

Sustainability Appraisal

Air Source Heat Pump System for St Marys CoE School, Clymping, Brookpits Lane, Littlehampton BN17 5QU

March 2026

The Project

St Mary's C of E Primary 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. A heat decarbonisation plan was prepared by Mantis Energy, which analysed energy use at St Mary's Primary School and assessed heat decarbonisation opportunities. Subsequently, 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.

The initiative will reduce the school's reliance on fossil fuels for all its estate power and heat needs, thus eliminating greenhouse gas emissions (GHG) being emitted in the running of their estate. The decarbonisation plan includes the introduction of an air source heat pump system. This current proposal comes out of the implementation of that recommendation.

Technology Options	Pros	Cons	Suitability
Ground Source Heat Pumps	Sustainable form of heat generation (zero-carbon at source); strongly supported by government; very low maintenance; long lifespan; more efficient than ASHP in very low temperatures (below 0°C)	Relatively specialised project; technical specification critical; time critical if the preferred finance routes are to be used; requires large area of land for ground arrays; installation takes longer than for air source (trenching on school grounds).	Suitable – but would cause a lot of disruption and would require a lot of ground work, drilling and trenching for the installation and then reinstatement
Air Source Heat Pumps	Sustainable form of heat generation (zero-carbon on site); strongly supported by government; very low maintenance; long lifespan; installation process is less intrusive than for GSHP and the plant can usually more easily be accommodated in a	Relatively specialised project; technical specifications critical; time critical if the preferred finance routes are to be used; may require a direct heating back-up at low temperatures; not as efficient as GSHP in extremely low temperatures (lower CoP).	Suitable – best option for school as lower cost and much less disruption for the installation.

	small space.		
Water Source Heat Pumps	Sustainable form of heat generation (zero-carbon on site); strongly supported by government; very low maintenance; long lifespan.	Relatively specialised project; technical specification critical; time critical if the preferred finance routes are to be used; requires a large sustainable source of water with some movement.	Not suitable
Biomass	More sustainable than fossil fuels; considered zero-carbon; sometimes easier project definition than heat pumps; operates at the same temperature as gas or oil boilers so may be better for old infrastructure.	Not as sustainable heat as heat pumps (emissions on site), relatively specialised project (significant plantroom design & installation work); technical specification critical; time critical; high maintenance; requires regular fuel deliveries and fuel storage.	Not suitable – No space for biomass plant room and fuel store and no feasible access route for lorries.
Solar Thermal	Renewable	Only designed for hot water; inconsistent (weather dependent); issues associated with storage (requires a large volume).	Not suitable – long term operating cost too high
Electric boiler	More sustainable than a gas boiler, would take up similar space and use existing secondary equipment.	Changing fuel will lead to operating costs increasing at least by a factor of 3.	Not suitable – long term operating cost too high
Electric heaters	Could replace hydronic system or just supplement the current boiler	Power infrastructure would need improving. Changing fuel will lead to operating costs increasing at least by a factor of 3.	Not suitable – long term operating cost too high
Electric radiant panel heaters	Could supplement hydronic system where required.	Power infrastructure may need improving.	Not suitable – long term operating cost too high