

Sound Assessment

Air Source Heat Pump System for St Mary's C of E Primary School

March 2026

The Project

St Mary's C of E Primary School, a small school located in Clymping, West Sussex, is part of the Diocese of Chichester. In line with Church of England net zero targets, the Diocese of Chichester are undertaking a heat decarbonisation project across two schools. ReEnergise supported the Diocese of Chichester in making a grant application to Salix for funding via the Public Sector Decarbonisation Scheme (PSDS). This grant will help fund the installation of an air source heat pump (ASHP) system, along with improvements to roof insulation.

Proposed ASHP Units

The ASHP system proposed to be installed at St Mary's C of E Primary School are two Viessmann Vitocal 150-A 16 kW units, as shown in Figure 1 below.



Figure 1: Viessmann Vitocal 150-A 16 kW ASHP

The dimensions of the units are:

- Length 600 mm
- Width 1144 mm
- Height 1382 mm

Proposed position of ASHPs

Figure 2 below shows the proposed location of the ASHP units, which are planned to be located in an enclosed courtyard on a concrete base which currently houses the school's oil tank. The oil tank will be removed a part of this project.



Figure 2: Proposed location of the outdoor ASHP units

Figure 3 shows the location of the existing oil tank where the ASHP units will be located.



Figure 3: Proposed location of the outdoor ASHP units

ASHP Operation

The purpose of the ASHPs is to provide space heating and hot water provision. The units will primarily operate during school hours and for a few hours in the morning before the school opens; they will operate on a reduced setting overnight. Only one unit will be required to operate at any one time, except in the coldest weather.

Acceptable Sound Levels

According to World Health Organization (WHO), 1999 Guidelines for Community Noise, the following are guideline noise levels for community noise in specific environments:

- Outdoor Living Area – Moderate Annoyance 50 dB(A), 16 hours between 07:00 and 23:00
- Indoor Speech Intelligibility – Moderate Annoyance 35 dB(A), 16 hours between 07:00 and 23:00
- Inside bedrooms night time sleep disturbance 30dB(A), 8 hours between 23:00 and 07:00
- Outside bedrooms, window open (outdoor values), sleep disturbance 45dB(A) L_{Amax}

As a comparison, 30 dB(A) is the equivalent to leaves rustling or a whisper, 50 dB(A) is equivalent to moderate rainfall or a refrigerator.

Noise Mapping

dBmap.net online noise mapping software has been used to create the noise map shown below in Figure 4. Error: Reference source not found. It should be noted that this analysis aims to capture a worst-case scenario. Heat pumps do not operate continuously on a maximum setting, and therefore for much of the time the noise levels experienced will be lower than those indicated.

According to the Viessmann technical manual for the Vitocal 151-A, the sound power level for the 16 kW ASHP units is 66 dB(A) when running at maximum, and 59 dB(A) in night mode.

The closest residential property to the proposed location of the ASHPs is Amberley Court, which is 8 m from the ASHP units at its nearest point. To reduce any noise impact on the neighbouring property, an acoustic panel timber fence is proposed to be installed to a height of 600mm above the wall. This, along with existing vegetation, will attenuate sound levels experienced by users of the property to a maximum of 32 dBA, which is below the WHO guidelines stated above.

Classrooms will not be impacted by the operation of the heat pumps as the areas of the school adjacent to the courtyard area are used for storage.



Figure 4: Noise map for St Mary's Clymping C of E Primary School when ASHPs are running at maximum power