Xxxxxxxxxxxxx Primary School

MECHANICAL SERVICES
CONDITION REPORT

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Broom Barns Primary School	Traci Pomroy – School Office Manager	1

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Contents

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Executive Summary

Main Building Block 11 ref. 1100330125 heating emitters, domestic hot and cold-water pipework including thermostatic mixing valves are in good condition and were replaced 6 years ago. The existing heating pipework within the Main Block 11 is estimated to be 60 years old distributed via a two pipe system, and the pipework is generally run exposed at high level throughout the site. This appears to be in good condition with no evidence of leaks and no issues were raised by the site manager. Apart from some new connections to fan convectors the pipe work is the original installation. The heating pipework reached the end of life span and should be replaced with new pipework systems. As part of the 2013 project, the original fan convectors and radiators were replaced with new fan convectors fitted at high levels and steel panel radiators fitted with TRV's which are in good condition. The mains cold-water supply is in good condition and no issues over water pressure or water discolouration were raised during the visit. Domestic hot water to all other outlets is provided by local point of use electric water heaters completed with thermostatic mixing valves. The heaters were all replaced in 2006 and are in satisfactory condition. Apart from minor repairs carried out to replace some of the water heater elements no issues were raised by the school.

Plantroom Block 11 ref. 1100330125 provides heating and domestic hot water services to the main Block 11 ref. 1100330125, heating and hot and cold water plant, is in good condition. The main boiler plant was replaced in 2013. Heating is served by 2No Remeha 210 Gas Eco Pro gas fired boilers. The existing plant consists of a 420kW output from condensing boilers and existing Megaflow hot water cylinder installed in 2013, which is in good condition. The existing heating and domestic circulation pumps and controls were also replaced in 2013 and are in good condition. The water tanks above the kitchen and hall were upgraded to comply with current standards in recent years the school in mainly served by mains supply but tanks are serving small toilet blocks only and are in good condition. Water quality and pressure at the outlets is satisfactory. There school's legionella risk assessment was updated with the works carried out in 2013. End of line temperature checks are taken and managed by the site manager.

Block 12 Nursery block ref. 1200330125 was built in approximately 1980. The space heating requirement is served by a wall mounted gas fired boiler which was installed 18 years ago providing heating to underfloor heating manifold and pipework. The boiler and associated plant equipment pumps, valves, pipework within plantroom to the underfloor heating manifold should be replaced with new as the plant and associate equipment exceeded its economic repair age. The indirect cylinder providing hot water to the staff kitchenette, play sink and toilets is approximately 18 years old, in poor condition and should be replaced with new. The water tank above cylinder was upgraded to comply with current standards in recent years and is in good condition. The water quality and pressure at the outlets is good, no issues were raised during the visit. The underfloor heating manifold and pipework is considered to be in good condition with no issues reported. The underfloor heating controls are approximately 15 years old and were modified in the past and reached economic life expectancy. It is recommended the existing boiler, controls, pumps, plant room pipework, pressurisation unit to underfloor heating is upgraded.

Recommendation	**Replace School heating pipework and plant Block 11, 12**
Condition Grading:	**D1**
Budget:*	**£104,575.39**
Recommended Programme Year:	**2020**
Current Energy Efficiency	**Poor**
On-Going Maintenance Cost	**High**

Expected Savings per annum	**£2,029.89**
Risk	**High risk of School closure**

1 Introduction

This report has been prepared at the request of [redacted], to provide an overview of the existing heating and domestic hot and cold water services including plant and pipework condition within the school and make recommendations for replacement/renewal/upgrade as appropriate.

The mechanical services referred to include:

LTHW Space Heating Services

Cold and Hot Water services

Mechanical Services Controls

Plant (Heating / domestic water service)

The report focus on the mechanical heating services and public health (hot and cold) services, but do not cover other services such as ventilation, air conditioning.

The report classifies the existing building services elements according to the DfE survey criteria and also highlights any identified non-compliance items.

The school compirses of the following buildings:

- Main Block 11 accommodating Block 11 ref. 1100330125 Total GIA 1479.95m^2
- Nursery Block 12 accommodating Block 12 ref. 1200330082 Total GIA 130.43m^2

2 Information Received

The following floor plans were provided to [redacted] to assist with the survey:

- 003300125 – [redacted] School.pdf

3 Surveys and Investigations

A non-intrusive visual survey was carried out on 30th September 2019, by [redacted] on behalf of [redacted]. The report is carried out by [redacted], Mechanical engineer of [redacted].

The visual survey was non intrusive as such no floor ducts were opened up to investigate pipework condition not any fixed cupboards or celings.

The survey covers the main items of plant and pipework such as the existing boiler plant, heating pipework distribution system and emitters and domestic hot and cold water system plant and pipework.

4 Inspection Findings

1. Block 11 ref. 1100330125 Main School building and Plant room is serviced from Block 11 Plant.

1.1. Plant, ancillary equipment and controls

1.1.1. The school Block 11 heating system is serviced by by 2No Remeha 210 Gas Eco Pro gas fired condensing boilers with collectively 420kW heating output located in Block 11 Plantroom. The boilers are nearing 6 years old and are considered to be in good condition and in good repair. The maintenance records indicate the boilers are in good condtion. It is recommended the heating plant is retained. **Condition / (Priority: A4)**

1.1.2. Domestic hot water to the kitchen is provided by 1 off mains fed Megaflo direct electrical hot water cylinder serviced by electrical immersion heaters located in Block 11 plantroom. The cylinder is 6 years old within its economical repair age. Therefore, it is recommended the unit is retained. **Condition / Priority Grade: A4**

1.1.3. Domestic hot water in the classrooms sinks are serviced by modular unvented Heatrae Sadia Multipoint electrical storage heater units located close to the outlet sinks/WHB in Block 11. The water heaters were replaced in 2006 including new termostatic mixing valves and are satisfactory condition (the indicative economic repair age for such unit CIBSE Guide M reference is 12 years). Therefore, it is recommended the hot water heater is to be retained. **Condition / Priority Grade: B3**

1.1.4. The existing heating system controls were replaced in recent years by the school in the Block 11 plantroom (11-GF-155). The visual inspection indicates that the Mechanical Control Panel and associated ancillaries is estimated to be approximately 8 years old and is in good condition. Control panel houses the operational on / off switches for the heating boiler, heating and domestic water pumps only. The controller has a manual timer and temperature controller on the front face of the control panel. It is recommended that the control panel is modified to allow new plant to be controlled effectively. **Condition / Priority Grade: B1**

1.1.5. Block 11 existing heating primary pumps and secondary circulation pump and hot water circulation pump in the 11-GF-155 plant room are around 8 years of age. The existing pumps are in good condition with no evidence of leaks or operational concerns and are connected to the old secondary side of heating pipework. It is recommended pumps are retained until replacement required. **Condition / Priority Grade: A3**

1.1.6. Block 11 existing cold water tanks located above kitchen and hall are around 6 years of age and are in good condition. They are cleaned, chlorinated and maintained regulary. Tanks were upgraded to comply with current standards in recent years. The water quality and pressure at the outlets is good. The last legionella risk assessment was carried out in 2013. End of line temperature checks are taken and managed by the site manager. Therefore, it is recommended tanks are retained. **Condition / Priority Grade: A4**

1.2 Space heating pipework and heating emitters

1.2.1 The existing two pipe low temperature hot water heating system pipework is the original steel pipework that was installed when the school was built approximately 60 years ago and it runs exposed at high levels throughout the site from the Plantroom Block 11 to the mixture of radiators and fan convectors within Block 11 ref. 1100330125. The heating system is beyond economical repair age (exceeded CIBSE Guide M indicative life expectancy of 35 years) and it is under a high risk of failure due to the age of the pipework. The heating pipework is serviced by one zone and is missing thermal insulation in most areas that contributes to inefficiency and imbalanced heating distribution and overheating issues that was reported by the member of staff. However, the pipework appears to be in satisfactory condition with no evidence of leaks and no issues were raised by the site manager. Replacement of the heating system pipework for the block 11 is recommended within next two years to prevent long term school closure due to age of the pipework. **Condition / Priority Grade: D1**

1.2.2. The existing heating system emitters consists of a mixture of fan convectors and steel panel radiators within Block 11 ref. 1100330125 areas. Most of the fan convectors located in classrooms / hall areas were replaced with new in 2013 fitted at high level in the spaces, steel panel radiators are estimated to be approximately 10 years

old and. All heat emiiters are in good condtion. During survey it was noted most of the steel panel radiators located in the admin/office area or toilets had thermostatic radiator valves fitted in recent years , no signs of corrosion were present during visual inspection. All heat emitters to be retained. **Condition / Priority Grade: A4.**

1.3. Domestic water services distribution pipework: Existing domestic pipework in school's Block 11 ref. 1100330125 is the copper pipework mains fed in most of the school, estimated to be around 8 years old and is in good condtion. Cold water pipework coonects to the existing electric point of use to outlets with TMV valves fitted. The hot water flow and return pipework is made by copper and runs from the electric water heater to the outlets. The pipework is considered to be in good condition and within the expected economic repair age (CIBSE Guide M indicative economic age 35 years). **Condition / Priority Grade: A4.**

2. Block 12 ref 1200330125 Nursery Block

2.1.1. Plant: Block 12 area is serviced by gas fired 1No Potterton Neataheat 16-22 gas fired condensing boiler that was installed 18 years ago and is in poor condtion. The boiler provides heating to the underfloor heating system and it passed its economic life with evidence of failure (the indicative economic repair age for such boiler CIBSE Guide M reference is 15 years). Immediate replacement of the boiler for the block 12 is recommended to prevent loss of heat to the area. **Condition / Priority Grade: D1.**

2.1.2. The boiler controls are ineffective; not meeting schools current plant operational needs. The Mechanical Controls and associated ancillaries is estimated to be approximately 18 years old and beyond economic repair age. The school reports that the existing mechanical controls are not reliable to operate and there are operation issues with controlling the plant equipment. Control panel houses the operational on / off switches for the heating boiler, which is a manual timer on the front face of the control panel. It is recommended that the control panel is replaced with new to allow existing plant to be controlled effectively. It is noted that the gas safety detection system sensors are missing from the installation. Therefore, it is recommended additional gas safety system including NG, CO sensors are included within controls to comply with current gas safe regulations. **Condition / Priority Grade: D1.**

2.1.2. Plant: Block 12 area is serviced to provide hot water by a vented hot water cylinder that was installed 18 years ago. The cylinder provides hot water to all outlets in Block 11. The unit and its insulation is in poor condition and should be replaced with new high efficiency cylinder. **Condition / Priority Grade: D1.**

2.1.3. Underfloor Heating system pipework: The underfloor heating system is approximately 25 years old. The school reported no issues with the underfloor heating system operation of manifold and pipework therefore the system shall be retained. **Condition / Priority Grade: B4**

2.1.4. Domestic water services distribution pipework: Existing domestic pipework in school's Block 12 ref. 1200330125 is the copper pipework fed from the tank above the cylinder, estimated to be around 18 years old and is in satisfactory condition. Hot and Cold water pipework connects to outlets with TMV valve fitted in the plantroom. The pipework is within the expected economic repair age (CIBSE Guide M indicative economic age 35 years). **Condition / Priority Grade: B4.**

2.1.5. Block 11 existing heating single head primary pumps and secondary single head circulation pump and hot water single head circulation pump in the 12-GF-171 plant room are around 18 years of age. The existing pumps are in poor condition and passed their economic repair age. The pumps are connected directly to the old secondary side of heating pipework. The pumps are under the risk of catastrophic failure and due to no other spare pumps servicing the system such failure may result in school closure. Therefore, it is recommended pumps are replaced with new twin head pumps as soon as possible. **Condition / Priority Grade: D1.**

5 Recommendations

The following below recommendations are proposed under Priority 1 category:

Summary

Block 11 heating pipework require immediate replacement due to reaching economic repair age.

Block 12 heating boiler, cylinder, pumps, plant controls require replacement as these are in poor condition and reached economic repair age.

Items (Refer to Section 4 Inspection findings)

1.1.1. The school Block 11 heating system is serviced by by 2No Remeha 210 Gas Echo Pro gas fired boilers with 420kW heating output located in Block 11 Plantroom. The boiler is nearing 6 years old and is within its economic life. – RETAIN.

1.1.2. Domestic hot water to the kitchen is provided by 1No mains fed Megaflow direct hot water cylinder serviced by electrcial immersion heaters located in Block 11 plantroom. The cylinder is 6 years old within its economical repair age. – RETAIN.

1.1.3. Domestic hot water in the classrooms sinks is provided by unvented Heatrae Sadia Multipoint hot water heater units located close to the outlet sinks/ WHB in Block 11. The water heaters were repalced in 2006 including termossatic mixing valves with new and are within its economic lifespan – RETAIN.

1.1.4. The existing heating system controls were replaced in recent years by the school in the Block 11 plantroom (11-GF-155). The visual inspection indicates that the Mechanical Control Panel and associated ancillaries is estimated to be approximately 8 years old and is in good condition. – RETAIN.

1.1.5. Block 11 existing heating primary pumps and secondary circulation pump and hot water circulation pump in the 11-GF-155 plant room are around 8 years of age. The existing pumps are in good condition and are connected directly to the 60 year old secondary side of heating pipework. The pumps appears to be in good condition with no evidence of leaks and no issues were raised by the site manager – RETAIN.

1.1.6. Block 11 existing cold water tanks located above kictehn and hall are around 7 years of age and are in good condition. They are cleaned, chlorinated and maintained regulary. Tanks were upgraded to comply with current standards in recent years.- RETAIN.

1.2 Space heating pipework and heating emitters.

1.2.1 The existing two pipe low temperature hot water heating system pipework is the original steel pipework that was installed when the school was built approximately 60 years ago and it runs exposed at high level throughout the site from the Plantroom Block 11 to the mixture of radiators and fan convectors within Block 11 ref. 1100330125. The heating system is beyond economical repair age (exceeded CIBSE Guide M indicative life expectancy of 35 years) and it is under a high risk of failure due to the age of the pipework. The heating pipework is serviced by one zone and is missing thermal insulation in most areas that contributes to inefficiency and imbalanced heating distribution and overheating issue that was reported by the member of staff. This appears to be in good condition with no evidence of leaks and no issues were raised by the site manager. Immediate replacement of the heating system pipework for the block 11 is recommended to prevent long term school closure. – **REPLACE WITH NEW.**

1.2.2. The existing heating system emitters is serviced by a mixture of fan convectors and steel panel radiators within Block 11 ref. 1100330125 areas. Most of the heat emitters e.g fan convectors located in each classrooms / hall areas were replaced with new in 2013 fitted at high level in the spaces. All heat emiiters are in good condtion. During survey it was noted most of the steel panel radiators located in the admin/office area or toilets had thermostatic radiator valves fitted in recent years , no signs of corrosion were present during visual inspection. – RETAIN.

1.3. Domestic water services distribution pipework: Existing domestic pipework in school's Block 11 ref. 1100330125 is the copper pipework mains fed in most of the school, estimated to be around 8 years old and is in good condtion. Cold water pipework coonects to the existing electric point of use to outlets with TMV valves fitted. The hot water flow and return pipework is made by copper and runs from the electric water heater to the outlets. It is noted that doemstic water services pipework replacements was carried out in recent years. The pipework is within the expected economic repair age **–** RETAIN.

2. Block 12 ref 1200330125 Nursery Block

2.1.1. Plant: Block 12 area is serviced by gas fired 1No Potterton Neataheat 16-22 gas fired condensing boiler that was installed 18 year ago and is in poor condtion. The boiler provides heating to the underfloor heating system. and it passed its economic life. Immediate replacement of the boiler for the block 12 is recommended to prevent long term school closure. **-REPLACE WITH NEW.**

2.1.2. The boiler controls are ineffective; not meeting schools current plant operation needs. The Mechanical Controls and associated ancillaries is estimated to be approximately 18 years old and reaching the end of economic repair age. It is recommended that the control panel is replaced with new to allow existing plant to be controlled effectively. - **REPLACE WITH NEW .**

2.1.3. Plant: Block 12 area is serviced to provide hot water by a vented hot water cylinder that was installed 18 years ago. The cylinder provides hot water to all outlets in Block 11. The unit and its insulation is in poor condition and should be replaced with new high efficiency cylinder . - **REPLACE WITH NEW.**

2.1.4. Underfloor Heating system pipework: The underfloor heating system is approximately 25 years old. The school reported no issues with the underfloor heating system operation of manifold and pipework therefore the system shall be retained. **-**RETAIN**.**

2.1.5. Domestic water services distribution pipework: Existing domestic pipework in school's Block 12 ref. 1200330125 is the copper pipework fed from the tank above the cylinder, estimated to be around 18 years old and is in good condition. Hot and Cold water pipework connects to outlets with TMV valve fitted in the plantroom. The pipework is within the expected economic repair age -RETAIN.

2.1.6. Block 11 existing heating single head primary pumps and secondary single head circulation pump and hot water single head circulation pump in the 12-GF-171 plant room are around 18 years of age. The existing pumps are in poor condition and are connected directly to the 38 year old secondary side of heating pipework. The pumps are under the risk of catastrophic failure and due to no other spare pumps servicing the system such failure may result in school closure. Therefore, it is recommended pumps are replaced with new twin head pumps as soon as possible. **-REPLACE WITH NEW.**

6 Health & Safety Considerations

Below are the health and safety concerns if immediate replacement of the plant identified is not carried out (Block11 &12)

- Heating system plant failure: **unreliable boiler in poor condition** with no further standby plant **– HIGH RISK of school closure**
- Heating system pipework failure: Very old system with**– HIGH RISK of school closure**
- Provision of new controls including fire alarm and gas shut off safety system integration - including a new gas solenoid valve, heat sensors and CO sensors **– HIGH RISK to maintenance engineers & end users**

7 Financial Assessment

7.1 Estimated Costs

Estimation Sheet						
Site:- [redacted] **School**						
Works:- Refurbishment of Mechanical Services						
Date:- [redacted]						
Item:	**Condition**	**Action**	**Quantity**	**Unit**	**Rate - £ (per kw/m2/m)**	**Total Cost**
Block 11 Main Building						
SPACE HEATING						
Allowance for a new surface run heating F&R pipework (in Mild steel) including thermal insulation and fittings	D1	Replace	650	m	£45.00	£29,250.00
Removal of all existing heating pipework that is identified as Grade D1	D1	Replace	1	Item	£2,500.00	£2,500.00
Pressure test, water treatment/ flushing, chemical dosing.	N/A	N/A	1	Item	£4,000.00	£4,000.00
Commissioning/Testing etc.	N/A	N/A	1	Item	£2,000.00	£2,000.00
Builders work 10%	N/A	N/A	1	Item		£3,775.00
Block 11 Sub-Total						**£41,525.00**
Block 12 - Nursery block						
HEAT SOURCE						
Heat Source - Space heating Gas fired condensing boiler including gas train, flue, plantroom primary pumps and pressurisation unit	D1	Replace	24	kW	£120 / kW	£2,880.00
Heat Source - DHWS production Replace existing cylinder with a new, circulation pump, balancing valves, isolation valves	D1	Replace	1	Item	£10,000.00	£10,000.00
Gas services modification with a safety control device connected to the Control Panel.	D1	Replace	1	Item	£3,000.00	£3,000.00

Supply and installation of the new Mechanical Control Panel to serve mechanical equipment in boiler room.	D1	Replace	1	Item	£8,000.00	£8,000.00
Space Heating Pumps (system side) including system side plantroom pipework, valves insulation and accessories	D1	Replace	60	kPa	£110/kPa	£6,600.00
Commissioning/Testing etc.	N/A	N/A	1	Item	£2,000.00	£2,000.00
Builders work 10%	N/A	N/A	1	Item		£1,000.00
Block 12 Sub-Total						**£33,480.00**
Block 11 &12						**£75,005.00**
Prelims(15%)						**£11,250.75**
Contingency Sum (5%)						**£4,312.79**
Project Costs						**£90,568.54**
Asbestos R&D survey report including samples testing			1	Item	£3,000.00	£3,000.00
Building Regulation Fees			1	Item		£500.00
Planning			1	Item		£500.00
Contract preparation			1	Item		£500.00
Subtotal			1		**Sub-total**	**£95,068.54**
Design/contract admin (10%)			1			£9,506.85
					Total Estimate	**£104,575.39**
*Estimates exclude any costs that may be discovered following an Asbestos R&D Survey						

- Any required asbestos removal / air monitoring works that may arise following R&D Survey
- Temporary Heating/Hot water Plant that may be required
- Out of Hours Working
- Costs exclude VAT.

7.2 Estimated Savings

School utility bills and previous repair maintenance costs are assessed to calculate following: -

[redacted] School - GAS USAGE AND ESTIMATED SAVINGS for Block 12 Nursery - no utility bills being available and calculations were based on formula XX kw X 8 hrs= daily kWh heating

Date	Daily gas usage for heating (kwh)	Current Htg consumption gas in month (kwh)	Heating cost current	New boiler plant (kwh)	Estimated heating bills	Current kitchen HWS consumption (kwh) month	Current HWS cost (£)	Estimated HWS (kwh)	Estimated HWS bills (£)	Estimated Annual repair bills (£)
Jun-18	0	0	£ -	0	£ -	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Jul-18	0	0	£ -	0	£ -	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Aug-18	0	0	£ -	0	£ -	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Sep-18	96	2016	£ 54.43	1,109	£ 29.94	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Oct-18	96	2016	£ 54.43	1,109	£ 29.94	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Nov-18	115	2415	£ 65.21	1,328	£ 35.86	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Dec-18	134	2814	£ 75.98	1,548	£ 41.79	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Jan-19	134	2814	£ 75.98	1,548	£ 41.79	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Feb-19	134	2814	£ 75.98	1,548	£ 41.79	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Mar-19	115	2415	£ 65.21	1,328	£ 35.86	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Apr-19	77	1617	£ 43.66	889	£ 24.01	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
May-19	0	0	£ -	0	£ -	1,600	£ 43.20	1,200	£ 32.40	£ 150.00
Total	901	18,921	£ 510.87	10,407	£ 280.98	19,200	£ 518.40	14,400	£ 388.80	£ 1,800.00
		Gas per kWh	2.5 pence							
		CCL charge kWh	0.2 pence							

The CO2 generated by burning natural gas is 0.185 kg / kWh [DEFRA, 18]

Current Carbon produced by gas	167	kg of Carbon	New plant	5,477	kg of Carbon

Current boiler efficiency : 80% (when new), 65% (current condition estimated), new gas fired condensing plant 95% efficiency: total saving approx 35% plant usage

Current heating system side efficiency: 40%, New system with thermal insulation: 90%: difference in system efficiency: 50%

Total system efficiency improvement: 40% (5% efficiency added on electricity with variable speed pumps)

49% reduction heating gas bills with new boiler plant replacement and pipework & insulation is expected - replacement of pumps will also provide savings included in this figure

£ 229.89	Annual saving on the energy bills on boiler and pipework replacement (energy)
£ 1,800.00	Annual saving on repair bills
£ 2,029.89	Estimated annual total savings in energy and maintenance as a result of plant and pipework replacement

8 Programme

The works shall be designed and procured in order for the contractor carrying out the works during school summer holiday period in 2020.

An Asbestos R&D survey shall be raised by a competent consultant in readiness of the construction works and shall be part of the pre construction information pack under CDM 2015. The contractors programme shall include for the works.

Due to size of project it is recommended the works is planned / phased so that the most disruptive works such as removal of existing plant, pipework and emitters and installation of heating and domestic water pipework and emitters and hot water plant shall be carried out during school summer holiday period with boiler plant replacement works running in paralel with school operation during September.

It is envisaged the site works would last 8 weeks on site.

9 Procurement comments

The project works would need to be designed by a competent design consultancy and competitively tendered by HCC procurement team. Recommended JCT Minor works with contractor design and carry out the works during school summer holiday period. We recommend 4-6 weeks should be allowed for tendering process with invitation of 4-6 competent frameworks contractors.

10 Conclusions & Recommendations

We have used our reasonable endeavours to provide information that is correct and accurate and have discussed above the reasonable conclusions that can be reached on the basis of the information available. We would recommend that in order to obtain more secure results, the following additional work should be commissioned. Having issued the range of conclusions it is for the client to decide how they would like to proceed.

11 Appendix A – Condition Grade and Priority Rating Definition

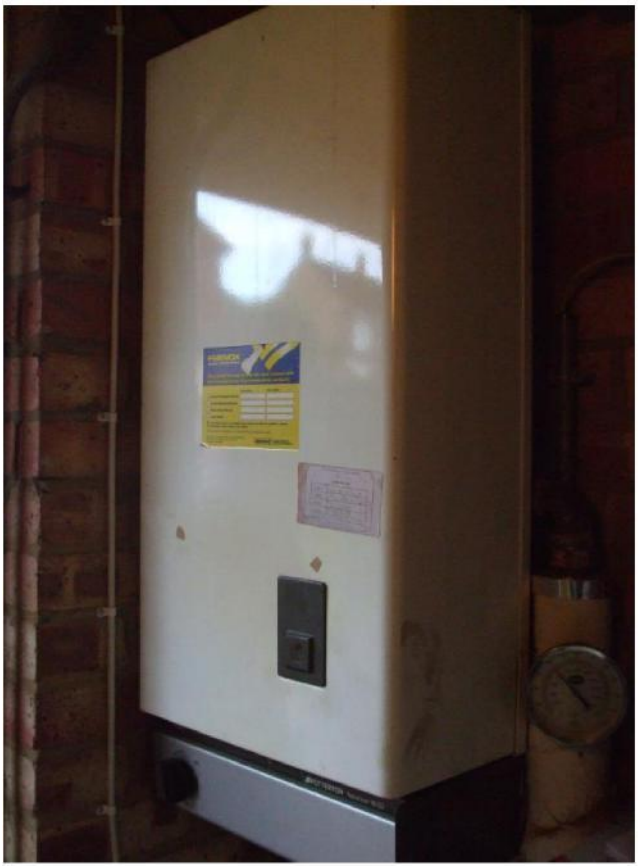
Condition Grade Definition

A Good	Performing as intended and operating efficiently
B Satisfactory	Performing as intended but exhibiting minor deterioration
C Poor	Exhibiting major defects and/or not operating as intended
D Bad	Life-expired and/or at serious risk of imminent failure

Priority Rating Definition

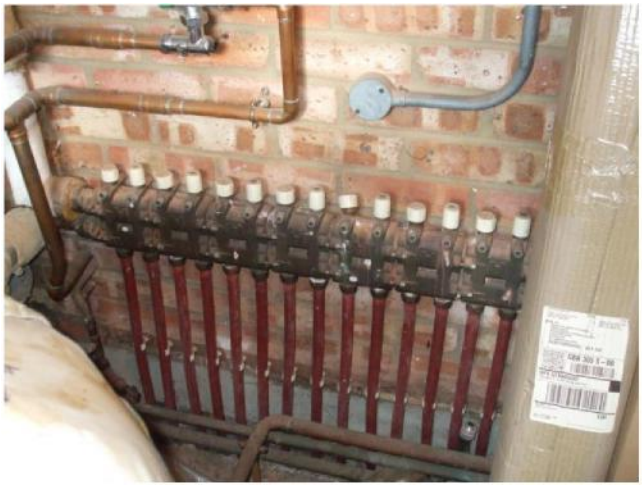
Priority 1	Immediate or year 1 remedial action required
Priority 2	Year 1-2 remedial action required
Priority 3	Year 3-5 remedial action required
Priority 4	Year 6 - 10 remedial action required

12 Appendix B – Site Survey Photographs



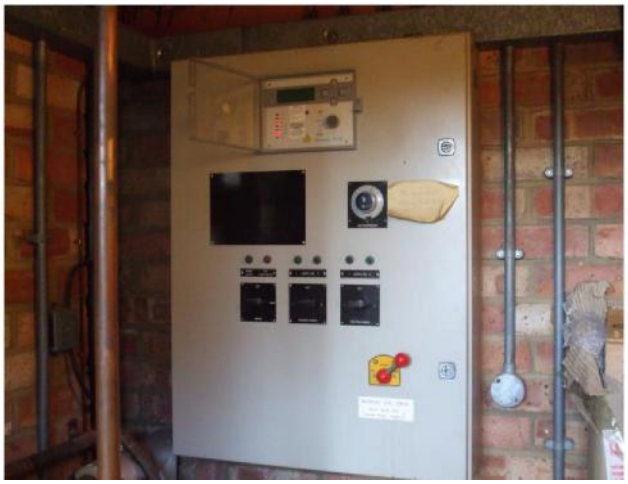
Picture 1- Existing Boiler 12-GF-171 Plantroom (D1)

Picture 2- Existing cylinder 12-GF171 Plantroom D1



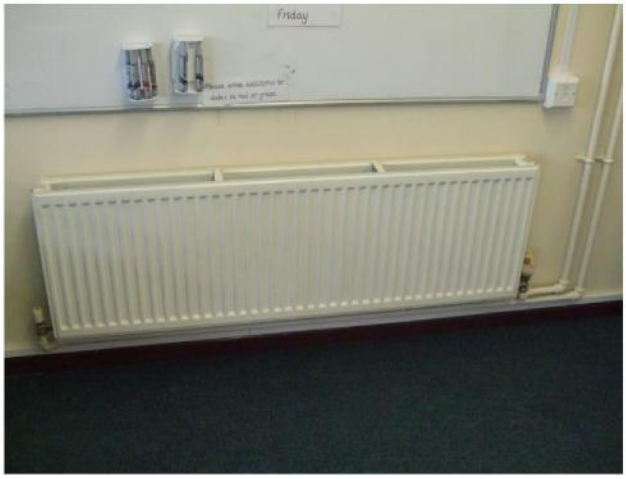
Picture 3- Underfoor heating manifold in 12-GF-164 Plantroom (B4)

Picture 4- Grundfos single main heating primary pump (D1) in 12-GF171 Plantroom

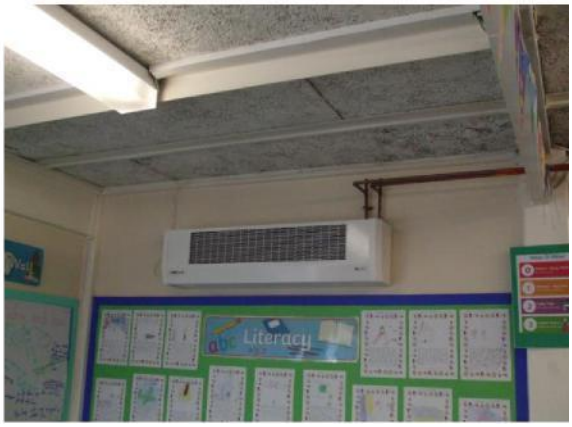


Picture 5- Existing control panel to be (12-GF-171) (D1) Replace with new.

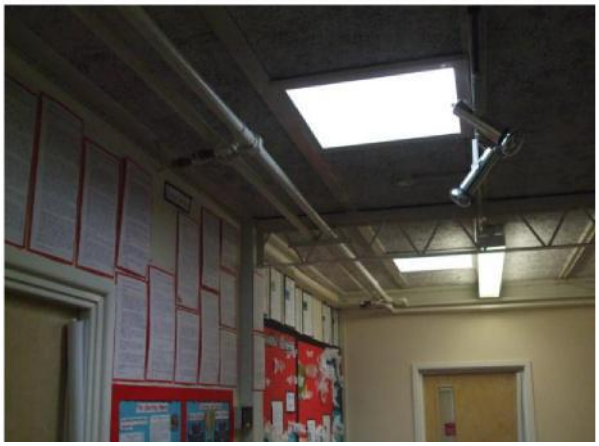
Picture 6- Gas solenoid valve to be replace with new in 12-GF-171 Plantroom (D1).



Picture 7- Block 11 Radiator with TRV in satisfactory Condition (B4). Pipework to be replaced with new (D1)



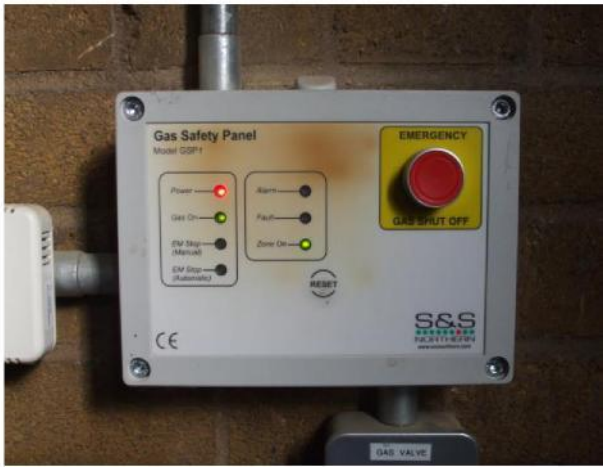
Picture 8-new fan convector (typical classroom) in Block 11 with old heating uninsulated pipework to be replaced with new (D1).



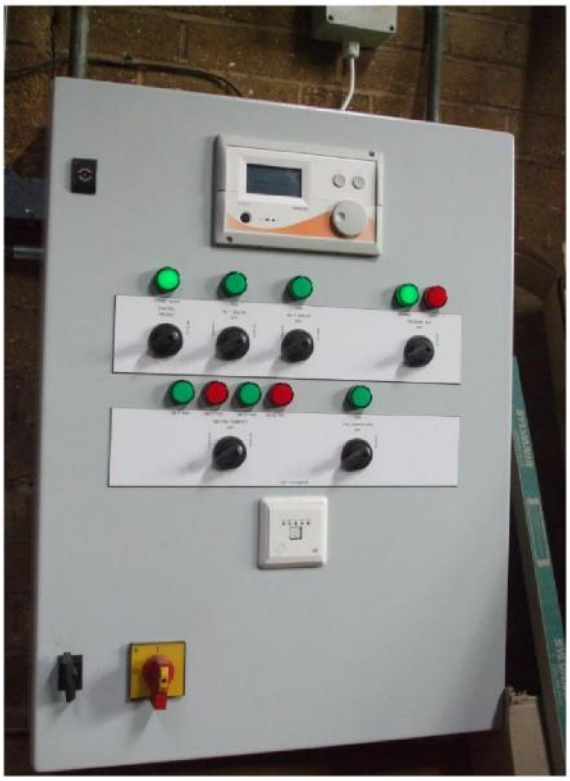
Picture 9- Block 11 Unisulated old heating pipework (D1)

Picture 10- Boiler No 1 in Block 11plantroom in good condition 11-GF-155 (A4)

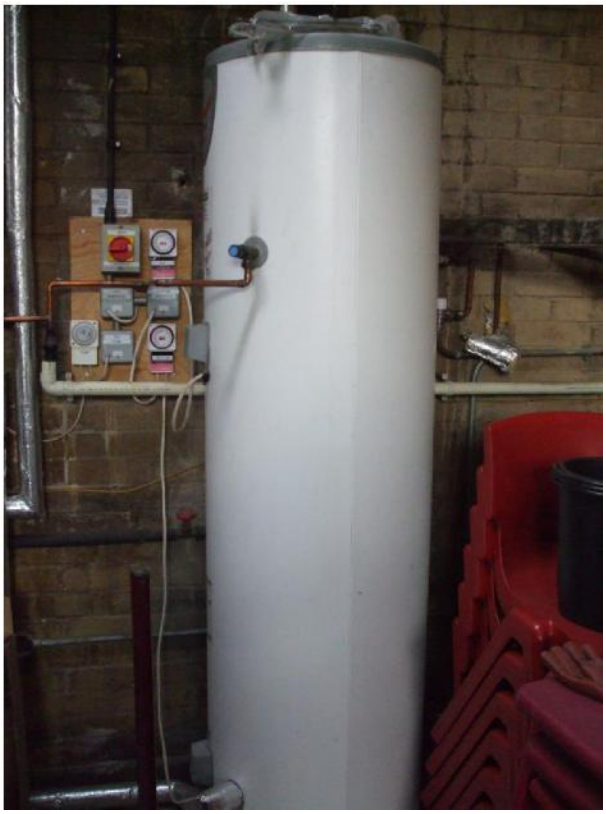
Picture 11- Boiler No 2 in Block 11 plantroom
In good condtion (A4) 11-GF-155



Picture 12- Existing gas safety control panel
11 plantroom 11-GF-155 to be replaced (B2)



Picture13- Existing mechanical control panel
in Block 11 plantroom 11-GF-155 in good condition (B4)



Picture 14- Block 11 cylinder to be retained in
plantrom 11-GF-155 (B2).