

Langstone Phase 2

Technical Note: Noise Conditions

20th March 2024

Introduction

This Technical Note considers the proposed plant equipment intended to serve Phase 2 at Langstone Park having regard to the provisions within Conditions 9, 18, 44 and 45 attached to the outline planning permission (Ref: APP/22/00172). These conditions refer to noise from plant, machinery and equipment (Condition 44); require details of acoustic performance (Condition 45); and require consideration of maximum noise levels from percussive piling or works with heavy machinery (Condition 9).

Noise Conditions

The conditions that are considered in this Technical Note are 9, 18, 44 and 45 and are reproduced below:

- 9 Percussive piling or works with heavy machinery (i.e. plant resulting in a noise level in excess of 69dbAmax – measured at the sensitive receptor) shall be avoided during the bird overwintering period (i.e. October to March inclusive) unless otherwise agreed in writing by the Local Planning Authority in consultation with Natural England. The sensitive receptor is the nearest point of the SPA or any SPA supporting habitat (e.g. high tide roosting site).

Reason: To avoid impacts on the SPA, SPA supporting habitat and Protected Species having due regard to policies CS11 and DM10 of the Havant Borough Local Plan, the Habitat Regulations and the National Planning Policy Framework.

- 18 The Reserved Matters applications in relation to any phase of development shall seek to ensure that the design of any units set close to nearby residential properties incorporate layout and designs that minimise potential impacts to residential amenities for example, in relation to loading bay positions, external equipment, openings, windows and lighting.

Reason: To ensure that impacts on residential amenity are minimised in accordance with policies CS16 and DM10 of Havant Borough Local Plan (Core Strategy) 2011 and the National Planning Policy Framework.

- 44 The external sound level emitted from plant, machinery or equipment in any phase of the development shall be equal or lower than the representative background sound level, with noise levels assessed (if necessary) in accordance with BS 4142:2014+A1:2019 at the nearest and/or most affected noise sensitive premises.

Reason: In the interests of the amenities of nearby residents having due regard to policy DM10 of the Havant Borough Local Plan (Core Strategy) 2011 and the National Planning Policy Framework.

- 45 No externally visible or audible plant, machinery or structures required for ventilation or filtration purposes shall be installed in each phase of the development until and unless details of the external appearance and acoustic and odour prevention performance of the same have been submitted to and approved in writing by the Local Planning Authority for that phase.

Any plant, machinery or structures required for ventilation or filtration purposes shall be provided and maintained in accordance with the approved details.

Reason: To protect the residential amenities of nearby residents having due regard to policy DM10 of the Havant Borough Local Plan (Core Strategy) 2011 and the National Planning Policy Framework.

Plant at Langstone Phase 2

The external plant and locations of the plant are shown on the annotated Masterplan in Figure 1.

1. The Masterplan shows three plant locations and the equipment consists of:

- Daikon VRF Condenser – Model REYA8A+REYA12A (Position 1 and 3)
- Daikon VRF Condenser – Model REYA8A+REYA12A (Position 2)

The detailed specifications and for the condenser units listed above, which include pictures showing the external appearance are attached in the Daikin Document entitled 'VRV 5 heat recovery, Air Conditioning Technical Data, REYA-A'.

Daikon VRF Condenser



Daikin have provided manufacturers sound power data for the two selected types of condenser units and these are shown in Figure 2.

The nearest residential receptors are located to the east of the site and the noise prediction locations (NPL1 & NLP2) are shown in Figure 3.

Plant Noise Assessment

A BS4142:2014+2019 noise assessment has been undertaken for the proposed plant at the nearest residential properties.

A recent noise survey was undertaken by Spectrum on 11th and 12th November 2021 and details are provided in the report entitled 'Langstone Park, Havant – Masterplan Noise Assessment'. The baseline noise measurements shown in this report have been used to enable the BS4142 assessment.

The Spectrum noise measurements at monitoring location LTM2 are considered to provide representative noise levels at the nearest residential receptors, as shown on Figure 3. The report includes an analysis of the day and night background noise levels and these are summarised in Table 1.

Table 1: Summary of Background Noise Analysis at LTM2

Period	Background Noise Levels, $L_{A90,T}$ dB			
	Range	Mean	Median	Mode
Day	38-59	47	49	50
Night	36-50	40	38	37&38

In relation to the 'background sound level' BS4142 states that '*it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest background sound level, but rather to quantify what is typical during particular time periods.*'

On this basis the median L_{A90} values are considered to provide representative background noise levels for the BS4142 assessment and these values are similar to both the Mode and Mean values.

The noise levels from the three plant areas shown on Figure 1 have been predicted at the nearest receptor locations. The predictions at Position 3 take the noise barrier effect of the building structure into account whereas the predictions at Positions 1 and 2 assume a direct line of sight from the plant to the receptors. The predicted plant noise levels at the nearest residential properties, assuming a worst case scenario where all items of plant are operating simultaneously are as follows:

- NPL1 – $L_{Aeq,T}$ 37 dB
- NPL2 - $L_{Aeq,T}$ 34 dB

BS4142 indicates that an acoustic correction should be applied if the noise is tonal, impulsive or intermittent. The octave band sound power levels shown in Figure 2 provide a good indication that there is not a tonal element of the noise for either condenser unit. It should be

noted that the manufacturers are unable to provide 1/3rd octave band data that would have assisted in determining any tonal components. The condenser noise is not considered to be impulsive in character. However, it is assumed that the condensers will have an identifiable on/off condition and if readily distinctive against the residual acoustic environment a penalty of 3 dB can be applied. The Spectrum noise data indicates that the residual noise levels at LTM2 are $L_{Aeq,T}$ 54 dB in the daytime and $L_{Aeq,T}$ 46 dB at night. The residual acoustic environment is 17dB higher than the background in the daytime and 12 dB higher at night and would not therefore be readily distinctive against the residual acoustic environment and so no penalty has been applied to the BS4142 assessment. The BS4142 assessment is shown in Table 2.

Table 2: BS4142 Assessment at NLP1 and NPL2

BS4142 Assessment	Daytime	Night-time
NPL1		
Specific Noise Level	$L_{Aeq,T}$ 37 dB	$L_{Aeq,T}$ 37 dB
Background Sound Level	$L_{A90,T}$ 49 dB	$L_{A90,T}$ 38 dB
Acoustic Correction	0 dB	0 dB
Rating Level	(37+0) = 37 dB	(37+0) = 37 dB
Excess of rating over background level	(37-49) = -12 dB	(37-38) = -1 dB
NPL2		
Specific Noise Level	$L_{Aeq,T}$ 34 dB	$L_{Aeq,T}$ 34 dB
Background Sound Level	$L_{A90,T}$ 49 dB	$L_{A90,T}$ 38 dB
Acoustic Correction	0 dB	0 dB
Rating Level	(34+0) = 34 dB	(34+0) = 34 dB
Excess of rating over background level	(34-49) = -15 dB	(34-38) = -4 dB

Noise Conditions

Condition 44

The noise target provided by Condition 44 is that the plant noise level should be equal or lower than the representative background sound levels when assessed using BS4142:2014+A1:2019. As shown in Table 2 the BS4142 assessment with the proposed plant provides an 'excess of rating over background level' of -12 to -15 dB in the daytime and -1 to -4 dB at night at the nearest residential properties, which meets the target provided by Condition 44.

Condition 45

Details of the proposed condenser units, the location and number of items of plant and the acoustic performance of the plant have been provided within Figures 1 and 2 of this Technical Note as required by Condition 45. The specification for the condensers including details of the external appearance of the condensers is provided in the Daikin Document entitled 'VRV 5 heat recovery, Air Conditioning Technical Data, REYA-A'.

Condition 9

It is confirmed that there will be no piling operation at Langstone Phase 2 and that standard construction plant will be used during the construction period to minimise the maximum noise levels when measured at the SPA or any SPA supporting habitat.

Figure 1 – Plan showing location and type of plant at Langstone Phase 2

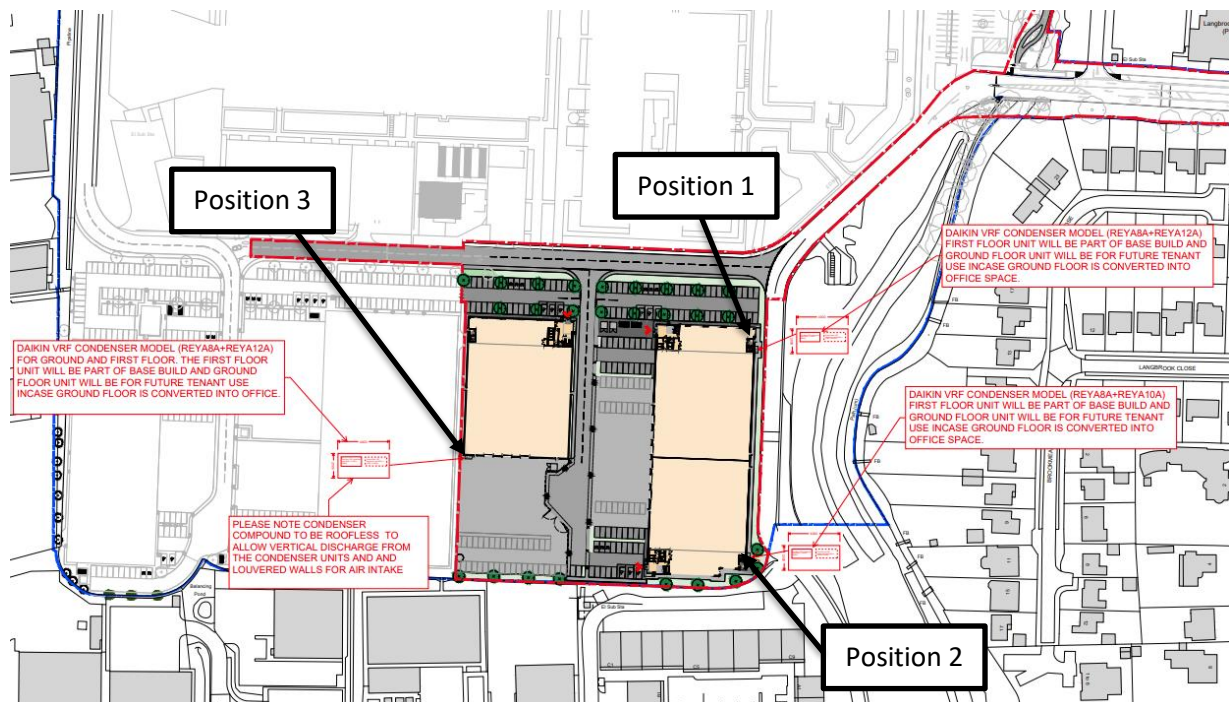
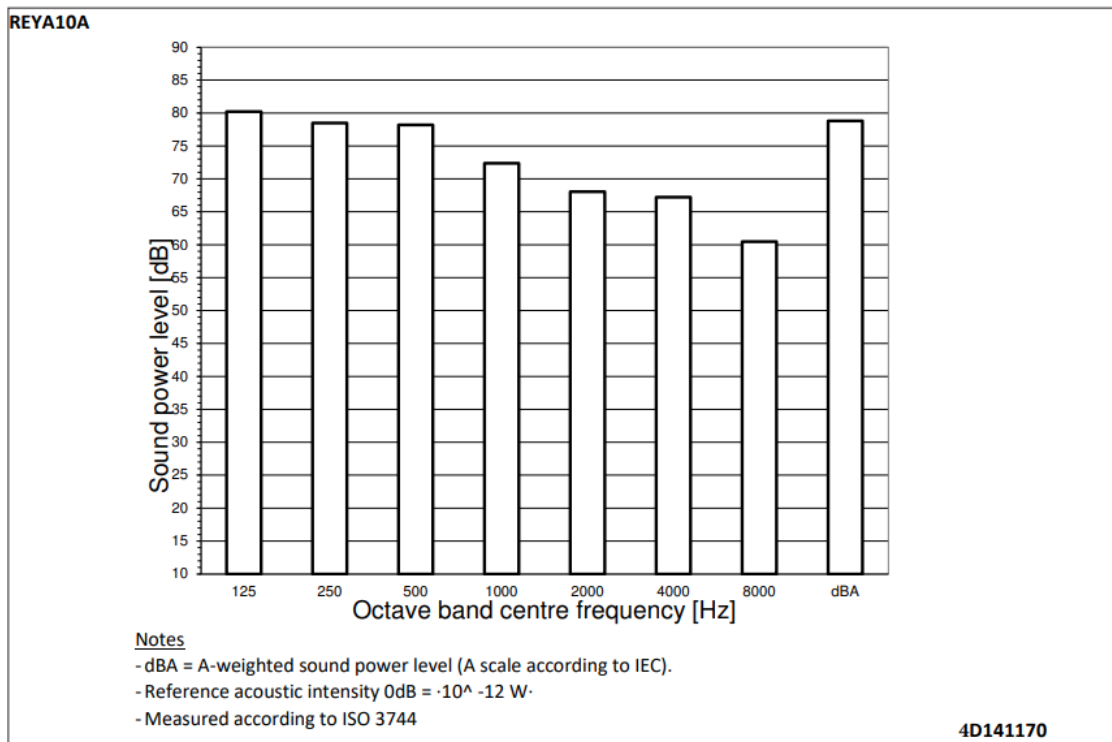


Figure 2 – Daikin Condenser Sound Power Levels



VRV 5 heat recovery • REYA-A

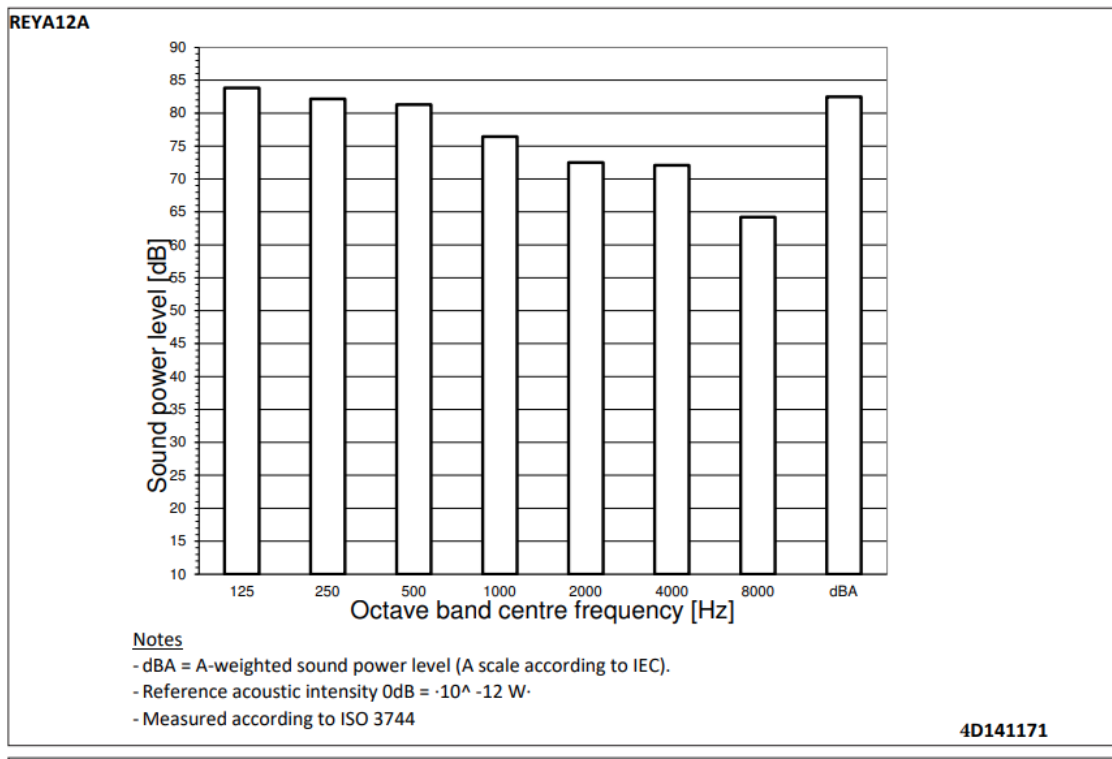


Figure 3 – Noise Prediction Locations

