



Service Report for:

Nutfield Church (C of E) Primary School

59 Mid Street
South Nutfield
Redhill
Surrey
RH1 4JJ

Contents

Date and time of site attendance:.....	- 2 -
Reason for attending site:	- 2 -
Work undertaken:	- 3 -
Overview.....	- 3 -
Main Control Panel	- 3 -
Gas Boilers	- 4 -
Boiler Primary/Heating Pumps	- 4 -
Hot water services	- 4 -
System Safety	- 4 -
Redundant equipment:	- 5 -
Remedial work Required:	- 5 -
Photos:.....	- 6 -

Date and time of site attendance:

Date	Arrival Time	Departure Time
Tuesday 29 th August 2023	08:30	11:30

Reason for attending site:

BMS Service

Work undertaken:

Overview

The boiler room is located on the lefthand side of the school and is accessed through a set of louvered doors.

The boiler room comprises the following pieces of equipment:

- 1no: Main Control Panel
- 1no: Floor standing boiler complete with forced draft gas burner
- 1no: Twin head heating pump set
- 1no: Gas fired HWS cylinder c/w HWS secondary pump

Main Control Panel

The main control panel is located on the left hand side of the plantroom as you walk in and is a small sized form 1 panel. This is an old control panel which has been modified over time. A Kieback and Peter DDC420 controller has been installed in the bottom left hand side of the control panel which is used to control the heating system.

The incoming electrical supply to the BMS control panel is provided by individual tri-rated singles from the adjacent distribution board. The incoming supply voltages were tested and found to be as follows:

Test Sequence	Measured Voltage
L-N	240V
L-E	240V

The current draw on each phase was also measured with all plant running at normal capacity and the readings were as follows:

Phase Tested	Current Draw Measured
L1	3.8A

The rest of the panel was checked over and found to be in good working order with no obvious issues identified.

The BMS equipment comprises of the following pieces of equipment; 1no: IQ4e, 1no: 8UI & 1no: 8DO. An upload of the strategy was taken and used throughout the service,

A lamp test facility has been provided and so a fly lead test was undertaken. The following panel lamps were found to have failed and need to be replaced:

Designation	Type	Voltage	Colour	Issue
HWS Enabled	MES Oval	6v 300mA	N/A	Lamp blown

The controller was checked over and found to be in good working order, however it was not seating correctly in the fascia. This was identified to be with the fixing bolts and unfortunately cannot be rectified.

The panels exterior was cleaned using cleaning solution to remove dirt that has accumulated over time.

Gas Boilers

1no floor standing cast iron boiler is installed which has an attached Reillo forced draft gas burner. The boiler is enabled via the DDC420 controller and is switched on and off to achieve the required flow temperature.

The heating flow temperature is calculated based on the outside air temperature. The calculated temperature is compared to the actual boiler flow temperature and the boiler is switched on and off to achieve this temperature.

The boiler and burner were checked over and found to all be OK with no issue identified.

Boiler Primary/Heating Pumps

Water is pumped from the boilers and into the building using Grundfos UPSD 65-60/4 F twin head pump set, setup as Duty/Standby. As much as these pumps are setup as DUTY/STANDBY, there is nothing in the panel itself to automatically switch between the two heads apart from if the head trips its associated overload. Only then will the standby pump be energised and utilised.

No flow monitoring has been provided and as such if a pump has been unplugged local, the controller has no way of knowing this is the case and presumes all is OK.

This is not ideal as the pump as used as the main circulation for the boiler. If the pumps are not running when the boiler is running, there is a high risk of the boiler overheating due to no circulation.

Both pumps were tested and found to work as expected with no issues identified.

Hot water services

Hot water is provided by a standalone Strebel gas fired water heater which is enabled by the DDC4520 controller. Once enabled, the unit runs to its own thermostat, switching on and off as required to maintain tank temperature.

An electronic descaling unit is attached which simply energises an electrode in an attempt to stop limescale building up inside the cylinder. This was checked over visually and appeared to be working OK but the electrode could not be checked for obvious reasons.

A HWS secondary pump has been installed which circulates HWS around the building. This was visually checked and was seen to be operational on the day of the service.

System Safety

System safety is provided by an Electro Thermal Link (ETL) mounted above the burner and an emergency stop button installed next to the entry/exit door. The ETL is not installed within the recommended distance from the burner and so its effectiveness in the event of a burner fire would be questionable. It would be recommended to lower the ETL so that it is no more than 300mm from the top of the burner so that it can

react to a burner fire more efficiently – ***lower ETL to no more than 300mm above the burner as currently it is too high for the ETL to be effective.***

If either the ETL or the emergency stop button are activated, the electric gas valve is closed and the gas supply cut off. This was tested and found to operate satisfactorily.

As much as this is not part of the BMS service, it was noted that no fire alarm heat/smoke detector, or fire alarm interface has been installed anywhere within the main boiler room or the adjacent electrical intake room, which is accessed through the boiler room. This is deemed a large safety risk as a fire breaking out in these areas would go unnoticed until the fire took hold, by which time may be too late. It would therefore be ***HIGHLY*** recommended that a fire alarm company is brought in and a heat detector installed in both the boiler room and the electrical intake room, along with a fire alarm interface which is linked to the BMS system so that the gas valve is shut in the event of a fire alarm activation – ***install fire alarm heat detectors in the boiler room and electrical intake room, and have a fire alarm interface installed to integrate with the BMS panel so that the gas valve is shut down when the fire alarm is activated.***

Redundant equipment:

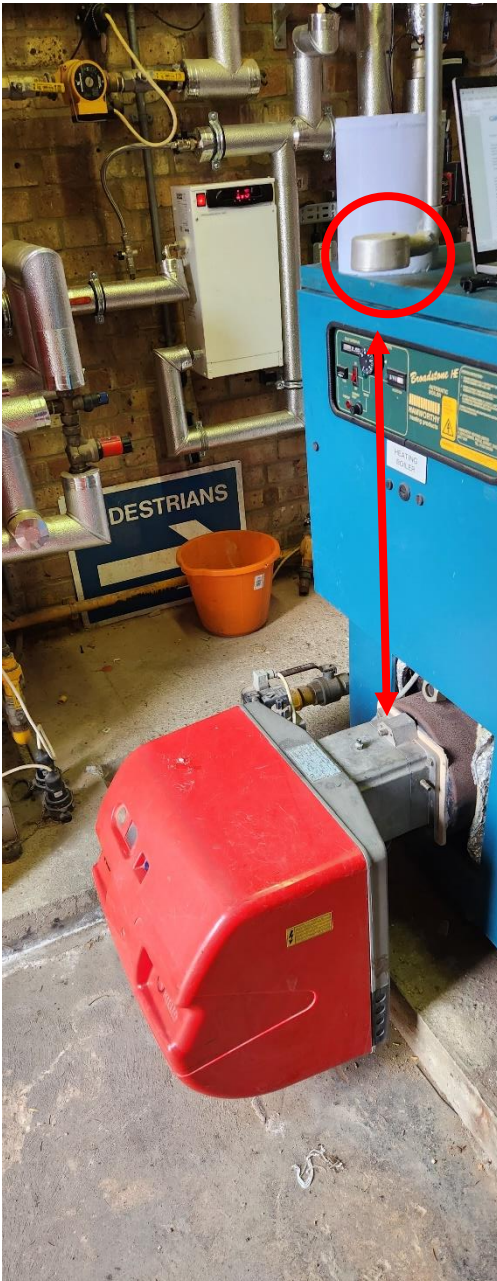
It appears that 2no: ASHP units were installed on the north side of the building which provided heat into the LTHW system. This system looks to have been stripped out, or the ASHP are being replaced.

On the day of the service, the 2no: ASHP's were sitting just outside the boiler room on the floor and the associated control panel was isolated and switched off.

Remedial work Required:

1. Replace blown panel lamp with new
2. Lower ETL above burner to no more than 300mm distance
3. Get fire alarm company to install fire alarm heat detectors in the boiler room and electrical intake room, and have a fire alarm interface installed to integrate with the BMS panel so that the gas valve is shut down when the fire alarm is activated.

Photos:



- Distance between ETL and burner in excess of 300mm



- No heat/smoke detector in the electrical intake cupboard



- No heat/smoke detector in the boiler room