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TECHNICAL REPORT

MEP SERVICING STRATEGY FOR

MINETY CofE PRIMARY SCHOOL CONSOLIDATION

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1.0 INTRODUCTION

Pope Consulting has prepared this document to complement the Stage 2 report produced by Footprint Architects. It describes the proposed scope and design philosophy of the Mechanical and Electrical (M&E) systems in support of the Primary School consolidation and extension project.

The proposed new building is stand alone, link attached by an external canopy with an approximate gross internal floor area of 160 m² and will comprise a new classroom, two new group rooms, WCs, a hygiene room, a store, and a dedicated plant room.

This report is issued as a consultative document and once agreed with the Client, will form the basis from which the detailed building services design will be developed through subsequent design stages.

Objectives of this Document

The objectives of this document are to:

- Confirm the understanding of the Client brief and describe the proposed building services systems to achieve it
- Encourage early-stage review and comment to inform design development
- Influence future design policy and key decision-making
- Brief user group members and the wider project team on the proposed engineering systems strategy

Sustainability and Energy Strategy

The building services design will be underpinned by a fabric-first, low-energy design approach, with priority given to minimising energy demand through passive measures and efficient system selection before considering renewable generation.

The project will target net zero carbon operation, subject to technical feasibility and economic viability, in line with current DfE guidance, Building Bulletin standards, and Wiltshire public-sector sustainability objectives. This will be achieved through:

- Minimisation of regulated and unregulated energy demand
- High-efficiency, all-electric building services systems
- Elimination of on-site fossil fuel combustion where practicable
- Integration of on-site renewable energy generation to offset operational energy use

Where required and technically feasible, Low and Zero Carbon (LZC) technologies, including renewable energy systems, will be incorporated to supplement the low-energy design strategy and support the net zero operational ambition. Any such technologies will be fully assessed and carefully integrated into a coordinated and holistic building services solution.

The building services design will align with the requirements and performance criteria set out in relevant Department for Education guidance, including (but not limited to):

- Building Bulletin 101 (BB101) – Ventilation, indoor air quality, and thermal comfort
- Building Bulletin 93 (BB93) – Acoustic design of schools
- Building Bulletin 87 / BB90 (as applicable) – Environmental design guidance
- Current DfE Output Specifications and relevant Net Zero Carbon in Operation guidance.

MEP Design Philosophy

The Mechanical and Electrical (MEP) design philosophy embraces the following principles:

- Minimise energy consumption through passive design measures and efficient building fabric
- Maximise daylight provision while controlling glare and unwanted solar gains
- Deliver high-quality internal environments that are visually, thermally, and acoustically comfortable and support learning, wellbeing, productivity, and attainment
- Specify high-efficiency plant and service distribution systems to minimise carbon emissions and support net zero operational objectives
- Promote water efficiency and conservation through good design and appropriate system selection
- Provide simple, intuitive building services systems that allow occupants appropriate and effective control
- Achieve low whole-life costs, considering capital, operational energy, maintenance, and replacement
- Allow flexibility to accommodate both short- and long-term changes in space usage, layout, and environmental control
- Integrate IT and communications (ICT) infrastructure seamlessly within the overall services strategy
- Ensure safe, efficient access to plant and equipment for operation, maintenance, and future replacement
- Deliver internal environmental conditions that fully comply with the Client's requirements, statutory regulations, and applicable DfE and Building Bulletin standards

2.0 DESIGN BRIEF & SCOPE

For RIBA Stage 3 – Planning and Concept Design, the Pope Consulting appointment will include the following activities:

- Provide specialist input on Mechanical, Electrical and Public Health (MEP) services, energy strategy, sustainability, and net zero carbon considerations to support the formal planning application submission to Wiltshire Council
- Develop the proposed MEP services design to a level of detail appropriate for planning, ensuring alignment with DfE guidance, Building Bulletin requirements, and the project's net zero carbon operational objectives (subject to viability)
- Prepare single-line schematic drawings illustrating principal plant locations, risers, and main service distribution routes to support multidisciplinary coordination and the planning submission

- Develop a coordinated MEP Services Strategy for the full extent of the scheme and produce a Stage 2 / 3 MEP Strategy Report, which will:
 - Define the outline scope of the mechanical, electrical, and public health systems
 - Provide clear and coordinated information to support the work of other members of the design team
 - Establish the technical and strategic basis for progression to detailed MEP design at later RIBA stages
 - Inform and support the Cost Consultant's budget estimates, including allowances for low- and zero-carbon technologies and energy-efficient systems

3.0 DESIGN CRITERIA

3.1 Design Standards

The Mechanical, Electrical and Public Health (MEP) services for the proposed scheme will be designed and installed to meet the project-specific design criteria set out within this document and will be fully compliant with the requirements and recommendations of the following:

- Footprint Architects' RIBA Stage 3 drawings and the associated Design and Access Statement prepared in support of the Planning Application
- Relevant CIBSE and Society of Light and Lighting (SLL) guides and best-practice guidance
- Requirements of all relevant statutory undertakers
- Health and Safety Executive (HSE) guidance and all applicable health and safety legislation
- The Construction (Design and Management) Regulations (CDM)
- The Pressure Systems Safety Regulations
- All applicable and current British Standards
- The Electricity at Work Regulations, with full compliance for all electrical installations
- Guidance issued by the Department for Education (DfE), including applicable Building Bulletins, standards, and codes of practice relevant to educational buildings

3.2 Operational Life

Elements of the building engineering systems will be selected and specified to achieve, as a minimum, the economic life expectancy periods set out in CIBSE Guide M: Maintenance Engineering and Management (2008).

3.3 Building Regulations Part L

The development will be designed to comply with the requirements of Approved Document L: Conservation of Fuel and Power, Volume 2 – Buildings Other Than Dwellings (2021 edition, incorporating the 2023 amendments).

In addition, the design will support Wiltshire Council's aspiration for net zero carbon operation, subject to technical feasibility and economic viability, through the adoption of a fabric-first approach, high-efficiency all-electric building services, and the integration of on-site low and zero carbon technologies where appropriate.

3.4 External fabric thermal performance

The following target building fabric performance criteria have been derived from previous successfully delivered schemes. These values have been issued to Footprint Architects and will be adopted as the assumed envelope performance standards for all future energy modelling and design development, unless otherwise agreed:

- Exposed external walls: 0.14 W/m²K
- Ground floor: 0.12 W/m²K
- Pitched roof: 0.13 W/m²K
- Flat roof: 0.11 W/m²K
- Windows: 1.4 W/m²K
- Glazing solar transmittance (g-value): 0.40
- Visible light transmittance: 0.70
- Rooflights: 1.5 W/m²K
- External personnel doors: 1.4 W/m²K

These performance targets support a fabric-first, low-energy design approach and are intended to contribute to compliance with Approved Document L, alignment with DfE guidance, and the project aspiration for net zero carbon operation, subject to viability.

3.5 Solar shading

External solar shading has already been incorporated into the architectural design by Footprint Architects, and this proactive approach is welcomed and commended as an effective measure for controlling solar gains and supporting thermal comfort.

3.6 Air leakage rate

The target air permeability value of 3.0 m³/m²·h at 50 Pa has been adopted from previous successfully delivered schemes and will be used as an assumption within the energy model.

Footprint Architects have confirmed that this level of airtightness is considered achievable based on the proposed construction methods and detailing strategy.

3.7 Façade modelling

Detailed façade modelling has not yet been undertaken and will be progressed following approval of this Concept and Strategy. Compliance with Approved Document L, assessment of overheating risk, and a review of thermal bridging details will be undertaken in collaboration with Footprint Architects as part of the ongoing design development.

3.8 Energy strategy and LZC technologies

To comply with Wiltshire Council planning policy requirements for carbon emissions reduction and the objectives of the local authority's climate emergency declaration, the proposed energy strategy adopts a fabric-first and energy demand reduction approach. Energy consumption will be minimised using high efficiency building services systems and optimised operational controls.

The remaining regulated energy demand will be met through an all-electric building services strategy, supported by the integration of on-site renewable

energy generation, including roof-mounted photovoltaic (PV) panels and high-efficiency air source heat pumps (ASHPs). This approach is intended to satisfy the renewables requirement, achieve compliance with Approved Document L, and support the project's aspiration to deliver net zero carbon operation, subject to technical feasibility and economic viability.

For domestic hot water provision, the use of point-of-use electric water heaters has been adopted. Given the low and intermittent hot water demand within the building, this solution minimises distribution losses, reduces installation complexity, and limits both capital and ongoing maintenance costs. This approach is considered appropriate for the building type and supports the overall low-energy, all-electric strategy adopted for the scheme.

3.9 External Ambient

Summer – 29°C dry bulb / 20°C wet bulb

Winter – -4°C saturated

External design conditions for thermal load calculations and plant sizing will be determined in accordance with CBSE Guide, Section A2, Weather and Solar Data.

External plant to be suitable for operation in external ambient conditions of 35°C dry bulb 50% RH. Humidity can be expected to be in the range of 30% to 70% RH or wet rooms where it will approach 100% at times.

3.10 Internal Conditions

Room	Winter	Summer
Circulation	20°C ±2°C	Uncontrolled Note 1
Classroom	24°C ±1°C	Uncontrolled Note 1
Group Rooms	24°C ±1°C	Uncontrolled Note 1
WCs	20°C ±2°C	Uncontrolled Note 1
Hygiene Room	24°C ±1°C	Uncontrolled Note 1
Storage/Plantrooms	15°C ±2°C	Uncontrolled Note 1

Notes:

The upper temperatures in summer will not be controlled. However, an overheating assessment will be carried out and if a risk of overheating is a significant risk, mechanical cooling will be considered.

External plant to be suitable for operation in external ambient conditions of 35°C dry bulb 50% RH. Humidity can be expected to be in the range of 30% to 70% RH or wet rooms where it will approach 100% at times.

3.11 Ventilation

The following typical extract ventilation rates are proposed in accordance with Building Regulations Approved Document F: Volume 2 Buildings other than dwellings:

Room	Ventilation Rate
Circulation	N/A
Classroom	Natural Ventilation with heat recovery

Room	Ventilation Rate
Group Rooms	Natural Ventilation with heat recovery
WCs	7.5 l/s/m ²
Hygiene Room	2.3 l/s/m ²
Storage/ Plantrooms	Natural Ventilation

3.12 Lighting

The design illuminance levels refer to the levels required as an average value and exclude a perimeter zone of 0.5m within each space.

The following table provides an overview of the lighting levels to be provided at finished floor level, unless indicated otherwise.

Area	Average Maintained Illuminance Levels (lux)	Reference
Circulation	100	Circulation spaces where visual tasks are minimal, but safety is key.
Classroom	300	Typical classroom task lighting per EN 12464-1 / CIBSE LG5 general classroom guidelines.
Group Rooms	300	
WCs	200	
Hygiene Room	200	Added controls for accessible hygiene spaces.
Storage/ Plantrooms	100	

4.0 PLANNING POLICIES & STANDARDS

All relevant legislation, regulations, standards, guidance, and good practice should be adhered to. This includes the following:

- Current Building Regulations and Approved Documents
- Wiltshire Council Policies
- Department for Education Guides and Building Bulletins
- B&ES (formally HVCA) Publications
- Chartered Institute of Building Services Engineers design (CIBSE) guides and commissioning codes
- BSRIA Best Practice Guidelines
- Health and Safety at Work Act
- CDM regulations
- Specific Requirements of the Local Building Control and Fire Officer
- The Institute of Plumbing and Heating Engineers – Plumbing Engineering Services Design Guide
- 2025 EU fluorinated greenhouse gas (F gas) regulation
- CIBSE TM13 Minimising the risk of Legionnaires Disease
- HSE ACoP L8 for the control of Legionella Bacteria
- Water Authority Byelaws
- The Water Supply (Water Fittings) Regulations 1999
- British Standard Codes of Practice for materials, equipment, and workmanship
- Manufacturer's requirements and recommendations for installation, testing, and commissioning

- Pressure Systems Regulations
- BS 7671:2018 - IEE Wiring Regulations (18th Edition) including latest amendments
- The Electrical Utility Company Guidelines
- Electricity Safety Quality and Continuity Regulations 2002

5.0 SUSTAINABILITY & ENVIRONMENTAL ENGINEERING

The design for the new building will be underpinned with a low energy and sustainable ethos/approach to meet brief.

The design of the building systems will achieve Net Zero Carbon in Operation.

5.1 Water Management

Like the energy hierarchy, the water strategy for the new building focuses first on resource reduction and then considers efficient use and recycling. The approach proposed is described in more detail below.

1. Reduction of water demand
 - a. Metering of water consumption is proposed. This will highlight any abnormal usage patterns and help in the creation and tracking of targets for water use minimisation.
 - b. Sub metering is proposed for areas of high water consumption such as the WCs.
 - c. A leak detection system is also proposed which would sound an alarm when a leak occurs so that it can be rectified immediately.
2. Efficiency
 - a. Water efficient appliances and fittings are proposed to further minimise water consumption.

Further discussions are required with the Planning Authorities to determine whether there are any specific planning requirements.

5.2 Energy Management

The energy hierarchy proposed for the new building is “Be Lean, Be Clean and Be Green.”

5.3 Passive and Carbon Savings Measures – Be Lean

The following initial measures are being considered for the building. These will be assessed further during the design development considering the building shape form and operational needs.

- External shading for inclusion on all major glazed area and that are likely to be subject to high heat gain.
- Low-emissivity, solar control glass to reduce heat loss in winter and cooling loads in summer, and to minimise artificial lighting energy consumption.
- Glazing dimensions will be reviewed to maximise useful solar gains whilst still mitigating overheating risk and respecting architectural design.
- Good practice building fabric U-Values
- Internal blinds with local occupant control to minimise solar gains (as required) and glare.

- The need for mechanical cooling will be alleviated through careful design.
- Low building air leakage to reduce the heat loss in winter due to infiltration.

5.4 Active Energy and Carbon Savings Measures – Be Lean

The following active measures will be considered:

- High efficiency heating plant, like ASHPs.
- Primary flow water temperature from the heating plant will be adjusted according to the external ambient temperature for high energy efficiency.
- Variable speed pumping of heating water services to take advantage of load diversity throughout the day.
- Variable speed pumping water supply services to reduce annual energy demand and take maximum advantage of diversity of load.
- High efficiency motors incorporated into all building services.
- High efficiency LED / electronic lighting ballasts and high efficacy lamps.
- Passive infra-red and daylight responsive lighting control where possible in common areas.
- Daylight responsive external lighting.
- Power factor correction reducing electrical consumption.
- Energy meters to facilitate feedback, monitoring, and control.

5.5 Renewable Energy Feasibility Study – Be Green

A range of renewable and (low carbon) energy technologies will be appraised for the new building. These include:

- Photovoltaic (PV) modules for electricity generation
- Solar hot water
- Ground source heat pumps
- Air source heat pumps (ASHP's)
- Combined Heat & Power (CHP)
- Wind turbines

Given the site constraints and building operational requirements, the incorporation of ASHPs and PVs are identified at this stage as potentially being the technology most suitable. However, the following technologies will be reviewed in more detail as the scheme design develops.

Renewable Energy Technology	Details & Compatibility	Feasibility
Solar Photovoltaic 	Photovoltaic (PV) panels could be installed at roof level to generate on-site electricity. In the northern hemisphere, optimal PV performance is achieved on roofs or façades oriented within 45° of due south, with panel inclinations typically between 10° and 15°.	This is feasible due to a good quantity of roof space available, on suitable orientations.

Renewable Energy Technology	Details & Compatibility	Feasibility
	The PV system would also benefit from the Smart Export Guarantee (SEG), providing a modest revenue stream for any surplus electricity exported to the grid. However, it is preferable to maximise on-site consumption of the generated electricity rather than export it. Incorporating battery storage into the system design should therefore be considered, as this would increase self-consumption, improve overall system efficiency, and maximise financial return.	
Solar thermal hot water 	The proposal requires a centralised solar hot water system incorporating a buffer vessel to contribute to domestic hot water generation. The system would operate by pre-heating the incoming water and would therefore require an additional heat source to ensure that safe and compliant hot water temperatures are consistently maintained.	These systems have not been considered, as it is recommended that the available roof area is utilised for photovoltaic (PV) arrays. PV technology is more effective in this context and will be used to directly offset electricity imported from the grid.
Ground Source Heat Pump	All heat pumps operate more efficiently than fossil fuel boilers and direct electric heating systems. They utilise the refrigeration cycle in reverse to extract low-grade heat and typically operate at lower flow temperatures, in the range of 40–50°C. These operating temperatures are particularly well suited to	A ground source heat pump would be technically feasible given the proposed use of underfloor heating. However, the high capital cost associated with installation makes this technology unsuitable for the project.

Renewable Energy Technology	Details & Compatibility	Feasibility
	underfloor heating systems. Ground source heat pumps (GSHPs) extract heat from the ground via buried pipework or boreholes. While they offer high efficiencies and stable performance, their capital costs are typically higher than alternative heating systems, primarily due to the civil engineering works required for the installation of ground loops or boreholes.	
Air Source Heat Pump 	Air source heat pumps (ASHPs) operate on the same principle as ground source heat pumps, utilising the refrigeration cycle to extract heat; however, in this case thermal energy is drawn from the external air rather than the ground. As ASHP systems rely on fan-assisted outdoor units, potential noise impacts must be carefully considered and mitigated through appropriate unit selection, positioning, and acoustic measures. Subject to these considerations, air source heat pumps represent a technically feasible and cost-effective solution for providing space heating, offering a good balance between capital cost, efficiency, and operational performance.	Air source heat pumps are considered feasible for this project due to the proposed use of underfloor heating. Adequate spatial provision has been incorporated within the scheme, although acoustic screening may be required to mitigate potential noise impacts. The operation of the units would align with school occupancy hours; however, they are likely to run for longer periods at lower output, as this mode of operation improves overall system efficiency.

Renewable Energy Technology	Details & Compatibility	Feasibility
Combined Heat and Power (CHP) Combined Heat and Power: Energy savings and efficiency A 1-megawatt natural gas engine in a combined heat and power application converts 100 units of fuel into 35 units of electricity and 50 units of heat while losing 15 units of energy. With conventional generation the losses are more substantial: 165 units of fuel are needed to produce the same amount of electricity and heat, with total losses of 80 units of energy. Power station heat (100 units) → 35 units Electricity → 35 units CHP fuel (100 units) → 50 units Heat → 15 units lost → Combined Heat and Power 85% efficiency Solar fuel (100 units) → 50 units Heat → 15 units lost → Conventional Generation 48% efficiency Source: U.S. Department of Energy Northeast CHP Technical Assistance Partnership	Combined Heat and Power (CHP) systems require a high and consistent thermal base load to operate efficiently. Although the unit is primarily installed for electricity generation, it is typically sized to meet the site's thermal base load most commonly domestic hot water services (DHWS) so that waste heat recovered from the engine can be effectively utilised to heat water. During the summer months, the DHWS demand can provide sufficient thermal load to allow continued CHP operation. However, where a substantial and consistent base load is absent, the size of the CHP unit that can be installed is constrained. In such cases, it is unlikely that the CHP would operate for extended periods during warmer months, thereby limiting annual run hours and reducing the potential CO₂ emissions savings.	There is no significant or consistent domestic hot water (DHW) demand within the proposed building. As a result, any recovered heat from a CHP system would be underutilised or rejected, significantly reducing overall system efficiency. In addition, CHP units typically have higher capital and ongoing maintenance costs compared to alternative technologies. On this basis, the inclusion of CHP is not considered feasible for this project and has therefore been discounted.
Wind Turbines	Wind power can be used to generate electricity either in parallel with the mains electricity supply or as a stand-alone system incorporating battery storage. To produce meaningful levels of electrical output, average wind speeds more than 5–6 m/s are typically required.	Due to the high capital and ongoing maintenance costs, together with the proximity of nearby residential developments, this technology has not been considered further. In addition, small-scale wind turbines are not cost-effective, as their limited energy yield does not justify the

Renewable Energy Technology	Details & Compatibility	Feasibility
	Wind turbines are highly visible structures and can be perceived as visually intrusive, which may give rise to planning constraints, particularly where sites are near residential areas. In addition, careful consideration must be given to turbine siting and rotor design to ensure that operational noise and shadow flicker does not adversely impact nearby receptors.	associated installation, operational, and planning constraints.

6.0 MECHANICAL & PUBLIC HEALTH ENGINEERING SYSTEMS

6.1 Plant Strategy

The project comprises a new-build extension to an existing primary school, forming part of the school's consolidation and expansion programme. The accommodation includes a classroom, group rooms, WCs, a hygiene room, a store, and a plant room.

The building services strategy adopts an all-electric, low-carbon approach in support of Wiltshire Council planning policy and the project aspiration for net zero carbon operation, subject to technical feasibility and viability.

Space heating will be provided via high-efficiency air source heat pumps (ASHPs) serving a low-temperature heating system, compatible with the proposed underfloor heating. The primary heating plant and associated distribution equipment will be located within the ground floor plant room.

Domestic hot water demand within the new building is limited and intermittent. As such, hot water will be provided via point-of-use electric water heaters, located close to outlets to minimise distribution losses, reduce installation complexity, and limit maintenance requirements.

Ventilation to teaching spaces, like the classroom, will be provided using heat-recovery assisted natural ventilation roof towers. These systems will utilise buoyancy-driven and wind-assisted airflow to provide effective daytime ventilation while recovering heat where appropriate to minimise energy losses during the heating season.

To manage summertime overheating risk and support compliance with BB101, the classrooms will also be provided with secure night-time purge ventilation

louvres, enabling effective passive cooling through night flushing while maintaining security.

Ventilation to the group rooms, WCs, and internal rooms without direct access to external façades will be provided via high-efficiency mechanical ventilation with heat recovery (MVHR/HRV) systems. These systems will be designed to operate only when required, minimising electrical consumption while maintaining indoor air quality in accordance with relevant standards.

The overall ventilation strategy supports the project's fabric-first, low-energy design approach, reduces reliance on mechanical cooling, and contributes to the aspiration for net zero carbon operation, subject to feasibility and viability.

Electrical energy demand will be offset in part through the installation of roof-mounted photovoltaic (PV) panels, contributing to compliance with Approved Document L and supporting the aspiration for net zero carbon operation. All major items of plant and building services systems will be provided with appropriate metering and sub-metering to enable effective monitoring of energy consumption and performance.

Primary heating pipework, domestic cold water pipework, ductwork, electrical cabling, and controls cabling will be distributed via dedicated service routes and risers, coordinated with the architectural layout. Services will be routed efficiently to minimise distribution losses and allow clear access for maintenance.

6.2 Heating Strategy

Space heating to the proposed school extension will be provided via a low-temperature hot water (LTHW) heating system, generated by high-efficiency air source heat pumps (ASHPs). The heating plant and associated equipment will be located within the ground floor plant room, supporting the project's all-electric strategy and aspiration for net zero carbon operation, subject to technical feasibility and viability.

The heating system will be designed to operate at low flow temperatures, typically in the range of 35–40°C, optimised for use with underfloor heating (UFH) throughout the occupied spaces. This approach maximises ASHP efficiency and provides a comfortable and evenly distributed internal environment well suited to educational buildings.

The plant room will accommodate the ASHP interface equipment, including buffer vessel(s), pressurisation unit, expansion vessels, primary circulation pumps, and secondary distribution pump sets, arranged to provide appropriate redundancy and maintainability. The requirement for standby plant capacity and system resilience will be confirmed during detailed design.



The LTHW distribution system will be arranged to serve the building heating circuits only, as domestic hot water will be provided separately via point-of-use electric water heaters. LTHW pipework will distribute locally within the plant room to serve the heating system. Valves will be provided to facilitate maintenance.

Heating to all occupied spaces will be provided via underfloor heating, unless noted otherwise. The UFH system will be zoned appropriately to reflect occupancy patterns and space usage, with each zone controlled by programmable room thermostats to provide simple, user-friendly control for occupants.

The heating system will be capable of maintaining the minimum internal air temperatures defined within the room data sheets and in accordance with DfE and Building Bulletin guidance. Control, metering, and monitoring of the heating system will be integrated with the overall building management and energy monitoring strategy to support efficient operation and performance optimisation.

6.3 Hot & Cold Water Services Strategy

Potable cold water for the proposed school extension will be supplied via the existing incoming mains water connection serving the school. It is anticipated that the existing mains supply will be extended from its point of origin to serve the new building.

The size and capacity of the existing incoming water main have not been confirmed as part of the site survey. The school is currently liaising with their water quality management company to ascertain the incoming main size, available pressure, and flow capacity. This information will be reviewed at the next design stage to confirm whether any upgrading of the incoming supply or pressure boosting is required.

Subject to confirmation of mains capacity, cold water will be distributed directly to the extension to serve:

- Point-of-use electric water heaters
- Cold water outlets, including WCs and wash hand basins
- Heating system make-up water, via a suitable backflow-protected connection

No centralised water treatment or chemical dosing systems are proposed for the cold water installation.

Cold water distribution pipework will be routed via dedicated service risers and corridor routes, coordinated with the architectural layout. Pipework will be fully insulated to limit unwanted heat gains and reduce the risk of elevated cold water temperatures.

Pressure regulating valves will be installed where necessary to protect downstream fittings from excessive pressure and ensure compliance with relevant standards. Anti-vacuum and air-release valves will be provided at high points within the system as required.



Where required to serve the hygiene room, a Category 5 backflow-protected supply will be provided via a dedicated break tank and booster arrangement, designed in accordance with the Water Supply (Water Fittings) Regulations and relevant guidance for educational environments.

The Architect will select all sanitaryware and fittings, these will incorporate integral flow-control measures, supporting water efficiency objectives and compliance with Approved Document G. The overall system design will promote low water consumption while maintaining suitable functionality for a primary school environment.

6.4 Above Ground Drainage Strategy

The proposed single-storey school building will be provided with an independent above-ground foul drainage system to serve all sanitary appliances and associated drainage outlets within the new accommodation.

Foul drainage will be collected from sanitary fittings and appliances and conveyed by gravity to the below-ground drainage system, which will be designed separately by the Civil / Structural Engineer. The above-ground drainage installation will terminate at ground floor slab level, where connection to the below-ground system will be made.

Where required, ventilation pipework associated with the foul drainage system will be provided and terminated through the roof in accordance with relevant technical, architectural, and regulatory requirements.

Sanitary discharge pipework will be designed in accordance with BS EN 12056-2 (System III) and sized to accommodate peak frequent use typical of a primary school environment.

The drainage system will be designed and installed to ensure that:

- Sanitary appliances drain quickly, quietly, and completely without nuisance or risk to health
- Discharge is conveyed efficiently without crossflow, backfall, leakage, or blockage
- Foul air is prevented from entering occupied areas of the building
- The system can be readily accessed for testing, cleaning, and maintenance

Above-ground drainage pipework will comprise uPVC pipework in accordance with BS 4514 and BS 5255, with solvent-welded joints. Intumescent fire collars or sleeves will be provided where drainage pipework passes through fire-resisting elements to maintain compartmentation.

The WC layouts within the building have been rationalised as part of the design development to improve drainage efficiency, minimise pipe runs, and optimise vertical and horizontal alignment.

6.5 Ventilation Strategy

The ventilation strategy for the proposed single-storey school extension has been developed in accordance with a low-energy, fabric-first design approach,

with a preference for natural ventilation where feasible, supported by mechanical systems where required to achieve environmental, and regulatory performance.

The classroom will be ventilated by a roof-mounted natural ventilation tower incorporating heat recovery, providing buoyancy-driven and wind-assisted airflow to the occupied space via a proprietary ceiling level diffuser. The system will be designed to meet BB101 requirements for indoor air quality and thermal comfort while minimising energy consumption.



The teaching space will also be provided with secure night-time purge ventilation louvre, enabling passive night cooling to mitigate overheating risk during warmer periods. The ventilation towers will incorporate automated controls linked to CO₂ concentration, internal temperature, and occupancy, ensuring effective ventilation while maintaining acoustic performance.

Internal rooms and spaces without direct access to façades will be ventilated using high-efficiency mechanical ventilation with heat recovery (MVHR) systems. This will include:

- Group Rooms (where natural ventilation cannot be achieved)
- WCs and accessible WCs
- Hygiene Room

The MVHR systems will be designed to operate only when required, minimising electrical energy use while maintaining indoor air quality.

All ventilation systems will be designed to achieve the following key performance objectives:

- Provide adequate fresh air to maintain acceptable indoor air quality in accordance with BB101
- Control internal temperatures to reduce overheating risk and avoid reliance on mechanical cooling
- Maintain suitable internal acoustic conditions in compliance with BB93

All WC and sanitary accommodation will be provided with mechanical extract ventilation to remove vitiated air and moisture to maintain these spaces under negative pressure relative to adjacent areas

Ventilation systems will be occupancy and/or humidity controlled, with background trickle ventilation provided where required

All ventilation systems, including roof-mounted ventilation towers and MVHR units, will be designed and acoustically attenuated to ensure that internal noise levels within teaching and learning spaces comply with BB93 and the project acoustic report.

6.6 Controls & Energy Monitoring Strategy

The proposed new air source heat pump (ASHP) installations serving the new building will be provided as a fully independent heating system, incorporating dedicated standalone controls. No integration is proposed with the existing oil-fired boiler plant control panel.

The ASHP system will be hydraulically separate from the existing heating installation and will serve the new building independently. All associated plant, distribution, and control functions will be self-contained within the new system.

Control of the ASHP will be provided via the manufacturer's packaged control system, supplemented by appropriate field devices. The control strategy will include, but not be limited to:

- Weather-compensated flow temperature control
- Circulation pump control and interlocks
- Time scheduling
- System safeties and fault monitoring

The existing heating installation is understood to be controlled via a local plant control panel, with no evidence of a site-wide Building Energy Management System (BEMS). Accordingly, no controls interface between the new and existing systems is proposed at this stage.

This arrangement establishes a clear operational and functional separation between the retained and proposed systems, simplifying installation, commissioning, and future maintenance, while avoiding modification to the existing legacy controls infrastructure.

Provision for future integration into a centralised BEMS may be considered subject to the wider building services strategy and client requirements.

7.0 ELECTRICAL ENGINEERING SYSTEMS

7.1 Incoming Electrical Services

The existing electrical supply to the school comprises a three-phase low-voltage utility connection with current transformer (CT) metering. Based on a visual inspection of the intake equipment, the supply appears consistent with a medium-capacity commercial connection, estimated at approximately 250–300 kVA. This has not yet been formally confirmed with the Distribution Network Operator (DNO).

A review of 12 months of electricity consumption indicates monthly usage typically ranging from 1,000 kWh to 3,700 kWh, with higher demand during winter. For a typical primary school operating profile (approximately 8-hour daytime occupancy), this corresponds to an estimated average demand of 10 kW to 25 kW during occupied periods.

This comparison indicates that the existing supply capacity significantly exceeds current operational demand, resulting in a low load factor and suggesting the presence of available spare capacity. This may allow for future load increases, subject to confirmation of maximum demand and agreement with the DNO.

This assessment is based on billing data and visual inspection only. Confirmation of the agreed supply capacity, maximum demand, and available headroom will be required at the next design stage through detailed metering analysis and liaison with the DNO.

The main intake equipment is located within a dedicated electrical cupboard between the existing St. Leonard's Room and the boys' toilet facilities. Access to this area is currently obstructed by stored materials and must be cleared to ensure safe operation, maintenance access, and compliance with DNO requirements, particularly if modifications or upgrades are required.



The capacity of the existing supply to support the proposed single-storey extension and associated all-electric building services strategy—including air source heat pumps, ventilation systems, point-of-use water heaters, and photovoltaic (PV) systems—has not yet been confirmed. The school has been asked to provide 12 months of electricity data, including half-hourly profiles where available, to enable assessment of:

- Maximum demand
- Available spare capacity
- Load profiles during occupied and unoccupied periods

This information will inform whether the existing infrastructure can accommodate the additional load or if reinforcement or demand management measures are required.

Subject to confirmation of available capacity, the extension will be supplied from the existing main LV distribution board, with a dedicated sub-main feeding a new local distribution board. Distribution design will be coordinated with architectural and building services layouts to optimise efficiency and maintainability.

Roof-mounted PV panels will form part of the energy strategy to offset electrical demand and support compliance with Approved Document L and Wiltshire Council planning policy. Metering will be configured or upgraded as necessary to allow export of surplus generation to the grid.

The electrical design will include appropriate sub-metering for major plant to support energy monitoring, performance optimisation, and potential educational use.

At the next design stage, the following actions will be undertaken:

- Analyse detailed electricity consumption data
- Confirm maximum demand and apply appropriate diversity
- Liaise with the DNO if capacity constraints are identified
- Confirm metering arrangements and PV export capability.

7.2 Photovoltaic (PV) System Strategy

A roof-mounted photovoltaic (PV) system will be provided to support compliance with Approved Document L and Wiltshire Council planning objectives for reduced operational carbon emissions. The PV array will be located on the most suitable roof areas of the proposed extension, subject to structural coordination, shading assessment, and roof access / maintenance requirements.

PV inverters will be located within an accessible electrical riser / services zone, with DC cabling routed in coordinated containment and AC output connected to a dedicated PV distribution board. The PV distribution board will be connected to the school's main switch panel (MSP) to enable on-site consumption of generated electricity and export of surplus energy to the DNO network where available.

The system will be configured to prioritise maximising on-site consumption, offsetting imported electricity associated with the extension's all-electric building services systems (including ASHPs, ventilation systems, and point-of-use water heaters). Import/export metering arrangements will be confirmed with the DNO and metering provider to allow export where applicable.

A web-enabled monitoring and data logging system will be provided to record PV generation and performance. Output data will be made available for facilities management and can be presented via a display located in a prominent area (such as the entrance lobby), indicating kWh generation and associated CO₂ emissions reductions, supporting both operational monitoring and educational engagement.

7.3 Small Power Strategy

A small power installation will be provided to serve the proposed primary school extension in accordance with the room data sheets, BS 7671 (current edition), and the requirements of the relevant Approved Documents (including Parts M, B and E where applicable).

Final circuits for small power and local controls will be installed using LSZH sheathed and insulated cables, routed within:

- High impact plastic conduit where concealed within walls, and
- Metallic containment (basket/tray/trunking) within accessible ceiling voids and service zones

Containment routes will be coordinated with the architectural layout and other building services distribution.

Standard 13A switched socket outlets will be provided throughout the extension. Socket outlets will be flush mounted in circulation spaces, and within perimeter dado trunking in teaching areas and, surface-mounted accessories

and galvanised steel containment used within plant rooms, stores, and back-of-house areas where appropriate.

Socket circuits will be protected by 30mA RCBOs at the distribution board, except where BS 7671 permits alternative arrangements. Circuit design will consider standing leakage currents associated with IT and AV equipment to minimise nuisance tripping.

Cleaning sockets will be provided such that no point within the building is more than 12m from an outlet.

Power distribution will be arranged to provide flexibility and suit teaching layouts. The following provisions will be incorporated as appropriate to each room type:

- Perimeter dado trunking (including Cat 6A data containment where required)
- Wall-mounted outlets
- Floor boxes where required and coordinated with furniture / teaching layouts
- Dedicated outlets for ceiling mounted AV equipment where required (e.g., displays, projectors)

The small power installation will include supplies for the following systems and equipment (where applicable):

- General power outlets (teaching spaces, plant room, stores, circulation)
- ICT / charging provisions (e.g., charging trolleys / bays where required)
- Interactive displays / teaching AV equipment
- Security systems as required (e.g., access control, intruder, CCTV interfaces)
- Fire alarm and life safety interfaces (power supplies as required)
- Point-of-use electric water heaters (local fused spurs / isolators)
- Mechanical services local supplies and controls, including:
 - MVHR units / extract fans (where local supplies are required)
 - Natural ventilation tower actuators and night purge louvre actuators
 - ASHP interface equipment (via local isolators as required)
- PV system ancillaries (monitoring / data logger, where not integral to inverter system)

Supplies to mechanical plant and renewables will be provided via local lockable isolators. Final connections from isolator to plant, including control panels and internal wiring, will be by the relevant specialist contractor.

Accessories will be white or coloured plastic in teaching and front-of-house areas, with more robust finishes used in plant and store areas as appropriate.

To support Part M, socket outlets and associated controls will be located at suitable heights and will provide appropriate visual contrast with surrounding surfaces (in coordination with the Architect), particularly in SEN-related areas where applicable.

A disabled person alarm system will be provided to any accessible WC / hygiene room as required. Each system will include:

- Local power supply via a 13A fused connection unit (FCU)
- Pull cord activation point and local reset
- Over-door indicator (visual and audible where required)
- A remote indicator panel located at a staffed point (location to be confirmed with the school)

7.4 Lighting Strategy

The lighting design will be developed to support effective learning environments, energy efficiency, and ease of operation, in accordance with CIBSE and SLL guidance, relevant Building Bulletins, and the project sustainability objectives.

Uniformity ratios will comply with CIBSE / SLL recommendations for educational environments. Lighting to circulation, WC, and ancillary spaces will be provided in accordance with recognised good practice for schools.

The classroom is designed as a double-height space, which lends to the use of suspended LED luminaires.

Suspended fittings will be selected to provide uniform illumination at the working plane while maintaining good visual comfort and avoiding glare. This approach also allows effective coordination with acoustic treatments and services.

Luminaires will be chosen to minimise contrast and provide good vertical illumination to walls and ceilings, enhancing visual comfort and spatial quality. Feature or accent lighting will be used only where necessary to support wayfinding or architectural intent.

The architectural design seeks to maximise the use of natural daylight as the primary source of illumination during occupied hours. Artificial lighting will be designed to complement daylight availability using simple, robust control strategies.



Lighting controls will be provided on a local, room-by-room basis, with clearly labelled scene-setting or dimming plates provided in teaching spaces. Controls will be intuitive for staff use and will operate independently rather than as part of a complex networked lighting control system.

Where appropriate, daylight linking and presence detection will be incorporated to reduce energy consumption while maintaining appropriate lighting levels.

All general lighting will utilise high-efficiency LED luminaires with low-loss control gear. Luminaires will be selected to provide:

- A consistent correlated colour temperature (CCT) of 4000 K in teaching, circulation, and staff areas, suitable for learning environments

- High colour rendering to support visual clarity and comfort

Emergency lighting will be integrated within the general lighting system where practicable.

The lighting design will aim to standardise luminaire types across the extension as far as practicable to simplify maintenance, reduce spare parts requirements, and minimise lifecycle costs.

All luminaires will be readily accessible for maintenance and lamp replacement, with consideration given to access arrangements within the double-height spaces.

7.5 Emergency Lighting Strategy

Emergency lighting will be provided throughout the proposed school extension in full accordance with the requirements of BS 5266, BS EN 1838, relevant Building Bulletins, and the Building Regulations.

The emergency lighting design will support safe evacuation of occupants, including children, staff, and visitors, and will allow for out-of-hours use of the building where required.

Emergency lighting will be provided to:

- All defined and undefined escape routes
- Open areas and circulation spaces
- Areas of specific risk, including plant rooms and electrical rooms

The extent and layout of emergency lighting will be developed in coordination with the fire strategy and will be subject to approval by Building Control and the Fire Authority.

Emergency lighting will be provided using self-contained LED emergency luminaires, selected as maintained (M3) or non-maintained (NM3) as appropriate to the space usage, occupancy profile, and access arrangements.

The emergency luminaires will operate under both:

- Total loss of normal electrical supply, and
- Local failure of the associated lighting circuit

Illuminated exit signs will be provided where required to clearly identify escape routes and final exits. Maintained exit signs will be used where necessary to always ensure visibility.

A local key-switch testing facility will be provided to allow functional testing of the emergency lighting system. The system will be designed to allow straightforward inspection, testing, and record keeping by the school's facilities staff in accordance with BS 5266.

Where practicable, emergency lighting fittings will be integrated with the general lighting luminaires to minimise visual impact and simplify maintenance.

7.6 Fire Alarm Strategy

The proposed school extension will be served by an analogue addressable fire detection and alarm system, provided by extension and modification of the existing school fire alarm system. The incumbent fire alarm maintenance contractor will undertake all works to ensure full compatibility with the existing installation.

The fire alarm system will be designed and installed in accordance with BS 5839-1, relevant Building Bulletins, the Building Regulations, and the agreed Fire Strategy for the school.

The fire strategy for the building is confirmed as an “all out” evacuation on activation of the fire alarm.

The fire alarm system will be configured to provide a Category L2 level of protection, incorporating automatic fire detection and manual call points throughout the extension.



The main fire alarm control panel will remain within the existing building at the agreed location adjacent to the principal entrance. The previously installed remote fire alarm panel within the modular building is no longer required, as this building is not linked to the main school fire alarm system.

A framed A3 zonal diagram, identifying detection zones, will be updated and displayed adjacent to the main control panel to include the new extension.

A combination of addressable smoke detectors, heat detectors, and manual call points will be installed throughout the extension to provide early fire detection.

- Manual call points will be provided on escape routes and at final exits
- Call points will be fitted with protective hinged covers
- All devices will be connected via addressable loops with integral short-circuit isolators

Detector selection will be coordinated with room usage and environmental conditions.

Addressable loop-powered sounders and combined sounder / visual alarm devices will be installed throughout the extension to provide effective warning to all occupants.

- Audible alarm levels will achieve not less than 65 dB(A) or 5 dB(A) above ambient noise levels, in accordance with BS 5839
- Visual alarm devices (VADs) complying with EN 54-23 will be provided to support occupants with sensory impairments

Visual alarm coverage will include:

- Accessible / disabled WCs
- Hygiene rooms
- Circulation areas
- Publicly accessible spaces

The requirement for vibrating pager systems will be reviewed with the Client and Fire Strategy, noting current best practice and school operational requirements.

Fire alarm input/output interface modules will be provided as required to control and interface with third-party systems on alarm activation, including:

- Access control systems
- Mechanical and electrical plant shutdown
- Ventilation systems (including MVHR and natural ventilation actuators where required)

Plant interface modules will incorporate key-switch isolation to facilitate routine system testing. Key switches will be located adjacent to the main control panel.

The fire alarm system will be connected to a remote monitoring service, with provision for monitoring of fire signals and fault conditions. Allowance will be included for an initial 12-month monitoring connection period.

The system will incorporate integral battery backup sized to maintain full operation for a minimum of 48 hours in quiescent mode, followed by alarm operation in accordance with BS 5839.

Electromagnetic door hold-open devices will be provided to corridor fire doors where required and will release automatically on fire alarm activation. Local key-operated override facilities will be provided adjacent to each controlled door.

All fire alarm cabling will be installed using fire-resistant cables, with containment and routing coordinated with other building services.

7.7 Access Control Strategy

The proposed school extension will be served by an extension of the existing Access Control System currently installed within the school, ensuring continuity of operation, compatibility, and ease of management. The system will be designed, installed, tested, and commissioned by the incumbent access control contractor in coordination with the school's operational and safeguarding requirements.

The access control system will provide controlled pedestrian access to the building during normal school hours and restricted access during out-of-hours periods, supporting safeguarding, security, and operational management.

The system will be IP-based and integrated with the school's existing network infrastructure, providing a consistent platform for access management across the site.

Access control will be provided, as a minimum, to the following locations within the extension:

- Main entrance door to the extension
- Internal doors providing controlled access between the existing school and the extension

- Doors to staff-only or restricted areas (e.g. plant room, stores), where required

The exact extent of access-controlled doors will be confirmed in consultation with the Client and school safeguarding lead.

Doors fitted with access control will typically be provided with:

- Proximity card readers compatible with the existing school credential system
- Electrically controlled locking devices suitable for the door type and fire rating
- Local override facilities where required

Where doors form part of a means of escape, access-controlled doors will:

- Fail safe to open upon fire alarm activation
- Be interfaced with the fire alarm system in accordance with BS 5839
- Be provided with green emergency break-glass units adjacent to each controlled door

Each door controller will incorporate integral battery backup to maintain operation in the event of a local power failure.

The access control system will be interfaced with:

- The fire alarm system, to ensure automatic release of controlled doors on alarm
- Reception or administration points, where remote door release is required

Automatic door operators will be provided to the main entrance where required, with doors arranged to fail safe open under emergency conditions.

The system will utilise the same card technology currently in use across the school, allowing staff to use a single credential for access throughout the site. Cards may also be used as staff identification, subject to the school's operational policy.

The system will be managed via the existing access control management software, with permissions, access levels, and time schedules configured to suit staff roles and safeguarding requirements.

Additional cards will be programmed and issued to support the extension, with an allowance made for future staff and operational growth.

The access control installation will comply with all relevant legislation, standards, and best practice guidance applicable to educational buildings, including:

- Safeguarding requirements for primary schools
- Equality and accessibility considerations (Part M)
- Fire safety and means of escape requirements

The final design will be coordinated with the fire strategy, ICT strategy, and the school's safeguarding policies.

7.8 Intruder Alarm Strategy

The proposed school extension will be served by an extension and modification of the existing intruder alarm system installed within the school. All works will be designed, supplied, installed, tested, and commissioned by the school's incumbent intruder alarm maintenance contractor, ensuring compatibility with the existing system and continuity of operation.

The intruder alarm system will be designed in accordance with PD 6662 and BS EN 50131, with the level of protection appropriate to a primary school environment and the school's safeguarding and security requirements.

The intruder alarm system will provide detection to the new extension, including external doors, accessible windows, and internal circulation routes as required. The system will be flexible and expandable, with allowance for future extension or reconfiguration.

The system will be connected via dual-path communications to an approved Alarm Receiving Centre (ARC) to enable remote monitoring and response in accordance with the school's security policy.

The system will be designed to Grade 2 or Grade 3, subject to confirmation with the Client, insurer, and local Police requirements. Higher grades may be adopted locally where increased security is required (e.g. plant rooms or areas containing valuable equipment).

The system will be configured to provide zonal setting and unsetting, allowing the extension to be armed independently or as part of the wider school system.

The existing intruder alarm control panel will be retained where practicable and extended to accommodate the new zones associated with the extension.

Keypads or keyprox readers will be provided at agreed access points to allow authorised staff to set and unset the system. Locations and quantities will be confirmed with the school during detailed design.

A combination of detection devices will be used to provide appropriate coverage, including:

- Door contacts to external and controlled internal doors
- Passive Infrared (PIR) or dual-technology motion detectors within internal spaces
- Additional detection devices where required to suit room usage and layout

Detector selection and positioning will be coordinated to minimise visual impact and avoid nuisance alarms.

Internal sounders will be provided to give an audible warning of alarm activation and system status. External sounders, complete with integral visual indication and battery backup, will be provided where required and located to minimise visual and acoustic impact on neighbouring properties.

External sounders will operate in accordance with current guidance on noise duration and local authority requirements.

The intruder alarm system will incorporate dual-path signalling (e.g. IP and GSM) to an NSI-approved ARC. Alarm activations meeting the relevant criteria will be transmitted to the ARC, which will notify nominated keyholders and, where applicable, request Police response in accordance with agreed protocols.

The intruder alarm system will be integrated, where appropriate, with:

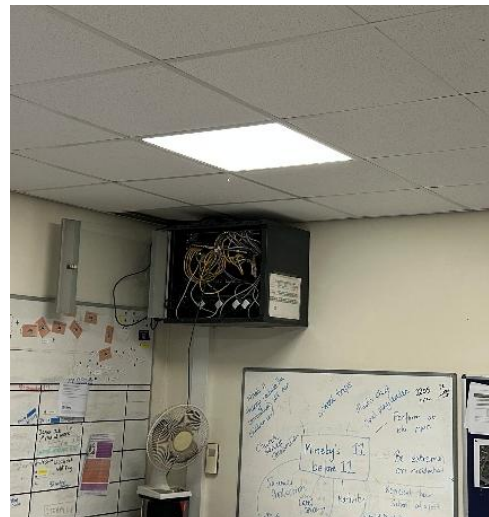
- The existing access control system, to support coordinated security operation
- The BEMS or site-wide monitoring systems where required for status indication

All interfaces will be agreed with the Client and specialist contractors.

7.8 Information & Communication Technology (ICT) Strategy

The proposed school extension will be provided with a structured cabling ICT infrastructure, designed to integrate seamlessly with the existing school ICT network. All ICT works will be coordinated, supplied, installed, tested, and commissioned by the school's incumbent ICT Managed Service Provider (MSP) to ensure compatibility with existing systems and operational continuity.

A Category 6A structured cabling system will be provided throughout the extension to serve all teaching, staff, and ancillary spaces, in accordance with the room data sheets and the school's ICT standards.



The structured cabling installation will include:

- Data outlet back boxes and faceplates
- Horizontal Cat 6A cabling to outlets
- Termination and testing at patch panels
- Certification of the installed cabling system

The system will be designed with a minimum of 25% spare capacity in cabling routes and patch panel capacity to accommodate future expansion.

Given the single-storey nature and modest scale of the extension, ICT cabling will be distributed from an existing or extended communications cabinet within the main school building, subject to confirmation by the ICT provider.

Where required, a local satellite communications cabinet may be provided within the extension to maintain cable length limits (maximum 90 m) and simplify distribution. Any new cabinets will be sized to allow for future growth and will be coordinated with the school's ICT strategy.

All cabinets will be provided with:

- Adequate space for patch panels and active equipment
- Power supplies and earthing
- Clearances for maintenance and ventilation

The Client and ICT provider will consider the provision of Uninterruptible Power Supplies (UPS) for critical ICT equipment.

Data and combined data/telephone outlet points will be provided as indicated on the room data sheets, including:

- Teaching spaces (interactive displays, teacher positions)
- General-purpose outlets for ICT and AV equipment

High-level data outlets will be provided for:

- Interactive displays and screens
- Wireless Access Points (WAPs)
- CCTV cameras, if required and access control equipment

Low-level outlets will be provided for general ICT and telephony use.

A wireless network will be extended into the new accommodation to provide full internal coverage and support modern teaching requirements. Wireless Access Points will:

- Be specified and located by the school's ICT provider
- Be powered via Power over Ethernet (PoE)
- Be positioned to avoid signal saturation and ensure adequate bandwidth

WAP locations will be coordinated with lighting, ventilation, and ceiling layouts.

The structured cabling system will support and interface with other building systems where required, including:

- Access control
- CCTV, if required
- Fire alarm interfaces (where applicable)
- BEMS / monitoring systems

Dedicated data outlets will be provided for these systems as required.

Interactive displays, screens, and associated AV equipment are excluded from this contract. However, the primary infrastructure, including data cabling, containment, and power provision, will be provided.

Final equipment selection, mounting heights, and exact locations will be agreed with the Client and ICT provider to ensure accessibility and usability for teaching staff and pupils.

Where projectors or ceiling-mounted equipment are required, support brackets and containment will be coordinated with the ICT provider and main contractor.