Brontide Consulting
Building Services Consultants

MECHANICAL & ELECTRICAL SCOPE OF WORKS DOCUMENT

Project :	Christchurch C of E Primary School London NW3 1JH
Description:	Refurbishment of Existing School
Reference :	0313/IW/SOW01
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CIBSE LOW CARBON ENERGY ASSESSORS

DOCUMENT ISSUE REGISTER

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1.0 INTRODUCTION

The following Scope of Works are based upon a visual survey (25/7/14) and SCABAL drawing nos. P110A and P111A.

The building is to be generally remodeled internally to create addition space and usage.

The internal phasing of the woks has yet to be determined. Phasing of the remodeling works may affect the scope of works and associated budget costs as described within this document.

The following scope of mechanical and electrical engineering works acknowledges that the proposed works are to be carried our within a Listed Building and a Conservation area.

Any modifications proposed to the mechanical and electrical installations shall not have any detrimental effect to the building fabric, structure or appearance. All new M&E services installations shall be installed to maintain the character of the original build construction and finishes.

The building area falls below the 1000m2 and the implication of Consequential Improvements under Building Regulations Part L2B is not applicable. However, the gas fired boilers for heating and hot water generation have been replaced in 2010 with high efficiency SEEBUK A rated models.

Together with the boiler replacement, the automatic controls have been replaced to provide weather compensation, optimization of operation and multi programmable time controls.

As part of the proposed refurbishment works the internal lighting shall be generally replaced throughout with high efficiency lighting including elements of automatic control (presence detection). External lighting shall be discreet to illuminate pathways and exits only. External lighting shall be wall mounted or secured to underside of external canopies. External lighting shall be Dark Skies compliant and the light fittings in keeping with the age of the building.

Heating and hot water pipework installed as part of the refurbishment and where appropriate shall be fully thermal insulated to ensure minimal heat loss.

As the central plant has been recently replaced, the building being Listed and in a Conservation area, the application of Renewable or Low Carbon Technology is not considered economical feasible or practical.

Generally the proposed refurbishment involves internal remodeling without effecting the existing base build mechanical and electrical services installation.

The only internal area increasing in capacity, function, output, etc is the kitchen. To cater for the increased capacity from the new kitchen location, requires a mechanical filtered extract ventilation system. The kitchen extract system shall discharge externally through a roof terminal as detailed by the Architect. The kitchen extract roof terminal is considered to be located at the highest point of the building where the kitchen is located and positioned away from the site boundaries.

The internal occupied rooms and spaces shall be naturally ventilated via openable windows as existing.

Existing toilets have mechanical extract ventilation installed and shall be retained.New toilet facilities shall have mechanical extract ventilation discreetly installed through external walls and discharged via black grate grilles to match existing.

The mechanical and electrical services proposed installation has limited impact or generation of external noise. The heating boilers are existing being retained. The new kitchen extract ventilation shall be acoustically treated within the building to have effect upon external ambient noise levels.

2.0 MECHANICAL SERVICES EXISTING SERVICES

2.1 LTHW Services

The existing gas fired boiler room is located within a first floor/roof plant room located above existing toilet accommodation and accessed via ladder from the corridor.

The whole of the boiler room plant and equipment was replaced in approximately 2010.

The gas fired boiler plant consists of 2No. wall hung high efficiency boilers as manufactured by Broag, Model Quinta 65. Approximate output 60kw each.

The heating system is pressurized. The heating boilers are individually pumped to a low loss header. From the low loss header, two secondary circuits are connected as follows:

a) 42mm compensated pumped (twin head variable speed) serving radiator heating to the School.

b) 22mm constant temperature pumped (single head) to an indirect vented hot water cylinder serving the toilets only. The hot water cylinder is located within the adjoining roof space.

The secondary heating copper distribution mains generally has been installed throughout the School at high level dropping to serve a mixture of radiators and low surface radiators as manufactured by Myson.

The existing automatic control panel mounted within the plant room incorporates Hardware/software as manufactured by Trend.

2.2 Gas

The incoming gas service and meter is currently located at the opposite end of the School to the boiler room. The gas meter is located within the coats area to the existing Year 1 and Reception classbases.

The U25 gas meter is located within a cupboard. The gas meter no. is M025AO1295.

A 50mm diameter gas main runs to the boiler room at high level.

The gas only serves the gas fired boiler room only.

2.3 Domestic Hot Water

Apart from a small 110 litre indirect vented hot water cylinder connected to the central gas fired boiler plant, the domestic hot water provision throughout is local point of use electric water heaters.

The small 110 litre domestic hot water cylinder serves the toilet accommodation located adjacent to the existing hall/kitchen.

2.4 Domestic Cold Water

The existing rising cold water main enters the building via the existing toilet accommodation adjacent to the existing IT suite. The existing external water meter and main stopcock are located within a chamber mounted within the foot path adjacent to the church.

The existing water meter and stopcock chamber is full of water and is believed to have a leak.

In the recent past, the existing roof mounted main cold water storage tanks have been abandoned and a new cold water main has been installed throughout serving all cold water outlets and electric water heaters.

The redundant cold water storage tanks are still in position located above the existing toilets/computer suite.

Smaller capacity cold water storage tanks are located in the roof/loft space located adjacent to the roof boiler room. The small tanks serve the local toilet block only.

2.5 Dx Heat Pump (Comfort Cooling)

The existing IT/Computer Suite has a standalone Dx refrigerant based comfort cooling system installed. The indoor unit is high level wall mounted.

The external condenser unit is located upon the flat roof of the existing single storey toilet accommodation adjoining the IT Suite. The existing condenser unit is screened from view.

3.0 MECHANICAL SERVICES – PROPOSED WORKS

3.1 LTHW Heating System

The following scope of LTHW heating workls to be read in conjunction with brontide Drawings Nos, 0313 –M-3000 to 3002.

The LTHW heating system first floor central plant room shall be retained without modification to the existing installation except the modification of heating pipework to the indirect vented domestic hot water cylinder.

The distribution LTHW heating mains and the LST radiators shall require modification and re-positioning to suit the proposed works as follows:

a) Provide relocated radiator (R34) to newly formed kitchen (former ICT Suite).

b) Reposition existing radiator (R29) to form new hall (removal of dividing partition).

c) Reposition existing radiator to allow double width doors to be formed into new hall.

d) Provide new LST radiator (R45) to new accessible toilet provision (00.40).

e) Reposition existing radiator (R33) to newly formed doorway into Girls Toilets (00.11).

f) Provide new LST radiator (R47) to new Group Room (00.20)

g) Reposition existing LST radiator (R15) to new Group Room (00.38).

h) Provide new LST radiator (R46) to new Repro/TA Room (00.36).

i) Provide new LST radiator (R48) to new Breakout/storage (00.22)

j) Provide new LST radiator (R44) to reception/circulation area.

k) Reposition existing radiator (R2) and connecting pipework to allow formation of new staircase.

l) Reposition existing radiator (R11) and connecting pipework to allow removal of existing wall within Reception classabase 00.23

m) Reposition existing radiator (R14) located in corridor to allow formation of new external doorway.

n) Reposition existing radiator (R21) located within Year 1 class base 00.18

o) Provide and install new LST radiators (R49 – R51) to newly formed 1st floor Year 6 classbase 01.08

General – the existing LTHW heating mains will require local modifications to suit new classbase remodeling and to allow formation of first floor classbase.

3.2 Gas

General – the existing high level gas distribution shall require local modification/diversion to suit new classbase remodeling, creation of the new hall and to allow formation of first floor classbase.

The gas pipework is currently installed exposed at high level through the school and painted to identify gas. If gas is to be concealed, any new boxing's, ceiling etc. will require to be ventilated to be compliant with the Gas Regulations.

Note: We have assume all new cooking equipment associated with the relocated kitchen is electric only.

3.3 Cold Water Main

The incoming cold water main supply shall be replaced to enable all new and existing fittings within the school to be connected to the cold water main and eliminate the need for cold water storage tanks.

The existing cold water storage tank located within the roof space where the new stairs are to be formed shall be made redundant and removed.

An application to be made to Thames Water to possibly increase the cold water main supply diameter and to repair the leak currently experienced in the boundary water meter and stopcock chamber.

The new replacement water main shall rise into the existing school building in an agreed location e.g. kitchen. The new rising cold water main shall be extended through the school at high level, and drop to connect to terminal fittings.

The new rising water main from the ground shall be complete with stopcock, double check valve, draincock and an appropriate anti scale device.

3.4 Domestic Hot Water

The existing vented 110 litre indirect domestic hot water cylinder to be repositioned and retained to serve the existing toilets (00.32 and 00.34). The relocated hot water cylinder to be positioned within the existing roof plant room.

The existing hot water provisions provided to toilet accommodation 00.34 to be retained. Existing hot water to the existing disabled WC and adjoining boys' toilets, shall be isolated and removed to allow construction of new stair case. The remaining boys toilet (00.32) shall have the hot water modified and extended to suit new layout.

a) Provide and install new point of use electric hot water heaters to serve new sink units located within each classbase (assumed).

b) Extend domestic hot water flow and return from relocated cylinder to serve new Accessible W.C (00.40).

c) Provide and install new point of use electric instantaneous domestic water heater to serve W.C. adjacent to Head Teachers Office (00.02).

d) Provide and install new electric point of use hot water heater to serve the change/WC G09.

e) Provide and install new semi-storage electric domestic water heater to serve the new cleaners store.

f) Provide and install new storage electric domestic water heaters to serve new kitchen provision. Capacity of domestic hot water to new kitchen to be confirmed when kitchen specification is available.

General – the Contractor to isolate, disconnect, remove and dispose of all redundant electric hot water heaters and associated connecting pipework to redundant toilets, sinks, etc.

All new electric water heaters (except the kitchen) shall be regulated and factory set to deliver hot water at 39deg C to avoid scald temperatures.

3.5 Domestic Cold Water

The existing domestic cold water main shall be modified and adapted to suit the new remodeled layouts.

The existing cold water main shall be disconnected from all redundant fittings and electric water heaters. This shall include the removal of all potential deadlegs in the pipework.

The cold water main shall be extended to serve new toilet provision and WRAS Approved unvented point of use electric water heaters.

3.6 Ventilation

Rooms/Areas not provided with mechanical ventilation to be naturally ventilated to comply with Building Regulations and Building Bulletin 101.

We have assumed all existing windows are openable or can be made openable to achieve the requirements of BB101.

Please note natural; ventilation and the compliance with BB101 shall be restricted by Listed Building criteria.

Where possible and achievable, Natural ventilation to be achieved by cross flow low – high openings located upon opposite sides of each room served.

Within each classbase or teaching area, provide and install a dedicated stand alone CO_2 sensor to provide visual indication of CO_2 levels within the room served.

Mechanical Ventilation

a. Provide and install new individual ducted extract ventilation to the Accessible W.C. The external terminals to the extract ventilation shall match the existing black grate grilles installed in the existing external walls.

b. Provide and install through the wall extract fan ventilation for the W.C. adjacent to Head Teachers Office. The external terminals to the extract ventilation shall match the existing black grate grilles installed in the existing external walls.

c. Provide and install new kitchen ventilation. The kitchen extract shall include grease filters. The kitchen extract shall be ducted to discharge through the exiting pitched roof and via a purpose made terminal. The position of the roof integrated terminal shall be located away from the site boundary and bordering properties. For details of roof terminal and position, please refer to the Architects drawings.

Note: Kitchen ventilation design and capacity is subject to the final kitchen specification as confirmed by the Client.

3.7 Above Ground Drainage

General – extend from sockets provided at ground level by others new above ground drainage to serve sinks, W.C's, wash hand basins, etc.

3.8 Basis of Mechanical Services Design

The Basis of Design for the Mechanical Engineering Services and plant maximum demand operating conditions are as follows and on completion of the works commissioning of the various systems and plant must demonstrate these conditions can be achieved.

Winter design external air temperature: -4°C 100% saturated

20% overload capacity included into design in accordance with CIBSE Guide Recommendation

Winter design internal air temperatures:

Reception Base Class	21°C +/- 1°C
Class Bases	19°C +/- 1°C
Offices	21°C +/- 1°C
Toilets	19°C +/- 1°C
Circulation	19°C +/- 1°C

Summer Internal Design Air Temperature:

To the requirements of BB101

Heat gain allowances

15w/m^2 – equipment

10w/m^2 – lighting (not applicable if daylighting criteria is achieved)

Mechanical ventilation air change rates:

Shower Rooms	–	6 air changes / per hour
Toilet Cubicles	-	15 Litres/sec/cubicle
Natural ventilation	–	8 litres/per second/per person rapid ventilation
		3 litres/per second per person background ventilation

Design Infiltration air change rates:

Winter	2 air changes / per hour
Summer	½ air changes / per hour

Noise levels:

Toilets	NR45
Class bases	NR33
Hall	NR35
Transit Areas	NR35
External	To the requirements of the Local Authority

Plant Operation:

16 hour period

Water Services:

To comply with Local Water Authority Requirements, British Standard EN806 and the latest Water Regulations.

Gas Services

To comply with the following documentation:

a) The Gas Safety Regulations latest edition

b) Publication IM/16 Guidance Notes on the Installation of Gas Pipework

c) Publication IM/15 manual valve selections

d) Publication IM/2 purging procedures

e) Publication IM5 soundness testing procedures

Internal gas service pipe distribution – pipework sized on maximum pressure drop over total equivalent length of travel of 0.4" wg = 99Pa

The Designs shall comply with all applicable Legislation, Regulations Guidelines and Recommendations as stated in the following where appropriate.

a) Planning Consents and Conditions

a) Current Building Regulations

b) Current Water Regulations & Byelaws

c) British Standards and Code of Practice

d) CIBSE Guides and Technical Memorandum

e) BRE Technical Bulletins

f) Health & Safety Regulations

g) CDM Regulations

h) HSE Guidance Notes & Publications

i) COSHH Regulations

j) HVCA Guides

k) IEE Regulations

4.0 ELECTRICAL SERVICES

4.1 UK Power Network (UKPN)

The building is currently served from a 200 Amp rated TP&N service supply extending from UK Power Networks existing local underground distribution system. The incoming service arrangement appears to be relatively new and in very good condition.

The service supply is located within the existing Caretakers Office (located adjacent to the Christchurch Hill public roadway) and enclosed within a cupboard, together with the associated metering equipment and consumer's main electrical switch disconnector and distribution / switchgear equipment.

It is envisaged that the current incoming supply arrangement will be sufficient for the load requirements to serve the proposed refurbishment works to the building.

In addition, a second UKPN service supply is currently provided within the mixed use areas adjacent to the Reception Classroom, the service supply appears to service the first floor staff room accommodation.

This service supply appears to have been installed for a number of years, and whilst there are no concerns relating to its general condition or operating performance, the service supply should be disconnected and made redundant and the areas serviced transferred onto the main electrical supply as part of the overall refurbished works proposed to the building.

A third service supply was present at high level within the entrance lobby adjacent to the current head teacher's room. This service supply appears to have been the original incoming service serving the building but now appears to be out of service and redundant.

It would seem prudent that the existing service is checked to confirm whether it is in service and ultimately removed from the building.

4.2 LV Distribution

The existing LV distribution system consists of a main Ryefield distribution board providing sub-main distribution to a series of three-phase and neutral (TP&N) and single-phase and neutral (SP&N) distribution boards positioned at strategic locations within the existing building.

Typically, the TP&N distribution boards provide distribution to high current equipment usage areas such as the Kitchen and the main administration block, whereas the SP&N distribution boards provide distribution to smaller and lower current usage areas such as the classrooms, etc.

Due to the nature of the refurbishment works it will be necessary to undertake modifications to the existing distribution system such that distribution boards are available locally for ease of distribution of small power and lighting final circuits serving the newly formed areas of the building.

The current use of a Ryefield distribution board, traditionally employed by UKPN for domestic distribution installations, will be replaced with a LV Panelboard complete with moulded case circuit breakers (MCCB's) to provide a technical engineering solution more suitable for a school building environment.

All new small power and lighting distribution boards will be provided with supplementary sub-metering equipment to monitor energy consumption to achieve compliance with Part L of the Building Regulations.

4.3 Lighting

The general lighting system provided throughout the building appears to be from original installation with piecemeal replacement of luminaires, etc., as and when remedial works undertaken to the building.

The luminaires provided to the original elements of the School such as the teaching areas, administrative areas and circulation spaces generally consist of linear fluorescent type fitted with louvre type diffusers either suspended from the building structure or integrated within a suspended lighting trunking.

Luminaires to other areas such as the main hall consist of surface mounted luminaires fitted with prismatic / opal diffusers.

The general lighting to the main hall area is supplemented with a specialist stage lighting system, operated and controlled via a dedicated lighting control system positioned within a separate cupboard enclosure within the hall area.

Generally the lighting is controlled either by wall mounted light switches located adjacent to the particular area served.

The nature of the refurbishment works will effectively necessitate the replacement of the lighting system, inclusive of all luminaires and modes of switch control.

The new lighting schemes would generally consist of the following elements to achieve compliance with current design guidelines associated with education premises: -

a) Teaching spaces will generally consist of surface and suspended high frequency fluorescent luminaries providing upward/downward illumination.

b) Circulation spaces will generally consist of surface ceiling and wall mounted high frequency fluorescent luminaries, subject to the nature and type of ceiling finishes.

c) W.C's spaces will generally consist of surface ceiling and wall mounted downlighter type luminaires, complete with compact fluorescent lamp sources. The final selection of the luminaires will be subject to the nature and type of ceiling finishes.

d) Feature lighting shall be provided in the corridors for display presentations as required.

e) IP44 proof fluorescent luminaires with motion detector switching shall be installed within stores and plant room.

f) All lighting will generally be locally automatically controlled with downstream manual switches in class bases and offices, etc. W.C's and circulation routes shall be switched by movement detectors with delayed off switching for energy saving.

g) All lighting will be provided for compliance with Part L of the Building Regulations in terms of conversation of energy relative to automatic switching control and energy efficacy of lamp sources.

4.4 Emergency Lighting

An emergency lighting system is provided throughout the existing building to assist the occupants in leaving the building in the event of an emergency situation arising.

The emergency lighting appears to have been a retro-fit installation and generally consist of the use of standalone self-contained emergency bulkhead luminaires installed surface mounted to the building fabric to the relevant areas of the building.

The nature of the refurbishment works will effectively necessitate the wholesale replacement of the existing emergency lighting system, inclusive of all luminaires and modes of test switch control.

The new emergency lighting schemes will be provided to all areas of the building to achieve compliance with current design guidelines associated with education premises and be specifically supplemented with the following: -

a) The use of combined luminaires integrated within the general lighting luminaires provided throughout all areas of the building to achieve compliance with statutory legalisation.

b) The use of emergency lighting exit signage to indicate the routes for means of escape from the building.

c) The introduction of emergency lighting to the external areas of the building, typically above or adjacent main mean of escape areas.

d) All emergency lighting will be of the self-contained system, with individual battery inverter units incorporated within each luminaire. Test switches, for statutory maintenance regimes, will be provided adjacent to the relevant area or adjacent to the relevant general lighting distribution boards serving the various areas of the building.

4.5 External Lighting

New external lighting will be provided to the building and consist of the following: -

a) High level lighting attached to the building fabric, to supplement the security measures for the building.

b) Local lighting to entrance / exit doors.

The external lighting will be controlled by dedicated external lighting controls to provide timeswitch scheduling and photocell control to suit the building operating conditions.

All external lighting shall be downward light output for “dark skies” compliance.

4.6 Small Power

Small power systems are provided throughout the building to serve the Schools teaching and administrative requirements. In addition, small power is provided to satisfy fixed items of equipment installed throughout the building.

Small power provision to the teaching areas generally consisted of twin socket outlets served either on an individual basis from the original elements of the building or contained within PVC conduit systems surface mounted to the building fabric.

The existing Computer Room utilises a form of a dado trunking installed to the perimeter areas of the room to accommodate the small power and data socket outlets serving the computer and PC equipment.

The nature of the refurbishment works will effectively necessitate the replacement of the small power system, inclusive of all outlets and circuit wiring.

The new small power system would generally consist of the following elements: -

a) All teaching areas will be provided with two compartment dado trunking to accommodate small power and data socket outlets requirements.

b) High level small power and data socket outlets within the teaching areas and administration areas to serve fixed items of equipment such as interactive screens, projector equipment, CO2 sensors, etc.

c) High level small power and data socket outlets within the teaching areas and administration areas to serve wireless access points (WAN).

d) Administration areas would also be provided with a two compartment trunking to accommodate small power and data socket outlets requirements.

e) General small power provision to serve the cleaners outlet provision throughout the building.

f) General small power outlets to serve hand dryers and urinal control equipment within the WC areas of the building.

g) General small power outlets mounted above worktop level to serve staff room welfare catering appliances, i.e. refrigerator’s, microwave’s, vending machines, etc.

h) General small power provision to serve the various power supplies associated with the security systems, including access control, CCTV systems, etc., to the building.

i) General small power provision to serve the fire alarm control panels.

Generally the small power systems will be provided on the basis of ring and radial final circuits to serve the proposed equipment and be protected against fault conditions with the use of combined MCB / RCBO protective devices in accordance with current legislative documents.

4.7 Fire Alarm System

The building is currently provided with an addressable fire alarm system inclusive of main control panel, automatic trigger detectors (smoke & heat detectors), electronic sounders and manual call points.

The layout and arrangement of the current installation suggested that the system is a Category 'L4' classification in accordance with BS 5839 standard.

The fire alarm system did not appear to be utilised for a Class Change system.

The nature of the refurbishment works will effectively necessitate the wholesale replacement of the existing fire alarm system, including undertaking modifications and temporary installations in order to maintain a fire alarm system as refurbishment works within the building are undertaken.

The modifications works to fire alarm system will entail the introduction of new trigger devices, electronic sounders, manual call points and xenon beacons to achieve compliance with the current British Standard and the requirements of the building control officer.

4.8 Data Communication

The building is currently provided with a data communication system providing IT distribution to all areas of the building. The system consists of 2 No. wall mounted data cabinets positioned at high level within the existing ICT room at ground floor level.

Data cabling extends from the data cabinets to serve the data outlets generally employing a surface mounted installation attached to the building fabric.

The nature of the refurbishment works will effectively necessitate the replacement of the existing data communication, including the relocation of the 2 No. existing data cabinets.

In addition, it will be necessary to undertake significant modifications and temporary installations in order to maintain the data communication system within the building to accommodate the proposed phasing and sequencing of the refurbishment works within the building.

The modifications works to the existing data communication systems would consider the use of a common network system (CNS) for integration of other network systems with the data communication network, i.e. CCTV, access control systems.

4.9 Intruder Alarm

The building is currently provided with a intruder alarm system to protect the building and its content from unwanted entry. The system comprises of PIR detectors at points of entry, door contacts to main entrance doors, security key pad device and main control panel and associated battery supply equipment.

The nature of the refurbishment works will effectively necessitate the replacement of the existing intruder alarm system, including undertaking modifications and temporary installations in order to maintain a intruder alarm system as refurbishment works within the building are undertaken.

The modifications works to the intruder fire alarm system will entail the introduction of new PIR detectors (dual functionality type), door contacts, etc., to achieve compliance with the current NAC0SS and the requirements of the building insurers.

4.10 Access Control System

The newly re-modeled areas of the building will be provided with an access control system to control and monitor the movement of the occupants entering the primary entrances of the building and in addition limiting to specific areas of the building, i.e. staff areas, server room, etc.

The access control system will operate as an standalone distributed addressable system consisting of externally mounted card reader panels, internally mounted request to exit button, manual call points, door locking equipment and intelligent door controllers serving each of the areas to be controlled.

4.11 CCTV System

The building currently has a number of CCTV cameras installed to specific areas, however, following discussion with the Caretaker it is understood these camera locations do not operate and are only employed as visual deterrent to visitors of the building.

The newly re-modeled areas of the building will be provided with a CCTV camera system to monitor the movement of persons both to the internal and external areas of the building.

The majority of the CCTV provision will be to provide coverage of the external areas of the building including key and primary areas such as the main entrance access areas and the key entry points of the building perimeter.

All CCTV camera images will be screened onto 2 No. TV monitors located within the Caretakers Office and include all necessary switching matrix and recording equipment.

4.12 TV Aerial System

The newly formed areas of the building will be provided with a new TV Aerial distribution system to provide terrestrial and ‘Freeview’ broadcast images to a series TV aerial socket outlets provided to specific areas of the building, i.e. the main hall, etc.

4.13 Disabled Alarm System

The newly formed disabled and accessible areas of the building will be provided with a local disabled call alarm system to provide an assurance alarm in the vent that the disabled users experience difficulties when using the provided facilities and require assistance from the building staff.

4.14 Induction Loop System

The newly formed main reception areas will be provided with a fixed induction loop system to assist with the hard of hearing with communicating to the building staff at the main entrance areas.

4.15 Lightning Protection

An assessment will be undertaken to the proposed layout arrangement of the newly formed building to determine the requirement for a lightning protection system to be installed.

Where the assessment indicates the system is required, a new lightning protection system consisting of aluminium / copper earth tapes and associated earth electrodes will be provided to the exposed areas of the building including all exposed metallic items of plant and equipment forming integral components of the protection of the system, i.e. rainwater pipes, mechanical plant, etc.

5.0 BUDGET COSTS

Mechanical Services			Cost £
	LTHW Heating a) Isolate and drain b) Modify distribution mains c) Reposition existing radiators and connecting pipework (approx. 9 number) d) Provide and install new LST radiators and connecting pipework (approx. 8 number)		 1,500.00 5,000.00 6,500.00 11,000.00
	Gas a) Modify gas distribution pipework		 5,000.00
	Domestic Hot Water a) Isolate and remove redundant hot water provisions b) Reposition and install existing 110 litre indirect vented HWS cylinder to serve new toilets c) Provide and install electric water heaters within each classbase (7 number) d) Provide electric hot water heater to new Head Teachers W.C. e) Provide electric hot water heater to new Cleaners Store f) Provide electric hot water storage heater to the new kitchen facility		 500.00 2,000.00 10,000.00 750.00 750.00 4,000.00
	Domestic Cold Water a) Engage Thames Water to provide new replacement water main and install new supply into the building. b) Extend the cold water main provision to suit new layouts and provisions		 7,500.00 4,500.00
	Ventilation a) Provide ducted extract ventilation to Accessible W.C. b) Provide extract ventilation to Head Teachers W.C. c) Provide and install new kitchen ventilation (Provision Sum subject to kitchen specification) d) Natural ventilation provision (CO_2 sensors)		 1,000.00 1,000.00 10,000.00 2,000.00
	Above ground drainage		2,000.00

	Electrical power wiring and local controls		2,500.00
	Thermal insulation		4,000.00
	Testing, commissioning, O&M Manuals and “As Installed Drawings”		2,500.00
	Total for Mechanical Services		**£84,000.0**
	Electrical Services		
	Modifications to UKPN Supplies		5,000.00
	LV Distribution		30,000.00
	General / Emergency Lighting		65,000.00
	Small Power Systems		40,000.00
	Fire Alarm Installation		18,000.00
	Disabled WC Alarm Call System		2,000.00
	Intruder Alarm System		10,000.00
	Access Control System		15,000.00
	Intercom System To New External Gates.		5,000.00
	Data Communication System		30,000.00
	TV Aerial System		2,500.00
	Modifications / Temporary Connections To Existing Electrical Services		20,000.00
	Total for Electrical Services		**£237,500.**

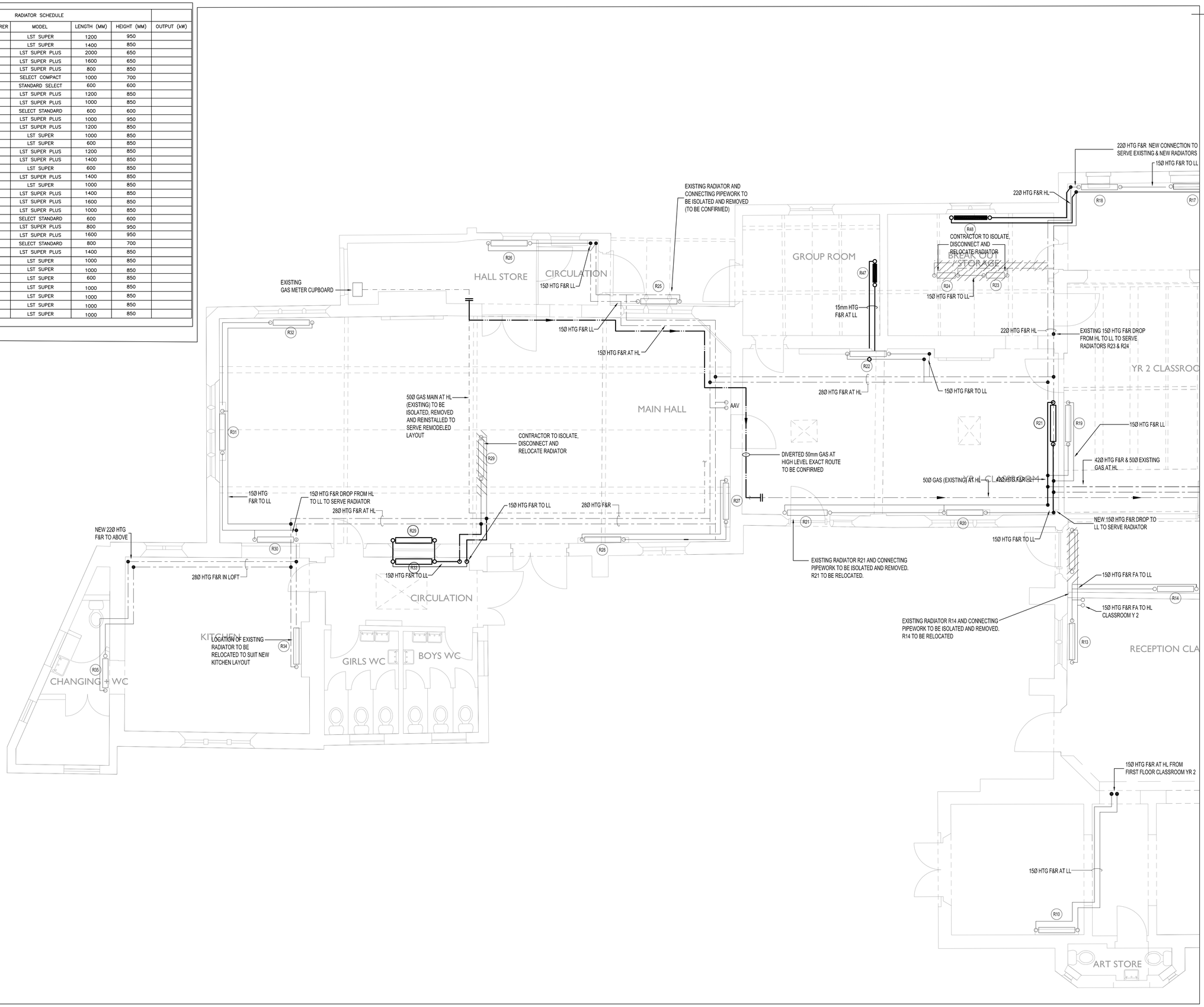
			00
	Total for M&E Services		**£357,500.00**

Exclusions

1. Multi phasing costs associated with temporary works (Phasing of works is undefined)
2. All BWIC excavation and trenching
3. MCD, VAT & Prelims
4. Brassware and Sanitaryware
5. Below ground drainage
6. Above ground rainwater drainage
7. Statutory supply company diversions, search fees, and off-site reinforcement, etc.
8. Asbestos, survey and removal
9. Demolition costs
10. Design fees
11. Service connections (by others)
12. Sprinklers
13. IT/Data equipment and servers
14. M&E services maintenance
15. White goods
16. Below ground rainwater harvesting
17. Natural ventilation terminal i.e., Monodraught, Passivent, etc.,
18. BREEAM requirements/assessments
19. PA Installation
20. Renewable/Low Carbon Technologies
21. Out of Hours working
22. CCTV Camera System
23. Lightning Protection

A1

RADIATOR SCHEDULE					
RADIATOR REF	MANUFACTURER	MODEL	LENGTH (MM)	HEIGHT (MM)	OUTPUT (kW)
R1	MYSON	LST SUPER	1200	950	
R2	MYSON	LST SUPER	1400	850	
R3	MYSON	LST SUPER PLUS	2000	650	
R4–R6	MYSON	LST SUPER PLUS	1600	650	
R7	MYSON	LST SUPER PLUS	800	850	
R8	MYSON	SELECT COMPACT	1000	700	
R9	MYSON	STANDARD SELECT	600	600	
R10	MYSON	LST SUPER PLUS	1200	850	
R11, R13–R14	MYSON	LST SUPER PLUS	1000	850	
R12	MYSON	SELECT STANDARD	600	600	
R15	MYSON	LST SUPER PLUS	1000	950	
R16	MYSON	LST SUPER PLUS	1200	850	
R17	MYSON	LST SUPER	1000	850	
R18	MYSON	LST SUPER	600	850	
R19	MYSON	LST SUPER PLUS	1200	850	
R20–R22	MYSON	LST SUPER PLUS	1400	850	
R23–R24	MYSON	LST SUPER	600	850	
R25	MYSON	LST SUPER PLUS	1400	850	
R26	MYSON	LST SUPER	1000	850	
R27–29	MYSON	LST SUPER PLUS	1400	850	
R30–R32	MYSON	LST SUPER PLUS	1600	850	
R33–R34	MYSON	LST SUPER PLUS	1000	850	
R35	MYSON	SELECT STANDARD	600	600	
R36–R37	MYSON	LST SUPER PLUS	800	950	
R38	MYSON	LST SUPER PLUS	1600	950	
R39–R40	MYSON	SELECT STANDARD	800	700	
R41–R43	MYSON	LST SUPER PLUS	1400	850	
NEW R44	MYSON	LST SUPER	1000	850	
NEW R45	MYSON	LST SUPER	1000	850	
NEW R46	MYSON	LST SUPER	600	850	
NEW R47	MYSON	LST SUPER	1000	850	
NEW R48	MYSON	LST SUPER	1000	850	
NEW R49	MYSON	LST SUPER	1000	850	
NEW R50	MYSON	LST SUPER	1000	850	



FOR CONTINUATION SEE DRAWING No. 1313-M-3001

Dimensions Should Not Be Scaled From This Drawing

Current CDM Regulations

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- Where applicable, all significant residual risks will be highlighted below.

Notes:

1.

KEY:

- EXISTING RADIATOR TO BE RETAINED
- EXISTING RADIATOR TO BE RELOCATED
- LOCATION OF RELOCATED RADIATOR
- NEW RADIATOR

Rev:	Date:	Amendments:	Drawn:
-	-	-	-
P1	28.07.14	PRELIMINARY ISSUE	JAC
P	28.01.14	PRELIMINARY ISSUE	RAM

PRELIMINARY

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Email: cad@brontideconsulting.com
Web: www.brontideconsulting.com
LOW CARBON ENERGY ASSESSORS CIBSE

Project:
CHRIST CHURCH PRIMARY SCHOOL
LONDON, NW3 1JH

Title:
GROUND FLOOR
HEATING SYSTEM LAYOUT
-

Drawn:	Engineer:	Approved:	Date:
RAM	IMW	-	-

Scale: 1:50 @ A1
Reference File: -

MECHANICAL SERVICES

Drawing Number: 0313 - M - 3000
Revision: P1

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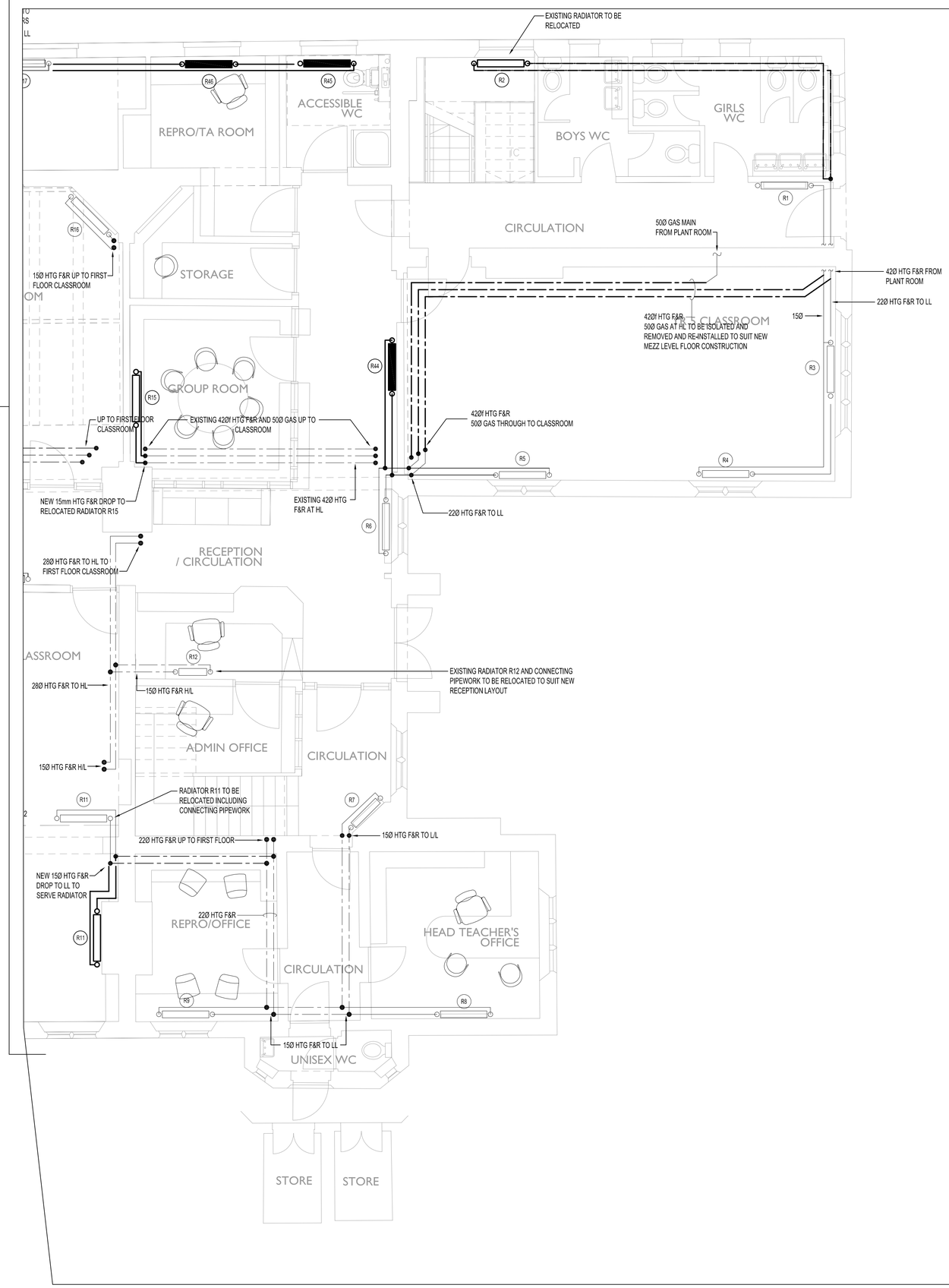
A1

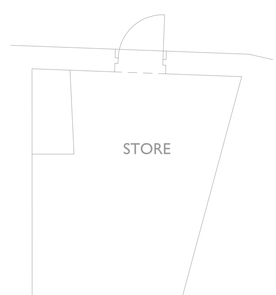
FOR CONTINUATION SEE DRAWING No. 1313-M-3000



KEY:

- EXISTING RADIATOR TO BE RETAINED
- EXISTING RADIATOR TO BE RELOCATED
- LOCATION OF RELOCATED RADIATOR
- NEW RADIATOR

RADIATOR SCHEDULE					
RADIATOR REF	MANUFACTURER	MODEL	LENGTH (MM)	HEIGHT (MM)	OUTPUT (kW)
R1	MYSON	LST SUPER	1200	950	
R2	MYSON	LST SUPER	1400	850	
R3	MYSON	LST SUPER PLUS	2000	650	
R4–R6	MYSON	LST SUPER PLUS	1600	650	
R7	MYSON	LST SUPER PLUS	800	850	
R8	MYSON	SELECT COMPACT	1000	700	
R9	MYSON	STANDARD SELECT	600	600	
R10	MYSON	LST SUPER PLUS	1200	850	
R11, R13–R14	MYSON	LST SUPER PLUS	1000	850	
R12	MYSON	SELECT STANDARD	600	600	
R15	MYSON	LST SUPER PLUS	1000	950	
R16	MYSON	LST SUPER PLUS	1200	850	
R17	MYSON	LST SUPER	1000	850	
R18	MYSON	LST SUPER	600	850	
R19	MYSON	LST SUPER PLUS	1200	850	
R20–R22	MYSON	LST SUPER PLUS	1400	850	
R23–R24	MYSON	LST SUPER	600	850	
R25	MYSON	LST SUPER PLUS	1400	850	
R26	MYSON	LST SUPER	1000	850	
R27–29	MYSON	LST SUPER PLUS	1400	850	
R30–R32	MYSON	LST SUPER PLUS	1600	850	
R33–R34	MYSON	LST SUPER PLUS	1000	850	
R35	MYSON	SELECT STANDARD	600	600	
R36–R37	MYSON	LST SUPER PLUS	800	950	
R38	MYSON	LST SUPER PLUS	1600	950	
R39–R40	MYSON	SELECT STANDARD	800	700	
R41–R43	MYSON	LST SUPER PLUS	1400	850	
NEW R44	MYSON	LST SUPER			
NEW R45	MYSON	LST SUPER			
NEW R46	MYSON	LST SUPER			
NEW R47	MYSON	LST SUPER			
NEW R48	MYSON	LST SUPER			
NEW R49	MYSON	LST SUPER			
NEW R50	MYSON	LST SUPER			



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Current CDM Regulations

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-	-	-	-
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P	28.01.14	PRELIMINARY ISSUE	RAM

PRELIMINARY

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LOW CARBON ENERGY ASSESSORS

Project:
CHRIST CHURCH PRIMARY SCHOOL
LONDON, NW3 1JH

Title:
GROUND & FIRST FLOOR
HEATING SYSTEM LAYOUT
-

Drawn:	Engineer:	Approved:	Date:
RAM	IMW	-	-

Scale: 1:50 @ A1

Reference File: -

MECHANICAL SERVICES

Drawing Number: 0313 - M - 3001

Revision: P

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A1

RADIATOR SCHEDULE					
RADIATOR REF	MANUFACTURER	MODEL	LENGTH (MM)	HEIGHT (MM)	OUTPUT (kW)
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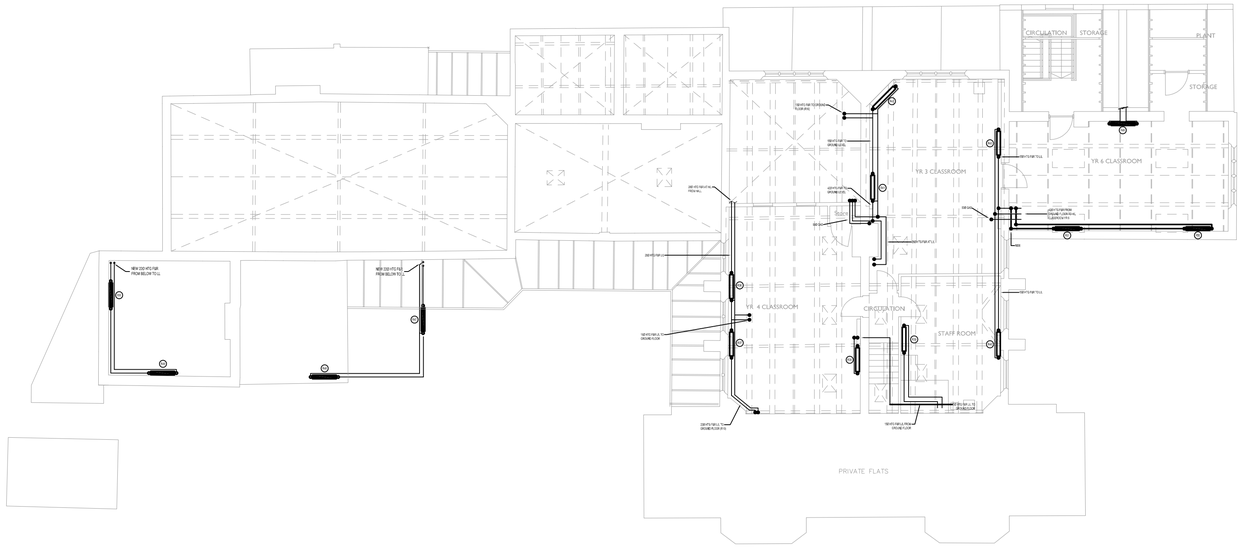
NEW R45	MYSON	LST SUPER			
NEW R46	MYSON	LST SUPER			
NEW R47	MYSON	LST SUPER			
NEW R48	MYSON	LST SUPER			
NEW R49	MYSON	LST SUPER			
NEW R50	MYSON	LST SUPER			



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CHRIST CHURCH PRIMARY SCHOOL
LONDON, NW3 1JH

Title:

FIRST FLOOR
HEATING SYSTEM LAYOUT
-

Drawn:	Engineer:	Approved:	Date:
RAM	IMW	-	-

Scale:	Reference File:
1:50 @ A1	-

MECHANICAL SERVICES

Drawing Number:	Revision:
0313 - M - 3002	P1

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