

6.0 Noise

6.1 Introduction

This chapter of the ES reports on the likely significant noise related effects to arise as a result of the proposed development. It has been produced by Suono Consultancy Ltd (Suono).

The chapter is supported by the following technical appendices in ES Volume 3:

Appendices	Title
Appendix 6.1	Planning Policy and Guidance
Appendix 6.2	Baseline Noise Survey
Appendix 6.3	Site Suitability Noise Assessment
Appendix 6.4	Construction Noise and Vibration
Appendix 6.5	Road Traffic Noise Assessment Results

6.2 Scoping, Consultation and Overview of Potential Effects

No scoping or consultation was carried out in the preparation of this ES Chapter.

The potential adverse and/or beneficial effects associated with following noise related elements are considered within this chapter:

- Construction noise and vibration impacts on existing and proposed receptors (dwellings).
- Noise impacts on existing receptors (dwellings) relating to changes in traffic flows on the local road network arising as a result of the proposed development (changes in flows on the local road network).
- Noise during occupation (i.e. control of noise to proposed dwellings/site suitability).

6.3 Assessment Methodology

6.3.1 Overview

The methodology set out in *Chapter 2* of this ES has been used to determine the potential significance of noise effects relating to and affecting the proposed development. All receptors (taken to be both proposed and existing dwellings) are deemed to have a *High* sensitivity.

The effect classification matrix from *Chapter 2* is replicated below for ease of interpretation of this chapter, when taking into account the stated receptor sensitivity above, and relevant magnitude of impact set out in the subsequent sections.

Table 6.1 - Effect Classification Matrix					
		Nature of Receptor (Sensitivity / Value / Importance)			
		High	Medium	Low	Negligible
Nature of Impact (Magnitude / Probability / Reversibility etc)	High	Substantial	Substantial	Moderate	Negligible
	Medium	Substantial	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

The relevant legislation, planning policy and guidance that has informed this chapter is set out in *Appendix 6.1*.

6.3.2 Construction Noise and Vibration

Construction noise and vibration is inherently temporary in nature and so any adverse impacts will be short term, temporary and direct only.

The variable location, operating duration, and types of construction noise and vibration sources associated with the development of new large residential sites can typically be expected to vary significantly over the course of any given construction programme. Therefore, detailed construction noise and vibration assessments for sites such as this typically rely on many assumptions to form their basis. This in turn can lead to high levels of assessment uncertainty which is clearly not desirable if specific noise thresholds are adopted as a basis for determining suitability of a given construction related activity, prior to the event.

With the above in mind therefore, construction noise and vibration related impacts and related effects shall be controlled through the adoption of best practicable means construction methods as far as is reasonably practicable. This guidance shall be incorporated into the Construction Environment Management Plan (CEMP) for the scheme.

Taking into account the inherently temporary nature of construction works, this approach ensures that the construction programme is not unduly restricted/prolonged by the application of potential overly onerous noise control measures, while still ensuring the best practicable noise and vibration practices are implemented.

Safeguards are also set out for consideration in the event that noise or vibration is found to cause disturbance to existing receptors. The process sets out a means to investigate noise from the problem construction activity, thresholds for determining acceptability, and a process that can be followed to reduce noise impacts is necessary, without overly restricting construction activity.

By operating in accordance with the noise and vibration control guidance set out within the CEMP, construction noise and vibration related impacts can be expected to be negligible, taking into account the detail set out therein.

6.3.3 Changes in Flows on the Local Road Network

When assessing potential noise impacts due to the changes in road traffic flows as a result of a development, it is appropriate to refer to the Design Manual for Roads and Bridges document LA 111¹. The document sets out noise assessment procedures to be followed when undertaking highway works such as building new roads. Whilst it is acknowledged that the proposed development does not include any such road project, the document provides a reliable, quantitative assessment basis for assessing the potential noise effects of changes in traffic flows on the road networks as a result of a development.

LA 111 sets out thresholds at which potential impacts may start to become apparent, based on changes in 18-hour daytime noise levels (06:00 – 00:00) within the short and long term.

The short term assessment according to LA 111 is considered to be a comparison of the year of opening with and without the introduction of development. The long term assessment, again according to LA 111, is considered to be a comparison between the year of opening and the year in which the greatest traffic flows will occur within 15 years of opening. In addition, it is appropriate to consider comparisons between future scenarios, with and without the proposed development, as a long term assessment.

In addition to assessing the impact of traffic flow changes due to the proposed development, other committed developments have also been included within the comparisons as appropriate, as these permitted schemes can be expected to be commenced with and would then form part of both short and long term assessment scenarios. A description of the relevant committed developments can be found in *Chapter 5* of this ES.

Calculations are carried out using basic noise levels for the various scenarios, using the methodology set out in CRTN²

The assessment is undertaken in terms of changes in the basic noise level defined at 10 m from the nearside edge of the carriageway in CRTN. The calculated basic noise level does not relate directly to noise exposure at individual residences, rather it is a reference noise level, comparison of which in various scenarios provide a good indication of the noise level changes that are expected to occur along an existing road link, where the road itself is the dominant road traffic noise source.

The basic noise level for each road in the relevant study area (as defined in the Transport Assessment submitted as part of the Outline Planning Application) is calculated for the baseline year, with and without development and in the future year both with and without development.

The proposed development traffic flows used for the purposes of this assessment account for the full wider allocation yield of circa 2,100 dwellings. This approach is deemed to represent a reasonable worst case in terms of the potential traffic growth on the local road network that is directly linked to the proposed development.

In summary, the following scenarios have been considered:

¹ Highways England (2020) **Design Manual for Roads and Bridges LA 111 Noise and Vibration**, Highways England, May.

² Department of Transport Welsh Office (1988) **Calculation of Road Traffic Noise**, HMSO.

Table 6.2 – Noise assessment traffic data scenarios	
Label	Description
DN29	Do nothing, year of opening – baseline only
DM29	Do minimum, year of opening – baseline plus committed developments only
DS29	Do something, year of opening – baseline plus proposed development only
DS29+	Do something plus, year of opening – baseline plus committed developments plus proposed development
DN44	Do nothing, future year – baseline only
DM44	Do minimum, future year – baseline plus committed developments only
DS44	Do something, future year – baseline plus proposed development only
DS44+	Do something plus, future year – baseline plus committed developments plus proposed development

Although 2029 has been adopted as the year of opening assuming the whole development would be complete at this time, in reality 2029 is the date of first opening, whereby only a proportion of the development would be expected to be ready for inhabitation. Assuming the whole development could be inhabited by 2029 is pessimistic worst case to avoid assumptions with respect to construction phasing/rates of inhabitation etc.

The future year of 2044 has been provided by the transport consultant as the worst-case year within 15 years of year of opening in terms of traffic growth. This is in line with the relevant guidance set out within LA111, as previously described.

The following comparisons of basic noise levels derived for the above scenarios have then been conducted:

Table 6.3 – Noise assessment traffic scenario comparisons		
Ref No.	Description	Temporal scope
1	DN29 vs DS29	Short term impacts
2	DN44 vs DS44	Long term impacts
3	DN29 vs DS44	Long term impacts

To consider committed developments, the following comparisons of basic noise levels derived for the above scenarios have then been conducted:

Table 6.4 – Committed development noise assessment traffic scenario comparisons		
Ref No.	Description	Temporal scope
4	DM29 vs DS29+	Short term impacts
5	DM44 vs DS44+	Long term impacts
6	DM29 vs DS44+	Long term impacts

When considering changes in flows on the local road network, the resulting change in basic noise level is taken to correspond to a magnitude of impact. The following table, drawing from guidance set out within LA 111 and making use of the descriptors set out in *Chapter 2* of this ES has been used to determine the magnitude of impact of changes in local road traffic noise on existing receptors in both the short term (year of opening) and long term (15 years after opening).

Table 6.5 - Magnitude of Noise Impact for Changes in Road Traffic Flows		
Impact Magnitude	Change in noise level, dB $L_{A10,18\text{hour}}$	
	Short Term	Long Tern
High	≥ 5	≥ 10
Low to Medium	3 to < 5	5 to < 10
Negligible	0 to < 3	0 to < 5

6.3.4 Control of Noise to Proposed Dwellings / Site Suitability

Full details of the assessment methodology adopted for considering noise from road traffic to the proposed receptors across the proposed development can be found in *Appendix 6.3*. Key considerations are set out below.

Noise survey works have been undertaken at the proposed development to quantify the baseline noise conditions and a noise modelling exercise has been undertaken. With the noise climate across the proposed development quantified, a review against appropriate assessment criteria has been undertaken.

The assessment criteria summarised within the following table have been drawn from BS 8233:2014³ and the ProPG⁴.

Table 6.6 - Internal and external noise criteria for proposed dwellings	
Location	Noise Criteria
Bedrooms and Living Rooms (daytime)	≤ 35 dB $L_{Aeq,16\text{hour}}$
Bedrooms (night-time)	≤ 30 dB $L_{Aeq,8\text{hour}}$ ≤ 45 dB $L_{Amax,F}$ (Not normally exceeded more than 10 times per night)
External amenity areas (or parts thereof)	Aspirational threshold of ≤ 55 dB $L_{Aeq,16\text{hour}}$ where practicable

Good acoustic design principles are to be adopted at initial design stage to achieve sound standards as far as is reasonably practicable and that the control of building overheating should be duly considered.

Where external noise levels exceed 50 dB $L_{Aeq,8\text{hour}}$ and / or 65 dB $L_{Amax,F}$ during the night-time period, it will be necessary to provide a building control strategy that does not rely solely on partially open windows (considering the requirements of the Building Regulations Approved Document O: Overheating⁵ (ADO) and guidance within the ADO Noise Guide⁶). Building envelopes shall be designed to allow the control of both noise and thermal comfort.

³ BSI Standards Publication (2014) **Guidance on sound insulation and noise reduction for buildings**, BSI Standards Limited, February.

⁴ Acoustics & Noise Consultants, Institute of Acoustics, Chartered Institute of Environmental Health (2017) **Professional Practice Guidance on Planning & Noise**, Ingenious Design, May.

⁵ The Building Regulations (2022) **Approved Document O: Overheating**, HM Government, June.

Not exceeding the above criteria (or in the case of external amenity spaces, not exceeding the relevant criterion as far as is reasonably practicable) ensures that the magnitude of noise impacts on proposed receptors shall be limited to no more than a negligible magnitude.

6.4 Baseline Conditions

6.4.1 Baseline Traffic Flow Information

Baseline traffic flow data for the local road network study area has been provided by Stantec (the Transport Consultant) and described in *Chapter 5* of this ES. The data also includes committed developments as appropriate.

6.4.2 Baseline Noise Climate

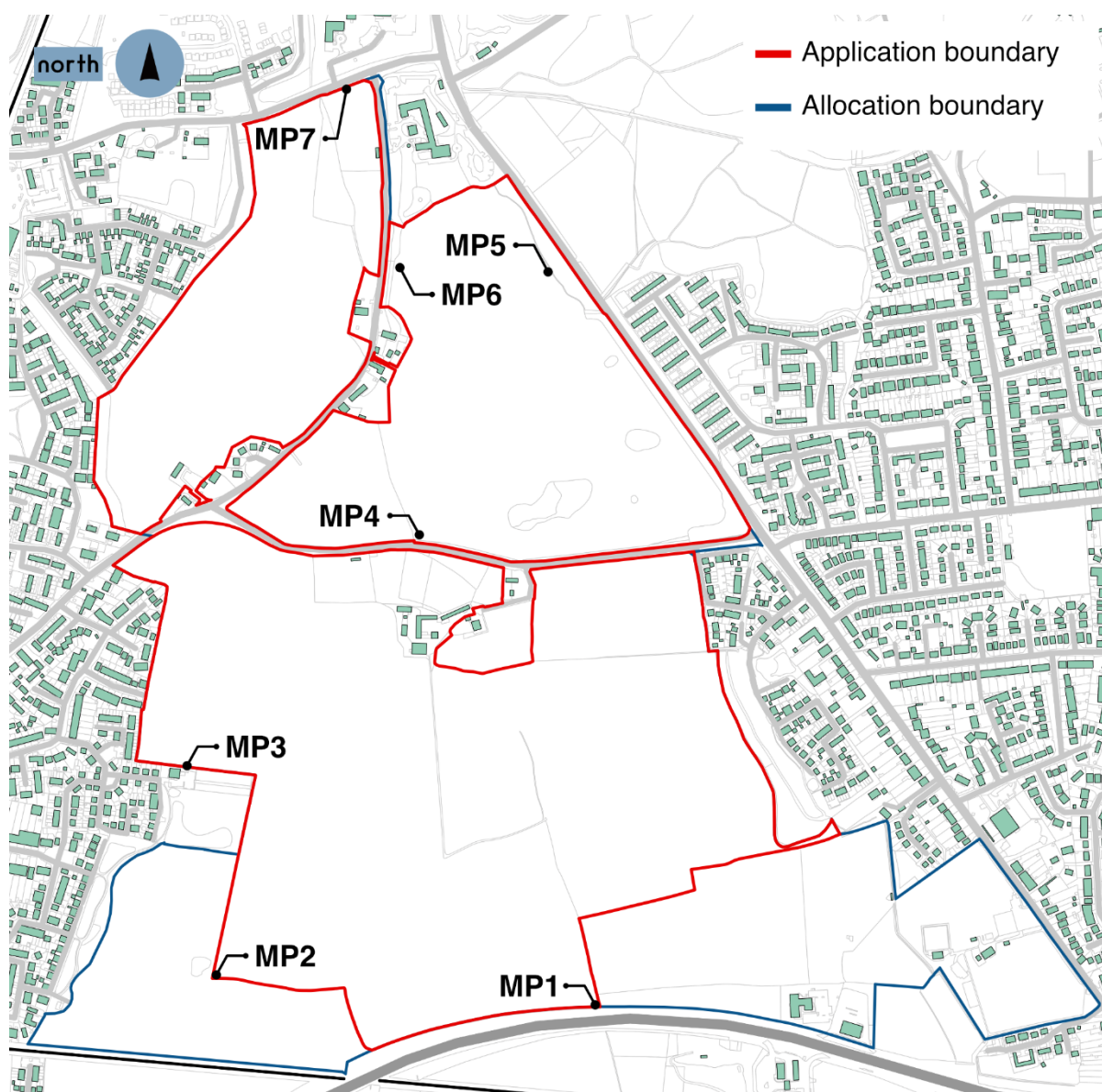
Baseline noise levels were quantified across the site in April and July 2024. Further details of the noise survey are provided within *Appendix 6.2*, with the relevant information reproduced below for ease of reference.

Seven unattended noise survey positions were utilised, with a number of attended measurements also made in spot position across the site to aid in the quantification of noise propagation (set out in *Appendix 6.2*). The unattended measurement positions can be described as follows and can be seen in the following *Figure 6.1*:

- MP1 - Microphone at 1.5 m above local ground level, on the southern boundary of the site, close to the A27 approximately 13 m from the nearest carriageway edge.
- MP2 - Microphone at 1.5 m above local ground level, in the southwest corner of the site controlled by the applicant, approximately 146 m from the nearest railway line and 250 m from the nearest kerb edge of the A27.
- MP3 - Microphone at 1.5 m above local ground level, to the west of the site on the boundary between the site and the Stride Community Centre on Daffodil Way.
- MP4 - Microphone at 1.5 m above local ground level, in the middle of the site, approximately 12 m from the nearest kerb edge of Southleigh Road.
- MP5 - Microphone at 1.5 m above local ground level, on the northwestern boundary of the site, approximately 36 m from the nearest kerb edge of Horndean Road at national speed limit (60 mph).
- MP6 - Microphone at 1.5 m above local ground level, towards the north of the site, approximately 22 m from the nearest kerb edge of Eastleigh Road.
- MP7 - Microphone at 1.5 m above local ground level, on the northern boundary of the site, approximately 10 m from the nearest kerb edge of Bartons Road.

⁶ Acoustics & Noise Consultants, Institute of Acoustics (2024) **Approved Document O Noise Guide**, Acoustics & Noise Consultants, Institute of Acoustics, November.

Figure 6.1 - Baseline Noise Survey Positions



A summary of the measured baseline noise levels at the positions described above is presented in the following table.

Table 6.7 - Baseline Noise Survey Results			
Measurement Position	Daytime (07:00 – 23:00)	Night-Time (23:00 – 07:00)	
	dB $L_{Aeq,16hour}$	dB $L_{Aeq,8hour}$	dB $L_{Amax,F}$
MP1: A27	67	63	78
MP2: A27 / Railway line	54	50	58
MP3: Stride Community Centre	51	49	55
MP4: Southleigh Road	59	50	70
MP5: Horndean Road	54	50	65
MP6: Eastleigh Road	52	47	61
MP7: Bartons Road	57	51	65

Noise contour plots representative of the day and night-time noise conditions across the site have been prepared, based on the measured levels above to allow for the noise climate across the site to be visualised. These are set out below for ease of reference in the figures below and can be also seen in *Appendix 6.3*.

Figure 6.2 - Daytime noise contour plot in terms of dB $L_{Aeq,16hour}$ at 1.5 m above local ground level

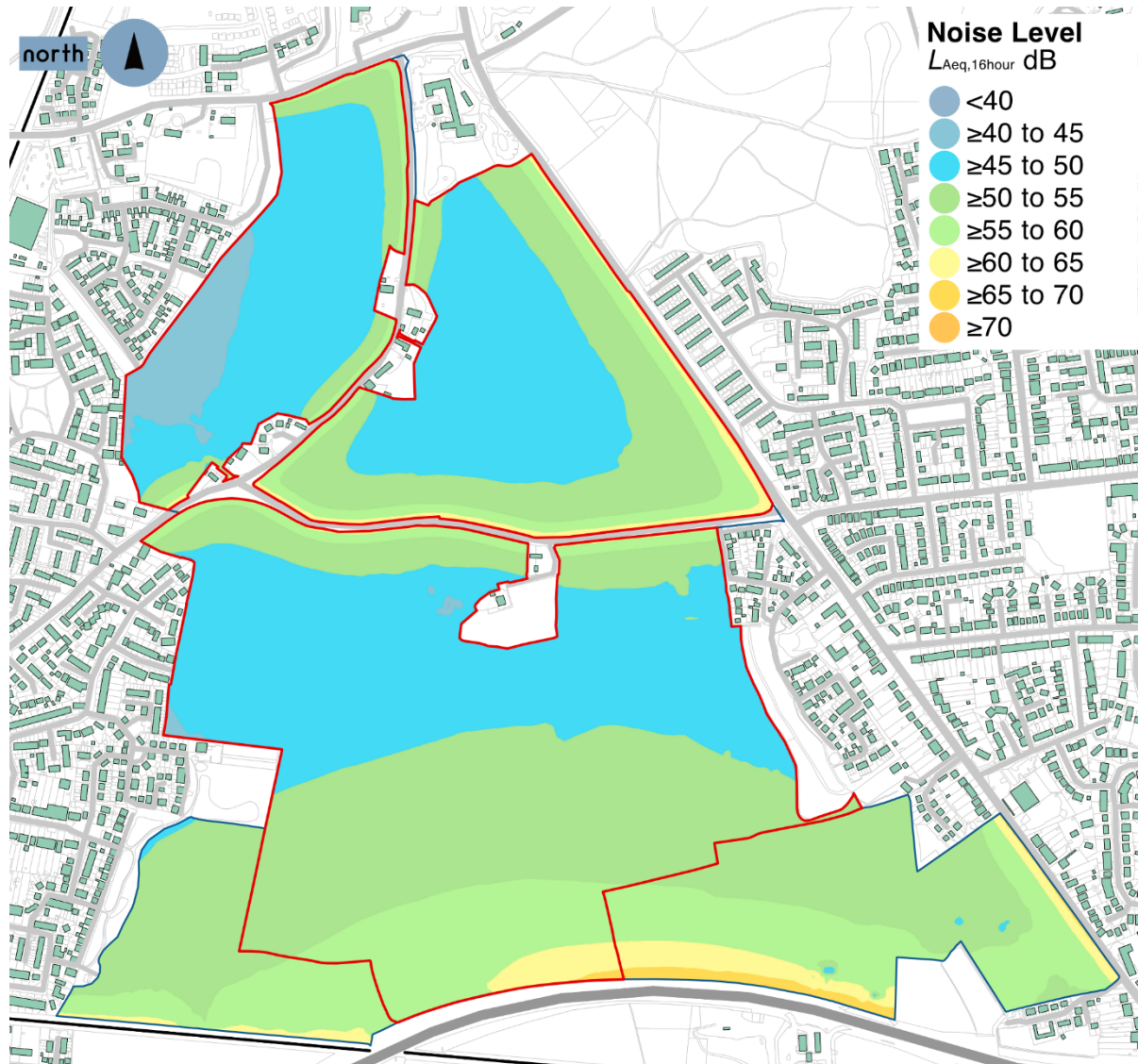
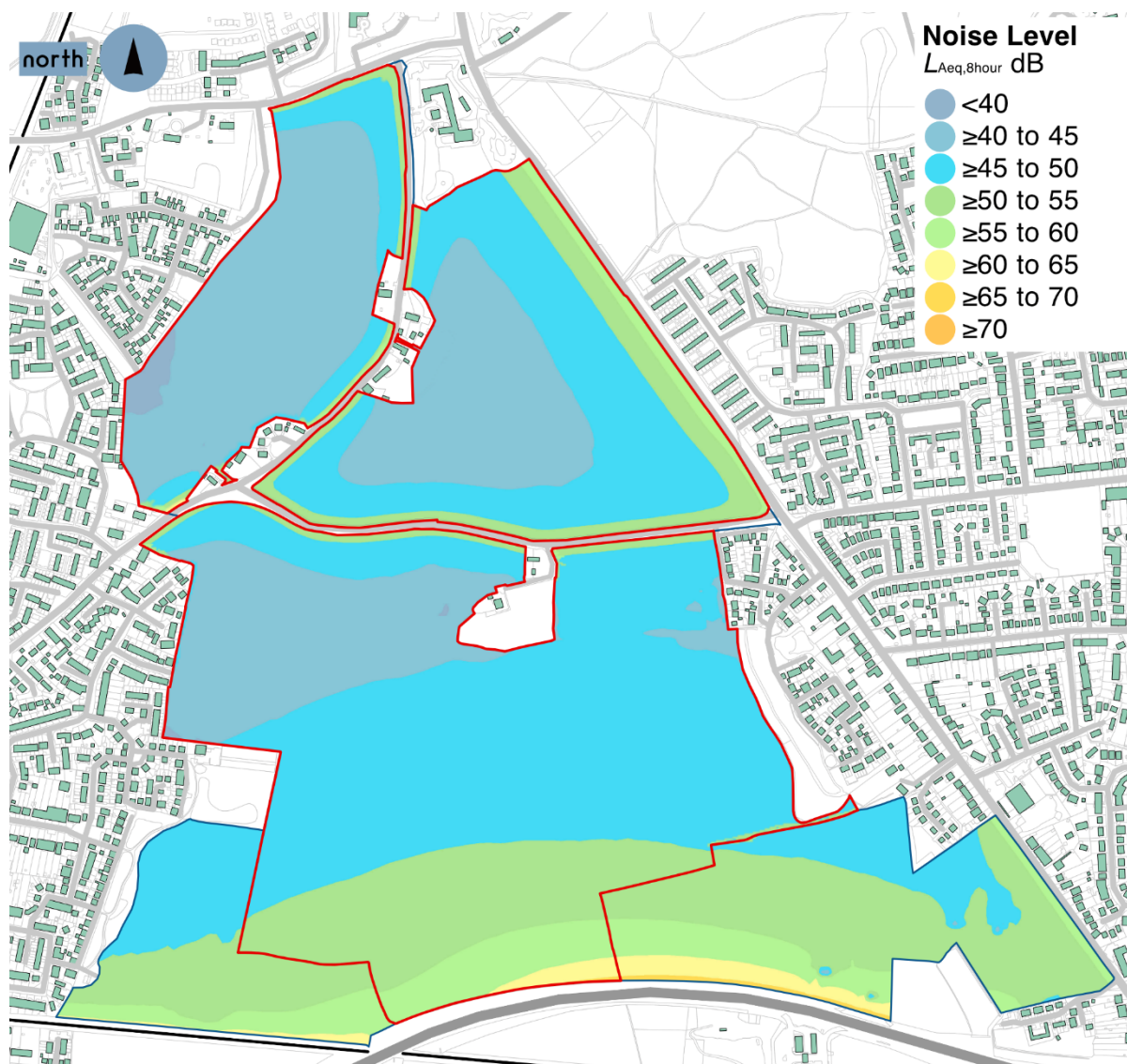


Figure 6.3 – Night-time noise contour plot in terms of dB $L_{Aeq,8hour}$ at 4.5 m above local ground level



6.4.3 Future Baseline

Future baseline traffic flow data for the local road network study area has been provided by the Transport Consultant. This has been considered as set out in Section 6.3.3.

6.5 Embedded and Standard Mitigation Measures

6.5.1 Embedded Mitigation Measures

Control of Noise to Proposed Dwellings / Site Suitability

The proposed development includes buffer zones adjacent to both the A27 and Horndean Road where no residential development is proposed. These buffer zones serve as an inherent noise mitigation measure, to reduce noise levels incident on the façades of the proposed dwellings, and to their associated external amenity spaces.

6.5.2 Standard Mitigation Measures

Construction Noise and Vibration

Construction noise and vibration effects will be mitigated as far as is reasonably practicable through the adoption of a construction noise management plan, set out within the scheme's construction and environmental management Plan (CEMP). Text for inclusion within the CEMP is set out within *Appendix 6.4*.

Control of Noise to Proposed Dwellings / Site Suitability

The Parameter Plans included as part of the outline application will inform a detailed layout for the site (to follow at the reserved matters stage). Therefore, detailed consideration of specific noise mitigation measures that will be incorporated to protect the proposed dwellings from noise is not possible at this time. Instead, the principles of noise control/mitigation have been considered and will be integrated into the proposed development as appropriate.

Fundamental to the control of noise across the site is the principle of “good acoustic design” This is described within the ProPG as follows:

“A good acoustic design process takes a multi-faceted and integrated approach to achieve optimal acoustic conditions, both internally (inside noise-sensitive parts of the building(s)) and externally (in spaces to be used for amenity purposes).

Good acoustic design should avoid “unreasonable” acoustic conditions and prevent “unacceptable” acoustic conditions... (these terms are defined in Element 2 [of the ProPG]). Good acoustic design does not mean overdesign or gold plating of all new development but seeking to deliver the optimum acoustic outcome for a particular site.

Good acoustic design is not just compliance with recommended internal and external noise exposure standards. Good acoustic design should provide an integrated solution whereby the optimum acoustic outcome is achieved, without design compromises that will adversely affect living conditions and the quality of life of the inhabitants or other sustainable design objectives and requirements.”

Considering the above, at detailed design stage, the selection of dwelling types, their positioning across the site and their orientation will be carefully considered to reduce noise levels to proposed receptors as far as is reasonably practicable. The aim shall be to orientate/arrange proposed dwellings closest to existing road links such that they provide acoustic screening for other dwellings and external amenity space.

The use of large-scale acoustic barriers adjacent to the A27 (nor other road links around the site) is not deemed to be practicable due the embankment on which the A27 passes the site and visual constraints.

Once the layout has been developed to reduce external noise to proposed receptors as far as is practicable, localised noise mitigation measures shall be taken into account. These will include (but shall not necessarily be limited to):

- Localised boundary treatments to external amenity areas (such as walls and suitably specified fences).

- Glazing and building ventilation strategies to control noise intrusion, including consideration of the ventilation in the context of the control of building overheating.
- Other building fabric considerations, such as façade and roof buildups to control noise intrusion as appropriate.

Mitigation measures shall be specified such that both internal and external noise levels can meet the relevant noise criteria across the development. Further information on the consideration and specification of mitigation measures can be found in *Appendix 6.3*.

6.6 Assessment of Environmental Impacts

6.6.1 Construction Phase

The construction phase of the development shall be undertaken in accordance with the proposed CEMP. Construction noise and vibration related impacts can therefore be expected to be negligible.

Taking into account the sensitivity of the affected receptors, construction noise and vibration related effects are assessed as being **negligible** short term, temporary and direct only.

Table 6.8 - Summary of Impact Assessment – Construction Phase						
Receptor	Sensitivity/ Importance/ Value	Description of Impact	Embedded & Standard Mitigation Measures	Magnitude of Effect	Type of Effect	Significance of Effect
Existing residential dwellings	High	Construction noise and vibration	Implementation of a CEMP inclusive of a construction noise and vibration management plan.	Negligible	Temporary, Short-term and Direct	Negligible

6.6.2 Occupation Phase

Changes in Flows on the Local Road Network

As shown in *Appendix 6.5*, changes in traffic flows on the local road network, due to the proposed development, have been calculated to give rise to no more than a negligible magnitude of impact on existing residential receptors.

As the affected receptors are of high sensitivity, based on the matrix in *Table 6.1*, the changes in traffic flows on the local road network are assessed to give rise to no more than **negligible**, permanent and direct noise related effects, in both the short and long term.

Control of Noise to Proposed Dwellings / Site Suitability

Through implementation of good acoustic design practices and the related standard noise mitigation measures, noise can be controlled to the proposed dwellings such that there would be no more than a negligible magnitude of impact on proposed residential receptors.

As the affected receptors are of high sensitivity, based on the matrix in *Table 6.1*, the resulting noise effects are assessed to be **negligible**, permanent, direct and long term.

Table 6.9 - Summary of Impact Assessment – Occupation Phase						
Receptor	Sensitivity/Importance/Value	Description of Impact	Embedded & Standard Mitigation Measures	Nature of Effect	Type of Effect	Significance of Effect
Existing residential dwellings	High	Noise impacts relating to changes in traffic flows on the local road network due to the proposed development.	None required	Negligible	Permanent, Short and Long-term and Direct.	Negligible
Proposed residential dwellings	High	Control of noise for existing sources to the proposed dwellings	Good acoustic design practices implemented where practicable, acoustic buffer zones, layout optimisation, suitably specified glazing, ventilation and garden screening.	Negligible	Permanent, Long-term and Direct.	Negligible

6.7 Additional Mitigation Measures

No additional mitigation measures are proposed.

6.8 Residual Impact Assessment

Additional mitigation measures are not proposed nor required, therefore residual effects will be as set out in *Section 6.6*.

6.9 Cumulative Impact Assessment

6.9.1 *Changes in Flows on the Local Road Network*

The cumulative impacts associated with committed developments also influencing changes in traffic flows on the local road network, in combination with the proposed development, have been calculated to give rise to no more than a negligible magnitude of impact.

Cumulative effects linked to development beyond the application boundary but falling within the wider allocation boundary, have been included within the assessed traffic flows and have therefore already been considered.

Considering the sensitivity of the affected receptors, cumulative impacts relating to changes in traffic flows on the local road network are assessed to give rise to no more than **negligible**, permanent and direct noise related effects, in both the short and long term.

6.10 Summary

This chapter sets out an assessment of noise and vibration related effects due to the proposed development.

6.10.1 *Main Receptors*

Existing and proposed residents in dwellings, all deemed to be of high sensitivity.

6.10.2 *Mitigation and Effects*

Construction noise and vibration: Controlled through implementation of a suitable CEMP with noise and vibration management plan. Effect significance assessed as **negligible** that is temporary, short term and direct.

Changes in noise emissions due to changes in traffic flows on the local road network: Changes in flows not significant and no mitigation measures required. Effect significance assessed as **negligible**, permanent, both short and long term and direct. The same significance of effect has been determined when considering committed developments/cumulative impacts.

Noise during occupation: Controlled through implementation of good acoustic design practices where practicable, acoustic buffer zones, layout optimisation, suitably specified glazing, ventilation and garden screening (for example). Detailed specification of mitigation measures can be undertaken at the reserved matters stage once a layout is suitably developed. Effect significance assessed as **negligible**, permanent, long term and direct.