

Ref: 51-486-TN1-1
Date: 28th April 2025

CASEY GROUP

BY Email

DISCHARGE OF CONDITION 19 WHITE MOSS ROAD AND DAM HEAD DRIVE, CHARLESTOWN

1. BACKGROUND & OBJECTIVES

E3P have been commissioned to produce a technical note that provides information sufficient in order to support the discharge of condition 19 of the planning approval in relation to the proposed Air Source Heat Pumps (ASHPs), specifically on whether acoustic enclosures are required and to provide details of these.

As such, an ASHP noise assessment will be conducted in order to ascertain whether acoustic enclosures are required. E3P have drawn upon the previously completed Noise Assessment (50-477-R1-1 dated November 2021) which was undertaken by E3P in order to consider the above condition.

The completed NIA included two separate sites, one close to Whitemoss Road, this site, and one at the former Whitemoss Day Care. The layout is shown below:



White Moss Road and Dean Head Drive

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Figure 1 Site Layout



2. NOISE SURVEY DATA – JANUARY 2024

In addition to the findings and surveys of the original reports, E3P have conducted additional noise surveys in order to satisfy the requirements of the planning condition, specifically to include rush hour and night-time measurements.

As such, the following survey was conducted:

The survey was undertaken during the following period:

 16:30 Wednesday 24th January to 09:00 Thursday 25th January 2023.

The following noise measurement position was chosen for the Road Traffic Noise Survey:

 Noise Measurement Position: Located in a position considered representative of the proposed facades of blocks 7, 8 and 9, as shown in Figure 1. The microphone was located at a height of 1.5 m above ground level and in free-field conditions. Sound sources consisted of road traffic along White Moss Road.

Table 1 details the measured sound pressure levels.

Table 1 Measured road traffic sound levels, White Moss Road

Measurement start time	Measured sound pressure levels (dB)			
	L _{Aeq,T}	10th high L _{Amax,fast}	L _{A90,T}	L _{A10,T}
17:00	50.9	N/A	48.7	52.6
18:00	49.8		48.2	50.8
19:00	47.9		46.0	49.3
20:00	46.0		44.3	47.0
21:00	44.7		43.0	45.3
22:00	44.0		41.9	44.7
23:00	41.7	54.4	38.8	43.1
00:00	38.5		35.7	40.1
01:00	35.2		33.2	36.8
02:00	34.9		33.2	36.1
03:00	36.8		34.8	38.4
04:00	37.5		35.0	39.4
05:00	41.3		38.5	42.8
06:00	45.9		42.5	47.8
07:00	46.7	N/A	44.8	48.1
08:00	48.0		45.3	49.3



To inform the ASHP noise assessment, the median daytime and night-time background sound levels from the measured values above are used. Specifically, a daytime background sound level of 45 dB $L_{A90,1hr}$ and a night-time background sound level of 40 dB $L_{A90,15mins}$. The daytime background is taken as the median value over the full daytime period. The night-time is the median measured value between the hours of 23:00-00:00 and 05:00-07:00, 15-minute periods when the heating systems at the majority of plots are likely to be in use.

Figure 2 shows the measurement position chosen.

Figure 2 January 2024 survey measurement position



3. PROPOSED ASHPS

E3P understands that The Casey Group intend to install Daikin Altherma 4 kW Monobloc units to the rear of each plot at ground level.

The following Daikin ASHP models are proposed:

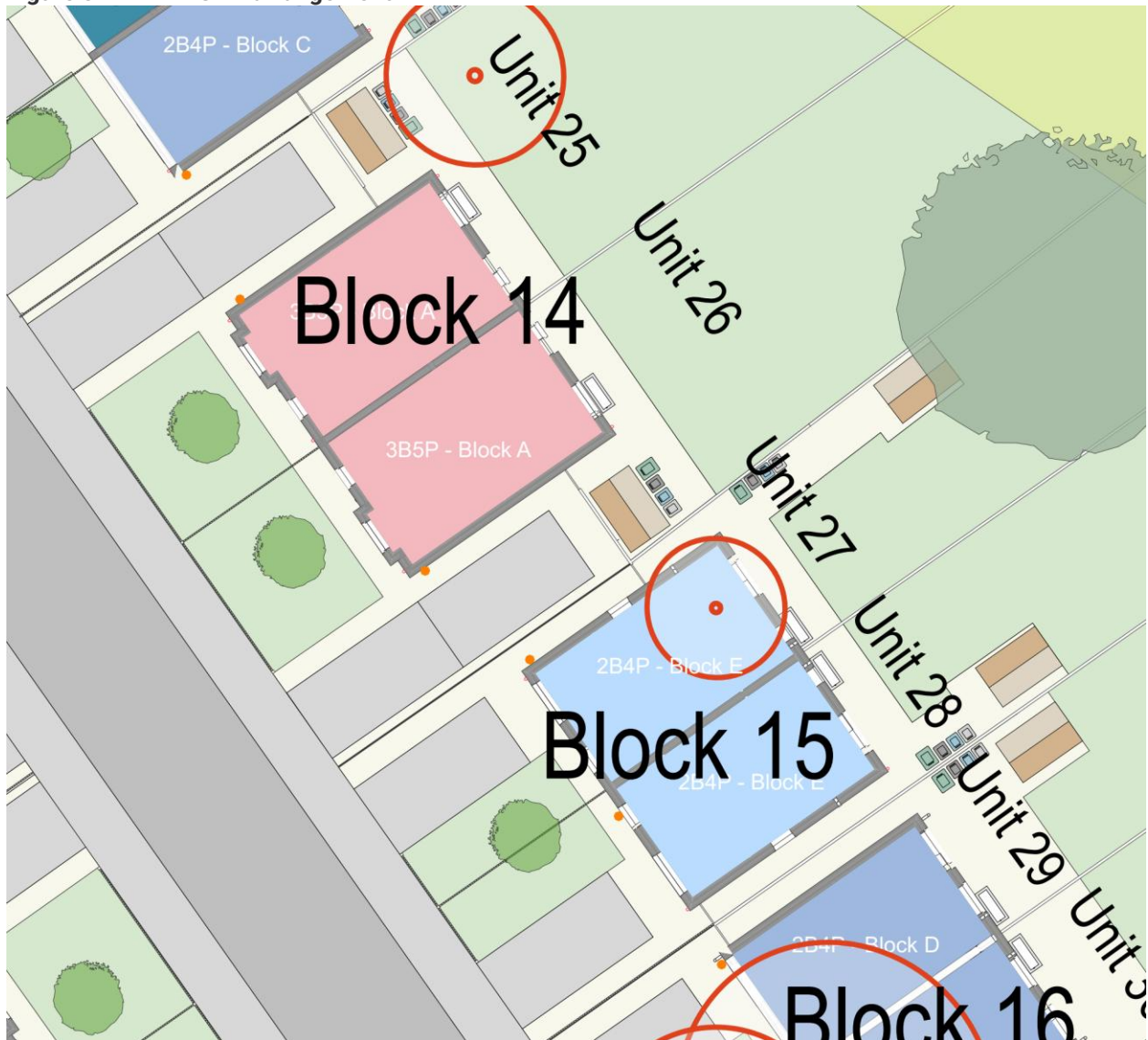
- Daikin Altherma 4 kW Monobloc – Sound Power of 58 dB L_w .

The above sound power level relates to normal typical operations.



The typical arrangement is shown below in Figure 3.

Figure 3 ASHP arrangement



4. CONSIDERATION OF POTENTIAL NOISE IMPACT

The assessment that is usually applied for potential noise from fixed installations (i.e., externally mounted plant) to give rise to community response is contained in BS 4142. This standard assesses the likely effects of such sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

BS 4142 describes a method for determining the specific sound level and background sound levels outside residential buildings and for assessing whether the noise is likely to give rise to adverse impact. The specific noise level from the commercial source is rated based on any tonal or intermittent characteristics of the sound.

BS 4142 assessment methodology involves comparing the existing background sound level with the predicted rating level from the new development. The difference between the two levels can be used to indicate the likelihood of adverse impact.

4.1. BS 4142 ASSESSMENT

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2025 MR1, to determine the impact of noise from the ASHPs.

The following inputs have been included in the model:

-  Proposed Site Plan.
-  A feature correction of +2 dB for just perceptible tonality is applied to the noise model. Given that these are personal ASHPs and the context of the development and receptors, this level of correction is considered robust.
-  Each ASHP is input as a point source with the unit drawn in to resemble the directional output of the ASHP from the fan only.
-  All ASHPs are modelled to be operational at the same time to inform a worst case assessment.
-  Site elevations have been taken as existing by way of a 2 m grid Digital Terrain Model (DTM) which contains public sector information licensed under the Open Government License v3.0.
-  Existing buildings are included.
-  A reflection order of 1 has been used in all calculations.
-  Noise levels generated using ISO 9613-1 and ISO 9613-2 “Acoustics – Attenuation of sound during propagation outdoors” as incorporated into CadnaA software.

Figure 4, appended to the rear of the report, shows noise levels at 1.5 m height across the Site to show garden noise levels. Numbers noted in the circle on the buildings are façade noise levels, left being daytime and right being night-time.



The background sound levels to be applied here are 45 dB during the day and 40 dB at night as measured at NMP1.

This results in a criteria of 40 dB during the day in rear gardens and 35 dB at 1st floor bedrooms windows.

Table 2 below details the expected noise levels in gardens during the day and at 1st floor windows at night. For garden noise levels, the noise level in the centre of the proposed garden is used for an average assessment. Furthermore, it is considered reasonable to assume that were residents outside to experience the noise, its unlikely heating would be required inside and that residents would sit or socialise within close proximity of the unit.

The grid noise map is appended to the rear and shows 1st floor façade levels and coloured grid at 1.5 m height. Bold values are in exceedance of the -5 dB criterion.

Table 2 **BS 4142 Assessment**

Block	Predicted rating level in garden (daytime), $L_{A,r}$ (dB)	Daytime criterion (dB)	Predicted rating level at façade (night-time), $L_{A,r}$ (dB)	Night-time criterion (dB)
Block 1	35	40	34	35
Block 2	34	40	34	35
Block 3	36	40	34	35
Block 4	38	40	33	35
Block 5	38	40	35	35
Block 6	40	40	35	35
Block 7	40	40	33	35
Block 8	37	40	35	35
Block 9	35	40	34	35
Block 10	38	40	35	35
Block 11	38	40	35	35
Block 12	39	40	34	35
Block 13	35	40	35	35
Block 14	35	40	35	35
Block 15	35	40	34	35
Block 16	35	40	35	35

In accordance with the guidance in BS4142 and MCCs criterion, the rating levels during the day and night achieve or fall below the required criterion.

It is worth noting, that all criteria are achieved at existing plots that surround the site. Indeed, the highest predicted rating level is 29 dB off site, which is well below the above criterion.

As such, acoustic enclosures are not required based on these ASHP models and locations.

I trust the report is clear and concise but please do not hesitate to contact me should you require further information.



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Yours sincerely,
For and on behalf of E3P Ltd

Lee Faulkner
Associate Director



Figure 4 - ASHP Grid Noise Map - Grid calculated at a height of 1.5 m above ground level

