THE CASEY GROUP

Date: 7th November 2024

TECHNICAL NOTE ON CONDITION 20(A) FIXED PLANT NOISE THE ENTERPRISE CENTRE, BENCHILL ROAD

1. INTRODUCTION

1.1. BACKGROUND & OBJECTIVES

E3P provided a Noise Impact Assessment in order to satisfy conditions 19 and 20 of the planning permission for the above Site. It is understood that details of the fixed plant items, Air Source Heat Pumps (ASHPs) are now known and, as such, part A of condition 20 is addressed in further detail here. For reference condition 20(A) states:

> *Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.*

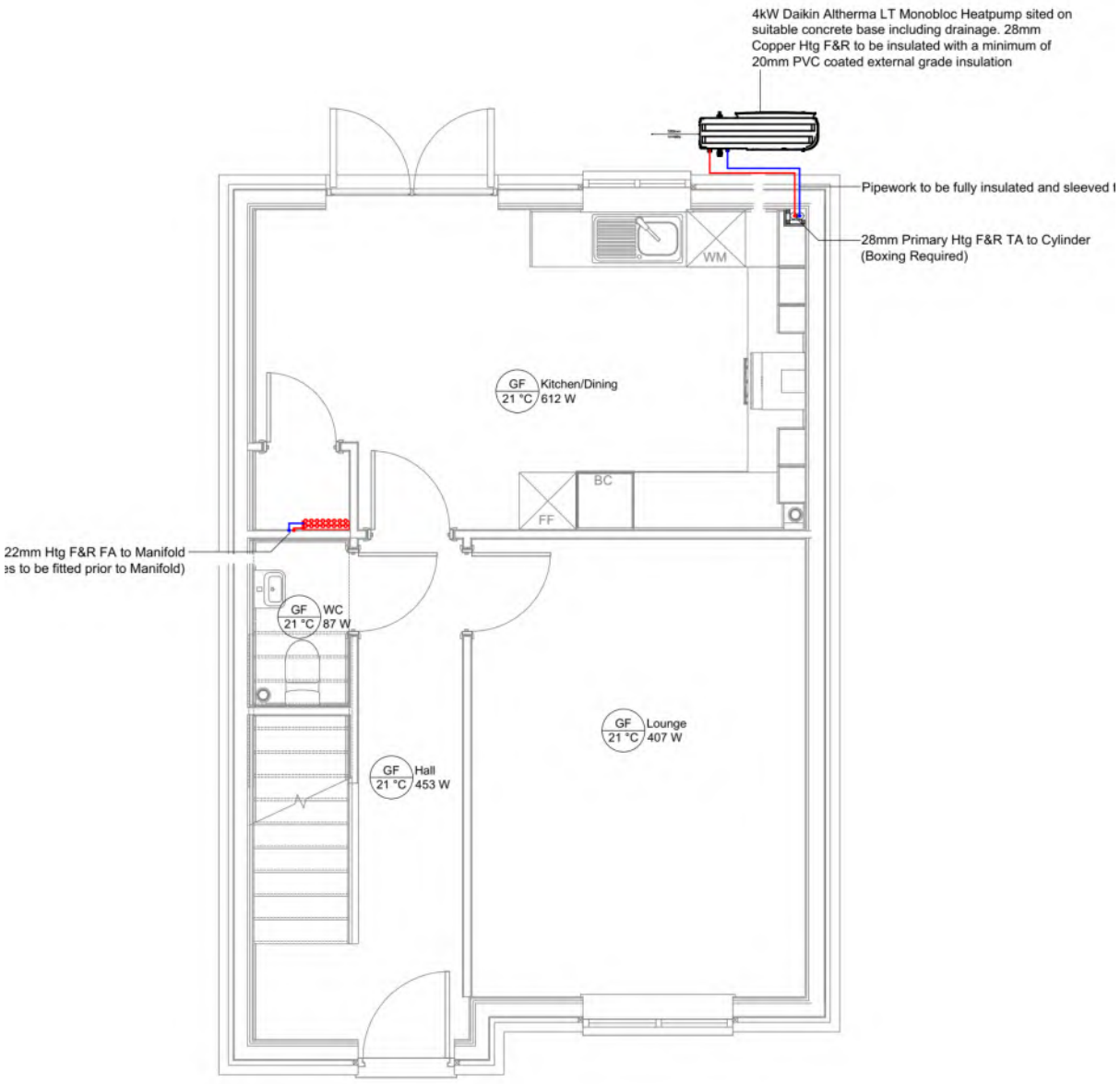
As such, this Technical Note considers noise level information for the proposed ASHPs. The note has been produced by Lee Faulkner, Associate Director, at E3P who is a corporate member of the Institute of Acoustics (MIOA).

1.2. PROPOSED ASHPS

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

The typical arrangement is shown below in Figure 1.

Figure 1 ASHP arrangement



2. 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.

2.1. BS 4142 ASSESSMENT

The following Daikin ASHP models are proposed:

- Daikin Altherma Monobloc 4 kW EDLA04EV3 – Sound Power of 58 dB L_w.

The above sound power level relates to normal typical operations.

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2024 MR1, to determine the impact of noise from the ASHPs.

The following inputs have been included in the model:

- Site Plan – ASHP Location dated 6th November 2024.
- 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.
- 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 2 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 48 dB during the day and 42 dB at night as measured at NMP1 (noted in the submitted Noise Impact Assessment for the development (51-071-R1-2). These are derived from the 24-hour measurement position and are considered the typical background sound levels. The daytime background is taken as the median value between 07:00-23:00 over the full weekday period. The night-time is the median measured value between the hours of 23:00-01:00 and 05:00-07:00 when the heating systems at the majority of plots are likely to be in use.

This results in a criteria of 43 dB during the day in rear gardens and 37 dB at 1st floor bedrooms windows.

Table 1 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 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 1 BS 4142 Assessment

Plot	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)
1	42	43	31	37
2 and 3	43	43	36	37
4	43	43	35	37
5	42	43	35	37
6	42	43	34	37
7	42	43	32	37
8 and 9	43	43	37	37
10	43	43	37	37
11	42	43	35	37
12 to 17	25	43	24	37
18 to 22	31	43	28	37
Existing	18	43	18	37

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.

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

Yours sincerely,
For and on behalf of E3P Ltd

Lee Faulkner
Associate Director

Figure 1 - ASHP COndition 20(A) Grid Noise Map - Calculation at 1.5m above ground level



Project:
Enterprise Centre, Benchill Road

Project-No:
51-071

Client:
The Casey Group

Rating Level, LA,r (dB)

- ... <= 38
- 38 < ... <= 40
- 40 < ... <= 42
- 42 < ... <= 45
- 45 < ... <= 48
- 48 < ... <= 50
- 50 < ... <= 52
- 52 < ... <= 55
- 55 < ...

Noise Map Objects

- Point Source
- Line Source
- Road
- Railway
- Building
- Barrier
- Receiver
- Building Evaluation
- Calculation Area

Wythenshawe Community Housing

The Enterprise Centre
Benchill Road
Wythenshawe

Proposed Site Plan

e3p

Project Engineer: L Faulkner
Date: 07/11/2024