

Introduction

Walmsley Associates have been commissioned by the William Clark Partnership to provide a commentary and overview of the mechanical plant noise generated by proposed Healthcare site on Hatfield Business Park for One Healthcare Hatfield.

We have reviewed and incorporated the Background noise survey and acoustic Report prepared by Sound Research Laboratories (SRL) and reviewed likely plant and equipment, and their noise levels to inform any additional noise attenuation requirements for the One Healthcare Hatfield.

Site location

The site is at the extremity of the existing Hatfield Business Park, with a residential access road (Manor Road) to the north of the site and a business park road (Hatfield Avenue) to the south of the site.

The A1(M) is located roughly 200m to the east of the site – the road is enclosed by a tunnel to the south-east of the site, however to the north-east of the site, the tunnel ends and the road rises to ground level. Another large road (Comet Way) runs alongside the A1(M) and has high levels of traffic.

Luton Airport is located roughly 20km to the north-west of the site.

The most acoustically sensitive receptors are the nearest residential properties on Manor Road. The other buildings on the Hatfield Business Park are not considered acoustically sensitive.

External Plant Noise Emissions

Noise from building services plant and equipment will be controlled in relation to the pre-existing background noise at nearby noise-sensitive receptors.

In the absence of defined plant noise criteria from the local authority, the site acoustic report has proposed a reasonable approach for noise emanating from building services plant and equipment to have a 'rating level' which is 5dB below the existing lowest background noise level (L_{A90}), measured 1m away from the nearest noise sensitive facades. 'Rating level' is defined in BS 4142:1997 "*Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas*".

It is also noted within the Acoustic Report that BS 4142:1997 states for plant noise with a characteristic or distinguishable sound (such as a hum) the 'rating level' is taken to be 5dB higher than the actual measured plant noise level. As it is likely that the plant noise will have a characteristic sound, we recommend that the plant noise limits are at least 10dB below the existing background levels, measured at the nearest noise-sensitive receptors.

With the above criteria borne in mind, the design of the building houses and encloses much of the heating, and water plant within the building at 1st floor level, while on an external plant deck at the rear of the building (overlooking Manor Road) the Theatre Air handling plant, and external heating/cooling condensers will be installed.

All externally mounted plant will be designed and attenuated to meet the Plant noise emissions set out within the SRL Report (Ref C/41864A/T01/JRHS), and to meet this criteria will be housed behind a screening system that will create a more aesthetic view of the equipment and promote plant noise attenuation.

The proposed location of external attenuated mechanical plant and equipment is identified on the sketch details below:-

One Healthcare Hatfield.
Mechanical Services Plant Noise Attenuation Statement

Figure 1: Proposed location of External Mechanical Plant on Site plan

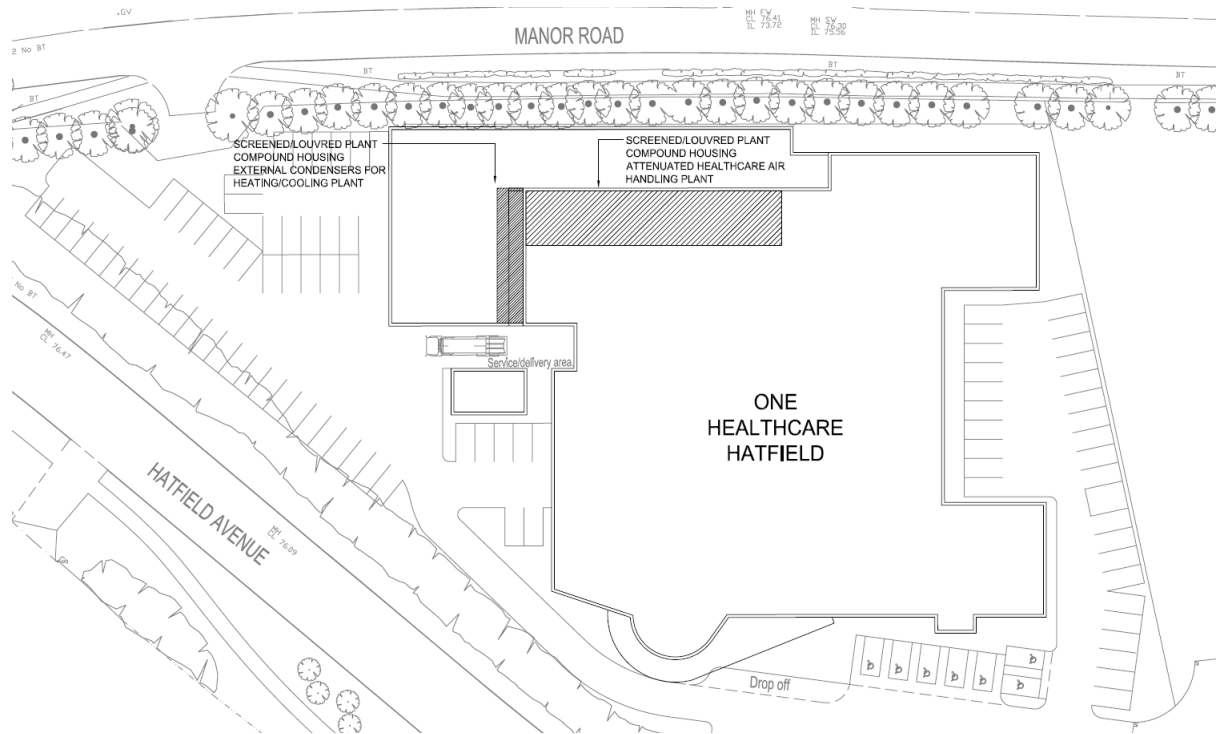
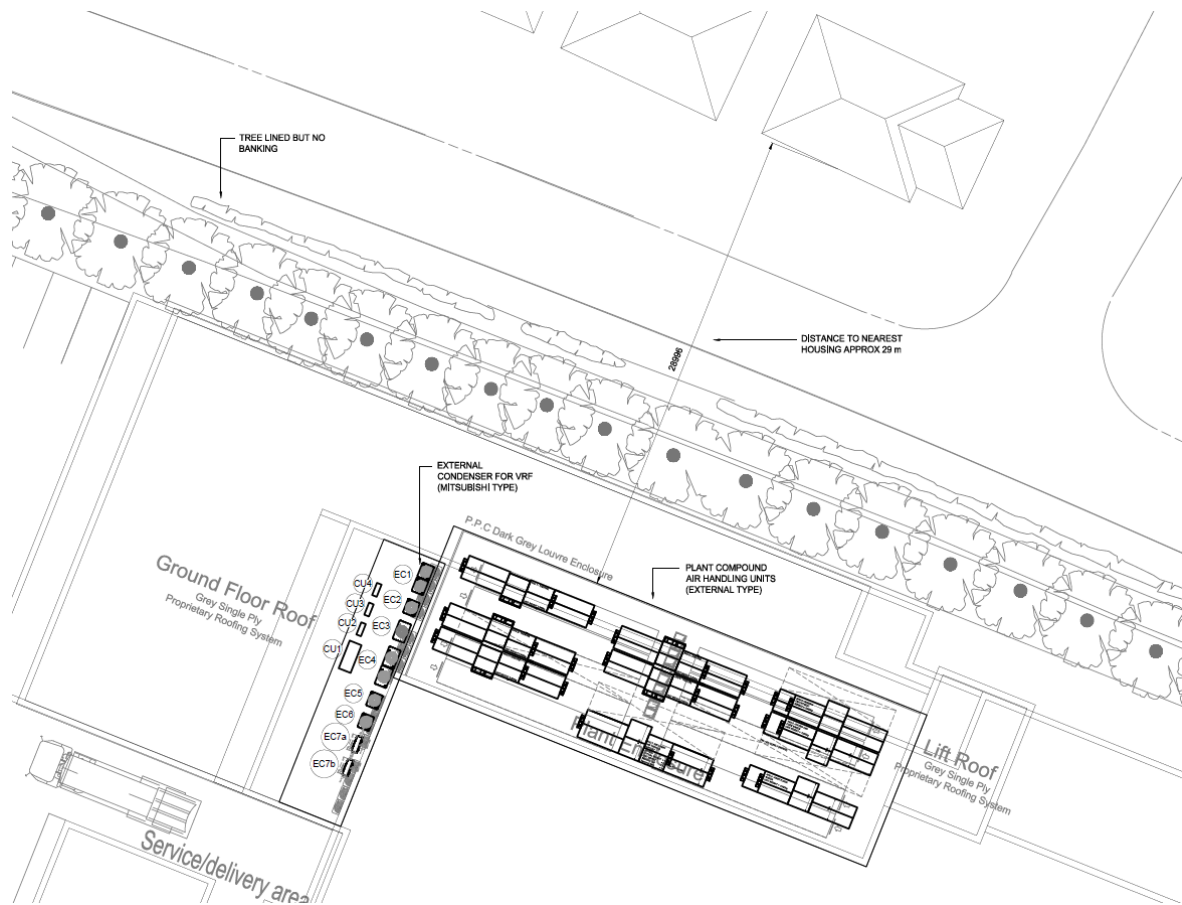


Figure 2: Detailed Mechanical plant proposal, plan view, behind louvred screens



Conclusions

Outline Acoustic analysis indicates that the provision of sound attenuation and insulation to external air handling plant, and the screening to the external condenser plant supporting the heating and cooling will ensure that the external plant emissions from noise are well within those set out within the SRL report.

Detailed plant selection and attenuation will also ensure that the impact of the plant noise is not heard within the new healthcare building, as occupied spaces are in closer proximity to external plant and equipment than the neighbouring properties.

Plant Operation time

By its very nature the healthcare premises will be occupied round the clock. However, the external air handling plant will operate to suit the occupancy of the department to which it is linked, and air handling units serving daytime departments constitute 6 of the 9No. proposed external air handling units

It is anticipated that Theatre use will be subject to elective surgery and conducted during normal daytime hours, these units would be "off" or at "low speed" during night-time hours, while the air handling units serving the private wards and core areas are likely to run 24 hours per day.

External Condensers provide heating and cooling to spaces that also may not be fully occupied at night. As such the building load would diminish in the evenings as Elective surgery and consultation ends, and noise output would follow suit as condensers reduce in speed.

Internal Plant Noise levels

Within the building plant and equipment will be selected to accord with Health Technical Memorandum 08-01: Acoustics. This provides guidelines for both noise intrusion from external sources, Criteria for internal noise from mechanical and electrical services, and sound insulation parameters of rooms, and is outlined in the SRL report.