the assessment. They have therefore been excluded from consideration within the ES.

Table 10.2 Elements scoped out of the assessment

Element scoped out	Justification
Operational Fixed Plant Noise	It is expected that fixed plant serving the Proposed Development will be designed to not have an adverse impact on the Proposed Development and sensitive locations surrounding the area.
Vibration	In terms of construction vibration, it is expected that this will be managed by good practice on the construction site and the CEMP once available. Vibration from road traffic movements is normally considered to be low and is not expected to increase due to relatively minor increases in road traffic volume. The sources are already present and would not be expected to affect the existing vibration significantly. As such, vibration has been scoped out of further assessment here.

Predicting effects

Construction/Demolition

- 10.2.3 At this stage, a full construction management plan is not available. Therefore, assumptions have been made based on standard construction activities and will be secured in a Construction Environmental Management Plan (CEMP) to be secured by planning condition.

Operational

- 10.2.4 The noise impact of the increase in road traffic noise has been predicted using SoundPLAN 3D noise modelling software in line with the procedure provided in the Calculation of Road Traffic Noise (CRTN) published by the Department for Transport. Traffic flows for the Baseline (2040) situation and Baseline + Arborfield Studios and Barkham Square (2040) situation have been provided by the transport consultants i-transport.
- 10.2.5 The predicted $LA_{10,18\text{hour}}$ values have been compared to determine the noise impact of additional traffic due to the development.

Significance Criteria

- 10.2.6 The significance level attributed to each effect has been assessed based on the sensitivity or value of the affected receptor(s) and the magnitude of change arising from the Proposed Development.

10.2.7 Significance criteria have been developed based on professional judgement, best practice guidance and relevant project experience. They are determined using the matrix based on magnitude of change and the sensitivity of the receptor, with the likely duration of the effect and the likelihood of the effect occurring also considered when assessing each effect.

10.2.8 The assessment of a receptor's sensitivity is described in the table below:

Table 10.3 Assessment of receptor sensitivity

Receptor Sensitivity	Description
High	Auditoria/studios; Specialist medical/teaching centres; and Libraries.
Medium	Residential; Quiet outdoor areas used for recreation; Conference facilities; Schools in daytime; and Hospitals/residential care homes.
Low	Offices; Restaurants; and Sports grounds when spectator or noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf).
Negligible	Residences and other buildings not occupied during working hours; Factories and working environments with existing high noise levels; and Sports grounds when spectator or noise is a normal part of the event.

Magnitude of Impact

Construction Noise

10.2.9 An assessment of temporary construction noise impacts has been carried out in accordance with the guidance set out in BS 5228:2009+A1:2014, Part 1: Noise.

10.2.10 BS 5228 provides a method for predicting and assessing construction noise levels based on details of construction activities. The predictive method is based on the sound power level (L_w) of each item of plant to be used, with corrections applied to account for the distance between the source and receptor locations, the percentage operating time of the plant, and any attenuation due to screening between source and receptor.

10.2.11 The assessment has been undertaken with reference to the criterion that construction noise should not exceed levels at which normal conversation within the nearest occupied building would become difficult with windows closed. To provide a conservative and robust assessment, the most onerous daytime external façade noise limit of 70 dB(A) has been selected as the target criteria, irrespective of proximity to main roads or industrial noise sources.

10.2.12 The magnitude of impact scale for construction noise is set out in Table 10.4.

Table 10.4 Magnitude of Impact – Construction Noise

Magnitude of Impact	Construction Noise level, LAeq,T dB
High	>70
Medium	65-70
Low	60-65
Negligible	<60

Construction Vibration

10.2.13 Limits for transient vibration relating to cosmetic damage from different types of structure are set in Table 1 of BS7385 part 2. It is important these limits are not exceeded to prevent building damage to existing properties.

10.2.14 The magnitude of impact scale for construction vibration is set out below:

Table 10.5 Magnitude of Impact – Construction Vibration

Magnitude of Impact	Construction vibration level peak particle velocity (PPV) mm/s
High	Above or equal to 10 mm/s PPV
Medium	Above or equal to 1 mm/s and below 10 mm/s PPV
Low	Above or equal to 0.3 mm/s and below 1 mm/s
Negligible	Below 0.3 mm/s

Operational Road Traffic Noise

10.2.15 The Proposed Development may have an impact on traffic flows on existing roads in the area surrounding the Site once the Proposed Development is operational. The effects of operational road traffic noise have been assessed by considering the change in traffic flows following completion of the Proposed Development, with reference to both the CRTN and the Design Manual for Roads and Bridges (DMRB).

10.2.16 The following scenarios have been assessed using the traffic data provided:

- Scenario 1 – Baseline (2040)
- Scenario 2 – Baseline + Arborfield Studios and Barkham Square (2040)

10.2.17 The methodology for determining the magnitude and significance of effects for operational road traffic noise is set out in Table 10.6.

Table 10.6 Magnitude of Impact – Operation Road Traffic Noise

Magnitude of Impact	Change in Noise level, dB(A)
High	>5.0
Medium	3.0 - 4.9
Low	1.0 - 2.9
Negligible	0.0 - 0.9

10.2.18 The predicted level of effect is based upon the consideration of magnitude of impact and sensitivity of the receptor. In this case, the receivers that could be affected by the development in terms of noise are residential which would be considered 'Medium' sensitivity – highlighted in the table below.

Table 10.7 Level of effect

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Substantial	Major	Moderate	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

10.2.19 In this case, Moderate, Major and Substantial impacts are considered significant. Negligible and Minor impacts are not considered to be significant.

Geographic Scope

10.2.20 The geographic scope of this assessment is limited to residential properties that could be affected by an increase in road traffic or construction noise within 0.5km of the Site boundary. These include residential dwellings on Princess Marina Drive, Biggs Lane, Langley Common Road, Baston Road among other surrounding roads.

Temporal Scope

10.2.21 The assessment of the operational impacts includes a comparison of the baseline 2040 situation and the baseline 2040 scenario including the Proposed Development and other committed developments. The construction impacts are assessed for the duration of the construction activities, 2027 to 2033

Consultation

10.2.22 It is understood that pre application discussions have occurred between the client and the Local Planning Authority but there have been no detailed discussions regarding noise.

Assumptions and Limitations

10.2.23 The list of construction plant and assumed on-time has been reproduced below. This is an estimation of on-time for the entire construction duration of the relevant phase. This would be considered a worst-case assessment as most of the equipment would not realistically be in use for this length of time. These assumptions are considered a reasonable approximation of the likely construction activities.

Table 10.8 Assumed construction plant and equipment

Plant and Equipment	BS5228:2009 Reference	Assumed On-Time (%)	Sound Pressure Level at 10m (dB L _{Aeq,T})
Site Preparation			
Tracked excavator (idling)	BS 5228-1:2009 Table C.2:4	12.5	52
Wheeled loader	BS 5228-1:2009 Table C.2:26	25	79
Dump truck (tipping fill)	BS 5228-1:2009 Table C.2:30	20	79
Dump truck	BS 5228-1:2009 Table C.2:31	20	87
Roller (rolling fill)	BS 5228-1:2009 Table C.2:37	20	79
Roller	BS 5228-1:2009 Table C.2:38	20	73
Grader	BS 5228-1:2009 Table C.6:31	15	86
Foundation Works and Substructure			
Dozer	BS 5228-1:2009 Table C.2:10	60	80
Tracked excavator	BS 5228-1:2009 Table C.2:14	55	79
Tracked excavator (idling)	BS 5228-1:2009 Table C.2:20	25	68
Wheeled loader	BS 5228-1:2009 Table C.2:26	50	79
Cement mixer truck (discharging)	BS 5228-1:2009 Table C.4:18	20	75
Cement mixer truck (idling)	BS 5228-1:2009 Table C.4:19	40	71
Poker vibrator	BS 5228-1:2009 Table C.4:33	40	78
Dozer	BS 5228-1:2009 Table C.2:10	60	80
Tracked excavator	BS 5228-1:2009 Table C.2:14	55	79
Building Erection Works and Superstructure			
Dumper	BS 5228-1:2009 Table C.4:3	60	76
Large concrete mixer	BS 5228-1:2009 Table C.4:22	40	76
Wheeled mobile telescopic crane	BS 5228-1:2009 Table C.4:38	60	78
Lorry with lifting boom	BS 5228-1:2009 Table C.4:53	40	77

Plant and Equipment	BS5228:2009 Reference	Assumed On-Time (%)	Sound Pressure Level at 10m (dB L _{Aeq,T})
Tracked excavator	BS 5228-1:2009 Table C.4:63	20	77
Mini tracked excavator	BS 5228-1:2009 Table C.4:67	50	74
Circular bench saw (petrol cutting concrete blocks)	BS 5228-1:2009 Table C.4:71	30	85
Hand-held circular saw (petrol-cutting concrete blocks)	BS 5228-1:2009 Table C.4:72	60	79
Diesel generator	BS 5228-1:2009 Table C.4:76	90	61
Road Works			
Road planer	BS 5228-1:2009 Table C.5:7	15	82
Road planer (idling)	BS 5228-1:2009 Table C.5:8	15	62
Bulldozer	BS 5228-1:2009 Table C.5:14	25	86
Articulated dump truck	BS 5228-1:2009 Table C.5:16	25	81
Road roller	BS 5228-1:2009 Table C.5:19	37.5	80
Asphalt paver (+ tipper lorry)	BS 5228-1:2009 Table C.5:30	25	75
Vibratory roller	BS 5228-1:2009 Table C.5:21	25	80
Vibratory roller	BS 5228-1:2009 Table C.5:20	25	75
Grader	BS 5228-1:2009 Table C.6:31	15	86
Landscaping Works			
Lorry with lifting boom	BS 5228-1:2009 Table C.4:53	40	77
Tracked excavator	BS 5228-1:2009 Table C.4:63	20	77
Mini tracked excavator	BS 5228-1:2009 Table C.4:67	50	74

10.2.24 The above sound pressure levels have been corrected for on-time, summed and then the corresponding sound power level applied to an area source for the development area in the 3D noise model.

10.2.25 It should be noted that a Construction Environmental Management Plan (CEMP) is not available at this stage and so the above is an estimation based on previous experience of construction operations, their phasing and operational plant sound power levels.

10.3 Baseline conditions

Current Baseline

- 10.3.1 An environmental noise survey of the baseline noise climate was carried out between 18th August 2025 and 21st August 2025. The details for this survey are given in noise.co.uk report 23255-1 dated 1st October 2025 (Appendix 10.1).
- 10.3.2 The existing noise climate in the area is dominated by road traffic noise with a contribution from existing commercial/industrial premises.
- 10.3.3 Receivers have been identified around the development area and have been considered in the assessment of operational and construction noise. The receivers are listed below and the worst case receiver in each area has been considered in the assessment:

Table 10.9 Receivers and sensitivity

Langley Common Road	Medium (Residential)
Baston Road	Medium (Residential)
Biggs Lane	Medium (Residential)
Princess Marina Drive	Medium (Residential)

Future Baseline

- 10.3.4 The future baseline situation in this area without the development would likely result in an increase of road traffic noise, due to natural road traffic growth.

10.4 Inherent design mitigation

- 10.4.1 For the construction phase of the development, a CEMP will be adopted and it is expected that best practicable means will be applied to minimise construction noise on existing sensitive receptors. Liaising with existing residents is recommended and carrying out noise generating activities at the greatest distance from existing receivers where possible is also recommended.

10.5 Potential effects prior to additional mitigation

Construction Phase

- 10.5.1 3D Noise Modelling has been undertaken and is presented at Figures 10.1 to 10.5 and informs the assessment of construction effects below.
- 10.5.2 The predicted sound pressure levels for each phase of construction at the worst case receivers are given below:

Table 10.10 Predicted sound pressure levels due to construction

Receiver	Predicted $L_{Aeq,T}$	Magnitude
Site Preparation		
Langley Common Road	54.6dB	Negligible
Baston Road	48.5dB	Negligible
Biggs Lane	39.8dB	Negligible
Princess Marina Drive	56.0dB	Negligible
Foundation Works and Substructure		
Langley Common Road	55.8dB	Negligible
Baston Road	49.7dB	Negligible
Biggs Lane	41.0dB	Negligible
Princess Marina Drive	57.2dB	Negligible
Building Erection Works and Superstructure		
Langley Common Road	55.4dB	Negligible
Baston Road	49.3dB	Negligible
Biggs Lane	40.6dB	Negligible
Princess Marina Drive	56.8dB	Negligible
Road Works		
Langley Common Road	55.9dB	Negligible
Baston Road	49.8dB	Negligible
Biggs Lane	41.1dB	Negligible
Princess Marina Drive	57.3dB	Negligible
Landscaping Works		
Langley Common Road	47.5dB	Negligible
Baston Road	41.4dB	Negligible
Biggs Lane	32.7dB	Negligible
Princess Marina Drive	48.9dB	Negligible

10.5.3 Against the Medium sensitivity residential receptors, all construction noise effects are <60 dB and therefore considered of **negligible** impact. This results in a **negligible** effect, which is **not significant** in EIA terms.

Operational Phase

10.5.4 3D Noise Modelling has been undertaken and is presented at Figures 10.6 to 10.8 and informs the assessment of operational effects below.

10.5.5 The below table gives the predicted road traffic noise increase due to the development and committed developments:

Table 10.11 Predicted increase in road traffic noise

Receiver	Predicted Increase $L_{Aeq,T}$	Magnitude
Langley Common Road	0.1dB	Negligible
Baston Road	1.2dB	Low
Biggs Lane	0.4dB	Negligible
Princess Marina Drive	1.0dB	Low

10.5.6 On the medium sensitivity residential receptors at Baston Road and Princess Marina Drive, the magnitude of impact is low. This results in a **minor adverse** effect which is not **significant** in EIA terms.

10.5.7 On the medium sensitivity residential receptors on Langley Common Road and Biggs Lane, the magnitude of impact is negligible. This results in a **negligible effect** which is **not significant** in EIA terms.

10.6 Additional Mitigation

Construction Phase

10.6.1 Based on the predicted sound pressure levels from the construction phase of the development, additional mitigation is not expected to be required.

Operational Phase

10.6.2 Based on the predicted sound pressure levels from the operational phase of the development, additional mitigation is not expected to be required.

10.6.3 Noise.co.uk report 23255-1, dated 1st October 2025 (Appendix 10.1) provides mitigation measures for the Proposed Development to allow internal and external noise criteria to be achieved.

10.7 Residual effects

Construction Phase

10.7.1 The magnitude of impacts on existing sensitive receivers due to construction noise is predicted to be 'Negligible'. Due to the sensitivity of the receivers being categorised as 'Medium', this results in an overall residual effect of 'Negligible'.

Operational Phase

10.7.2 The magnitude of impacts on the worst case existing sensitive receivers due to operational noise is predicted to be 'Low' which is not considered to be a significant effect.. Due to the sensitivity of the receivers being categorised as 'Medium', this results in an overall residual effect of 'Minor'. Due to the small increase in objective sound pressure level and that the predictions include a worst case scenario which also includes traffic increases from Barkham Square, this is not considered to be a significant effect.

10.8 Implications of Climate Change

10.8.1 In regard to climate change, with rising temperatures there may be a desire for future NSRs to open windows for additional ventilation, due to potential overheating risk. This may lead to increased exposure to high noise levels. It is however acknowledged in line with Overheating: Approved Document O, the implications for noise are to be considered for all future developments at Building Regulation stage.

- 10.8.2 The Proposed Development will be adequately designed to prevent an overheating risk, which in turn will reduce the likelihood of NSRs exposing themselves to higher noise levels. It can therefore be considered that climate change will have minimal influence when considering both noise and vibration.

10.9 Cumulative effects

Barkham Square

- 10.9.1 Traffic increases from the Barkham Square development have been included in the operational assessment with regards to an increase in road traffic noise. The potential cumulative effects of the Proposed Development and Barkham Square have therefore been assessed.
- 10.9.2 It is possible that elements of the construction of both the Proposed Development and Barkham square will occur concurrently. However, given the intervening distances between the developments and that both sites will employ best practicable means, the cumulative effect of noise is considered likely to be **not significant**.

Wider Committed Development

- 10.9.3 The traffic flows used for the assessment of operational noise include an overall increase in traffic flows based on the local plan growth and distribution and therefore these increases in road traffic noise are considered to have been assessed and the resulting effects are not considered to be significant.
- 10.9.4 It is not expected that other construction operations on wider committed developments will have a significant effect on the predicted impacts, given the intervening distance and that construction sites are expected to employ best practicable means. It is therefore, considered that the cumulative effect, including wider committed development, will be **not significant**.

10.10 Summary

- 10.10.1 An assessment has been carried out to predict the potential noise and vibration impacts of the construction and operational phases of the development.
- 10.10.2 The predicted construction impacts are considered to be negligible and therefore not significant and no additional mitigation measures are likely to be required.
- 10.10.3 The predicted operational impacts are considered to be minor at worst, this is not considered to be significant and additional mitigation is not required.

10.11 References

Legislative Framework

- Control of Pollution Act (1974);
- Environmental Protection Act (1990);

Policy

- Department for Environment, Food & Rural Affairs (DEFRA), 2010. Noise Policy Statement for England (NPSE).
- Ministry of Housing, Communities & Local Government (MHCLG), 2026. National Planning Policy Framework (NPPF).

Guidance

- Ministry of Housing, Communities & Local Government (MHCLG), 2017. Professional Practice Guidance: Planning & Noise
- BS 7445-2: 1991 'Description and Measurement of Environmental Noise - Part 2: Guide to the acquisition of data pertinent to land use'
- Association of Noise Consultants (ANC), Institute of Acoustics (IOA), & Chartered Institute of Environmental Health (CIEH). (2017). ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise. New Residential Development
- BS 8233: 2014 'Sound Insulation and Noise Reduction for Buildings - Code of Practice'
- BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'
- BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'
- BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'
- BS 6472:2008 'Guide to Evaluation of Human Exposure to Vibration in Buildings Part 1: Vibration Sources other than Blasting'
- BS 7385-1: 1990 & BS7385-2:1993 'Evaluation and Measurement for Vibration in Buildings'
- Design Manual for Road and Bridges (2011) – Design Manual for Road and Bridges Volume 11 Section 3 Part 7 Traffic Noise and Vibration
- DMRB LA11, 2020. Assessment of traffic noise impacts
- Department of Transport & Welsh Office (1988) London: HMSO 'Calculation of Road Traffic Noise (CRTN)'
- Department of Transport (1995) London: HMSO 'Calculation of Railway Noise (CRN)'
- WHO Regional Office for Europe (2018) 'Environmental Noise Guidelines for the European Region' World Health Organization, Regional Office for Europe

10.12 Assessor information

Table 10.12 Assessor Information

Chapter	Responsibility	Name	Qualifications	Assessor information
Noise and Vibration	Noise.co.uk	Jonathan Seiffert	Bsc, MIOA	10 years of experience in acoustics consultancy including environmental and building acoustics. Holds the Diploma in Acoustics and Noise Control from the IoA and full corporate membership of the IoA.

Table 10.13 Summary of effects

Receptor	Receptor sensitivity	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
Construction Phase					
Langley Common Road	Medium	Construction noise	Construction management plan and best practicable means	Negligible	Not significant
Baston Road	Medium	Construction noise	Construction management plan and best practicable means	Negligible	Not significant
Biggs Lane	Medium	Construction noise	Construction management plan and best practicable means	Negligible	Not significant
Princess Marina Drive	Medium	Construction noise	Construction management plan and best practicable means	Negligible	Not significant
Langley Common Road	Medium	Construction Vibration	Construction management plan and best practicable means	Negligible	Not significant
Baston Road	Medium	Construction Vibration	Construction management plan and best practicable means	Negligible	Not significant
Biggs Lane	Medium	Construction Vibration	Construction management plan and best practicable means	Negligible	Not significant
Princess Marina Drive	Medium	Construction Vibration	Construction management plan and best practicable means	Negligible	Not significant
Operation Phase					
Langley Common Road	Medium	Increase in road traffic noise	Not predicted to be required	Negligible	Not significant
Baston Road	Medium	Increase in road traffic noise	Not predicted to be required	Minor	Not significant
Biggs Lane	Medium	Increase in road traffic noise	Not predicted to be required	Negligible	Not significant
Princess Marina Drive	Medium	Increase in road traffic noise	Not predicted to be required	Minor	Not significant
Langley Common Road	Medium	Increase in road traffic vibration	Not predicted to be required	Negligible	Not significant
Baston Road	Medium	Increase in road traffic vibration	Not predicted to be required	Negligible	Not significant
Biggs Lane	Medium	Increase in road traffic vibration	Not predicted to be required	Negligible	Not significant
Princess Marina Drive	Medium	Increase in road traffic vibration	Not predicted to be required	Negligible	Not significant

Table 10.14 Summary for Securing Mitigation

Identified receptor	Type and purpose of additional mitigation measure (prevent, reduce, offset, enhance)	Means by which mitigation may be secured (e.g. planning condition / legal agreement)	Delivered by	Auditable by
Construction Phase				
Demolition / construction workers as well as existing and new residents	CEMP	Planning Condition	Contractor / Applicant	LPA
Operation Phase				
	N/A			