St John the Divine, Selsdon

Scope of Works for a

Hybrid Heating System

Issue 1

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1.0 Introduction

The church requires a completely new heating system. The reasons are set out in the Statement of Needs.

The contractor will be responsible for the detailed design, specification of equipment, supply and installation of the complete system.

Note. Heating in the vestries, baptistry and porch is by electric convectors and not part of this scope.

2.0 Strip Out

The existing heating system comprises a large gas fired boiler in the basement boiler room and a mix of radiators and convectors in the church. The boiler and pipework in the basement boiler room, the expansion tank in the 1st floor tower room and associated pipework are to be removed. All visible heat emitters and pipework in the church to be removed. This includes the surface mounted radiators located around the church and the original floor mounted convectors located in the choir and servers’ vestries and north choir aisle. The original convectors built into the perimeter walls are to remain in situ.

All equipment and material stripped out will be removed from site.

Once clear of equipment the boiler room will be cleaned and the floor and walls painted.

3.0 Description of System

The primary heat source will be from 2 x ASHP’s with a nominal output of 40 kwh (Viessman or similar). The ASHP’s will provide hot water to a bank of 3 x 1000 litre thermal stores. 1 x 150 kwh high efficiency gas boiler will be incorporated in the system to provide back up as and when required and resilience in the event of heat pump failure.

Expansion vessels will be provided.

The primary circuit will be linked to the secondary heating circuits via a plate heat exchanger. There will be two secondary circuits around the perimeter of the church; one circuit for the north side of the church and one for the east end and south side.

The heat emitters will be reverse flow fan convectors (Smiths Caspian range or similar) and convector radiators. The heat emitters will be compatible with the performance specification of the ASHP’s

The choir stalls will be provided with under pew heaters on a separate zoned circuit to enable the choir to be heated without the need to heat the main body of the church.

Flow and return pipework to the heat emitters will be surface run, as discretely as possible and suitably fixed. The contractor will be responsible for specification of material, fittings and pipe sizing.

The system will be managed by a suitable Building Temperature Management System designed to maximise the system efficiency.

The contractor will be responsible for the specification of the equipment, (recommendations are made for the ASHP’s and heat emitter) including ASHP’s, gas boiler, expansion vessels, thermal stores, plate heat exchanger, pumps, valves, ancillary pipework, distribution pipework, heat emitters.

The ASHP’s will be sited outside, adjacent to the NE exit. They will be mounted on appropriately sized concrete plinths and provided with a suitable means of noise suppression.

The gas boiler, thermal stores and associated equipment will be located in the basement boiler room. The boiler will be flued via the existing boiler flue and terminate at the top of the tower.

The contractor will provide the following

* Location of ASHP’s and route of services from the ASHP to the boiler room.
* Schedule of equipment.
* Separate schedule of heat emitters – make/model, Ref no, output.
* Layout of heat emitters in the church with proposed pipe runs.
* Schematic of heating system.
* An estimate of running costs and carbon emissions

4.0 Supporting Information

* Heat loss – The heat loss of the church is calculated at 160 kwh
* Area/volume – The church has a floor area of 500 m2 and volume 4000 m3
* Design temperature is 18 deg c with an external temperature of -3 deg c
* Electrical supply. The incoming electrical supply is 100 amp three phase.
* Electrical capacity. To accommodate existing and additional usage the electrical requirements of the new heating system will not exceed 70% of the available incoming electrical supply.

5.0 Installation

5.1 Design

All calculations used in the design of the system will comply with the Chartered Institution of Building Services Engineers Guides A, B, and C

5.2 Standards

The complete design and installation will comply with all relevant British Standards, codes of practise, Institute of Gas Engineers requirements, manufacturers guidance, Building Regulations and Health and Safety legislation. In particular the Building Regulations: Approved Document L2B and BS 6644 and 5499 as applicable. Flues will be installed in accordance with Building Regulations: Approved Document J

The gas installation will be in accordance with the Gas Safety (Installation and Use) Regulations, BS 6891 Installation of low pressure gas pipework of up to 28mm in domestic premises, and Institution of Gas Engineers document IGE/UP/2, Gas installation pipework, boosters and compressors on industrial and commercial premises, IGE/Up/1, Soundness Testing and Purging of Industrial and Commercial Gas Installations and IGE/UP/!0 Edition 4 + A:2016, Installation of flued gas appliances in industrial and commercial premises.

All electrical work will be in accordance with BS 7671:2008 as amended (IEE regulations)

5.3 Commissioning and Maintenance

The system will be commissioned in accordance with the manufacturer’s instructions and relevant standards. All plant and pipework will be clearly labelled.

A full O&M manual will be provided which will include relevant drawings and schedules.

System training for the client and client’s representatives will be provided.

The contractor will provide on site support during the initial period of use to ensure that the system is set to provide optimum performance.

The contractor will provide one year of maintenance and a service visit at the end of the period.