

# UWE Estates Design Specification

## Chapter 7: Electrical Engineering



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## 7.1 Change Control

Version Number	Date of Issue	Chapter Ref	Brief Description of Change(s)
1.4	01/05/19		Various updates and changes throughout all sections.
1.5	NOV 2019		Various updates and changes through sections: 7.4; 7.5.2; 7.6; 7.7; 7.8.4.
2021	JAN2021		Numerous updates and changes throughout all sections. All detailed in 2021 version.
2022	JAN2022		Numerous updates and changes throughout all sections. All detailed in 2022 version.
2023	JAN2023		Numerous updates and changes throughout all sections. All detailed in 2023 version.
2024	FEB2024		Remained at 2023 version.
2025	JAN2025		Numerous updates and changes throughout all sections.

## 7.2 Management of Electrical Design

### 7.2.1 Initial Survey

- Survey existing services and ascertain the implications of any new works. A condition survey may be required for works within existing areas. The designer is responsible for checking the suitability of all existing electrical, security & data at project inception.
- The contractor shall allow for advance tracing, identification and recording of all existing LV and ELV circuits that are identified during refurbishment works.
- Consideration and review of case studies and technical papers of similar applications.
- Consider budgetary and energy conservation requirements.

### 7.2.2 Design Co-ordination

- Liaise with all members of the design team including the building designer and structural engineer to provide an integrated building/ structural / services installation. This must include coordination of electrical contractors’ work requirements, plant space and significant apertures within the structure.
- Particular attention must be paid to the end-users small power requirements.
- Coordination is required with the mechanical and any other services, designer regarding the power and control requirements for the mechanical services.
- Likewise, IT infrastructure has specific power, and energy consumptions, requirements which are discussed in this Chapter (but also see Chapter 8). There must be close co-ordination between the electrical services designer and UWE IT Engineers.

### 7.2.3 Initial Load Assessment

- This supports early assessment of plant space requirements for co-ordination with the building designer.
- An electrical load assessment must be calculated/obtained and ensure that the existing load can accommodate any additional expansion
- Existing load characteristics must be obtained at design stage.
- All design calculations must be provided prior to design approval by estates.

### 7.2.4 Plant, System Selection and Location

Selected to maximize operational efficiency and availability encompassing any energy saving requirements

### 7.2.5 Electrical Design Standards

All electrical specifications and designs shall comply with the current BS, CIBSE, BSRIA standards.

If there are any doubts or questions relating to electrical systems or standards, the designer must discuss these with UWE Estates.

### 7.2.6 Stage Gate Approvals (RIBA Stages 2-6)

At every Stage, approval must be sought from the UWE Electrical Engineer before proceeding. Reference should be made to the UWE Electrical Safety Policy HSP\_005 Appendix 1.

## 7.3 Resilience

Ethos – Reduce down time, and to allow work to be carried out in non-essential areas without disrupting critical University systems. This would enable non-essential items to be powered down temporarily (i.e. assist with carbon targets)

### 7.3.1 Essential & Non-Essential Supply

HV Tx > MP > SDB > DB > Final Circuit

Lighting, Small Power

HV Tx > MP > ESDB > EDB > Final Circuit

### 7.3.2 Essential Circuit

FAP, Access Ctrl, CCTV, BMS, Emergency Lighting, Comms Rooms, Air Conditioning within comms rooms, Refuge Systems.

College or service specific circuits should be fed via dedicated EDB to minimise any impact when any work on general estates equipment be needed. Likewise, any college specific work won't impact operations outside of the college work area.

## 7.4 Cabling

### 7.4.1 Overground

System	Standard	Extra Information
Power (<50v)		
Power (>50v)		
Data		
Fire	FP200 multi-core CWZ rated pliable fire-resistant cable	All cabling shall be mechanically secured using

	(Firetuf or similar) with red low smoke fume zero halogen outer sheath. No cables smaller than 1.5mm <sup>2</sup> cross section shall be used	copper coated P-Clips and stainless-steel tie wraps
<b>Audio Visual</b>		AV cables should be mounted in basket, for ceilings  Rigid containment used for risers, or use of dado trunking

#### 7.4.2 Underground

System	Standard	Extra Information
<b>Power (&lt;50v)</b>		
<b>Power (&gt;50v)</b>		
<b>Data</b>		
<b>Fire</b>		

## 7.5 Containment

The designer shall utilise a factor +50% when sizing containment systems to allow spare capacity for future adaptations.

Particular attention must be given to the selection of cable containment used to ensure the integrity of the containment if subjected to fire.

All pre-harmonised coloured wiring shall not be reused and must be replaced with new LSFOH cable of the appropriate size and type (This may mean changing the existing cable size to ensure BS7671 compliance).

Wiring systems are supported such that they will not be liable to premature collapse in the event of a fire.

To comply with Fire Safety standards, only metal containment and suitably metal cable ties shall be used.

### 7.5.1 Individual Wiring Methodology

#### 7.5.1.1 Small Power

Final circuit wiring shall be wired in 6491B singles. Each final circuit cable in the distribution board shall be fitted with a propriety cable ferrule system identifying the final circuit cable reference. The cabling shall be sized in accordance with the latest edition of the IET Wiring Regulations.

Final circuits shall be installed in galvanised steel trunking and conduit within ceiling voids and enclosed in galvanised steel conduit in walls.

Where it has been agreed with the UWE Electrical Engineer that final circuits may be wired utilizing 6242B LSF cables they shall be contained within steel wire basket and in all instances secured with metallic cable ties.

In the plant and switch rooms final circuits shall be wired in 6491B LSFOH single core cables in exposed galvanised steel trunking and conduit.

Within teaching spaces and the like Marco Elite 3 compartment White dado trunking must accommodate CAT 6 data cables. Contrast inserts or contrasting dado lids are to be provided behind accessories for DDA Compliance.

All ring final circuits shall be a minimum of 4mm<sup>2</sup> conductor CSA.

### 7.5.1.2 Lighting

Internal lighting circuit cables shall not be less than 1.5 mm<sup>2</sup> or more than 2.5mm<sup>2</sup> conductor CSA. Final circuit wiring shall be LSFOH single core cable, reference 6491B, enclosed in galvanised steel trunking and conduit. The installation shall be concealed in the fabric of the building, flush down walls and recessed in ceiling voids.

Lighting circuits containing high wattage luminaires (above 150W) shall be individually designed. Cable sizes, protective devices shall be carefully calculated to suit the particular installation in these cases.

MCBs and RCBOs shall be 10A Type C with the load on each MCB limited to 5A maximum.

Luminaires are to be installed and wiring following the manufactures recommends methodology.

Above suspended ceilings, lighting control modules shall be utilised and associated flexible leads. Emergency luminaires shall be connected varied connectors to distinguish between lighting and emergency lighting luminaires. Lighting control modules shall be located in the ceiling void, adjacent to the luminaire fixed to the building structure/trunking, behind an accessible ceiling tile.

Where luminaires are fixed directly to the building soffit they shall be connected direct to the final circuit wiring with the final connections using heat resistant single core wiring from terminations in accessible conduit boxes or adaptable boxes.

### 7.5.1.3 Emergency Lighting

All wiring shall comply with BS5266-1.

Central battery emergency luminaire cabling shall have a minimum conductor CSA of 2.5mm<sup>2</sup>.

Wiring shall be FP200 enhanced or an equivalent approved standard and sized in accordance with respective circuit loading.

Central battery emergency luminaire cabling shall be installed on separate or segregated containment exclusive for the use of emergency lighting cabling.

The use of proven metal cable fixings shall be utilised throughout. Plastic will not be acceptable.

### **Approved Equipment and Companies – Prysmian, Nexams**

#### 7.5.1.4 Fire Alarm

All wiring to comply with BS5839-1. Cabling must meet the FP200 enhanced standard or equivalent.

Fire alarm cabling shall be installed on separate or segregated containment exclusive for the use of fire alarm cabling.

The use of proven metal cable fixings shall be utilised throughout. Plastic will not be acceptable.

### **Approved Equipment and Companies – Prysmian**

#### 7.5.2 Individual Containment Methodology

General - Standard galvanised steel trunking or conduit and accessories is to be used throughout the site with heavy gauge trunking or conduit in boiler and plantrooms.

Dado Trunking - 3 compartment Marco Elite 3 white PVC dado trunking, with grey lids.

SWA Cables - Heavy duty galvanized steel cable tray and cable ladders/racks.

Data and Voice - Dedicated, medium/ heavy duty galvanized steel cable basket.

Fire Alarm - Dedicated, medium/ heavy duty galvanized steel cable tray with metallic cable ties.

Security - Dedicated, medium/ heavy duty galvanized steel cable basket.

### **Approved Equipment and Companies –**

- Dado trunking - Marco Elite 3
- Accessories - Honeywell MK or Crabtree
- LSOH Cables - Delta Crompton, Prysmian or Draka UK

### 7.5.3 Feeder Pillars

Pillars are to be selected from either the Lucy Zodian Fortress or

Colour: Pine Green (RAL 6028)

### 7.5.4 Ducting, Underground & Overground

insert

### 7.5.5 Fire Stopping

Refer to Chapter 5 for full details of Fire Stopping requirements.

Electrical and Data cables are regularly added and removed across UWE. This requires reopening cable penetrations and installing fire-stopping material afterwards. Therefore, during the design stage, UWE expects early consideration of fire-stopping options that are flexible and adaptable to changing infrastructure demands without compromising reliability and protection against fire and smoke. The use of flexible, modular, and adaptable fire-stopping products that can easily accommodate the requirement to add and remove electrical and data cables must be considered. Refer to Chapter 5 for further information on these Fire Stopping products.

### 7.5.6 Permitting

All works, method and procedures shall be in accordance with UWE Estates Procedures and Permits. Electrical Permits to Work must be requested before any electrical works commence on site. As a general procedure, the UWE Term Contractor is used to manage isolations.

### 7.5.7 Network Topology

insert

### 7.5.8 HV, LV & Essential Supply

insert

### 7.5.9 Data, Fibre & Comms

insert

## 7.6 High Voltage (HV)

Any new substation shall be connected to the site wide HV network, connection details shall be agreed with UWE Estates prior to any works commencing.

HV switchgear panels must be built to IEC 60694 and appropriate sections of IEC 62271-200 or 62271-202 for prefabricated Sub stations.

Switchgear shall be a minimum of IP44 and selected according to site conditions.

Switch Panels shall be equipped with intelligent microprocessor protection relays and trip units offering data measuring and appropriate communication facilities.

All Ring Main Units (RMU) shall be of the Non-Extensible Type, unless specified otherwise.

Ring Main units to be provided with VIP protection relays to ensure that discrimination can be achieved. Time fused link may also be considered once full calculations have been carried out at detailed design stage. RMU's shall also be provided with a voltage presence indicating system and have a Pfisterer facility to enable phase comparisons to be carried out at the RMU.

Phase rotation shall be verified via the UWE Estates department when replacing equipment to ensure that cross phasing does not occur, and supplies are not connected to cross phases.

Each new RMU shall be provided with Earth Fault Passage Indication units.

All new transformers shall be, super / ultra-low loss, hermetically sealed. Insulating fluid shall be Model 7131. UWE's preference is towards Ultra Low Loss Amorphous Transformers.

Transformers shall be sized to ensure their most optimum performance. Each substation shall require a specialist earthing and bonding design to provide a safe environment and allow the HV and LV earth terminals to be interlinked. New main earth bars shall be required at each substation location. The design will firstly require specialist on-site measurements and survey, as well as the existing fault characteristics and HV supply substation 'hot' or 'cold' designation to be known.

The designer shall engage with a HV an earthing specialist to produce a HV earthing design for each/ all substations. The design shall show details such as the main earth bar and all sized connections and recommendations for all bonding within each substation.

All electrical switchboards shall be provided with a 1m wide carbon free rubber mat or mats having a ribbed upper surface and being of such continuous length to suit the full operating extent of each switchboard.

Where a design entails work on electrical plant within an existing substation, the designer shall include for a HV earthing specialist to produce a report on the existing HV earthing arrangements and provisions. The report and any recommendations shall be discussed with UWE Estates on how these may be implemented in a project. The Report should state parameters such as EPR to confirm whether substation is hot or Cold, Step potential, Touch Potentials and Transfer Potential.

## 7.7 Low Voltage (LV)

insert

Design

insert

### Labelling

An asset tagging system is in place, the consultant should familiarise themselves with the UWE Asset Information Requirements Document (AIR) and ensure this is captured within the design.

All electrical switch rooms, cupboards and risers shall be identified with the room number and 'Danger Live

All accessories shall be labelled with the distribution board room number, distribution board number and circuit reference.

Details of cable sizes and type, protection device ratings, and point of origin shall be labelled on all LV switchboards, panel boards and distribution boards.

Details of Ze readings with the date of test shall be displayed at each switch board/panel board/distribution board.

All distribution boards shall have engraved labels fixed to the front of the distribution board.

Traffolyte labels shall be used to identify all circuit descriptions within each distribution board (adjacent to MCB's).

All cabling shall be identified by ferrule type cable markers on all phases, neutrals and cpc's.

All new distribution board and circuitry shall adopt UWE standard methodology for labelling. Labelling standards to be obtained from estates team.

Warning labels showing voltage affixed to all switchboards, panel boards and distribution boards.

insert

### Product Selection

insert

### Lighting

Need for standards for lighting controls in student accommodation – align to SAP5 design standards with the following included:

- Presence detection in corridors
- Absence detection in rooms

### Standard

insert

### Emergency

insert

### Controls

insert

### Monitoring

insert

### Distribution

Differentiation between Simple and Complex/ Critical circuits from DBs, so that simple (e.g. offices, teaching spaces) can be timer controlled from the DB level, and complex / critical circuits (e.g. labs,

cleaner sockets, fridges / freezers, fire alarm systems, BMS, door control, etc) can be timer controlled from individual plug level where possible

LV Distribution Academic	Tier 1	Tier 2	Tier 3		Tier 4	
	T1 Panel Board	T2 Panel Board	T3 Non-Essential DB	T3e Essential DB	T4 Non-Essential DB	T4e Essential DB
Manufacturer	TBA	Schneider	Schneider Acti 9 Isobar P	Schneider Acti 9 Isobar P	Schneider Acti 9 Isobar P	Schneider Acti 9 Isobar P
3P DB min ways	TBA	TBA	18	12	16	4
1P DB min ways	TBA	TBA	N/A	N/A	20	12
Blanking Method	TBA	TBA	Blank Pole modules such as SEA9BP	Blank Pole modules such as SEA9BP	Blank Pole modules such as SEA9BP	Blank Pole modules such as SEA9BP
SPD	Mersen, Type 1, remote indication.	Mersen, Type 1/2, remote indication	Mersen or Schneider, Type 1/2, remote indication	Mersen or Schneider, Type 2/3, remote indication	Mersen or Schneider, Type 1/2, remote indication	Mersen or Schneider, Type 2/3, remote indication
Metering	Yes, all incoming and outgoing circuits	Yes, all sub-main circuits and secondary supplies.	Yes, Power and Lighting Split	Yes	Yes, Power and Lighting Split	Yes
Status Reporting and Monitoring	Remote Status on all ACBs and MCCBs	Remote status on all ACBs and T3e or T4e sub-main MCCBs	N/A	Instance Specific, discuss with UWE Engineer	N/A	Instance Specific, discuss with UWE Engineer

*Panel*

*Distribution? (Bus Bars)*

Supply  
insert

*Generators*

*UPS*

*Photovoltaics*

## 7.8 Metering

Refer to Design Specification Chapter 12 for all metering specifications.

Small Power  
insert

Reels

Floor Boxes

Sockets

Under-desk Power & Extension Cable Systems

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
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??	<b>Sceptre Networking Limited</b> Telephone: 0845-121-0802	<b>Sceptre Networking Limited</b> Telephone: 0845-121-0802
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To meet the requirements of BS6396 Electrical Systems in Office Furniture and Education Furniture, Faculties and Services must ensure that when purchasing and providing mains power extension cable systems for office furniture and IT systems that they meet this specification.

This applies to all new installations, office moves, refits and refurbishments and when assessing and processing Health & Safety workplace and DSE inspections.

## 7.9 Protection, Isolation & Switching

insert

### 7.9.1 Surge Protection

insert

### 7.9.2 Power Quality

insert

### 7.9.3 Power Factor

### 7.9.4 HF

## 7.10 Monitoring

insert

### 7.10.1 Earthing

insert

## 7.11 Lightning Protection

insert

## 7.12 Lifts

- General
  - A lift's location in the building shall be clearly signed.
  - Signage within lifts shall be large clear and contrasting.
  - The lift shall be large enough to allow wheelchairs to turn around and/or have space for a carer to share the lift.

Lift Design

- Lifts are to be designed to comply with:
  - The Lift Regulations 1997
  - Part M of the Building Regulations.
  - All relevant parts of BS EN 81:2022 and in particular:

- Doors to be resistant to fire for 120 minutes and comply with EN81-58:2018 Safety rules for the construction and installation of lifts - Examination and tests - Part 58: Landing doors fire resistance test.
- Where Vandal resistance has been stipulated or environment indicates it is required: EN81-71:2018 Safety rules for the construction and installation of lifts - Particular applications to passenger lifts and goods passenger lifts - Part 71: Vandal resistant lifts.
  - 
  - The Lifts Directive 2014/33/EU
- Consideration shall be given to the provision of more than one lift in a building to allow for repairs, maintenance and break downs.
- See CCTV section – Lift cars should include CCTV.

### Fire Alarm Lift Interface

- All lifts shall be interfaced to the fire alarm system and upon activation shall bring the lift to the ground floor, park and with doors open.
- Provide an aspirating smoke detection (ASD) system at the top of each lift shaft with an accessible control panel located on the top floor. (See section )
- Careful co-ordination is to be ensured between the lift installer and fire alarm system specialist.

### Evacuation Lifts

- UWE has a legal duty to ensure the evacuation of all building occupants. In all buildings with multiple levels, the provision of 'evacuation lifts' is required as part of the design.
- Evacuation lifts shall be installed as 'full evacuation lifts' to BS 9999:2017 and useable in the event of a fire.
- Where the provision of such a lift(s) is discounted the arrangements for the evacuation of people with a disability that would prevent them from evacuating the building unaided must be stated in a written risk mitigation statement.

### Lift Communication

- Remote communication must be installed in all lifts in the form of an auto-dialler. All lifts shall be connected to the UWE owned/operated analogue network to enable emergency calls to the UWE Security Control Room. The line must be provided under the UWE Lift Line Contact and as such must be ordered via UWE's Unified Comms team. (see section)
- Traffic analysis reporting should be visible remotely.

### Lift Controls

- Buttons and panels should be designed and positioned to be usable from a wheelchair and by persons with reduced manual dexterity and impaired vision (e.g. large buttons, with a good visual contrast between the number and the button as well as braille identification).

### Commissioning

- The testing of any new install shall be to BS8486-3:2017 Examination and test of new lifts before putting into service – Specification for means of determining compliance with BS EN 81.
- Auditory messages and visual indication must be provided to inform users of floor levels and door opening and closing.
- \*Should it be determined that the refuge spaces are not available as required by EN81-20:2014, then the University would expect a derogation against 2.2 of the EHSRs of Lifts Directive 2014/33/EU to be sought from BEIS or whichever department is allocated responsibility at tender stage.

- When travel to top floor from Fire Service Access level exceeds 18000mm or the requirement for a Fire Fighter Lift has been indicated: EN81-72:2015 Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lifts -Part 72: Firefighters lifts

Minimum Expectations (to be read in conjunction with lift traffic analysis)

- Minimum Lift Size 630Kg 8 Persons Type 2 Access (1100w x 1400d x 2200h)
- Minimum Entrance size 900 x 2000
- Preferred size 1000Kg 13 Persons Type 3 Access (1100w x 2100d x 2200h)
- Entrance size 1000 x 2000
- For travel up to 4 floors or less than 10,000mm Lift Speed 1.0 m/s
- For travel above 4 floors or 10,000mm Lift Speed 1.6m/s
- For travels above 10 stops or 30,000mm Lift Speed 2.0m/s
- Minimum Lift Size 630Kg 8 Persons Type 2 Access (1100w x 1400d x 2200h)
- Minimum Entrance size 900 x 2000
- Preferred size 1275Kg 17 Persons Type 5 Access (1400w x 2000d x 2200h)
- Entrance size 1100 x 2100
- For travel up to 4 floors or less than 10,000mm Lift Speed 1.0 m/s
- For travel above 4 floors or 10,000mm Lift Speed 1.6m/s
- For travels above 10 stops or 30,000mm Lift Speed 2.0m/s
- All lifts to be Motor Room-less in design.
- Permanent Magnet Gear-less Motor VVVF to operate closed loop.
- Designed for 240 starts per hour
- Stopping accuracy +/- 6mm under all load conditions
- Controllers shall be located in a locked panel that shall be located on the top floor, all control equipment / panels to be **open protocol** with built in programmers not removable from site.
- All operating parameters shall be readily accessible and re-programmable by third party maintenance service provider.
- Shaft position system up to four floors tape head and monitor above four floors USP system.
- Doors to be stainless steel and have box framed architraves also in stainless steel. Door operator to be VVVF and capable of advance door opening.
- Autodiallers to be manufactured by Safeline Ltd and must be compatible with the universities safeline monitoring system.
- BREEAM Requirements
- **Traffic Analysis (Trip counter)**
- VVVF Drive units
- Standby Mode for controllers and indicators
- Energy efficient LED lights
- CAT6 cabling between lift car and controller included within the lift car trailing flex to allow CCTV to be connected within the car.

**Approved Equipment and Companies** – Consultation must be had with Estates Operations Electrical Engineer.

### 7.13 Hearing Loops

Analogue infrared transmission equipment should be installed to all large Lecture Theatres and at reception Counters. They should also be installed within teaching rooms and meeting spaces as appropriate. The system shall be compatible with other units installed throughout UWE.

The presence of an induction loop or infrared hearing system shall be indicated by standard symbol signage.

All equipment to be housed in a locked cabinet secured to the building fabric.

All systems are to be supplied with radio microphones.

**Approved Equipment and Companies** – Details can be obtained from UWE IT Services who manage the portable hearing loop devices.

### 7.14 Data & Fibre

For details on data and fibre see Design Specification Chapter 8.

### 7.15 Photovoltaics

For all PV installations:

- SolarEdge equipment/monitoring is to be used.
- New installs must be fully/correctly set up on SolarEdge portal before handover/acceptance.
- Need to include module level shut down – e.g. SolarEdge SafeDC – consult with Carbon & Energy Team for further information

### 7.16 Audio Visual (AV)

For details on Audio & Visual Equipment see Design Specification Chapter 8.

### 7.17 Ariel & Antenna

insert

### 7.18 Radio's

insert

### 7.19 Deaf Alert

See Fire Alarm

### 7.20 Automatic Windows & Blinds

insert

### 7.21 Security Systems

All cabling from data outlet to security device, i.e. the patch cabling. Must be installed in it's own containment to prevent tampering or removal, especially when the patch cable exits any ceiling cable trays to the device itself. At no time should a data outlet be installed so near to a security device that it is allowing accessibility to be able to disconnect the device. Should this be unavoidable, then the outlet and the patch cable connection must be secured in a secure box.

## 7.22 Access Control

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>Assa Abloy ARX (Academic)</b>	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094
<b>Salto (Accommodation)</b>	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094

### 7.22.1 Physical Security Design

There are four tiers to physical security of spaces:

Tier 4 – Protected Equipment (e.g. padlock)

Tier 3 – Magnetic Lock

Tier 2 – Mechanical (access control) wireless handles. Where infrastructure allows.

Tier 1 – Physical Lock and thumb turn.

Tier 0 – No Lock/Provision

Door Type	Access Control Notes	Normal Tier
<b>Perimeter Entrances (Building External Doors)</b> <i>This may include perimeters of ownership, like the boundary of two buildings.</i>	Magnetic Locks only.	Tier 3
<b>Rooms that require restricted access to a high number of people, or for authorised people only.</b> <i>This is where key distribution would have a high administrative burden, or key holders would change frequently in short spaces of time. Postgraduate spaces, laboratories or plantrooms would be good examples.</i>	Ordinarily protected by electronic locks <i>Some justification for manual lock capability to remain, usage dependent. Generally, if magnetic locks fitted, then manual lock to be removed.</i>	Tier 2 (single doors) or Tier 3 (double doors)
<b>General Purpose Teaching/ Meeting</b> <i>These rooms/areas should be accessible by majority of University users, and should not be controlled by magnetic locks</i>	n/a	Tier 0 or Tier 2 (with justification)
<b>Restrooms/Kitchens</b> <i>The University doesn't want to be recording staff that take breaks in shared spaces, this may be seen as a deterrent for their use. If student access needs to be discouraged, signage should be explored first.</i>	n/a	Tier 0
<b>Corridors and General areas</b> <i>Free access or movement areas.</i>	Ordinarily free access, Magnetic locks not required	Tier 1

	<i>Unless heavily justified or the entire area is restricted movement and not resulting in access control leading to access control</i>	
<b>Areas where there is a risk of theft or damage of valuable University assets.</b> <i>This may include IT Comms rooms where damage may cause huge impact to University services or public facing stationery stores where likelihood of theft is unmanageable.</i>	Ordinarily protected by electronic locks (Security, ITS, Estates or Faculty) Some justification for manual lock capability to remain, use dependent. Generally, if access fitted, then manual lock to be removed.	Tier 2
<b>Storage areas with high footfall but contents still require enhanced protection</b> <i>This is where key distribution would have a high administrative burden, and access needs to be controlled for sensitivity reasons. Mailrooms, or records stores are good examples</i>	Ordinarily protected by electronic locks Manual locks to be removed.	Tier 2 (single doors) or Tier 3 (double doors)
<b>Cleaners Cupboards</b> <i>Chemicals need to be controlled by physical keys, which are centrally monitored by TRAKKA.</i>	Protected by electronic locks	Tier 2

### 7.22.2 Magnetic Locks

A suitable maglock is to be provided for ALL operational leafs on the door system, including ¼ doors etc.

Default maglock details;

- 1500kg Alpro AL2400LP 12/24v
- L Bracket ALAMLB2400
- Z&L bracket ALAMZB2400

### 7.22.3 Barriers & Gates

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>CAME Barriers</b>	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094

### 7.23 CCTV

CCTV purpose at UWE is for the prevention and detection of crime.

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
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<b>Hanwha/Wise system</b>	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094
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Document Name	Document Link
<b>Data Protection Policy</b>	<a href="https://www.uwe.ac.uk/-/media/uwe/documents/about/data-protection-policy.pdf">https://www.uwe.ac.uk/-/media/uwe/documents/about/data-protection-policy.pdf</a>
<b>CCTV Code of Practice</b>	<a href="#">Update to Surveillance Camera Code of Practice - GOV.UK (www.gov.uk)</a>

### 7.23.1 CCTV Design

For CCTV installations, our incumbent installer should be approached when considering any installation design. This is so all requirements, and positioning can be achieved. The incumbent installer will co-ordinate any UWE requirements into the design.

Minimum Considerations for **All** CCTV installs:

- PoE (Power over ethernet) to be installed.
  - Any alternative derogation must be approved.
  - This allows UWE to ensure uninterrupted power on switching can be installed where required on 'key' cameras.
- 30 days storage per camera must be included as part of the project price, as this will need to be purchased alongside
- Signage survey must be undertaken of the local area, it is a legal requirement to provide signage. Signs can be requested from UWE.
- AI (Artificial intelligence) cameras must be considered for appropriate locations.

### 7.23.2 Internal Fixed Cameras

Internal CCTV must have justification and must be appropriate for any perceived risk within an area, installations must align to the surveillance code of practice.

1. Fixed, single/180/270/360 mounted in clear, unobstructed, maximum coverage locations to facilitate requirements, preferably at threshold of building.
2. Internal CCTV that is tasked to view external doors from in to out must be capable of viewing through any glass partitions/doors.
3. Data shall be provided within one metre of the CCTV location.

### 7.23.3 External Cameras

As UWE operate relative open sites, it is important to avoid "blind spots" externally.

1. AI Cameras to be included within the provision.

2. PTZ/High end zoom CCTV, flat roof building, to be mounted on swing out, weighted, maintainable arms, on the building roof areas.
3. PTZ/High end zoom CCTV, mounted on actual building envelope, to be mounted on suitable fixed bracket, maintainable arms, within reach of 12-step stepladders.
4. Fixed, single/180/270 mounted on actual building envelope, suitably high for maintenance.
5. CCTV to be mounted on buildings only. CCTV poles, masts and posts that would be located in grounds areas away from buildings are to be avoided wherever possible.
  - a. CCTV poles and masts should be avoided. They present problems for maintenance, and for the required ducting and cabling/power distance problems that come with pole mounting CCTV.
6. Adequate dedicated data ducting to be provided.  
Max length 90m from relevant switch. (see data ducting specs)
7. Data and power required shall be provided within one metre left/right/above of the CCTV location, in an external IP65 type externally mounted box

#### 7.23.4 Lift Cameras

Lift car cameras must be provided in any new installs. And must be considered in refurbishments.

No analogue or twisted pair conversions or relay boxes within lift shafts or any part of the installation will be accepted due to data loss.

#### 7.23.5 Body Worn CCTV

The University also deploys body worn cameras for its security Personnel. This is a centrally run system (per site), that is administered by UWE Security.

Only if UWE are building a new site, with new Security staff base would any infrastructure be required.

Infrastructure is currently available at:

- Frenchay (Control)
- Bower Ashton (Control)
- Glenside (Control)
- Bush House (Arnolfini, City Campus)

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>Motorola</b>	<b>Reliance High Tech</b> The Columbia Centre Station Road Bracknell Berkshire RG12 1LP Telephone: 0845-121-0802	<b>Reliance High Tech</b> The Columbia Centre Station Road Bracknell Berkshire RG12 1LP Telephone: 0845-121-0802

## 7.24 Intruder Alarm

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>Honeywell Galaxy Intruder</b>	<b>Shield Fire &amp; Security Services</b> Unit 6, Crown Road Warmley Bristol BS30 8JJ 0117 4286970	<b>Shield Fire &amp; Security Services</b> Unit 6, Crown Road, Warmley, Bristol, BS30 8JJ 0117 4286970

## 7.25 Intercom Systems

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>Stenafone (on barriers)</b>	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094
<b>Aiphone (in accommodation)</b>	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094	<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094

## 7.26 Panic Alarms

These are to be installed and linked back to the Control Room at Frenchay in the following areas: Receptions, Information Points & (Risk assessed) Interview Rooms.

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>Honeywell Galaxy</b>	<b>Shield Fire &amp; Security Services</b> Unit 6, Crown Road Warmley Bristol BS30 8JJ 0117 4286970	<b>Shield Fire &amp; Security Services</b> Unit 6, Crown Road, Warmley, Bristol, BS30 8JJ 0117 4286970

## 7.27 Fire Detection & Alarm

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>Honeywell GENT</b>	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689

All installations must be performed by GENT approved installers. Graphics updates must be undertaken by UWE incumbent supplier.

### Detection Capping or Isolation

All fire alarm isolations are to be performed by incumbent maintenance provider and will only be authorised with correct isolation permit issued by Estates.

Detection caps can be signed out from Security.  
Caps must be returned daily and checked out daily.

All alterations, temporary or otherwise, must be performed by incumbent maintenance provider, so they can ensure that the UWE graphics are kept up to date.

### Minimum Standard

UWE minimum standard for fire installations is full compliance to BS5839-1

- L3 Category in academic areas
  - There are additional areas specifically identified as “Critical Areas of High Risk”  
Please see **UWE Fire Safety Standard FSS10** for more information.
- L1 Category for sleeping accommodation.

### Information and Documentation

The minimum level of information and documentation is listed below:

Item	Requirement
<b>Zone Diagrams</b>	Provide zoning proposals for the building and LPS1014 Certificate prior to commencement of design/ installation.
<b>Decibel Reports</b>	Each installation must undergo a decibel test before handover
<b>Commissioning Certificates</b>	Each installation or alteration to existing system must have a commissioning certificate, including reference to graphics updates. As detailed in BS 5839
<b>Test Results</b>	Record all the test results and present them in tabulated form and indicate on As Fitted drawings
<b>As-Fitted Drawings</b>	New installations and alterations to existing systems must have marked up drawings, in accordance with BS5839

Installation (Management) Requirements

Hardware Item	Manufacturer Data	Installation Requirements
<b>Graphics</b>	<a href="#">Literature</a>	All devices must be available on the graphics system. And this is to be performed by incumbent maintenance supplier.  The graphics must: Indicate the location of the fire
<b>CLSS</b>	<a href="#">Literature</a>	All devices must be available on the CLSS system, to enable device management by maintenance contractor

Installation (Hardware) Requirements

UWE have several standard requirements to enhance the installation, these are listed below:

All devices **MUST** be fed from the correct panel. Therefore, devices must be in the correct fire zone, and the subsequent fire alarm panel.

The installer of the Fire Alarm is expected to work in conjunction with installers of periphery equipment that is interfaced. Interfaced equipment must be individually checked that they are working before handover.

Hardware Item	Manufacturer Data	Extra Installation Requirements
<b>Fire Panel</b>	<a href="#">Literature</a>	Where possible semi-recessed installation  The main panel should be located either in the reception area of a building or what is intended to be the main entrance.  Repeat panels to be located in accessible position throughout the building  All panels should include integral key switch to enable isolation.  All loop cards shall have VIG-LPC-EN high power 800ma loop cards on all panel loops
<b>Fire Panel – Battery Extender Boxes</b>		The fire alarm panel shall incorporate battery extender boxes capable of supporting the system for approx. 4 days in the event of mains power failure.  The standby batteries shall be mounted within, below, or next to the main Fire Panel.  Equipment requirements consist of: - 1 x Fire system battery storage metal box, key locked, wall mounted. (Part: VS-BATTBOX-72)

		<ul style="list-style-type: none"> <li>- 8x 21Ah Fire panel standard batteries. (<i>Part: 4015-602-YFR Panasonic 21Ah-12v</i>)</li> <li>- Associated battery leads for parallel connection to 48v DC GENT Fire Panel supply requirements.</li> </ul>
<b>Loop Cards</b>		<p>Loop cards shall have VIG-LPC-EN high power 800ma loop cards on all panel loops. To a maximum or no more than, 155 devices per loop, calculating device loading, to deliver the required 25% spare capacity requirement on loop milliamps, loop device numbers and the overall system design</p>
<b>Detection</b>	<a href="#">Literature</a>	<p>Standard installation is white devices.</p> <p>Smoke detection should be provided throughout. Heat detection to be provided in agreed areas as follows:</p> <ul style="list-style-type: none"> <li>- Accommodation Kitchens</li> <li>-</li> </ul> <p>Detection to be provided in voids exceeding 800mm depth. Devices should always be accessible for maintenance, but where there is increased difficulty (e.g. lift shafts) self-testing devices should be deployed</p> <p>Use higher power V-VAD (Quad) detectors (Voice/Strobe) and Sounder beacons up to 2km max loop length</p> <p>All detectors should be individually identifiable with LED indicator as standard.</p>
<b>Manual Call Points</b>	<a href="#">Literature</a>	<p>All MCPs should have resettable elements and a transparent hinged protective cover.</p> <p>All MCPs should have a standard sign installed adjacent.</p>
<b>Beacons (remote indicators)</b>		<p>Flashing beacons shall have a red lens and be EN54-23 compliant.</p> <p>Beacons should be located at all access points to a fire zone (internal and external including roof access points)</p> <p>Beacons should be located in busy areas, where noise is likely (e.g. lecture theatres, plant rooms, bars and café's.</p> <p>Areas where the hard of hearing may be alone should also have beacons installed (e.g. toilet facilities, or adapted accommodation areas [inc. kitchen, bedroom and en-suite areas])</p>
<b>Interfaces</b>	<a href="#">Literature</a>	<p>All fire alarm system interfaces are to be installed in GENT S4 Interface Enclosures Plastic s4-34490. It is preferable to install 4 way interfaces as standard for</p>

		<p>future proofing, as opposed to single way. Both single and four way should be input/output capable.</p> <p>Doors located on zone boundaries will need to be fed from both zones.</p> <p>All access-controlled doors (mag locks, automatic latches etc...) will allow free exit/access to the building. Normally this means that the locks will automatically disengage upon activation of the fire alarm. On rare occasion some approved doors within high-risk area's can be exempt, however this must form part of the fire strategy and risk assessment.</p> <p>Entertainment venues must have interfaces, to disconnect the power to audio equipment.</p> <p>Entertainment venues with additional power supplies (for portable sound systems) must have interfaces to disconnect the power. E.g. 16A sockets.</p> <p>Ensure that an output signal is linked to the main mechanical control panel or ventilation to provide automatic shutdown or operation upon fire alarm activation.</p> <p>Ensure any gas and ventilation systems are interfaced into the Fire Alarm system.</p> <p>Interfaces for (but not limited to) systems such as smoke dampers, gas solenoid valves, CHP's etc. shall be included in consultation with M&amp;E installers.</p> <p>Ensure that any sprinkler systems are interfaced into the Fire Alarm System (The fire alarm will <b>NOT</b> activate the sprinkler, the sprinkler will activate the evacuation)</p> <p>Automatic doors that are 'held open' must be interfaced so they close on fire activation. This is either via a Holder or Door Operator</p>
<p><b>Door Holders</b></p>	<p><a href="#">Literature</a></p>	<p>For manual doors, it is acceptable to put in place door holders where there is a risk of wedges being used for example in corridor areas.</p> <p>But must never be used on stairwells or designated areas of safety like refuge areas.</p>

Cause & Effect Requirements

Standard evacuation requirements are for full evacuation; therefore, the alarms will activate throughout the fire zone that is "in alarm".

Adjacent zones should go into a state of pre-alarm and release doors being held open and drop out magnetic locks. However, the fire alarm does not need to sound until the detection requires it.

In accommodation areas, a double knock system is in place as follows:

Location	Initial Reaction:	Double Knock Reaction:
Bedroom	Pre-alarm (Alarm activates in bedroom only)	Entire Block activation
Corridor	Alarm activates in entire Flat or House	Entire Block activation
Kitchen/Diner	Alarm activates in entire Flat or House	Entire Block activation
Landlord Area	Alarm activates in entire block	N/A
MCP Activation	Alarm activates in entire block	N/A

Any other form of evacuation must be agreed by:

- a) Head of Security
- b) Head of Health & Safety
- c) Estates Lead

### 7.28 Fire Paging System (Deaf Alert)

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>CST</b>  (Unit 240 Centennial Park, Centennial Avenue, Elstree, Hertfordshire, WD6 3SJ)	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689

Hardware Item	Manufacturer Data	Extra Installation Requirements
Paging	<a href="#">Literature</a>	
Pillow Vibrators		

### 7.29 Door Watchers/Screamers

In Accommodation areas, door watchers are installed to stop kitchen doors being propped open by occupants. Battery powered solutions should be avoided, and these should be fitted using a dedicated power supply.

Door watchers should be fitted with a protective cage to reduce the chance of tampering by occupants.

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>HOYLES</b>	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester

	LE2 6DY Telephone: 0116-244-8689	LE2 6DY Telephone: 0116-244-8689
<b>HOYLES</b>		<b>KSCM Ltd</b> Unit 3 Trubody's Yard 121 London Road Warmley Bristol BS30 5NA Telephone: 07979-381-094

### 7.30 Refuge & Rescue Systems

Emergency Voice Communications Refuge System (EVC)

The University specified system complies with: BS5839:Part 9 / BS9999 / BS8300

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>Baldwin Boxall</b>	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689

#### Design Principals

Refuge installations must communicate centrally to a University control room, and local systems must be avoided.

The refuge call point must be installed within a fire protected area, so that the users are able to use the system in safety or wait for rescue in a fire event.

Emergency signage and lighting must be provided at the refuge point, see [Emergency Lighting Section](#)

#### Emergency Telephones (Green)

All buildings must have an emergency communication provision, in the form of a green telephone.

*Red Telephones are no longer installed at UWE. These are being replaced on a phase basis.*

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<b>Baldwin Boxall</b>	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689	<b>Defensor Life Safety Systems</b> 15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689

Part Number: BVOCET



All Emergency Telephones must be installed with a protruding “3D” green sign:

Emergency phones should be located at primary ground floor ingress/egress points to buildings. Refuge call points in buildings are expected to supplement the provision on upper floors.

The handsets must be pre-programmed to call the Frenchay Security Office Refuge system upon lifting the receiver. Each handset must be labelled and must be clearly marked by the installation team with the phone’s location.

For extra resilience, and visibility between UWE sites, the control room main alarm panel should be interfaced into fire system.

### 7.31 Accessible WC Alarms

Named Manufacturer	Incumbent Maintenance Provider	Incumbent Installer
<p><b>C-TEC</b></p> <p>(C-TEC, Challenge Way, Wigan, WN5 0LD, UK)</p>	<p><b>Defensor Life Safety Systems</b></p> <p>15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689</p>	<p><b>Defensor Life Safety Systems</b></p> <p>15 Kingsley Street, Leicester LE2 6DY Telephone: 0116-244-8689</p>

In Wet Rooms and other locations, IP65 rated installations will be required. Where IP65 is required, recommended Manufacturer is Baldwin Boxall, Ceiling pull cord DTACPM, which can be supplied from Acron Fire Security as well as Baldwin Boxall.

### 7.32 Special Locations

insert

### 7.33 Washroom

insert

### 7.34 Temporary Events & Hook-ups

insert

### 7.35 External Lighting

insert

Sports Pitches

insert

### 7.36 E.V Charging

insert

### 7.37 Trace Heating

insert

### 7.38 Studios & Workshops

insert

### 7.39 Laboratories

insert

### 7.40 Lecture Theatres

insert

### 7.41 Permits & Access

UWE operates a standard permitting policy for all work carried out on the estate, and full details are available in the 'Electrical Policy'. A summary of process is below.

#### Isolation

Isolations require adequate notice to enable an impact assessment to be made and the relevant stakeholders engaged with prior to any isolations taking place. The amount of time needed to generate a permit varies on the type and location, however a guide on minimum notice periods is below:

Equipment Tier	Equipment Type	Minimum Notice Period
Tier 1 (HV)	HV all DSS Equipment	90 Days
Tier 1 (LV)	LV Main Panel	60 Days
	LV Sub-Panel	
Tier 3e (LV)	LV Distribution Board (Essential)	30 Days
Tier 3 (LV)	LV Distribution board (Non-Essential)	21 Days
Tier 4e (LV)	LV Distribution Board (Essential)	14 Days
Tier 4 (LV)	LV Distribution board (Non-Essential)	7 Days
Tier 5e (LV)	LV Final Circuit (Essential)	4 Days
Tier 5 (LV)	LV Final Circuit (Non-Essential)	3 Days
Tier 5eC (LV)	Critical Supply Circuits	21 Days

For the avoidance of doubt, it should be noted that the above periods are for planned works and that emergency isolations are exempt.

Notice periods are set based on the impact and disruption to operational activities.

For low level final circuit isolations, a 3-day notice period is in place and for tier 3-5 sub main isolations 7 days' notice is required. This is to enable the relevant people to sign off on isolations and for the correct staff to be available.

### 7.42 Keys

Cliq Key?

### 7.43 Test & Inspection

insert

### 7.44 Commissioning

insert

### 7.45 Periodic Testing (EICR)

insert

### 7.46 PAT & FAT

insert

### 7.47 Product List

Item / Description	Manufacturer	Model
<b>Distribution Equipment</b>		
Switch Gear and Panel Boards	Schneider Electric	
Distribution Boards	Schneider Electric	Acti9 Isobar P
Circuit Protection	Schneider Electric	
Surge Protection Devices (SPD)		
Metering – Panel Boards	Schneider Electric	PM5111
Metering – Distribution Boards	Schneider Electric	A9MEM3255
<b>Containment</b>		
Ladder/Tray/Trunking/Basket		
Dado Trunking		
<b>Cabling</b>		
Sub-Main Distribution		XLPE
Lighting Support Couplers (LSC) / Marshalling Points	Hager	Klik
<b>Lighting</b>		
General Lighting	Zumtobel / Thorn / Dextra / Sylvania / Fagerhult	N/A
Emergency Lighting (ALL)	Zumtobel / Thorn / Dextra /	
External	Thorn / Sylvania /	N/A
Lighting Control (General)	Zumtobel	
Lighting Control (Architectural)		
Emergency Monitoring	Zumtobel	
<b>Electrical Accessories</b>		
General	MK	N/A

Item / Description	Manufacturer	
Switch Gear and Panel Boards	Hager	

Distribution Boards	Hager	
Circuit Protection	Hager	
Surge Protection Devices (SPD)		
Metering – Panel Boards	Schneider Electric	PM5111
Metering – Distribution Boards	Schneider Electric	A9MEM3255

Item / Description	Manufacturer	Model
HV Transformer	Wilson	E3 Amorphous
HV Ring Main Unit (RMU)	Schneider Electric	
Insulating Medium	Midel	

### 7.48 Maintenance Suppliers

Supplier	Discipline or Coverage	Nominated Installer	Contact Details
Defensor	Fire Alarm & Detection Refuge Emergency (green) Phone	YES	
Sceptre Networking	Data Voice Fiber Desktop Power	YES	
AW Parry	Passenger and Goods Lifts		
KSCM Ltd.	CCTV Access Control Auto Door	YES	