

ACOUSTIC TECHNICAL NOTE



Reference:	14449.ATN01.PNA.0
Revision:	0
Date:	16 April 2026
Project:	Reading Police Station
Subject:	Supplementary Planning Plant Noise Assessment

1. INTRODUCTION

This report is to be read in conjunction with RBA Acoustics report ref. 14449.RP01.EBF.2, dated 16 April 2026.

New items of mechanical plant are proposed at the proposed residential development at land currently occupied with Reading Police Station, Flint Street, Reading. 3No. ASHPs are proposed at roof level (Level 16) of the tallest part of the development.

RBA Acoustics has undertaken environmental noise monitoring at the development site, full details of which are included in the report referenced above. The measured levels have been used to derive plant noise emission limits in accordance with the requirements of Reading Borough Council.

This report provides the criteria, predictions of noise impact from the proposed plant including mitigation recommendations, and assessment against the project criteria.

2. CRITERIA

Reading Borough Council's expectations regarding new building services plant are as follows:

"Noise generating development"

Applications which include noise generating plant when there are nearby noise sensitive receptors should be accompanied by an acoustic assessment carried out in accordance with BS4142:2014;+A2019 methodology. It is likely that this development will include noisy mechanical plant such as air conditioning, kitchen extraction, generator, externally ventilated plant room.

The noise assessment needs to establish the predicted noise rating level taking account of any characteristic factors like tonality or impulsiveness of the noise. The rating level should be compared with the background noise level.

The noise source specific noise level (plant noise level) should be at least 10dBA below the existing background level as measured at the nearest noise sensitive receptor and the rating level should not exceed the background level (as measured in accordance with BS4142:2014)."

In line with these requirements and the measured levels reported in RBA Acoustics report ref. 14449.RP01.EBF.2, dated 16 April 2026, we would propose items of mechanical services be designed so that noise emissions from the plant do not exceed the levels provided in Table 1 when assessed at the nearest noise sensitive location.

Table 1 – Plant Noise Limits at Measurement Positions

Assessment Period	Plant Noise Criteria to be achieved at 1m outside the window of the nearest Noise-Sensitive Receptor (NSR), L_{Aeq} [dB]					
	Position 1		Position 2		Position 3	
	Specific Noise Level	Rating Level	Specific Noise Level	Rating Level	Specific Noise Level	Rating Level
Daytime (07:00 – 23:00)	59	69	42	52	44	54
Night-time (23:00 – 07:00)	38	48	33	43	35	45

Levels at Position 1 are assumed to apply to receptors overlooking the A329 IDR, e.g. on Body Road. Levels at Position 2 are assumed to apply to receptors on Castle Street. Levels at Position 3 are assumed to apply to receptors to the north of the site, e.g. the future Broad Street Mall development and to receptors within the development not overlooking Castle Street or the IDR.

3. PLANT PROPOSALS

This assessment has been based on the information provided to RBA by PSH, the project MEP Consultants and is described in the following sections.

3.1 Proposed Plant Items

The following plant is proposed for the scheme:

Table 2 – Proposed Plant Items

Ref.	Manufacturer/Model/Duty	Plant Type
ASHP 1-3	Daikin Bluevolution EWYT650B-XRA2	Air cooled heat pump with scroll compressors

3.2 Plant Locations

The 3No. heat pumps are proposed to be located on the roof of the tallest building in the development, at the equivalent of Level 16. The equipment positions are indicated on the site plan in Figure 2.

3.3 Plant Noise Levels

Information regarding the noise levels of the proposed plant has been provided by the manufacturer of the unit. The associated plant noise levels are detailed as follows:

Table 3 – Plant Noise Levels

Unit	Parameter	Sound Level [dB] at Octave Band Centre Frequency [Hz]								dBA
		63	125	250	500	1k	2k	4k	8k	
ASHP 1-3	L_p at 1m	77	72	70	67	65	62	58	58	71

A review of the octave band data provides no indication of any tonal characteristics associated with the proposed plant.

3.4 Ratings Penalties

The proposed plant does not show any indication of being tonal. The plant is proposed to run continuously, therefore no penalty for intermittency has been applied. The plant does not have any impulsive characteristics; therefore no ratings penalty has been applied for impulsivity. The specific and ratings levels are therefore the same, and this assessment therefore assesses against the more onerous Specific $L_{Aeq,T}$ level.

3.5 Attenuators

The units are proposed to be fitted with attenuator packs with the minimum sound reduction performance provided in Table 4.

Table 4 – Attenuator Insertion Losses

Description	Minimum Insertion Loss (dB) at Octave Band Centre Frequency (Hz)								O/A
	63	125	250	500	1k	2k	4k	8k	
Attenuator Package	2	5	8	13	16	16	14	12	12

3.6 Noise-Sensitive Receptors

Receptor 1 – Broad Street Mall

The future Broad Street Mall development is located approximately 115m to the north of the plant location and partially screened by the roof edge and massing of the tower building.

Receptor 2 – Castle Street

Existing receptors on Castle Street are approximately 100m from the plant location and significantly screened by the intervening buildings.

Receptor 3 – Body Road

Existing receptors on Body Road are approximately 98m from the plant location and partially screened by the roof edge and massing of the tower building.

Receptor 4 – Level 9 Apartments

Level 9 apartments in an adjacent building of the same development are approximately 33m from the closest plant location, and partially screened by the roof edge and massing of the tower building.

Receptor 5 – Level 6 Apartments

Level 6 apartments in an adjacent building of the same development are approximately 52m from the closest plant location, and partially screened by the roof edge and massing of the tower building.

All receptors are shown in Figures 1 and 2.

3.7 Predicted Noise Levels at Noise-Sensitive Receptors

Our calculation method for predicting noise levels from the proposed external plant at the nearest noise-sensitive receptors (NSR), based on the information above, is summarised below.

- Source Term SPL / SWL
- Attenuators
- Distance Attenuation
- Directivity
- Reflections
- Screening

Table 5 – Predicted Plant Noise Levels at Receptor Positions

Noise Sensitive Receptor	Predicted Specific Level (dB, $L_{Aeq,T}$) at NSR During Period			
	Daytime (07:00 – 23:00)		Night-time (23:00 – 07:00)	
	Prediction	Criterion	Prediction	Criterion
NSR1 – Broad St Mall	32	44	32	35
NSR2 – Castle Street	24	42	24	33
NSR3 – Body Road	24	59	24	38
NSR4 – L9 Flats	33	44	33	35
NSR5 – L6 Flats	32	44	32	35

The predicted specific levels are within the project criteria at all receptors.

4. VIBRATION CONTROL

In addition to the control of airborne noise transfer, it is also important to consider the transfer of noise as vibration to adjacent properties (as well as to any sensitive areas of the same building).

We would typically advise that condensing units / fans / AHUs be isolated from the supporting structure by means of either steel spring isolators or rubber footings. For particularly sensitive locations, or when on lightweight structures the mounts should ideally be caged and be of the restrained type.

For high vibration-generating plant, e.g. heat pumps or chillers located on roofs or in close proximity to noise-sensitive receptors, critical consideration must be given to vibration isolation as the natural frequency of typical isolators can coincide with the frequency of a typical roof. This can lead to significant vibrational noise transfer to below, unless the isolators are appropriately selected. We would typically expect the isolators to be caged and restrained steel spring isolators. Where the roof is lightweight, it is likely that a plant deck will need to be installed and connected to the structural columns to take the plant off the lightweight elements of the roof.

It is important the isolation is not “short-circuited” by associated pipework or conduits. To this end, any conduits should be looped and flexible connectors should be introduced between the condenser and any associated pipework. Pipework should be supported by brackets containing neoprene inserts.

A detailed assessment of the specific measures will be required at design stage and once full plant selections are made.

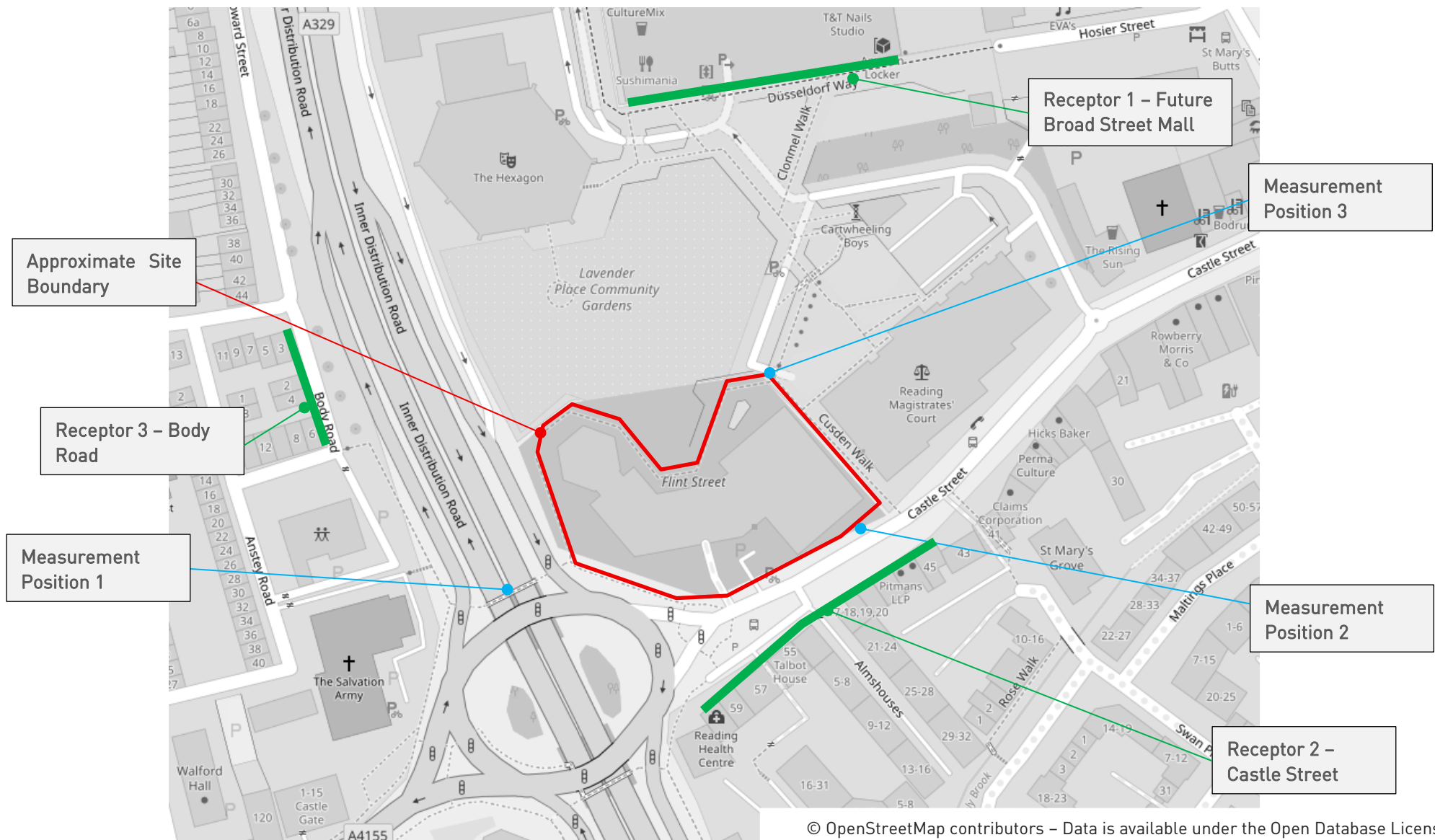
5. CONCLUSION

The required criteria for atmospheric noise emissions from proposed plant installations have been derived from project survey data.

The following mitigation measures are proposed within this report:

- Attenuator packs capable of achieving the insertion losses listed in Table 4 should be fitted to all ASHPs.

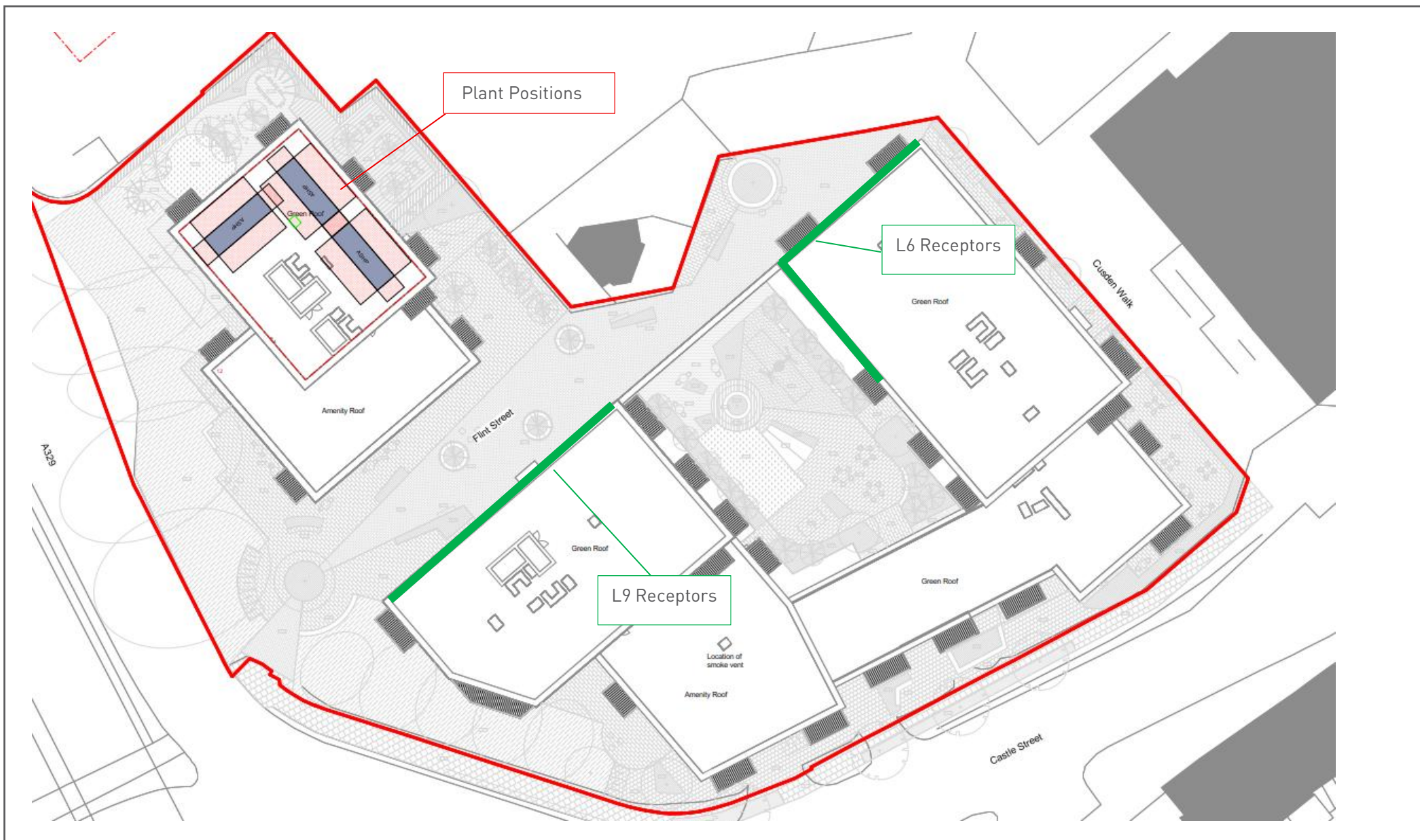
Provided the above mitigation measures are included in the design and installation, the results of the assessment indicate atmospheric noise emissions from the proposed plant are within the criteria required by Reading Borough Council and, as such, can be considered acceptable in terms of noise.



Reading Police Station
 Site Plan Showing Noise Monitoring Positions and Receptor Locations
 Project 14449

Figure 1
 16 April 2026
 Not to Scale





Reading Police Station
 Site Plan Showing Roof Plant Positions and Receptor Locations
 Project 14449

Figure 2
 16 April 2026
 Not to Scale

