



***Mechanical & Electrical  
Building Services  
Engineering  
Guidelines  
For  
Temporary Accommodation  
School Buildings***

*Planning & Building Unit  
Building Section  
Department of  
Education and Science  
Tullamore, Co. Offaly.*

*Telephone: (0506) 24300  
Fax: (0506) 51119*

*Web: <http://www.education.ie>*

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## 1.0 Introduction

All Mechanical and Electrical Building Services in rented or purchased Temporary Accommodation in both primary and Post Primary Schools procured from March 2004 must comply with these guidelines. It is for issue to school authorities (hereinafter referred to as the Client<sup>1</sup>) and to design teams.

These Guidelines replace all previous guidelines issued by the Department of Education and Science for Mechanical and Electrical Building Services in rented or purchased Temporary Accommodation in Schools.

The Guidelines are based on Engineering Applications that work and best suit the school environment and not just on general best engineering practices.

In applying these guidelines to projects, Schools, Educational Authorities and Design Team Consultants will be obliged to comply in full with the Design Team Procedures and other guidance issued by the Department.

This document does not relieve the Consultants from their normal design responsibilities.

In all instances, the Department of Education & Science shall have the final say in the application of these Guidelines to projects where grant-aid is to be sanctioned.

For further advice on these or any other matter, please contact:

The Planning & Building Unit  
Building Section  
Department of Education & Science  
Portlaoise Road,  
Tullamore,  
County Offaly.

Telephone: 0506 24300

Fax: 0506 51119

Web: <http://www.education.ie>

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<sup>1</sup>In the case of Community and Comprehensive Schools and a number of Primary Schools the Minister for Education and Science is the Client, but for the purposes of this document the term “Client” shall also encompass the School Authorities.

## **2.0 Design Philosophy**

### **2.1 General Design Philosophy**

The design should allow for repair or replacement of components of the building such as fittings, finishes and services with minimum disruption and cost. To achieve this it is essential that all disciplines within the Design Team work together from the beginning of the project and that the design be developed through collaboration by all of the Design Team members.

To allow for economic services installation, where more than one unit is being provided accommodation shall be combined where possible into one block.

### **2.2 Mechanical Services Design Philosophy**

The mechanical services installation shall comprise heating, water, gas, soils and wastes, and fire protection services.

The design of the Mechanical Services must take into account the site microclimate, the building form and orientation of spaces, the thermal performance characteristics of the building, the occupancy trends and restrictions on pollutant emissions.

### **2.3 Electrical Services Design Philosophy**

The electrical services installation shall comprise Power Distribution Services, Lighting Services, Communication Services, and Protective Services and in some cases Heating.

The design of the Electrical Services must take into account the building form, the characteristics of the building, the occupancy trends and orientation of spaces.

### **2.4 Standards**

To ensure the longevity of these guidelines specific mention of individual standards, which are continuously being updated, has been avoided. The Design, Installation, Commissioning and Handover of the Building Services, materials, products and workmanship shall comply with the relevant prevailing Irish, European and British Standards. Materials and products specified shall conform to current European Directives.

### **2.5 Value for Money**

The Building Services Consulting Engineer should ensure that all potential costs that could arise during the execution of the contract and the installation and commissioning of services to schools are provided for inclusion at the appropriate stage, this also including possible capital contributions for Utilities.

### **3.0 The Built Environment**

#### **3.1 Energy Efficiency**

An integrated design approach should provide opportunities for energy efficiency.

The design team should be aware that energy efficiency strategies can support each other or can conflict and thus individual measures should not be considered in isolation.

#### **3.2 Passive Energy Measures**

The use of passive energy measures to achieve a comfortable internal environment should be employed where possible. The positioning of the building (allowing for site restrictions) should be developed to take account of the need to minimise energy consumption with particular emphasis on maximising the use of natural ventilation, daylighting, useful solar gain and minimising heat losses and unwanted solar gains.

#### **3.3 Natural Ventilation**

Ventilation shall be by natural means through the use of permanent vents and windows with opening sections.

Window design must ensure that adequate natural ventilation is provided without draughts. To ensure this the provision of opening sections at the upper part of the window must be provided. The operation of these sections must be independent of the lower opening sections. Full opening vertical sections are to be avoided for use as the primary source of natural ventilation.

Toilets should be ventilated by natural permanent ventilation means. A permanent natural vent to the exterior, either directly or ducted, should be provided in addition to any opening window.

#### **3.4 Natural Daylight**

All teaching spaces and habitable rooms shall have natural daylight as the principal source of light. Artificial lighting shall be used to supplement the available daylight in accordance with standards detailed in this document.

The geometry and distribution of glazed areas should be carefully designed to provide a high level of natural light while avoiding glare and ensuring a good quality daylighting distribution in the room with average daylighting factor in the range of 3.5 to 5.5 %.

The use of solid panes in the window geometry is to be avoided unless the above standards can be achieved. All teaching areas and habitable rooms should have a horizontal vista and view of the outside environment. Window sill heights should be a minimum of 800 mm above finished floor level. Window head height should be a minimum of 2100 mm above finished floor level for the primary windows in a teaching space.

### **3.5 Thermal Insulation**

Thermal insulation standards shall meet or exceed the prevailing Building Regulation standards.

### **3.6 Acoustic Performance**

Noise producing and noise sensitive spaces should be located, designed and detailed so as to minimise noise interference between them. A minimum noise reduction of 40 dB is required between teaching spaces and other noise generating areas. The design and installation of the Building Services Systems shall ensure that their operation will not interfere with the schools operation. A background noise level (B.N.L.) OF 35 shall not be exceeded in all Teaching Spaces.

### **3.7 Materials**

Building Services materials should be selected and incorporated in the design to ensure that the building and all components are durable and low maintenance and do not present a hazard to the health and safety of the users.

### **3.8 Universal Access**

Universal access needs should be considered locally with the Client. Where a number of single accommodation units are proposed and are identified as having the same use, the need to duplicate universal access on all units should be carefully considered as rotation of the classes on an annual basis may equally facilitate universal access requirements.

## 4.0 Heating Services

The type of heating to be provided for the accommodation should be based on the selection criteria established in the following table. The systems shall be controllable and capable of providing 18 °C minimum temperature in each room.

All wording on any control panels shall be agreed with the Client beforehand. Use of terminology such as zone 1, zone 2 on its own shall not be acceptable. The actual zone shall be defined on a colour coded A3 drawing, which shall be laminated and fixed on, or immediately adjacent to the panel, on a timber backing screwed to the wall. No abbreviations are to be used on the panel without an explanation in full provided on the drawing.

Control units located in habitable spaces shall be of a type appropriate for their location in terms of aesthetics and size. Industrial housing shall not be acceptable.

<b>Option No</b>	<b>Type of heating system</b>	<b>When to be used</b>
1	Night Rate electrical storage heaters	Unit is in the vicinity of the main school switchboard and existing electrical system is capable of serving new load with no need for upgrade of supply or electrical switchboard.
2	Connect to School's existing heating system	When unit is in vicinity of main school boiler house or heating system and existing heating system is capable of serving additional load with no need for upgrade of system or boilers.
3	Gas fired boiler system	When neither 1 & 2 above are physically or economically possible <u>or</u> when more than one unit is to be provided.

### 4.1 Option 1. Night Rate Electrical Storage Heaters

Thermal storage heaters shall be provided in each classroom. Each heater is to have a thermal cutout and be wired in surface mounted galvanised steel conduit on a separate circuit from the local sub-board; the heaters shall be installed in accordance with the manufacturers recommendations. Convector style electric heaters are not to be used.

### 4.2 Option 2. Connect to School's Existing Heating System

Where economically possible, an accommodation unit may be connected to the school's main heating distribution system provided the system has capacity and the connection of the additional load will not diminish the system performance in the existing school.

The connection points should be fitted with isolation valves to allow future isolation of the extended heating pipe work with no disruption to the school's main system and thermostatically controlled at point of entry into the temporary accommodation



unit. This may not be possible with all existing systems, in particular one-pipe systems.

The interconnecting pipe work between the main school and temporary unit should be cross-linked polyethylene PE-X pipe within a pipe type system. The heating distribution shall be low-pressure hot water via appropriate polyethylene patented piping distributed in the floor void to steel panel radiators. The system shall be of the two-piped flow and return type.

Radiators shall, wherever possible, be located under external windows but under no circumstances shall they be fitted beneath chalk/white boards. Care must be taken to ensure that radiators are not positioned so as to obstruct furniture or teaching aids. Radiators must be readily accessible and not located behind timber or other such ducting. Radiator numbers shall be selected to provide the most economical operational solution and not simply to match the number of windows.

### **4.3 Option 3. Gas Fired Heating System**

Each accommodation unit, or where more than one unit (e.g. combination of adjoining units), shall be provided with a room sealed domestic style wall hung combination gas fired boiler with fan assisted flue and self contained pressurisation unit, temperature controls, safety thermostats, safety pressure relief valve piped externally and terminating downward at low level, pump, controls and timer, etc. This unit shall be located in the cloaks area in an enclosed cupboard.

Accommodation units must be combined into one block where more than one unit is being provided.

The boiler shall serve the heating and hot water requirement if appropriate (refer to section 5.3) and will be controlled by a single programmer.

The gas service shall be provided externally adjacent to the unit and shall consist of two 47 kg net weight propane gas tanks with auto change-over, enclosed in a ventilated metal secure enclosure so that the bottles or controls cannot be interfered with.

Where a number of accommodation units are being provided consideration may be given to the provision of a half tonne storage tank with chain link fencing if deemed necessary. The regulations pertaining to the locating of gas containers in the proximity of occupied spaces, boundaries, roadways, etc. should be observed.

If natural gas is available locally and presents a cheaper capital installation cost to LPG then this may be considered.

Where horizontal discharge balanced flues are proposed the terminals shall be mounted not less than 2.5 m above the external finished ground level.

The heating systems shall be low-pressure hot water via appropriate polyethylene patented piping, distributed in the floor void to steel panel radiators. The system shall be of the two-piped flow and return type.

Radiators shall, wherever possible, be located under external windows but under no circumstances shall they be fitted beneath chalk/white boards. Care must be taken to ensure that radiators are not positioned so as to obstruct furniture or teaching aids. Radiators must be readily accessible and not located behind timber or other such ducting. Radiator numbers should be selected to provide the most economical operational solution and not simply to match the number of windows.

The system should have a simple boiler installation controls system comprising optimum start / stop control and automatic frost protection. The controls should include a manual override with run on timer so that heating is available for occasional out of hours use.

A laminated wall chart permanently fixed shall be provided explaining common operating / maintenance procedures and check lists for the main equipment. All zones etc. shall be defined clearly in terms of actual classroom areas etc. and not just zone 1,2 etc. No abbreviations shall be used.

Thermostatic control shall be provided to each teaching unit via a two-port on/off valve and range adjustable wall mounted thermostat.

Holiday switching shall also be provided on the controls.

#### **4.4 Heating Insulation**

Where heating pipe work is not being used as a useful heating surface, insulation of appropriate thickness and quality shall be applied. The insulation shall be unslit pre-formed CFC free, sleeved sections of high quality insulation fitted in accordance with the manufacturers instructions. The insulation shall also be applied to all connections, bends, tees and valves.

### **5.0 Water Services**

The Water Services shall comprise mains water, cold water installations and hot water installations.

#### **5.1 Mains Water Systems**

External mains and fittings shall be located at least 750 mm below topsoil level. Suitable backfilling and other protection shall be provided in accordance with the site conditions.

Mains water supplies shall also be provided at all sinks. All sink units should be provided with a manual kitchen style swivel head-mixing unit. Internal Mains water piping shall be polyethylene patented piping appropriate for use and distributed in the floor void.

The dead leg distribution pipe to all outlets should be kept to a minimum. To aid in this the classroom sink should be located where possible adjacent to the toilet party wall.

## 5.2 Cold Water Services

The cold water service shall be a gravity fed system.

The cold water piping shall be polyethylene patented piping appropriate for use and distributed in the floor void.

An insulated low profile cold water storage tank of 500 litres actual capacity per classroom shall be provided, positioned in a housing at high level over the toilet area but within the unit (i.e. not on the roof).

Self-closing low-pressure drop spray taps shall be specified.

## 5.3 Hot Water Services

The type of hot water system to be provided for the accommodation should be based on the selection criteria established in the table below.

All washbasins should be provided with hot water outlets with lockable local thermostatic blending valves to prevent scalding. All sink units should be provided with a manual-mixing unit with suitable warning on the wall over the sink informing users of the presence of hot water. Self-closing low-pressure drop spray taps shall be specified on all wash hand basins.

Any legionella risk shall be treated with trace heating of the hot water distribution system. The hot water piping shall be polyethylene patented piping appropriate for use and distributed in the floor void.

<b>Options</b>	<b>Type of hot water system</b>	<b>When to be used</b>
1	Electric under sink hot water heater 7 litres capacity	Accommodation Unit is standalone and to be provided with electric heating or connected to school existing heating system.
2	Electric under sink hot water heater 7 – 10 litres capacity	Where two accommodation units are combined.
3	Gas fired combination boiler system	When options 1 & 2 above are not physically or economically possible <u>or</u> when more than two accommodation units are to be provided.
4	Gas fired boiler and indirect hot water cylinder	When more than four accommodation units are to be provided.

### Option 1 & 2 Electric water heaters

A seven-day timer set to eliminate standing losses out of school hours should control the electric water heaters. Storage should be kept to a minimum. Sanitary and sink layouts should be configured to maximise the option of one unit serving a back to back layout subject to maximum dead leg requirements. Adequate and

safe pressure relief arrangements are to be provided. The electric hot water heater shall only be installed within an enclosure.

### **Option 3 Combination Boiler System**

The boiler system shall provide hot water on a priority basis with no additional hot water load applied when sizing the boiler. There shall be no separate hot water storage system. The flow temperature setting of the domestic hot water shall be provided at the boiler.

### **Option 4 Gas fired boiler and indirect hot water cylinder**

The boiler system shall provide hot water to an indirect hot water cylinder on a priority basis with no additional hot water load applied when sizing the boiler. Separate hot water storage shall be provided via a fast recovery factory insulated indirect open vented hot water cylinder with multi coil heat exchanger.

The cylinder capacity shall be based on 2 litres storage per pupil up to a maximum size of 140 litres. The primary heating side shall be controlled via a two port valve and thermostat from the main heating system circuit. Electric immersion heaters shall not be required on these cylinders.

## **5.4 Water services Insulation**

All distribution cold water services pipe work in locations likely to give rise to freezing or condensation shall be appropriately insulated with unslit pre-formed CFC free, sleeved sections of insulation with a continuous vapour barrier in the case of cold and mains water services.

All distribution hot water services pipe work shall be appropriately insulated to limit heat loss with unslit pre-formed CFC FREE, sleeved sections of insulation.

Appropriate colour identification bands and flow directional arrows shall be affixed to all insulated pipe work.

## **6.0 Ventilation Services**

All temporary accommodation classrooms shall be provided with adequate natural ventilation. Toilet areas shall also be naturally ventilated via windows and permanent vents. There shall be no need for mechanical ventilation.

## **7.0 Soils and Wastes**

All soils and wastes shall include vents, anti-siphons and traps to all fittings as appropriate. All joints in soil and wastes runs shall be fusion made with the appropriate solvent, or socket and synthetic O-rings.

Generally, soils and wastes shall be run in PVC piping but other plastics, such as polypropylene and high-density polypropylene may be used for particular applications.

## **8.0 Fire Protection Services**

Adequate protection services to enable the building occupants to evacuate safely shall be provided in the form of hand held fire extinguishers.

A 2 Kg Dry Powder fire extinguisher and hanging bracket shall be supplied in each classroom. Fire hose reels are not to be provided for first aid fire fighting.

## **9.0 Primary Electrical Distribution**

The incoming electrical supply and the main switchgear for the school should be evaluated to establish availability of additional load requirements at an early stage; this should not be left until the units arrive on site.

Steel wire armoured type cables are to be laid underground in 125 mm purpose designed pipes with appropriate service indication in trenches at least 600 mm deep. Joints on underground cables are not acceptable.

Where a new accommodation unit is being located in an area where space exists for additional accommodation units and there is a possibility of a need in the future for additional temporary accommodation then consideration should be given to providing an electrical mains supply to the switchgear panel in the first accommodation unit with suitable capacity to serve additional future accommodation units. Space should be left in the switchgear panel for future switch fuses.

Overhead electrical mains between accommodation units or between any unit and the main school building will not be accepted. Cables loosely thrown on any roof section will not be accepted; all sub-main cables are to be routed underground.

The inclusion of a Prime Cost Sum for the provision of sub-main cables in an accommodation unit tender is unacceptable. Exact requirements are to be specified by the design team and priced by the tendering firms.

## **10.0 Power Distribution Services**

Each temporary accommodation unit or double unit shall have its own distribution board; this shall be located at high level within the teaching space and comprise MCB's, etc. All units are to be properly labelled indicating the respective areas that are served. Circuit Protection shall be via earth leakage circuit breakers on all general socket and water heater circuits and MCB's.

All sockets shall be switched 3 pin, 13 Amp capacity; surface or flush mounted depending upon building construction. Circuits shall be carried in galvanised steel conduit, cable trunking, or dado trunking as noted. Surface metal boxes shall be specified without manufacturers knockouts for surface mounted systems. Socket surface plates shall be of metal clad finish only and engineered to fit flush with the back box.

Five number 13 Amp twin sockets shall be provided in each Primary School classroom in a dado carrier system for computers along with two 13 Amp twin sockets in a conduit system. Two 13 Amp twin sockets shall be provided in each

Post Primary School classroom in a conduit system. Sockets shall be mounted 300 mm above the finished floor.

Power outlets to water heaters, water boiler and cooker control should be suitably rated and switched with a neon indicator.

The supply and installation of hand dryers is not grant aided for hygiene reasons and should not form part of any design calculations, contract or tender documents.

### **11.0 Earthing**

The electrical installation including all fluorescent light fittings shall be properly earthed in accordance with the relevant E.T.C.I. National Rules For Electrical Installations and ESB regulations.

### **12.0 Lighting Services**

Lighting to provide appropriate illumination with the correct intensity and colour shall be provided. A light level on the working plane of 300 lux shall be provided in general classrooms and 120 lux in toilets, circulation and entrance areas.

The light fittings shall be surface mounted 1500 mm linear high frequency fluorescents complete with T5 tubes and dust proof diffusers of good quality.

Fittings shall be robust and easy to maintain.

Compact fluorescents shall be used in the entrance areas and should also be used in small stores.

Lighting in toilet areas should be of the linear high frequency fluorescent type with cubicle heights terminated below ceiling level to maximise light distribution. The positioning of light fittings shall not give rise to shadows or glare.

The switching of lights in classrooms shall be so arranged that natural daylighting may be maximized and individual rows serving areas benefiting from daylighting can be separately controlled. The controls for operation of lighting in each space should be contained within that space.

Light switches shall be metalclad finish only with grid type switches and be engineered to fit flush with the back box.

The light switches to stores, etc., shall be push type with auto time delayed release and is positioned on the internal side of the room on the side opposite to the door hinges.

The lighting circuits shall be run in galvanised steel conduit, surface or concealed, depending upon building construction.

External lighting shall consist of high level wall mounted bulkhead type fittings.

High-pressure Sodium units should be used and timer switches, daylight sensors should be incorporated into the lighting design.

Fittings shall be of robust and vandal proof quality. External lighting shall be time controlled subject to intruder alarm override.

### **13.0 Communication Services**

The communication services shall comprise information communication technology systems and public address / class change systems. No provision shall be made for Telephony or Television systems.

#### **13.1 Information Communication Technology**

If the existing school building has an Information Technology network then consideration of how this is to be extended to the temporary accommodation either via hardwiring or using wireless technology needs to be outlined to the Department. When making the case for extending the existing system full cost implications will need to be identified along with methodology.

The number of points shall be five per classroom for Primary Schools and one point per classroom for Post Primary accommodation.

The installation shall comply with the Department of Education and Science Information and Communication Technology (ICT) Infrastructure Guidelines for Primary and Post Primary Schools respectively.

#### **13.2 Public Address / Class Change System**

If the existing school has a public address system then this should be extended to the temporary accommodation to provide public address facilities in the classroom.

#### **13.3 Provision for the Hearing Impaired**

Generally provision for hearing impaired persons shall be via a portable loop systems or personal infrared equipment. These are not to form part of the building contract; they are treated as an equipment item between the Department and the Client.

### **14.0 Protective Services**

The protective services shall comprise Door Entry System, Intruder Alarm System, Emergency Lighting, and Fire Detection and Alarm Systems.

#### **14.1 Door Entry System**

Where an arrangement of multiple temporary accommodation units are combined with a reception / admin office, a simple door entry system capable of two-way communication should be provided on the main entrance door complete with remote release facility.

In the design of the main entrance and the reception office a natural view must be maintained between the reception office and the front door entrance area.

The unit should comprise a single button vandal resistant, flush mounted stainless steel entry panel complete with microphone and speaker, an internal wall / desk mountable handset with release button should be located in an office / reception area or the nearest agreed classroom. Toggle switches shall be installed so that the intercom handsets can be switched off during staff breaks.

If no reception / administration office is proposed and three or more units are to be combined with one shared entrance, then a simple doorbell system with an internal sounder shall be provided.

Where accommodation units are standalone or have individual entrances manual quick release locks shall be provided on the external doors for security.

#### 14.2 Intruder Alarm

If the existing school has an Intruder Alarm system, then, if capacity exists in the main control panel, this should be extended to the temporary accommodation, either via hardwiring or using wireless technology, which ever is the most economical. If there is no capacity in the control panel then consideration should be given to a standalone system.

#### 14.3 Emergency Lighting

Emergency lighting shall be provided in accordance with prevailing standards. It shall generally consist of non-maintained, self contained, emergency lights and exit sign located over the emergency exit door. Each light fitting shall have a minimum 3-hour duration and be complete with a neon-monitoring pilot.

#### 14.4 Fire Detection and Alarm Systems

Mains wired smoke alarms with integral sounder shall be provided in single and double units up to a maximum of five classrooms in one single storey block. These detectors should be interlinked and each detector unit shall have an integral battery back up power supply, an AC power indicator light and rapid flashing LED to indicate which detector is the originating alarm. All interconnected detectors shall sound simultaneously if any one detector is activated. A smoke detector shall be located adjacent to any gas fired boilers.

There is no need to interconnect standalone accommodation units.

Where greater than five classrooms are provided in one block or accommodation is provided in two storeys, then the existing school fire alarm should be extended / interlinked to a system in the temporary accommodation to an L3 standard either via hardwiring or using wireless technology, which ever is the most economical. A smoke detector shall be located adjacent to any gas fired boilers.

### 15.0 Handover Documents

Prior to demonstration users shall be provided, with an operating and maintenance manual, which clearly indicates in non-technical terms all aspects of operating the equipment and sets out the procedures for routine operation and maintenance checks and checklists. The manual should include postal, telephone and email contact details for suppliers of replacement parts and service.



## **16.0 Inspection, Testing and Commissioning**

In addition to regular site inspections of the installation of systems, when the installation of systems has been completed, the Building Services Consulting Engineer shall inspect the equipment in operation and advise the Contractor of any defects. All equipment and systems shall be demonstrated to the Building Services Consulting Engineer as working satisfactory and as designed.

Commissioning of installations should be carried out in accordance with the procedures, checks and tolerances given in the relevant BSRIA Application Guides and achieve the standards set in the CIBSE Commissioning Codes and prevailing standards.

## **17.0 Training and Demonstration**

After the Building Services Consulting Engineer is satisfied and has witnessed that all equipment and systems are operating satisfactory, training and demonstration shall take place.

Adequate notice shall be given to the Client and at an agreed time and in the presence of the Building Services Consulting Engineer, a training and demonstration event shall be provided.

## **18.0 Checklist Questionnaire**

The questionnaire in appendix one must be completed in full and sent to the address on the cover of this document prior to tenders been accepted.

All details should be agreed by the Project consultants and the Client and signed by all parties.

**Checklist Questionnaire for Mechanical and Electrical Building Services in rented or purchased Temporary Accommodation in both Primary and Post Primary Schools. 2 Pages**

1. Number and type of units to be provided?

Single: \_\_\_\_\_ Double: \_\_\_\_\_ Multiple: \_\_\_\_\_

2. Are additional units likely to be required in the next few years? \_\_\_\_\_

3. Are the units combined or stand-alone? \_\_\_\_\_

4. If stand alone, could they be combined? \_\_\_\_\_

5. Do the natural daylighting provisions meet the guideline requirements? \_\_\_\_\_

6. Describe the level of Universal access provided and rationale applied.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. Describe the type of heating system to be provided. Option No \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

8. Describe the type of hot water system to be provided. Option No \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

9. Is the existing electrical supply system adequate for the required electrical load? (If not give details) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. What provision has been allowed for electrical supply to future accommodation units? \_\_\_\_\_

\_\_\_\_\_

11. Provide details of existing school ICT network system and description of proposed ICT service to Units. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

12. Provide details of existing PA system and class change system and description of proposed service to Units.

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13. Provide details of proposed security provisions at entrance(s) to Units.

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14. Provide details of existing intruder alarm in school and description of proposed service to Units. \_\_\_\_\_

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15. Provide details of existing fire alarm in school and description of proposed service to Units. \_\_\_\_\_

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16. Provide details of Utility capital contributions that occur with this project.

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We confirm that the above details have been agreed and reflect the issues relating to this project in full.

**Building Services Consultant Engineers:**

Name: \_\_\_\_\_

Address:

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Signed: \_\_\_\_\_ Date: \_\_\_\_\_

**School Authority:**

Name: \_\_\_\_\_

Roll No: \_\_\_\_\_

Address:

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Signed: \_\_\_\_\_ Date: \_\_\_\_\_