



Department
for Education

Employer's Requirements Part B

Further Education

Output Specification

Generic Design Brief

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Summary

The Generic Design Brief (GDB) is supported by Technical Annexes which detail the technical requirements for the design and construction of colleges. These documents should be read in conjunction with the College Specific Brief (CSB).

Review Date

Review dates for this document shall be at 6-month intervals.

Who is this publication for?

This document is for technical professionals involved in the design and construction of college premises, as part of the Employer's Requirements of the DfE Construction Frameworks (the DfE Construction Framework 2021 and the Offsite Schools Framework (incorporating Modular and MMC delivery)(MMC)). It may also be used as the basis of similar documentation for other procurement routes using the Further Education Output Specification.

Uniclass Codes

This document captures Uniclass codes for the management of exchange of information. To access all codes and associated titles reference should be made to [Uniclass 2015 | NBS \(thenbs.com\)](https://www.thenbs.com/Uniclass-2015).

Definitions

Terms and acronyms used throughout the Further Education Output Specification (FE-OS) are defined below. [PM_40_60_23]

(Further definitions of space types and collections of space types are given in Technical Annexes 1A and 1B. [PM_40_60_23])

Access Statement - A description of how inclusive design principles have been incorporated into a development, to be produced in conjunction with a planning application. [PM_40_60_23]

Activity Space Types - A type of space based on the activities to be accommodated, and the associated attributes required, as listed in Annex 1A, 1B of the Further Education Generic Design Brief, and providing a 'parent' ADS code. [PM_40_60_23]

Additional Learning Support (ALS) - Colleges have specific statutory duties when it comes to supporting students with additional needs and special educational needs and disabilities (SEND). Many colleges provide an ALS service in dedicated spaces and have dedicated teams who are able to offer advice, support and guidance to ensure student wellbeing. An ALS Team may consist of support staff such as mentors, counselling service and a college nurse to provide confidential support if needed. ALS may provide students with access to one-to-one out of class support or small group support. Students may also have access to a range of assistive technologies and specialist equipment. Students on SEND-specific programmes may attend some or all classes in an ALS department.

Alternative Provision (AP) - Education arranged by local authorities for pupils who, because of exclusion, illness or other reasons, would not otherwise receive suitable education. Education arranged by schools for pupils on a fixed period exclusion; and pupils being directed by schools to off-site provision to improve their behaviour (in the OS the word School includes AP unless otherwise stated). FE colleges may cater for AP where a school is responsible for a pupil's education, or where pupils of compulsory school age, not registered at a school, are educated at FE colleges and for whom the local authority is financially responsible, and for asylum seekers of compulsory school age attending FE colleges. [PM_40_60_23]

Approved Document (AD) - Documents which support the technical parts of the Building Regulations. Where specific references are made to the parts of the Building Regulations, they are denoted as Part L, Part M etc. Where references are made to Approved Documents, they are noted as AD A, AD B etc. [PM_40_60_23]

Area Data Sheets (ADS) - Spreadsheets identifying the requirements for each space including area, services and environmental performance and FF&E (excluding ICT). See Annex CS1. [PM_40_60_23]

Basic Teaching Area - The area comprising all the teaching spaces needed for the full range of subjects. [PM_40_60_23]

BIM Protocol – is the Project’s Information Protocol including the Information Particulars within the Project’s Information Protocol and the following documents: DfE’s Exchange Information Requirements, DfE’s Detailed Exchange Information Requirements, Project’s Information Standard and Project’s Information Production Methods and Procedures. [PM_40_60_23]

Building - Any building or other erection at any of the Sites. [PM_40_60_23]

Building Elements - Different parts of any building, including roof and floor structure and coverings, stairs, ceilings, walls, finishes and doors. [PM_40_60_23]

Building Readiness Programme - Programme to be developed six months in advance of Practical Completion to capture all handover activities in the run up to Practical Completion including testing, commissioning and witnessing, soak test, decant and contractors clean, as well as post-handover matters detailed on the Completion Checklist. [PM_40_60_23]

Building Services - means electric, gas and water services, heating, ventilation, air conditioning, controls, access, security and alarm systems and electrical plant and installations including pipework, ductwork, data and power cabling (and in instances renewable technologies such as photovoltaic systems, ground source heat pumps etc). [PM_40_60_23]

College - as defined in the Scheme Contract. [PM_40_60_23]

College Hours - College hours refer to the hours of the day the college is in use for education purposes. [PM_40_60_23]

College-specific Brief (CSB) - The CSB (and its Annexes) provides key data for a specific College and sets out requirements for that College which are additional or alternative to the GDB (and associated Technical Annexes) including, where relevant, the Refurbishment Scope of Works (Annex CS2). [PM_40_60_23]

College-specific SoA and ADS - The College-specific Schedule of Accommodation (SoA) and Area Data Sheets (ADS), Annex CS1 of the CSB, lists every space in the Works, based on a project SoA. The area data requirements for each space are provided on summary worksheets and are recorded on College-specific ADSs for each space. [PM_40_60_23]

Community Use - Community Use applies to use of the College or areas of the College outside Core Hours. [PM_40_60_23]

Completion Activities - Activities detailed on the Handover Completion Checklist. [PM_40_60_23]

Completion Date - as defined in the Scheme Contract. [PM_40_60_23]

Consequential Works - Works required outside the site boundary (e.g., offsite highway works required as part of a planning condition). [PM_40_60_23]

Core Hours - Core hours refer to the hours of a day the college is in use by the majority of students. [PM_40_60_23]

Clusters – a Suite of Spaces designed to fit within a number of bays on a standard structural grid, for instance of 3.6m x 7.8m. [PM_40_60_23]

Deliverables - means information or action required from the Contractor at key stages in the Scheme to provide the evidence of satisfactory progress or compliance with the Employer's Requirements. [PM_40_60_23]

Decant Protocol - means the Decant Protocol as defined in the Scheme Contract. [PM_40_60_23]

Department - A department or faculty within a College based on vocational and technical studies, detailed in the CSB. [PM_40_60_23]

Early Years - Refers to children aged 0 to 5 years. [PM_40_60_23]

Education and Health Care (EHC) Plan - A plan that identifies the educational, health and social needs of students and sets out the additional support needed. EHC Plans are gradually replacing statements of special educational need. [PM_40_60_23]

Employer - means the party named as the Employer in the Scheme Contract. [PM_40_60_23]

Employer's Requirements (ERs) - as defined in the Scheme Contract. [PM_40_60_23]

Energy Use Intensity (EUI) - The Energy Use Intensity (EUI) is an annual measure of the total energy consumed in a building. [PM_40_60_23]

Exchange Information Requirements (EIR) – as defined in the BIM Protocol.
[PM_40_60_23]

Existing Buildings - The Buildings at the College prior to the relevant Completion Date but excluding any new facilities comprising the Works. [PM_40_60_23]

Fabric First - A design term referring to maximising the performance of the building external envelope. Fabric First building designs concentrate on the passive design capability such as maximising air tightness, eliminating thermal bridging, optimising insulation, solar gain and natural ventilation, rather than relying on technology such as photovoltaics to improve a building's energy efficiency and sustainability credentials. [PM_40_60_23]

FF&E Groups - A method of identifying the level of Contractor responsibility for different types of FF&E. Group 1 requires the installation and provision of new items, Group 2 requires the installation and occasional repair or replacement of legacy items, Group 3 requires decant and placing of legacy items, Group 4 requires decant only. [PM_40_60_23]

Fittings, Furniture and Equipment (FF&E) - is a blanket term which includes fittings. Fittings are furniture items that form an integral part of the building to be operational and require wall/floor treatments after installation. Furniture and Equipment (F&E) may be fitted, fixed or loose. Fitted F&E is fitted to the fabric of the building but does not rely on the building to be operational. Fixed equipment requires installation and is hard wired to the fabric of the building. Fixed furniture is also attached to the fabric of the building but only to ensure stability. Loose F&E is independent from the building but has spatial implications and shall be shown on final layouts. [PM_40_60_23]

Furnished Space Types - a type of internal space within a standard Activity Space Type identified by the FF&E required, to suit variables such as the age range and group size. [PM_40_60_23]

Further Education Output Specification (FE-OS) - DfE specification suite comprising; Generic Design Brief, with associated Technical Annexes and College Specific Brief, with associated College Specific Annexes). [PM_40_60_23]

General Teaching - College teaching that typically does not involve practical activities or specialist equipment, for example English, maths or humanities.
[PM_40_60_23]

Generic Design Brief (GDB) - the Generic Design Brief (and integral Technical Annexes) outlines the Employer's generic requirements for College Buildings and grounds. [PM_40_60_23]

Good Industry Practice - the exercise of that degree of skill, care, diligence, prudence and foresight which would reasonably and ordinarily be expected from a skilled and experienced Contractor engaged in the same type of undertaking under the same or similar circumstances. [PM_40_60_23]

Green Infrastructure - the term used to describe a network of integrated green spaces and features (e.g., trees), which provide simultaneous benefits and are multi-functional as opposed to individual elements. [PM_40_60_23]

Gross Area - The overall area of the Buildings, taken to the inside face of the external walls and measured over internal walls, as Gross Internal Area (GIA) or Gross Internal Floor Area (GIFA) by the Royal Institution of Chartered Surveyors (RICS). The minimum Gross Area required includes plant area for boiler rooms and a server room, as well as hub rooms and vertical ducts, but further area shall be needed if ventilation plant, chimneys or sprinkler tanks are included in the final gross area of the designed building. [PM_40_60_23]

Gross Internal Floor Area - the area of a building measured to the internal face of the perimeter walls at each floor level as defined by the 'Gross Internal Floor Area' by the Royal Institute of Chartered Surveyors (RICS). [PM_40_60_23]

Guided Learning Hours – The time relating to the activity of a student in being taught, instructed, or supervised by a teacher or presenter delivering education. These are defined by the College.

Handover Completion Checklist - a detailed checklist capturing all handover activities, including pre and post Practical Completion activities, documentation required at handover and post-handover matters. [PM_40_60_23]

ICT Infrastructure - Information Communication Technology (ICT) Infrastructure means passive ICT Infrastructure as defined in Section 4 of the GDB. [PM_40_60_23]

Information Deliverable(s) - Information or action required from the Contractor at key stages in the project to provide the evidence of satisfactory progress or compliance with the Employer's Requirements. [PM_40_60_23]

Legacy - Items which have been used at the Existing College Site (where applicable) which are considered suitable for use on the new or refurbished Site. [PM_40_60_23]

Light reflectance value (LRV) - A measure of visible and usable light that is reflected from a surface when illuminated by a light source. [PM_40_60_23]

Local Exhaust Ventilation (LEV) - Local ventilation, as near to the source of pollutants as possible, of a practical activity such as a fume cupboard, a wood dust extract system or a heat bay fume extract system. [PM_40_60_23]

Loose Equipment Purchase Protocol - The protocol which shall form part of the Contractor's Proposals to be agreed between the Employer and the Contractor for the procurement of new loose equipment. [PM_40_60_23]

Minimum Life Expectancy - The period of time for which an element, item or product can be expected to satisfy minimum performance requirements associated with that element, item or product, when subject to typical conditions, wear and usage (vandalism is not deemed 'typical' for the purpose of this definition). [PM_40_60_23]

Mobility Equipment - A wheelchair, a motorised wheelchair, a walking stick or a standing frame or any other mobility aid required to be used within the College. [PM_40_60_23]

Net Area - The usable area within the Gross Area of the Buildings, comprising Basic Teaching Area; larger spaces e.g., catering and sports spaces; learning resource areas; staff and administration; and storage. It includes everything except Non-Net Areas. [PM_40_60_23]

Net Zero Carbon Building - A New Building with net zero operational carbon; does not burn fossil fuels, is 100% powered by renewable energy and achieves a level of energy performance in-use that meets the EUI targets. No carbon offsets can be used to achieve this balance. [PM_40_60_23]

New Buildings - Any Buildings constructed pursuant to the Scheme Contract. [PM_40_60_23]

No Work - A Building element or service designated 'No Work' in the Refurbishment Scope of Works (RSoW) requires no work to be done to an existing element, so the element can be left as existing and is not the responsibility of the Contractor. [PM_40_60_23]

Non-net Area - Part of the Gross Area of buildings not included in the Net Area comprising circulation; toilets and personal care; plant, including boiler, server rooms and plant rooms; kitchen suites; and the area occupied by internal walls. [PM_40_60_23]

Non-net Site Area - Part of the Gross Site Area which supports the functioning of the Site and includes the footprint of buildings and access areas such as paths, roads and parking. [PM_40_60_23]

Operational Carbon (kgCO₂e) - The carbon dioxide and equivalent global warming potential (GWP) of other gases associated with the in-use operation of a Building. This includes both regulated and unregulated energy loads. [PM_40_60_23]

Outbuildings and Enclosures - structures providing a simple, secure enclosure, with protection from weather and wildlife, for air handling plant, external tanks or external storage (such as sheds or garages). [PM_40_60_23]

Outdoor Class Space - An external space allocated for the delivery of the curriculum. [PM_40_60_23]

Overheating Risk Assessment (ORA) - The DfE methodology for carrying out modelling to mitigate the risk of overheating as defined in BB101 and Technical Annex 2F. [PM_40_60_23]

Partial College Project - A project in which the Works are carried out on some buildings or parts of the grounds of a college, typically less than 75% of the overall building area. [PM_40_60_23]

Performance in Use (PIU) Targets - A set of easily measurable criteria, related to the indoor environmental conditions and building performance, used to assess the performance in use of the relevant Building. [PM_40_60_23]

Practical Completion - as defined in the Scheme Contract. [PM_40_60_23]

Practical Teaching - Teaching that involves students doing (or observing) practical activities and often requiring access to services and specialist equipment, for example science. [PM_40_60_23]

Practical Spaces - Teaching Spaces listed as light practical spaces or heavy practical spaces in Annexes 1A and 1B of the Further Education Generic Design Brief. [PM_40_60_23]

Profound and Multiple Learning Difficulties (PMLD) - Students with PMLD are likely to have severe and complex learning difficulties as well as a physical disability or sensory impairment. This range of needs also includes specific learning difficulties (SpLD) which encompasses a range of conditions such as dyslexia, dyscalculia and dyspraxia. [PM_40_60_23]

Project Execution Plan (PEP) - the project execution plan is the governing document that establishes the means to execute, monitor and control projects. The plan serves as the main communication vehicle to ensure that everyone is aware

and knowledgeable of Scheme objectives and how they shall be accomplished.
[PM_40_60_23]

Quality Plan - means a document, or several documents, that together specify quality standard, practices, resources, specifications and the sequence of activities relevant to a Scheme. [PM_40_60_23]

Rectification Period - as defined in the Scheme Contract. [PM_40_60_23]

Refurbished Buildings - as defined in the Scheme Contract. [PM_40_60_23]

Refurbishment Scope of Works (RSoW) - Annex CS2 of the CSB which sets out the scope of works required for Refurbished Buildings. Work required to each element shall be defined as Renewed, Replaced, Repaired, Retained or have 'No Work'. [PM_40_60_23]

Regulated Energy - Energy consumed by a Building, associated with fixed installations for heating, hot water, cooling, ventilation, and lighting systems. These form the basis of a compliance calculation for AD L. [PM_40_60_23]

Remodelled Area - The total area of any internal spaces in which some internal walls are to be removed and/or rebuilt, and most elements within the space, including the fenestration, are to be Renewed or Replaced. [PM_40_60_23]

Renewed - A Building element or service designated 'Renew' in the RSoW requires an entirely new element, designed to satisfy relevant outputs in the GDB as listed in the RSoW (and by the code in the ADS where relevant), for instance a complete doorset in a new opening or a completely new replacement roof including roof structure. [PM_40_60_23]

Repaired - A Building element or service designated 'Repair' in the RSoW requires isolated repairs to an existing element, to minimal specifications in the RSoW and requirements in project-specific drawing(s), for instance isolated repairs to an existing floor finish, window or radiator. [PM_40_60_23]

Replaced - A Building element or service designated 'Replace' in the RSoW requires a partially new and/or major repairs to an existing element, to satisfy the relevant outputs in GDB, as listed in the RSoW (and by the code in the ADS where relevant), for instance a new door leaf in an existing frame, a new window in an existing opening, or a new roof on an existing structure. [PM_40_60_23]

Retained - A Building element or service designated 'Retain' in the RSoW requires an existing element to be retained, with No Works required unless needed in order to complete other Works which form part of the project, so the element can be left as

existing, but the Contractor is responsible for ensuring that its overall performance is no worse than its existing performance. [PM_40_60_23]

Schedule of Accommodation (SoA) - A schedule of all spaces required in the College, including their required size and type. [PM_40_60_23]

Scheme - means the design and construction or construction (as the case may be) of works associated with College Buildings under a Scheme Contract. [PM_40_60_23]

Scheme Contract - means an agreed contract for a Scheme. [PM_40_60_23]

Secure Line - The agreed demarcation between secure and public areas of the buildings and grounds for the purposes of access, safeguarding and security. [PM_40_60_23]

Sites - as defined in the Scheme Contract. [PM_40_60_23]

Soft Landings - The DfE process for soft landings pursuant to the Government Soft Landings (GSL) Protocol. [PM_40_60_23]

Special Educational Needs (SEN (D)) - Special educational needs (and disability). [PM_40_60_23]

Special Educational Needs (SEN) - A Further Education establishment where students have Education, Health and Care (EHC) Plans or statements of SEND. Colleges cater for various age ranges and types of SEND. Students are taught in small classes, and support staff and health professionals work alongside teaching staff. [PM_40_60_23]

Specially Resourced Provision (SRP) - Additional specialist facilities in a College Site for a small number of students, typically less than 30, who usually have EHC plans or statements of special need. Students spend most of their time in mainstream classes, attending the SRP facilities for individual support, to learn a specific skill, to receive medical or therapeutic support or to access specialist equipment. The facilities can be in a Department or dispersed throughout the college. [PM_40_60_23]

Supplementary Area - Net Area and Non-Net Area which is used for non-college or support functions such as Specially Resourced Provision, a community health centre, or residential accommodation. Additionally, 'other spaces' may include ancillary areas not defined within the GIFA such as outbuildings and glasshouses. [PM_40_60_23]

Sustainable Drainage System (SuDS) - a collection of water management practices that aim to align modern drainage systems with natural water processes. Sustainable drainage systems (SuDS) differ from a traditional drainage system as it mimics natural systems, aiming to manage rain close to where it falls.

[PM_40_60_23]

Technical Annexes - The suite of documents integral to the GDB which outlines the detailed technical requirements for a college. Where the term GDB is used, it assumes inclusion of the requirements outlined in the Technical Annexes.

[PM_40_60_23]

Teaching Spaces - any spaces within the basic teaching area and any large or indoor sports space except catering and social areas, as defined in Technical Annex 1A and 1B. [PM_40_60_23]

Teaching Resources - Material that supports teaching and learning including printed material and equipment. [PM_40_60_23]

Unregulated Energy - Energy consumed by a Building which is outside of the scope of building regulations. This includes energy associated with equipment such as plug-in devices, ICT and FF&E. [PM_40_60_23]

Untouched - An area or building defined in the RSoW as not requiring any work. [PM_40_60_23]

Utilities - A service or commodity provided by a public or private utility including public sanitary and storm sewers, natural gas, telephone, public water facilities and all other utility facilities and services necessary for the operation and occupancy of the College. [PM_40_60_23]

Vocational Curriculum – A subject area being taught and studied at the College related to a trade or profession. [PM_40_60_23]

Whole College Project - A project in which the Works are carried out on most Buildings or most of the grounds of a college, typically more than 75% of the overall building area, and the Contractor has responsibility for providing the required facilities for the whole college with the Sites. [PM_40_60_23]

Works - All of the works (including design and works necessary for obtaining access to the Sites) to be undertaken as defined in the Scheme Contract. [PM_40_60_23]

1. Context and Key Principles

1.1. Status of this Document

1.1.1 This document is the Further Education Generic Design Brief (GDB) and integral Technical Annexes which, together with the College-specific Brief (CSB) and its Annexes, forms the Further Education Output Specification (FE-OS). The FE-OS is part of the Employer's Requirements (ERs). [PM_10_20]

1.1.2 The OS outlines the required standards for College Buildings and grounds. [PM_10_20]

1.2. Document Structure

1.2.1 The FE-OS comprises two parts and is structured as shown in Table 1 and Table 2. [PM_10_20]

Title	Content
Main document	
Section 1	Context and Key Principles
Section 2	Buildings and Grounds
Section 3	Fittings, Furniture and Equipment
Section 4	ICT Design Requirements
Section 5	Operability and Maintenance
Section 6	References
Technical Annexes	
Annex 1A	Definitions of Internal Areas and Spaces: Further Education
Annex 1B	Definitions of Spaces for SEND Provision: Further Education

Title	Content
Annex 1C	Definitions of External Area and Spaces: Further Education
Annex 2A	Sanitaryware and Facilities
Annex 2B	External Space and Grounds
Annex 2C	External Fabric
Annex 2D	Internal Elements and Finishes
Annex 2E	Daylight and Electric Lighting
Annex 2F	Mechanical Services and Public Health Engineering
Annex 2G	Electrical Services, Communications, Lifts, Fire and Security Systems
Annex 2H	Energy
Annex 2I	Controls
Annex 2J	Sustainability
Annex 2K	Building Performance Evaluation Methodology
Annex 3	Fittings, Furniture and Equipment

Table 1 Further Education Generic Design Brief and its Technical Annexes

Title	Content
CSB Main document	
Section 1	Introduction
Section 2	Strategic Brief
Section 3	Project Brief
Section 4	ICT Design Requirements
CSB Annexes	
Annex CS1	College-specific Schedule of Accommodation and Area Data Sheets
Annex CS2	College-specific Refurbishment Scope of Works (RSoW)
Annex CS3	College-specific Legacy Equipment Schedule
Annex CS4	College-specific Legacy Furniture Schedule
Annex CS5	College-specific Legacy ICT Equipment Summary
Annex CS6	College-specific Sustainable Estate Strategy
Annex CS7	College-specific Adjacency Diagram

Table 2 College-Specific Brief and its Annexes

Definitions

1.3.1 For terms and acronyms reference should be made to Definitions at the start of this document. [PM_40_60_23]

Precedence of Documentation

1.4.1 All elements of the ERs, comprising the GDB (including the Technical Annexes) and the CSB (including the College-specific Annexes) shall be satisfied. [PM_10_20]

1.4.2 The CSB outlines project specific requirements in addition to the GDB. [PM_10_20]

1.4.3 Where there is any inconsistency between the GDB and the CSB, this shall be dealt with in accordance with the Scheme Contract. [PM_10_20]

1.4.4 For the avoidance of doubt, the Contractor shall consider and address all requirements of Part A (General Conditions) of the ERs. [PM_10_20]

1.4.5 'Building Bulletin 93' (BB93): Acoustic design of schools - performance standards shall be used in the design of colleges, in the absence of a college specific acoustic design guide. A qualified acoustician should provide the complete design advice and requirements for acoustic performance for the specific College. [PM_10_20]

1.5. Information Management and Building Information Modelling (BIM)

1.5.1 The DfE's Information Management Resources (including the BIM Protocol) comprises the following parts and is applicable to all documentation, drawings and models:

- a) Project's Information Protocol [PM_40_60]
- b) DfE's Exchange Information Requirements (EIR) [PM_10_20_28]
- c) DfE's Detailed Exchange Information Requirements [PM_10_20_28]
- d) Project's Information Production Methods and Procedures [PM_40_60]
- e) Project's Information Standard. [PM_40_60]

1.6. General Requirements

1.6.1. Project Parameters

1.6.1.1 A College shall provide a suitable learning environment for anyone over the age of 14 but may additionally include Early Years provision, where defined in the CSB. The College learning environment is to be set in an adult based community building and estate. Where the College is to accommodate students aged under 18, the environment should be suitably designed to safely transition the students into adulthood. [PM_10_20_82]

1.6.1.2 The CSB identifies whether the Works are deemed a Whole College Project or a Partial College Project:

- a) in a Whole College Project, the Contractor shall be responsible for providing the required facilities for the whole College within the Site and shall comply with all requirements in this GDB and its Technical Annexes [PM_10_20_82]
- b) in a Partial College Project, the Contractor shall only be responsible for the Works to New Buildings, Refurbished Buildings, Remodelled Areas, grounds, FF&E or ICT identified in the CSB and shall comply with all requirements in this GDB and the Technical Annexes except where it is stated that the requirements apply only to a Whole College Project. [PM_10_20_82]

1.6.1.3 The requirements in this OS in respect of Buildings, FF&E and ICT Infrastructure shall apply to all parts of the Works in any New Buildings. [PM_10_20_82]

1.6.1.4 The requirements in this OS in respect of Buildings, FF&E and ICT Infrastructure shall apply to all parts of the Works in any Building Elements or Building Services provided in Refurbished Building(s) which are designated Renewed or Replaced in the RSoW. [PM_10_20_82]

1.6.1.5 Where the requirements refer to an area, space or Department, these requirements shall apply to all spaces in any New Buildings or Remodelled Area. [PM_10_20_82]

1.6.1.6 Any area or space within New Buildings or Remodelled Area shall conform to all relevant requirements in this GDB and the Technical Annexes. [PM_10_20_82]

1.6.1.7 Where Early Years building accommodation or external grounds are required by the CSB, the School's OS suite of documents shall define the requirements for these spaces. All School's OS requirements shall be met in all areas where occupied by early years aged children. Any discrepancy between the School's OS and the FE-OS shall be highlighted by the contractor and solutions in each case agreed with the Employer. [PM_10_20_82]

1.6.1.8 The requirements in this OS in respect of external space and grounds:

- a) shall always apply to the external areas adjacent to any New or Refurbished Building(s) which are required for access or which are affected or removed due to the proposed Works, including any informal and social area adjacent to Early Years classrooms [PM_10_20_82]
- b) shall not apply to existing grounds within the Site except for any part that is specifically described in the CSB, or in a Whole College Project [PM_10_20_82]
- c) shall apply to all parts of the Site where designated a Whole College Project in the CSB [PM_10_20_82]

- d) shall not apply to existing grounds beyond the Site except for any part that is specifically described in the CSB (for instance for Consequential Works).
[PM_10_20_82]

1.6.1.9 All Buildings, grounds, ICT and FF&E provided shall comply with all relevant and current regulations, British and European standards and policies including without limitation those referenced and/or listed in the Technical Annexes and the CSB Annexes.
[PM_10_20_82]

1.6.1.10 The College shall consider through the briefing stages how they shall respond to the Equality Act 2010 and include these requirements for spatial needs and adjacencies in the SoA/RSoW. These shall be in addition to statutory requirements, BS and EN standards. The Contractor shall ensure all requirements are met, along with any other equality related needs defined in the CSB. [PM_10_20_82]

1.6.1.11 Where the Contractor is not able to meet the requirements in full, due to the limitations of the Site or the Buildings on the Site prior to the Works, details of alternative proposals (i.e., proposed derogations) are to be submitted to the Employer for approval, stating where or how they do not comply and why they are considered a satisfactory alternative. [PM_10_20]

1.6.2. Refurbishment

1.6.2.1 In Annex CS1, the following designations shall apply with respect to the work required to rooms, spaces or Departments in Refurbished Buildings except where expressly altered in the RSoW:

- a) Remodelled Area: the total area of any spaces in which some internal walls are to be removed and/or rebuilt, and most elements within the space, including the fenestration, are to be Renewed or Replaced. [Ac_10_70_70]
- b) Refurbished Area: existing spaces or area to remain, within their existing walls, in which some elements in the space are to be Renewed, Replaced or Repaired and some are to be Retained, but decorated where necessary. [Ac_10_70_70]
- c) Untouched Area: existing spaces or area not within the Works, shall be left as existing with No Work required. [Ac_10_70_70]

1.6.2.2 Work required to Refurbished Buildings shall be as defined in the RSoW, under the headings of architectural elements (including FF&E) and M&E elements (including ICT Infrastructure). [Ac_10_70_70]

1.6.2.3 In the RSoW, the following designations shall apply with respect to work to individual elements (except where expressly altered in the RSoW):

- a) **Renew:** all new elements or finishes designed to satisfy the relevant outputs of the GDB and the Technical Annexes (and by the code in the ADS where relevant). [Ac_10_70_70]
- b) **Replace:** partially new and/or major repairs to existing elements or finishes designed to satisfy the relevant outputs of the GDB and the Technical Annexes (and by the code in the ADS where relevant), where possible. [Ac_10_70_70]
- c) **Repair:** isolated repairs to elements or finishes to satisfy the requirements in any project-specific specification or drawing issued as part of the CSB. [Ac_10_70_70]
- d) **Retain:** existing elements or finishes left as existing, with no work required unless needed in order to complete other works that form part of the project; overall performance shall be no worse than the existing performance. [Ac_10_70_70]
- e) **No Work:** No Work required; shall be left as existing. [Ac_10_70_70]

1.6.2.4 Subject to Sections 1.6.2.1 to 1.6.2.3, in respect of refurbishment work to Refurbished Buildings, the required level of compliance with this GDB is set out in the RSoW. [PM_10_20]

1.6.2.5 Notwithstanding the requirements outlined in the RSoW, the following shall be complied with when carrying out refurbishment work (references are within this GDB unless otherwise stated):

- a) The requirements of Sections 1.1 to 1.6 inclusive, and all relevant parts of Section 3, Section 4, Section 5, Section 6 and Section 7 shall be met. [PM_10_20_90]
- b) Except where refurbishment works to a space or Department are designated as 'Untouched', or where building elements or services are designated 'No Work', the Contractor shall notify the Employer if further work is needed to comply with the School Premises (England) Regulations 2012, or to comply with health and safety legislation or where further works are required as a result of works to adjacent spaces. [PM_10_20]
- c) Except where refurbishment works to a space or Department are designated 'Untouched', all work shall be left clean, serviceable and commissioned where necessary, as required in Part A (General Conditions). [PM_10_20]
- d) Any elements provided as new shall have a Minimum Life Expectancy as described in Section 1.7.7. If an element is being Replaced in a Refurbished

Building, the Minimum Life Expectancy shall be met as far as possible, within the constraints of the location, the adjacent elements and the sub-structure. Any fitting, repairing or reusing of existing elements shall be carried out in accordance with Good Industry Practice and such elements shall have a reasonable life expectancy to be agreed with the Employer. [PM_35_10_47]

- e) Refurbishment work shall comply with AD M. In Remodelled Areas, the building layout shall be clearly organised to enable ease of circulation for building users and shall, where possible, aid orientation and ease of movement to external areas, particularly in the event of emergency. [PM_10_20_90]
- f) Works to Building Services systems provided in Refurbished Buildings shall take account of Section 2.8.2 and an energy audit shall be carried out as described in Section 2.12.4. [PM_10_20_90]

1.6.3. Design Deliverables

1.6.3.1 Compliance with the DfE's Exchange Information Requirements (as defined in the BIM Protocol) and evidence of satisfactory progress shall be demonstrated through the provision of Information Deliverables at key stages in the project and in accordance with the project. [PM_10_20_28]

1.6.4. Compliance

1.6.4.1 The Contractor shall demonstrate compliance with the Employer's Requirements by use of protocols detailed in the Contractor's Quality Assurance procedures capturing evidence of both coordinated design and its implementation into the construction of the College Building(s) and Grounds with photographic evidence and/or third-party accreditation. [PM_70_15]

1.7. Building Good Colleges

1.7.1. Overview

1.7.1.1 The aim of the DfE technical standards is the provision of colleges which are healthy environments, at the right size and designed to be safe, secure and long lasting. Sustainable design, construction and operation is embedded as a holistic approach throughout to embrace the elements of environmental responsibility - social value and economic viability - ensuring that college buildings and grounds will support the people and organisations who learn, teach and manage them. [PM_35_05_22]

1.7.1.2 These outcomes can be distilled into the following ten overarching principles for excellent Colleges:

- a) Context [PM_35_10]

- b) Identity [PM_35_10]
- c) Natural Environment [PM_35_10]
- d) Movement and site connectivity [PM_35_10]
- e) Functionality [PM_35_10]
- f) Healthy and Safe Environments [PM_35_10]
- g) Inclusion [PM_35_10]
- h) Standardised Approach [PM_35_10]
- i) Future Proofing [PM_35_10]
- j) Whole life [PM_35_10]

1.7.1.3 Within the setting of Further Education, the ten principles have been developed and expanded from the six principles for schools, to reflect the differing business and estate development plans and wide range of curricula to support 21st Century skills. Supporting guidance is set out in the Sustainable Estate Guidance which complements the FE-OS. The Contractor shall make allowance to deliver these aspects within their design processes. The outputs of the above may feature within the CSB. [PM_35_05_22]

1.7.2. Context

1.7.2.1 Further education campuses shall reflect the diversity of local aspirations and educational/ student and employer needs. Colleges can enhance, or reinforce local community and identity and other local provision by strengthening connectivity to their physical and community context. [PM_35_05]

1.7.2.2 Site planning shall be influenced by a range of distinctive contextual elements including educational, historical, cultural, local and regional context. The context includes the immediate surroundings of the site, the neighbourhood in which it sits and the wider setting, as well as consideration of sites across the estate and the arrangement and use of individual buildings within college campuses. [PM_35_05]

1.7.2.3 The character and arrangement of the buildings and grounds in its setting shall respond to the contextual elements, such as

- a) the movement network and hierarchy of surrounding streets and routes for active travel [PM_35_05]
- b) relationship in scale, massing, form and building lines to existing structures, such as buildings, enclosures, open space [PM_35_05]

- c) natural qualities, such as open space, views, strategic landscape character, orientation, microclimate, soils, geology, drainage, strategic landscape, topography. [PM_35_05]

1.7.3. Identity

1.7.3.1 Colleges shall have their own identity - creating a sense of place that is connected to its local context and welcoming to the college community. The buildings and grounds are to be integrated, and the relationship between the two shall be well considered. The spaces in between buildings and access to them shall be as well considered as the buildings themselves. [PM_35_10_22]

1.7.3.2 The sense of place is to be created through consideration of local character, such as:

- a) materials, building forms, and features [PM_35_10_22]
- b) relationship to paths, routes, edges, block pattern or views [PM_35_10_22]
- c) connection to its surrounding settlement, such as active ground and street frontage, entrances [PM_35_10_22]
- d) relationship to building heights, building line, massing, set-back, roofline [PM_35_10_22]
- e) particular ecological or geological characteristics [PM_35_10_22]
- f) response and connection with local landmarks or historic events. [PM_35_10_22]

1.7.4. Natural Environment

1.7.4.1 The character and arrangement of the buildings and grounds shall enhance the natural as well as the built environment. [PM_35_10_22]

1.7.4.2 Natural qualities are essential for health and wellbeing, biodiversity, shading and cooling, noise mitigation, air quality and flood management. [PM_35_10_22]

1.7.4.3 Consideration to include a whole-site green infrastructure strategy, connected to local strategic landscapes, such as green corridors, parks and green public spaces. The microclimate shall inform the orientation of linked open spaces and buildings, to deliver quality green spaces as an integral part of the place through for example:

- a) building orientation and open spaces - integrating shade to control solar gain [PM_35_05_79]

- b) water management systems - sustainable drainage for surface water and rainwater run-off including blue/green roofs, rain gardens and swales [PM_35_05_79]
- c) understanding local flood risk and implementing adaptation measures [PM_35_05_79]
- d) the potential of the ground for heating or cooling; permeable surfaces [PM_35_05_79]
- e) wind and air movement across the site and buildings. [PM_35_05_79]

1.7.4.4 In addition, environmental net gain, as outlined in the Government's 25-year environment plan, can be supported through site-specific action such as:

- a) integrated landscape, ecological and biodiversity enhancements [PM_35_40]
- b) use of urban green factor tools to determine amounts of green space [PM_35_40]
- c) re-use and repair of brownfield land-decontamination or remediation [PM_35_40]
- d) tree planting and landscape species to provide character, areas of shade that benefit the comfort inside buildings by assisting in mitigating overheating, as well as users - improving the use of outside space for curricular and social activity [PM_35_40]
- e) low maintenance solutions support long-term retention of these important features. [PM_35_40]

1.7.5. Movement and site connectivity

1.7.5.1 Movement to, within, and across sites should be considered to create a well-connected place which is accessible and easy to move around. [PM_35_05_79]

1.7.5.2 Colleges can provide footfall and activity that supports a much wider range of local facilities and businesses. Colleges have an opportunity to open up facilities to the public to support vocational curriculum such as hair and beauty or catering. Business incubation and closer engagement with employers may result in multiple access needs and types of boundaries. [PM_35_05_79]

1.7.5.3 Access and connections to, within and between the college site or sites, should consider a movement network that establishes:

- a) connection to local centres through all forms of movement, prioritising walking, cycling and public transport [PM_35_05_79]
- b) potential for wider local benefits, for instance by provision of public facilities, extension of a bus route, or a more direct footpath or cycle path to a neighbourhood centre or needs of shared spaces [PM_35_05_79]
- c) routes that support walking, cycling routes and movement needs of diverse users, including any vulnerable person including; children, the elderly and people with disabilities. Consider how and when these routes will be used by students, staff and visitors, throughout the day for example: safety; variety and interest; social activity; light and shade; commercial or street level activity; landscape or greenery; noise and pollution; surface type and quality; congestion [PM_35_05_79]
- d) parking and servicing should be arranged to support the quality of movement with connection to open spaces and building entrances. Cycle parking should be in an appropriate location relative to routes and building entrances [PM_35_05_79]
- e) consideration of the routes for emergency services, refuse collection and delivery should not undermine the quality of place. [PM_35_05_79]

1.7.6. Functionality

1.7.6.1 The Buildings, grounds, FF&E and ICT Infrastructure provided by the Contractor shall provide an environment which supports the Educational Drivers outlined in Section 1.8. [PM_35_10_32]

1.7.6.2 The design shall meet the requirements given in Educational Drivers in the CSB, taking account of the age ranges of the students, the curricula and the constraints of each College and of any Buildings on the Site prior to the Works. [PM_35_10_32]

1.7.6.3 The design shall be coordinated, fully integrating, structure and fabric, Building Services, ICT Infrastructure, and FF&E. [PM_35_10_32]

1.7.7. Healthy and Safe Environments

1.7.7.1 All Works shall be designed and constructed in line with The Construction (Design and Management) Regulations 2015. [PM_10_20_90]

1.7.7.2 The layout and design of the buildings, grounds, FF&E and ICT Infrastructure shall provide a safe, secure and healthy environment for students and staff. [PM_10_20_82]

1.7.7.3 The setting and quality of place shall promote the wellbeing of students and staff through welcoming site and building approaches, transparency and connection, access to open spaces, links between internal and external space and links to the natural environment. [PM_10_20_82]

1.7.7.4 The design shall promote, physical health, welfare and safety measures e.g. boundaries and gates, security measures and passive supervision, wayfinding and zones, secured access to plant, hygiene and welfare provision, dining experience and access to fresh air and drinking water provision, lighting, spaces and facilities that encourage movement and activity. [PM_10_20_82]

1.7.8. Inclusion

1.7.8.1 Inclusive access shall be integrated into the design and use of the grounds and buildings to support the inclusion of all students and staff including those with special educational needs (SEN) and disabilities into mainstream learning environments. [PM_40_20_42]

1.7.8.2 The range of user ages shall be considered, including the provision of early years requirements where specified in the CSB. [PM_40_20_42]

1.7.8.3 People with disabilities, including those using mobility equipment and those with a visual or hearing impairment, shall not be placed at a disadvantage by the design of the buildings or grounds, or by the FF&E and ICT Infrastructure provided. All staff and students shall be able to access to the whole curriculum and participate in the life of the education community. [PM_10_20_82]

1.7.8.4 Everyone shall feel welcome and able to use the same routes, spaces and facilities as other users wherever possible.

1.7.8.5 Particular attention shall be given in the grounds to:

- a) potential physical or spatial barriers - in terms of arrival and approach, drop off and parking, level changes, travel distances and travel time, covered routes and seating [PM_40_20_42]
- b) legibility and easy orientation - an easily understood site layout and suitable use of colour, surface materials and textures and good signage [PM_40_20_42]
- c) good quality acoustics and lighting - critical in teaching and learning spaces but also important in arrival and communal spaces [PM_40_20_42]
- d) easy access between indoors and outdoors and to the full range of outdoor facilities and external learning provision. [PM_40_20_42]

1.7.8.6 All teaching and learning spaces must support college users with SEN and/or disabilities and their assistants. Inclusion in the grounds is also supported by a range, and

wide distribution, of easily accessible support spaces in the buildings across the estate such as:

- a) shared resource spaces - cafes, libraries, social / learning space [PM_40_20_42]
- b) staff workspace and resource bases [PM_40_20_42]
- c) multi-purpose small group rooms, medical/therapy rooms [PM_40_20_42]
- d) storage space for educational and mobility equipment [PM_40_20_42]
- e) accessible toilets, changing places, and hygiene facilities for assisted use. [PM_40_20_42]

1.7.9. Standardised Approach

1.7.9.1 The design solution (or elements within the design solution) for any New Building or new FF&E shall be capable of being replicated for similar types of colleges, including the use of off-site construction where feasible, so that best practice can be assured without the need for whole new designs. [PM_10_20_82]

1.7.9.2 Standardisation could be achieved in a number of ways, including:

- a) whole college/parts of colleges/modules [PM_10]
- b) kit of parts/components [PM_10]
- c) standard dimensions/dimensional coordination/grids [PM_10]
- d) process/procurement (including FF&E) [PM_10]
- e) supply chain/other (including briefing). [PM_10]

1.7.10. Future Proofing

1.7.10.1 New Buildings and grounds and any new FF&E and ICT Infrastructure shall be designed, constructed or procured so that later changes can be achieved easily and cost-effectively. [PM_10_20]

1.7.10.2 These would be in response to changes in curricula/skills priorities, organisation, technology and, where required in the CSB, student numbers and Guided Learning Hours. Essential changes in room sizes shall be achievable in the future without major building work. [PM_10_20]

1.7.10.3 Works delivered within the Project Brief shall not negatively impact the vision for the future as detailed within the Strategic Brief. [PM_10_20]

1.7.10.4 All systems shall be appropriately designed and installed to allow for future developments in technology where appropriate. [PM_10_20]

1.7.10.5 In line with Government legislation, the DfE is committed to:

- a) Ensuring that all centrally delivered projects meet net zero carbon in operation at handover. This may require the Contractor to include other provisions appropriate to the college to deliver a site-specific solution at a project level. [PM_40_20_85]
- b) mitigating and adapting in response to the climate-related risks of overheating inside of buildings, flooding due to intensity of rainfall [PM_40_20_85]
- c) reducing operational carbon emissions to zero across our estate by 2050. [PM_40_20_85]

1.7.10.6 Buildings and Grounds shall be designed adopting the following hierarchy:

- a) **Be Lean** - deliver a Fabric-First approach to meet (or exceed) the minimum Fabric Energy Efficiency Standard (FEES) in Technical Annex 2J and design out the need for active equipment by exploiting passive opportunities presented by the Building and its immediate microclimate [PM_35_40]
- b) **Be Clean** - meet (or exceed) minimum energy performance targets by maximising the energy efficiency of installed equipment and delivering fossil fuel free heat following the low carbon heat source hierarchy [PM_35_40]
- c) **Be Green** - meet (or exceed) renewable technology standards to generate energy through on-site renewables and enhance the grounds through implementation of sustainable drainage systems and a green infrastructure strategy to increase biodiversity [PM_35_40]
- d) **Be Seen** - meet (or exceed) minimum standards defined within Technical Annexes 2H and 2K, including commissioning the Building, supporting and empowering the end users with training and robust handover protocols to meet or exceed minimum requirements for monitoring, verifying and reporting energy performance. [PM_35_40]

1.7.10.7 The Contractor shall also adopt a sustainable approach to the construction and production of all new facilities provided, and deliver a cost-effective and resource-efficient facility that:

- a) minimises the use of all resources [PM_40_20_85]

- b) reduces the demand for energy and water use during the Works period [PM_40_20_85]
- c) minimises CO2 emissions during the works period [PM_40_20_85]
- d) minimises noise and air pollution during the works period [PM_40_20_85]
- e) allows opportunities for recycling during the works period [PM_40_20_85]
- f) maximises the use of building materials and construction practices that allow for materials to be recycled after the end of their lifespan/use [PM_40_20_85]
- g) maximises the use of products that protect occupants' health and promote a healthy learning environment e.g., consider toxicity and off-gassing of materials (air quality) [PM_40_20_85]
- h) considers the whole life cycle embodied carbon of materials used [PM_40_20_85]
- i) considers qualified user control (i.e., to allow people to control their own environment at will - linked to people's psychological well-being). [PM_40_20_85]

1.7.10.8 The Contractor shall design and build the facilities in accordance with 'BS EN ISO 14001' and shall prepare operational plans for the Employer to operate facilities that record all targets for the key aspects of environmental performance, as identified in this GDB and the Technical Annexes. [PM_10_20_90]

1.7.11. Whole life

1.7.11.1 The Minimum Life Expectancy requirements outlined in the life-expectancy tables in this GDB shall be met to reduce the frequency at which the asset lifecycle replacement takes place for overall replacement of each element. [PM_35_10_47]

1.7.11.2 Where the Minimum Life Expectancy requirement is deemed to have a significant impact on capital expenditure which is disproportionate to the benefit, the Contractor shall propose the best value optimised solutions. [PM_35_10_47]

1.7.11.3 If an element is Replaced in a Refurbished Building, the Minimum Life Expectancy shall be met unless, and subject to agreement by the Employer, there are such constraints due to location, the adjacent elements or the sub-structure that make this impossible. [PM_35_10_47]

1.7.11.4 Any fitting, repairing or reusing of existing elements shall be carried out in accordance with Good Industry Practice and such elements shall have a reasonable life expectancy to be agreed with the Employer. [PM_35_10_47]

1.7.11.5 Where alternative Minimum Life Expectancy is proposed by the Contractor, this shall be accompanied by an assessment of how the disruption and impact on the operation of the College is balanced and justified against the overall whole life cost benefit to the College. [PM_35_10_47]

1.8. Educational Drivers

1.8.1. Overview

1.8.1.1 The design of each College shall take account of the educational drivers of this GDB and any College-specific educational drivers in the CSB. [PM_10_20]

1.8.2. Curriculum and Organisation

1.8.2.1 The design of any New Building shall provide enough adaptable space to be able to accommodate a range of learning scenarios, both now and in the future. [PM_10_20]

1.8.2.2 Any facilities provided shall support and encourage learning outside the formal timetable through innovative and thoughtful design, for example in catering/cafe and social areas and any outdoor space, to promote independent learning. [PM_10_20]

1.8.3. Teaching and Pedagogy

1.8.3.1 The design of any Buildings and grounds shall create an environment conducive to effective teaching through the provision of:

- a) ICT Infrastructure and building design that allows the provision of the best use of the ICT available now and in the future [SL_25_10]
- b) designs that allow a range of potential furniture and equipment layouts and are well coordinated with equipment, ICT and Building Services [SL_25_10]
- c) transparency between the central circulation and teaching spaces so that users are visible to others in that Department. [SL_25_10]
- d) a design that allows users to engage and interact with the external environment, to create practical hands-on learning [SL_25_10]

1.8.4. Behaviour and Pastoral Care

1.8.4.1 The design of Buildings and grounds shall create an environment that ensures building users feel safe and supports pastoral care. [Ac_25_90_60]

1.8.5. Health and Well-Being

1.8.5.1 An effective healthy indoor environment shall be provided where works are carried out by including the provision of:

- a) natural daylight and electric lighting [PM_40_20]
- b) a means of ventilation, using crossflow [PM_40_20]
- c) thermal comfort, including heating and an Overheating Risk Assessment and acoustics which are designed to support healthy and productive college settings. [PM_40_20]

1.8.6. Standards

1.8.6.1 All European Standards are to apply until replaced with new UK equivalent or updated standards. [PM_10_20_90]

1.8.6.2 Where local planning policies require any environmental certification, these elements shall be funded as a project abnormal and included within the CSB. [PM_10_20_26]

2. Buildings and Grounds

2.1. Overarching Requirements

2.1.1 This section provides the generic requirements for Buildings and grounds which apply to the Works in each College. [PM_10_20_82]

2.1.2 All elements of the (GDB) and the College-specific Brief (CSB) shall be considered and addressed. [PM_10_20_82]

2.1.3 Alternative approaches may be suggested to meet the ERs. Any proposed changes or relaxations to these ERs must be recorded and approved via the change and derogation protocols as defined in the Contract. [PM_10_20_82]

2.1.4 Where the Project includes Supplementary Area, such as a residential facility, innovation or commercial offering, requirements for the Buildings and grounds set out in the College-specific Brief, including its Annexes, shall be met. [PM_10_20_82]

2.2. Site Plan

2.2.1. Overview

2.2.1.1 The design shall maximise the potential use of the Site, whilst dealing with any site-specific constraints. [PM_35_05_79]

2.2.1.2 Any New Buildings shall be located and orientated in a manner that creates suitable internal and external spaces and allows for possible future extensions. Reference shall be made to CS6 Site-specific Sustainable Estate Strategy. [PM_35_05_79]

2.2.1.3 The design shall prioritise the needs of pedestrians and cyclists balanced against the use of vehicles. All users shall be able to find their way safely and easily around Buildings and grounds in accordance with AD M and BS 8300:2018. [PM_10_20_90]

2.2.2. Site Layout

2.2.2.1 The layout of New Building(s) and external works areas shall:

- a) ensure the safety and security of students, staff and visitors [PM_10_80]
- b) provide clearly defined boundaries (including publicly accessible areas i.e., for community uses) which discourage trespass and vandalism, and ensure good visibility to facilitate surveillance across the Site (within site constraints) [PM_30_10_80]
- c) take account of the character of the area and topography of the Site, including its shape, contours and subsoil; and the local vegetation, ecology and micro-climate [PM_35_05_79]
- d) take account of existing Utilities' service routes [PM_30_10_93]
- e) orientate New Buildings on the Site to balance passive environmental design principles with site constraints [PM_35_40_84]
- f) mitigate the effects of adverse environmental conditions, such as traffic noise and flooding, including any highlighted in the CSB [PM_35_40_30]
- g) locate quieter activities away from noisier activities and neighbourhood noise, wherever possible [PM_35_05_79]
- h) consider the needs of neighbours in close proximity [PM_35_05_79]
- i) omit car parking and reduce car usage in line with the planning requirements and Section 3.2.2 of Technical Annex 2J [PM_35_40_84]

- j) allow easy movement between changing rooms and outdoor Sports facilities and consider community use including out of hours where relevant. [PM_35_05_79]
- k) protect existing Site features worthy of retention where desirable and practicable, including existing trees in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. [PM_35_05_79]
- l) ensure the College estate promotes biodiversity and green infrastructure solutions, aligning with planning policy and environmental objectives. [PM_35_40_84]
- m) create external spaces that align with the public realm and provide suitable landscape for community use. The College remit should extend to providing a warm and welcoming setting for the community, which is integrated into the public realm. [PM_35_05_79]

2.2.3. Site Access

2.2.3.1 Where a New Building is constructed that shall affect existing access to the Site, or existing access to Existing Buildings on the Site, the appropriate requirements for site access set out in this section will be met. [PM_60_10_50]

2.2.3.2 Design of a Whole College Project on an existing or new Site, shall:

- a) comply with any requirements for site access control systems specified in the CSB [PM_10_20_90]
- b) be accessible to all (to be reflected in the Access Statement that the Contractor provides) [PM_40_20_42]
- c) ensure that all main access routes including roads, paths, ramps and entrances are clear, legible and fully negotiable, by all people including those with limited mobility in accordance with AD M, BS 8300-1:2018, and BS 8300-2:2018 [PM_10_20_90]
- d) ensure that all New Buildings and grounds are designed to include suitable guarding and barriers where there is a risk of falling, including pedestrian and vehicle barriers, and suitable requirements to prevent injury from (opening) doors and windows in accordance with AD K [PM_10_20_90]

- e) provide a clear hierarchy of circulation routes with easily supervised and clearly identified entry points to the Buildings and signage directing visitors from the entry of the Site to the visitor's reception [PM_60_10_50]

2.2.3.3 Where a Nursery playroom/or crèche is provided, parents and/or carers shall be able to gain access to the Nursery to collect and drop off children without needing to access secured areas for safeguarding purposes (internal or external), including the Early Years Outdoor Class Space. [PM_10_20_82]

2.2.3.4 The access to any New or Refurbished Buildings or new external works shall provide for:

- a) fire and emergency escape routes leading to safe places of assembly [PM_35_30_24]
- b) access to and through soft landscape areas along defined pathways that do not require special footwear and are easily maintained [PM_35_05_79]
- c) in Whole College Buildings, any all-weather surfaces being located so that access is via permeable solid surfaces [PM_35_05_79]
- d) safe access for deliveries, maintenance vehicles and waste removal [PM_35_05_79]
- e) safe and convenient access for pedestrians, cyclists and vehicles, including emergency vehicles, balancing the demands of different users and keeping vehicular movement within the grounds to a minimum, and as far as possible separate from pedestrian routes (on existing sites, the Works shall maintain or improve the accessibility for emergency vehicles on and around the Site) [PM_35_05_79]
- f) relevant adjustments for students with SEN(D) when designing access routes to accommodate their specific needs, particularly as some students with these needs are likely to be less aware of traffic risks and may not see or hear vehicles [PM_40_20_42]
- g) suitable access around the Building for maintenance of the grounds and building façade. [PM_80_10_50]

2.3. Internal Space

2.3.1. Overview

2.3.1.1 The New and Refurbished Buildings shall provide all the teaching, support and other spaces specified in Annex CS1, to suit the College's curriculum and organisation for the number of student places planned based on Guided Learning Hours and align with the Space Standards Template. [PM_10_80]

2.3.1.2 Internal spaces shall meet the requirements below:

- a) The area of the College as defined in the SoA. [PM_10_20]
- b) The total area for Outbuildings and enclosures, listed in Annex CS1, is an indicative area to provide for external storage and to house central air handling plant (including heat pumps, heat exchangers and ductwork). It is additional to the total Gross Area in Annex CS1. Further area shall be needed if ventilation plant, chimneys or sprinkler tanks are included in the Gross Area of the building. [PM_10_20]
- c) The area of Outbuildings and enclosure area provided for outdoor storage and plant area shall provide secure protection from weather and wildlife. [PM_10_20]

2.3.1.3 The Building layout shall allow the Site to be used outside of Core Hours. [PM_10_20_82]

2.3.1.4 The fire strategy shall align to the requirements in operational use and the CSB, considering the risks associated with community/third party users and occupants unfamiliar with the Building. The security systems, fire alarm systems, heating and cooling shall be zoned to align with college requirements. [PM_40_20_30]

2.3.2. Organisation and Layout

2.3.2.1 Spaces in New Buildings or Remodelled Areas shall be located so that there is a clear spatial diagram for the Building that is appropriate for the curriculum and organisational requirements of the College, as set out in the CSB. [PM_10_80]

2.3.2.2 Spaces shall be linked by well organised circulation space that suits the likely movement and numbers of students. [PM_10_80]

2.3.2.3 The layout of New Buildings shall have the right balance and distribution of space, to meet the requirements of the CSB. [PM_10_80]

2.3.2.4 In a Whole College Project, the possibility of future changes shall be considered, including the following:

- a) Each Department shall be able to be linked to, or expanded into, an adjacent Department in the future. [PM_10_80]
- b) The configuration of spaces shall be able to expand, contract and be reformed in as many ways as is economically feasible. [PM_10_80]

2.3.2.5 Columns and piers shall meet the following requirements:

- a) No column or pier shall compromise the use of any space or the efficient layout of FF&E within the space. [PM_10_80_75]
- b) Where columns or piers are unavoidable in Teaching Spaces they shall be against or within a wall or, where benches are provided, within the benching zone. [PM_10_80_75]
- c) There shall be no columns or piers in large spaces as defined in the Technical Annex 1A. [PM_10_80_75]
- d) Where columns and piers are unavoidable in circulation spaces they shall be located and constructed to minimise any hazard created e.g., through chamfering the sides from the walls. [PM_10_80_75]

2.3.3. Dimensions and Proportions

2.3.3.1 The Net Area of any space is defined in Annex CS1.

2.3.3.2 The proportions and dimensions of stores, and the location of store doors, shall allow ergonomically appropriate access to all shelves and an efficient shelving layout. [PM_30_10_22]

2.3.3.3 Service risers shall

- a) be proportioned to allow safe access for servicing and maintenance requirements [PM_10_80_75]
- b) not limit the required occupancy of a room or furniture layouts [PM_10_80_75]
- c) only be accessible from non-occupied spaces. [PM_10_80_75].

2.3.3.4 Where the space is in a Remodelled Area, the area of the space may be based on the existing size or on column centres. [PM_30_10_22]

2.3.3.5 Where requirements of Annex CS1 cannot be achieved in a Remodelled Area, Teaching Spaces shall be within 10% of the minimum recommended area for that type of space. [PM_30_10_22]

2.3.3.6 In a Remodelled area, the total area of non-teaching spaces shall be as detailed in Annex CS1. [PM_10_80]

2.3.3.7 In New Buildings and Remodelled Areas, Teaching Space proportions shall meet the minimum ratio of 2:1 in either direction and (except those for SEN) be rectangular in plan. [PM_30_10_22]

2.3.3.8 In New Buildings, spaces shall be at least the minimum depth shown in Annex 1A, 1B, and CS1. [PM_30_10_22]

2.3.3.9 Functionality shall be demonstrated with an FF&E layout. [PM_35_10_32]

2.3.3.10 The proportions of performance spaces shall allow the audience a clear view of the performance area. [PM_30_10_22]

2.3.3.11 Each space shall have at least the minimum open height and minimum clear height specified in Technical Annex 1A, 1B and CS1. [PM_30_10_22]

2.3.3.12 All key occupied spaces shall be designed to accommodate cross ventilation. [PM_35_70_94]

2.3.3.13 The minimum open height above shall be from the finished floor level to the underside of the ceiling or soffit. The minimum clear height shall be from the finished floor level to the underside of the ceiling, where used, or to the underside of acoustic baffles, lighting rafts or air handling units below the soffit. [PM_10]

2.3.3.14 Isolated elements such as individual luminaires, sprinkler heads, fire and smoke detectors, beacons, public address and voice alarm speakers, PIR sensors, grilles, diffusers, and Wi-Fi points can protrude up to 150mm below the ceiling at the minimum clear height, except in certain vocational facilities, sports spaces and indoor catering areas, where the open height specified above or in Annex 1A, 1B, and CS1 shall be the clear height. [PM_30_10_22]

2.3.3.15 A bulkhead can protrude up to 150mm below the ceiling line if it covers no more than 25% of floor area within the space. Acoustic baffles, lighting rafts or air handling units below the open height shall not protrude beneath the clear height and shall not cover more than 40% of floor area within the space, including any bulkheads. [PM_30_10_22]

2.3.3.16 In New Buildings and Remodelled Area, the minimum clear width of a main circulation corridor shall be in accordance with Table 3 below and the Space Standards Template (SoA). [PM_10_20_90]

2.3.3.17 The clear width shall:

- a) be measured between walls and any permanent projections (such as a radiator) or the balustrade to voids, excluding skirtings and small electrical fittings [PM_30_10_22]

- b) be unobstructed by opening doors e.g., from an accessible toilet [PM_30_10_22]
- c) exclude Net Area required for lockers to a minimum depth of 0.6m on one or both sides [PM_30_10_22]
- d) exclude other Net Area immediately adjacent to the circulation route, including open-plan areas, the space in front of reception desks and space for coat hooks or wheelchair storage, to the minimum width specified in the College-specific ADS [PM_30_10_22]

2.3.3.18 Minimum circulation widths including allowance for lockers or coats and bags storage shall be as shown in Table 3. [PM_30_10_22]

College	No lockers (mm)	Lockers on one side (mm)	Lockers on both sides (mm)
Colleges with Teaching Spaces off one side of circulation	1900	2500	3100
Colleges with Teaching Spaces off both sides of circulation	2400	3000	3600

Table 3 Minimum widths of Main Circulation Routes (mm)

2.3.3.19 The circulation in New Buildings and Remodelled Area shall:

- a) allow for increased traffic flow at the entrances to stairways, large spaces and indoor catering areas such that congestion is avoided at peak times [PM_10_20]
- b) allow for corridor doors to be held open to provide the required opening width, as specified in Technical Annex 2D. [PM_10_20_90]

2.3.3.20 In New Buildings and Remodelled Area, secondary circulation routes leading from a main circulation route to habitable spaces shall have a minimum clear width of:

- a) 1.2m where there is an access route through a space to another room and a 'strip' of circulation is discounted from the usable Net Area of the space [PM_30_10_22]
- b) 1.2m if leading to one or two spaces totalling up to 60m² or less [PM_30_10_22]
- c) 1.5m if leading to a Department that only includes learning resources, staff, administration, or storerooms less than 45m² each [PM_30_10_22]
- d) 1.8m in a non-ambulant Special College. [PM_30_10_22]

2.3.3.21 Where lifts are provided, the clear landing dimensions required by AD M at each level shall not reduce the minimum width requirements for circulation within the lift's vicinity, and internal finishes shall be suitable for public use. [PM_10_20_90]

2.3.4. Departmental Space Allocation (Department)

2.3.4.1 Projects shall provide the Spaces identified in Annex 1B in Departments, unless specified otherwise in the CSB. [PM_10_20_90]

2.3.5. Practical Teaching Facilities

2.3.5.1 Practical Teaching facilities shall comprise Practical Teaching Spaces listed in Annex CS1 which shall be serviced, as identified in Annex 1A. [PM_10_20_90]

2.3.5.2 Practical Teaching Spaces in New Buildings and Remodelled Area shall have the shape and proportions to allow flexibility in the range of possible FF&E layouts. [PM_10_80]

2.3.5.3 Practical Teaching Spaces provided shall have enough space around FF&E for students to work safely, according to the requirements of Technical Annex 3. [PM_10_20_90]

2.3.5.4 Practical Teaching Spaces shall be designed to meet requirements in Annex CS1 and to support safe practices. [PM_10_80]

2.3.5.5 Practical Teaching facilities shall include the following support spaces, unless specified otherwise in Annex CS1:

- a) Teaching stores (additional to storage in furniture in the room itself) adjacent to the Practical Teaching space, for resources and (where specified in Annex CS1) for work in progress [SL_90_50_87]
- b) Preparation/storage rooms to service science, and vocational spaces.[PM_10_80]

- c) Learning resource spaces such as kiln rooms (kilns shall not be in the teaching space itself) and small group rooms. [PM_10_80]

2.3.5.6 Practical Teaching Spaces provided in vocational curriculum for example Motor Mechanics, shall have Local Exhaust Ventilation, in accordance with the requirements of Technical Annex 2F on Local Exhaust Ventilation (LEV) systems and Annex CS1.

[Ss_65_40_33_48]

2.3.5.7 Departments provided for science shall have centrally positioned preparation room(s) on each floor, facilitating the convenient delivery of hazardous materials and to reach all science teaching spaces. [SL_25_80_75]

2.3.5.8 The location of preparation room(s) shall not limit the adaptability of vocational spaces (for example laboratories). [SL_25_80_75]

2.3.5.9 Separate, secure storage shall be provided for hazardous chemicals and other dangerous material, in a dedicated store adjacent to and accessed from preparation rooms.

[SL_90_50_13]

2.3.5.10 Storage for D&T or engineering workshops provided shall be in a preparation room designed such that materials can be delivered, stored and cut to size safely.

[SL_25_80_22]

2.3.5.11 The preparation room for D&T or engineering workshops shall be located to allow easy and level access to the Practical Teaching Spaces it serves. [SL_25_80_22]

2.3.6. Practical Teaching Facilities (SEN Provision)

2.3.6.1 Practical Teaching facilities shall be designed to suit the range of SEND at the College. [PM_10_20]

2.3.6.2 Where there are students working to a mainstream curriculum, the Practical Teaching Spaces shall require services and specialist furniture and equipment. [PM_10_20]

2.3.6.3 Practical Teaching Spaces shall have the flexibility to accommodate identified specialist equipment where necessary; and be adaptable for use with other equipment in the future. [PM_10_20]

2.3.7. Auditorium, Lecture and Performance Facilities

2.3.7.1 In any Whole College Project, an Auditorium or lecture theatre, that may form part of a performance suite, shall be provided. It shall be easily reached from the main entrance and reception, catering and kitchen suite and other support spaces. [PM_10_20]

2.3.7.2 Lecture and Performance Spaces shall be delivered in accordance with the CSB. [PM_10_20_90]

2.3.7.3 Large spaces shall accommodate the maximum occupancy given in Annex CS1 and the range of activities listed in Annex 1A. [PM_10_20_90]

2.3.7.4 Any Auditorium or Lecture theatre and associated support spaces shall include, unless specified otherwise in Annex CS1:

an auditorium or lecture theatre will have retractable bleacher seating and a floor-level performance area, unless a floor level seating area and a permanent raised stage area, or permanent tiered seating, is specified in the CSB. [SL_40_60_05] or [SL_25_10_47]

storage spaces for equipment including chairs and tables. [SL_90_50]

an adjacent lighting and audio control space which provides a view over the performance area and, if accessed from within the auditorium or lecture theatre, is accessible when the bleacher seating is retracted. [SL_40_65_47]

2.3.7.5 The auditorium or lecture theatre shall accommodate the maximum occupancy given in Annex CS1 and the range of activities listed in Annex 1A including performance, assembly and exams. [PM_10_20_90]

2.3.7.6 The auditorium or lecture theatre shall:

- a) be located so that the route to the hall is clear for visitors attending in order to aid wayfinding and maintain security. [SL_40_60_05] or [SL_25_10_47]
- b) be zoned to allow for efficient heating and lighting systems, and to ensure security when other areas are not in use. [SL_40_60_05] or [SL_25_10_47]
- c) be located such that large scale sets produced in the art and/or DT facilities can be easily brought into the hall [SL_40_60_05] or [SL_25_10_47]
- d) have appropriate sanitary provision including accessible facilities, in close proximity and in the same zone for easy access for events. [SL_40_60_05] or [SL_25_10_47]

2.3.8. Catering, Café and Kitchen Facilities

2.3.8.1 The areas of space(s) provided for catering shall be as identified in Annex CS1 and shall be designed to accommodate the catering arrangements of the College set out in the CSB. [PM_10_20_90]

2.3.8.2 Catering, Café and Kitchen Spaces shall be delivered in accordance with the CSB and designed to accommodate the range of activities listed in Annex 1A. [PM_10_20_90]

2.3.8.3 Catering, Café and Kitchen Spaces shall accommodate the maximum occupancy given in Annex CS1 for the range of activities listed in Annex 1A. [SL_40_20_43] and SL_35_60_14

2.3.8.4 The design shall be developed to ensure that circulation adjacent to the catering facilities is sufficient to provide communal areas to support the waiting and arrival of building users to the large spaces. [PM_10_80]

2.3.8.5 The catering and café facilities shall be designed to facilitate the requirements for distribution of food and goods to these spaces from the goods delivery point and any primary catering kitchens. [PM_10_80_75]

2.3.8.6 A specialist consultant shall be appointed for the design of the kitchen, catering and café facilities and associated areas including office, toilets, changing and staff areas where the spaces are not defined as shell and core. [SL_35_60_14]

2.3.8.7 A specialist consultant shall be appointed to liaise with the College (and its catering providers) to determine the specific requirements associated with the works. This shall incorporate coordination with the full suite of FE-OS documentation. [SL_35_60_30]

2.3.9. Sports Facilities

2.3.9.1 Sports spaces shall be delivered in accordance with the CSB. [PM_10_20_90]

2.3.9.2 Sports spaces shall accommodate the maximum occupancy given in Annex CS1 to meet the range of activities listed in Annex 1A and 1B. [PM_10_20_90]

2.3.10. Administration Facilities

2.3.10.1 Administration spaces shall be delivered in accordance with the CSB. [PM_10_20_90]

2.3.10.2 Administration spaces shall accommodate the maximum occupancy given in Annex CS1 and the range of activities listed in Annex 1A. [PM_10_20_90]

2.3.11. Library, Learning Resource Centre and Informal Breakout Spaces.

2.3.11.1 Where identified in the CSB, these spaces shall be provided additional to learning resource areas (e.g., small group rooms) and located to suit the range of vocational studies. [SL_25_75]

2.3.11.2 These spaces shall be designed:

- a) to accommodate formal and informal learning including individual study (using ICT and printed material) and reading [SL_25_75]
- b) such that the location and number of data points is as indicated in Section 4 and the CSB. [PM_10_20_90]

2.3.12. SEND, Medical and Therapy Spaces

2.3.12.1 These Spaces shall be delivered in accordance with the CSB. [PM_10_20_90]

2.3.12.2 These Spaces shall accommodate the maximum occupancy given in Annex CS1 and the range of activities listed in Annex 1A. [PM_10_20_90]

2.3.12.3 Medical and therapy facilities and support spaces shall be provided for SEND to include a SEN therapy medical treatment room and a SEND resource base and/or other small group rooms as required in Annex CS1 for small group and individual support work with students with SEND. These spaces should be located for easy access whilst maintaining privacy. [PM_10_20]

2.3.12.4 Medical treatment rooms shall be designed for the medical examination and treatment of students to enable therapy activities, when not required for its primary function. It shall include a sink. [SL_35_10_53]

2.3.12.5 The design shall include where identified in the CSB, in addition to the above:

- a) at least one therapy room for visiting therapists to see students and to carry out administrative tasks, with an equipment store and an accessible toilet/hygiene room nearby [SL_35_10_88]

2.3.12.6 Provision shall be made for any additional spaces required in Annex CS1 or the CSB, which may include:

- a) a further therapy room (for instance for physiotherapy) which shall have an accessible toilet/changing room nearby [SL_35_10_88]
- b) a quiet calming space (room) which provides a quiet place, with materials, fittings and finishes chosen to safeguard against self-harm [SL_35_50_69]
- c) a medical treatment (nurse's room) which provides a hygienic environment and includes secure and appropriate storage for medicines. [SL_35_10_53]
- d) a life skills training room for learning cooking and washing in a domestic environment for independent living. [SL_25_40_42]
- e) an office for the Special Educational Needs Coordinator (SENCo). [SL_20_15_59]
- f) a meeting room for parents and students for transition assessments and multi-agency meetings. [SL_20_15_50]

2.3.13. Non-Teaching Storage

2.3.13.1 Central and secure lockable stores shall be provided where required in Annex CS1, for instance for students' records. [SL_90_50]

2.3.13.2 These Spaces shall be delivered in accordance with the CSB. [PM_10_20]

2.3.13.3 These Spaces shall support storage for range of activities listed in Annex 1A and 1B. [PM_10_20_90]

2.3.13.4 Storage for examination papers shall be secure and meet relevant exam board criteria (Joint Council for Qualifications (JCQ) or equivalent). [SL_90_50_77]

2.3.13.5 Storage for gases associated with medical and vocational requirements shall be:

- a) close to its point of use with clear access for delivery [SL_55_20_34]
- b) clearly marked, ventilated in accordance with current safety standards, lockable and not vulnerable to vandalism [SL_55_20_34]
- c) located at ground level, not underground (for example in a basement) [SL_55_20_34]
- d) fitted with outward opening doors. [SL_55_20_34]

2.3.13.6 Specialist advice shall be obtained on the use and storage of gas cylinders where provided. [SL_55_20_34]

2.3.14. Toilets

2.3.14.1 The requirements for toilets stated in Annex 2A shall be met in addition to the following requirements:

- a) The toilets shall be designed and fitted out to a standard that ensures privacy and discourages anti-social behaviour (including by use of mobile phone cameras) and vandalism. [SL_35_80_89]
- b) On each floor, at least one of the toilets (not including accessible toilets) shall be designed and located so that it can be identified as a single person toilet directly accessed off circulation for use by all building users whilst ensuring their privacy. [SL_35_80_89]
- c) Accessible toilet and hygiene facilities shall be conveniently dispersed around the College, with suitable way-finding and clear sightlines. [PM_10_20]

2.3.14.2 The following additional requirements shall be provided in relation to toilet facilities within a college with SEN provision or where there is a Designated Unit, to meet the particular needs of the students and the College's specified approach to managing toileting arrangements, as outlined in the CSB:

- a) There shall be sufficient hygiene rooms, each with enough space for staff to assist and a range of sanitary equipment to suit the mix of students' disabilities. [SL_35_80_39]
- b) There shall be a toilet facility available on arrival into the College Building. [SL_35_80_89]
- c) A unisex accessible toilet shall be provided close to the main entrance to allow a carer of either sex to provide assistance. [SL_35_80_03]
- d) There shall be a self-contained laundry to support the hygiene facility, where specified in Annex CS1. [SL_30_60_47]

2.3.15. Entrances and Circulation

2.3.15.1 The layout of New Buildings shall be clearly organised and work efficiently to enable ease of circulation for building users and to aid orientation and ease of movement to external areas, particularly in the event of an emergency. This shall be enhanced through the design of the Building and not just rely on signage. [PM_10_20]

2.3.15.2 The following requirements shall be met:

- a) The main entrance shall be clearly defined, accessible and secure in line with the Security Strategy and as defined in the CSB. [PM_10_20_90]
- b) The Buildings shall provide shelter at principal entrances in line with AD M. [PM_10_20_90]
- c) All building entrances shall have a draft lobby. [PM_10_80]
- d) Corridors shall be as defined in Section 2.3.3: Dimensions and Proportions. [SL_90_10_15]
- e) Stairways shall meet the requirements of Section 2.6.5: Internal Stairs and Balustrading (Guarding). [SL_90_10_87]

2.3.15.3 All spaces, except plant and service voids, are to be fully accessible in new build projects. In refurbishment schemes, the building users shall be able to access every type of space in the buildings, to ensure that they have full access to the curriculum. [PM_35_50_01]

2.3.16. Visual Connectivity

2.3.16.1 New Buildings and Remodelled Areas shall provide visual connectivity between spaces as defined in the CSB. Internal glazed screens within New Buildings shall be provided to:

- a) staff work rooms and offices, as set out in Annex 2D. [PM_10_80_75]
- b) teaching or learning spaces. [PM_10_80_75]

2.4. External Space and Grounds

2.4.1. Overview

2.4.1.1 The landscape design shall ensure that external spaces provided are as listed in Annex CS1 and meet the requirements in Technical Annex 2B and the requirements within this section and the CSB. [PM_10_20_90]

2.4.1.2 In a Whole College Project on a new or existing Site, the site layout shall be designed to:

- a) provide a safe and attractive environment for the student cohort, offering a variety of different settings for sports, outdoor teaching, social and recreational activities to meet the curriculum of the college [PM_10_80]
- b) provide secure areas relative to the needs of the different age ranges and needs of students to meet the College's safeguarding policies [PM_10_80]
- c) provide facilities for physical and non-physical activities to meet students' needs [PM_10_80]
- d) maximise opportunities for passive supervision, making positive use of overlooking, interaction and encounters with staff and other students [PM_10_80]
- e) take account of climate change adaptation measures in planning transitional and external spaces, to reduce internal temperatures and provide outdoor shelter (transitional spaces include unheated atria, covered walkways, covered verandas, and porches). [PM_40_20_85]

2.4.1.3 Where any outdoor spaces required are to be sheltered, this can be provided by suitable vegetation as well as by structures. [SL_25_10_61] and [SL_40_20_59]

2.4.2. Typical Organisation

2.4.2.1 In any Whole College Project, the following types of outdoor space shall be included, to accommodate the formal curriculum and the informal and social activities of students, as outlined in the CSB:

- a) Outdoor Sport Facilities including hard surfaced areas marked out for games such as netball and tennis, and soft surface sports pitches to meet the College needs. [SL_42_15]
- b) Informal and Social Areas, including soft grassed/planted areas, hard surfaced recreational space and areas for formal learning activities to meet the College needs. [SL_40_55]
- c) Habitat Areas, including supervised spaces and resources for teaching and learning to meet the College's curriculum needs [SL_32_80]
- d) Non-Net Site Areas such as access areas (including emergency access), cycle routes, roads, delivery areas, and bin storage areas, drop-off and parking. [SL_80_35_20], [SL_80_35], [SL_50_40_72], [SL_90_10_24], [SL_80_45_01] and [SL_80_45_59]

2.4.2.2 In any Partial College Project, outdoor space shall be provided:

- a) to ensure appropriate access to the Buildings included in the Works, as defined in Section 2.2.3: Site Access [SL_80_35_63]
- b) to replace or relocate any outdoor spaces or facilities affected or removed due to the proposed Works, including equipment and outbuildings [SL_40_55]
- c) to deliver an Early Years Outdoor Class Space adjacent to any Early Years classrooms provided where required in the RSoW. [SL_25_10_61]

2.4.2.3 The design and layout of external areas shall follow the hierarchy of outdoor sports facilities identified in the CSB. [PM_10_80]

2.4.2.4 The design and layout of external areas shall provide for any facilities identified in the CSB for students with SEN, especially in specialist Colleges. [PM_10_80]

2.4.3. Outdoor Sports

2.4.3.1 Hard-surfaced areas for games courts, and adjacent or overlapping skills practice areas, shall accord with any requirements identified in Technical Annex 1C and the CSB. [SL_42_15_59]

2.4.3.2 Where several courts are provided, these shall be combined, wherever possible, into multi-use games courts. These shall have appropriate dimensions to suit a wide range of sports, as set out in Technical Annex 1B. [SL_42_15_55]

2.4.3.3 Where the CSB requires some sports to have a higher priority, this shall affect the markings and dimensions required. [SL_42_15_59]

2.4.3.4 Grass areas for pitches, athletics and multi-purpose sport shall meet the requirements in Technical Annex 1C and the CSB, and:

- a) have sufficient pitch margins built into the design to ensure user safety and allow for some pitch locations to be moved annually to reduce wear [SL_42_15]
- b) be designed and constructed to a standard that allows the use specified in the CSB for the College's year-round curriculum needs [SL_42_15]
- c) be economic to maintain, with easy access for maintenance equipment (and for irrigation if needed) [SL_42_15]
- d) be located and orientated to suit the activities [SL_42_15]
- e) Sport England requirements to be further considered as part of the college environment. [PM_10_20_90]

2.4.3.5 The choice of surface for any artificial grass pitches provided shall be as specified in Technical Annex 1C and based on performance, safety and durability, through:

- a) the properties best suited to the types of games to be played, such as 'ball bounce' [SL_42_15_04]
- b) slip resistance and abrasiveness [SL_42_15_04]
- c) wear resistance [SL_42_15_04]
- d) ease of maintenance. [SL_42_15_04]

2.4.3.6 Best practice for sub-structure preparation, cultivation, topsoil storage and placement, and for the alleviation of compaction during construction, shall be followed for all areas to be grassed. [SL_42_15]

2.4.3.7 Any grassed areas provided for sport shall be capable of sustaining both summer and winter pitches and overlapping summer pitches, such as cricket and rounders, and athletics facilities such as running tracks. [SL_42_15]

2.4.3.8 Specialist advice shall be sought, for example an Agronomist, to ensure an adequate pitch construction is provided. [PM_10_20]

2.4.3.9 If new or extended pitches are provided to replace existing, they shall be designed and drained to be 'like for like'. [PM_10_20]

2.4.3.10 Pitches and courts that are going to be used by the community shall be sized in accordance with the relevant parameters detailed within Sport England 'Comparative Sizes of sports Pitches and Courts (Outdoor)'. [PM_10_20_90]

2.4.3.11 Pitches and courts that are going to be used by the community shall allow after-hours access in accordance with any requirements in the CSB and any planning requirements. [SL_42_15]

2.4.3.12 Where any existing outdoor sports facilities are used by the community, the existing support facilities shall be retained, such as parking, access routes and lighting. [PM_10_20]

2.4.3.13 New or additional facilities including floodlighting shall be provided where required in the CSB. [PM_10_20_90]

2.4.4. Hard and Soft Informal and Social Areas

2.4.4.1 Any informal and social areas provided shall cater for students according to their needs. [SL_40_55]

2.4.4.2 The following areas shall be provided and as required by the CSB:

- a) A formal hard sports court, marked out for activities such as informal team games, with an enclosed area if ball games could cause harm to people in adjacent spaces. [SL_42_15_59]
- b) Areas of shade for summer months which can be achieved through several existing mature tree canopies or a permanent shade structure which covers a similar area to the tree canopy. [SL_40_55]
- c) Where Early Years is provided on a site, Outdoor Class Spaces for Nursery class pupils, with direct access from classrooms or playrooms. [SL_25_10_61]
- d) Supporting hard informal and social areas where required in the CSB, or where already provided in a Whole College Project, such as outside teaching space or outdoor dining space. [SL_40_55_36]

2.4.4.3 External spaces shall be laid out to avoid bullying and anti-social behaviour. [PM_10_80]

2.4.4.4 Outdoor social areas shall be located so that activities do not disturb teaching in ground floor teaching spaces or in outdoor areas directly outside classrooms. [PM_10_80]

2.4.4.5 Any outdoor FF&E provided shall be positioned for ease of access and supervision, and to minimise the risk of theft and vandalism. [PM_10_80]

2.4.4.6 The specification and location of seating in social areas shall enable use by building users with physical disabilities, to align with the aspiration of the College to consider the public realm. [PM_10_20]

2.4.5. Habitat Areas

2.4.5.1 Suitable outdoor spaces shall be included to provide various resources across the site in accordance with any areas identified in the CSB, depending on the College's requirements and the natural opportunities for greening of the estate. [SL_32_80]

2.4.5.2 Habitat areas (including meadowland, wildlife habitats, ponds, gardens and outdoor science areas) shall be fenced, such that they can only be accessed by students when supervised. [SL_32_80]

2.4.5.3 A portion of the habitat area shall not be developed but provide a framework to allow the College to develop parts of their grounds gradually in the future, with the participation of students. [SL_32_80]

2.4.5.4 Any planted areas shall as a minimum conserve (and enhance) biodiversity and be designed to allow site management without the use of hazardous pesticides. [SL_32_80]

2.4.6. Paths, Roads and Delivery Areas

2.4.6.1 The design shall ensure that:

- a) any access roads and turning areas provided are of a width and geometry to ensure easy and safe access to all vehicle parking areas and delivery points without risking the safety of building users and visitors to the Site [SL_80_35]
- b) any pedestrian routes and cycle routes provided are clearly distinguished from vehicular access routes, and that they are obvious, well-lit and visible, with clear lines of sight [SL_80_35_63]
- c) paths used for both pedestrians or cyclists are adequately dimensioned, and marked to show a separation [SL_80_35_63]
- d) account is taken of any local requirements specified in the CSB. [SL_80_35]

2.4.6.2 In Whole College Projects or where required as part of a Partial College Project, access and turning facilities shall be provided to suit delivery and refuse vehicles, buses and cars for building users. [PM_10_20]

2.4.6.3 Appropriate advice shall be sought in respect of road widths, turning radii and construction from the relevant statutory bodies. [PM_10_20]

2.4.6.4 Roadways shall be arranged to eliminate reversing movements in the vicinity of students. [SL_80_35]

2.4.7. Drop-off and Bus Turn-around Provision

2.4.7.1 Where required as part of a whole or partial college development, the design shall ensure that:

- a) a clear drop-off point is provided at the main entrance area that is acceptable to Highways and Planning Authorities [SL_80_10_94]
- b) the boarding and disembarkation of buses are sited away from other traffic movements [SL_80_10_94]
- c) any pickup/drop off area is visible from the highway to enable drivers to estimate whether there is space for them to enter [SL_80_10_94]
- d) car parking and the pick-up/drop off area are not the main features of the vista of the Site. [SL_80_10_94]

2.4.7.2 Whole College Projects for SEND, or a College with a Designated Unit, shall have dedicated vehicle drop-off areas of a size and location to meet the College's arrangements set out in the CSB. [SL_80_10_94]

2.4.7.3 Non-ambulant Specialist Colleges shall have covered access from the vehicle drop-off place to the students' entrance. [SL_80_10_94]

2.4.8. Cycle Storage and Parking

2.4.8.1 Any cycle storage and parking areas shall be designed so that:

- a) cycle storage is easily accessible to cyclists without crossing vehicular routes wherever possible and includes a means of securing bikes [SL_90_50_17]
- b) cycle storage is located close to showering facilities where possible. Showers to be provided as defined in the CSB [SL_90_50_17]
- c) parking is segregated from other traffic movements [SL_80_45_59]
- d) the number of parking spaces shall be minimised meeting any planning requirements and any other requirements specified in the CSB [SL_80_45_59]
- e) separate bays are provided for disabled users and visitors. [SL_80_45_01]

2.4.9. Outbuildings and Enclosures

2.4.9.1 External storage shall be provided, in simple, secure outbuildings giving protection from weather and wildlife, for the following:

- a) External sports equipment, near to outdoor sports facilities if listed in CS1 and ADSs [SL_90_50_82]
- b) Examination furniture, where required in the CSB [SL_90_50_32]
- c) Waste materials, including facilities for separation and recycling [SL_90_50]
- d) External maintenance equipment [SL_90_50]
- e) Combustible waste materials, securely located in accordance with relevant legislation. [SL_90_50]

2.4.9.2 Secure storage for goods and waste awaiting collection shall be positioned at least 10m from the outer walls of the Building or adjacent premises in a location that does not obstruct sightlines for pedestrians, drivers or cyclists and which negates the need to impede footpaths or roadways with temporary storage of bags or containers. [SL_90_50]

2.4.9.3 Where it is not possible to locate the secure storage 10m from the outer walls of the Building or adjacent premises, the design shall still comply with the fire safety management responsibilities of the Regulatory Reform (Fire Safety) Order 2005. [PM_10_20_90]

2.4.9.4 Any existing outbuildings or external storage used by the College that are affected by the Works shall be relocated or re-provided as part of the Works. [SL_90_50]

2.4.9.5 In Whole College Projects or where required as part of a Partial College Project, simple, secure enclosures giving protection from weather and wildlife, shall be provided for any plant. [SL_90_90]

2.4.10. Groundworks and Surfacing

2.4.10.1 A detailed soil condition analysis shall be undertaken of the areas to be used for outdoor Sport to enable provision of pitches capable of sustaining both summer and winter use. [PM_30_20_33]

2.4.10.2 Specialist advice shall be sought to ensure an adequate pitch construction is provided. [PM_10_20]

2.4.10.3 Any hard-surfacing materials used shall meet the standards relevant to the proposed use. [PM_10_20_82]

2.4.10.4 Refer to Technical Annex 1C and 2B for suitable surfacing options for different external contexts. [PM_10_20_90]

2.4.11. Fencing, Balustrading and Guarding

2.4.11.1 Any fencing provided shall meet the standards relevant to the proposed use included in Technical Annex 1C. [PM_10_20_90]

2.4.11.2 Refer to Technical Annex 2B for suitable fencing options for different external contexts. [PM_10_20_90]

2.4.11.3 All external guarding provided shall meet the requirements of AD K and BS 6180:2011 'Barriers in and about buildings'. See Section 8.4 in Technical Annex 2B. [PM_10_20_90]

2.4.12. Minimum Life Expectancy

2.4.12.1 The Minimum Life Expectancy requirements set out in Table 4 shall be met. [PM_35_10_47]

Element	Element Name	Minimum Life Expectancy (Years)
External Space	Roads and paving	40
External Space	Fencing	15
External Space	Hard Surfaced Social areas	20
External Space	External Furniture	10
External Space	Door Barriers	20

Table 4 Minimum Life Expectancy for external space

2.5. External Fabric

2.5.1. General Requirements

2.5.1.1 The design of both New Buildings and Renewed elements in Refurbished Buildings shall meet the requirements in this section and Technical Annex 2C. [PM_10_20_90]

2.5.1.2 The external fabric and structure shall meet the following requirements:

- a) Robust materials and finishes are used that are resilient and durable and provide protection against potential malicious or physical abuse.

[PM_35_10_25]

- b) Fabric First principles are followed, through minimising the use of all resources, reducing the demand for energy and water use during the Works Period and in use, minimising waste and carbon dioxide emissions during the Works Period and in use, achieving low elemental U-values through insulation optimisation, and maximising air tightness. [PM_35_10_60]
- c) Products and materials are used that comply with The Montreal Protocol and with British Standards or equivalent European industry standards as amended. [PM_10_20_90]
- d) Designs are certified by an independent structural engineer and meet the requirements of Building Regulations AD A and BS EN Standards. [PM_10_20_90]
- e) Certification is provided that the design has been carried out in accordance with Structural Engineering Eurocodes, their relevant National Annexes and the design recommendations in Annex A of BS EN 1991-1-7:2006. [PM_10_20_90]
- f) For structurally insulated panel systems and other large panel wall systems, certification is required for:
 - 1) hollow core beams spanning onto wall panels [PM_10_20_82]
 - 2) prevention of progressive collapse for a Type iib building [PM_10_20_82]
 - 3) means of support for services to be fixed to timber roof cassettes. [PM_10_20_82]

2.5.1.3 Products and materials shall not be specified that:

- a) are known within the UK and/or European Union at the time of specification to be deleterious to the environment, and/or health and safety, or diminish the durability of other structures, finishes, plant and/or machinery [PM_10_20_82]
- b) are on the lists of banned materials available from the European Commission's Enterprise and Industry website (https://ec.europa.eu/commission/index_en) or the Health and Safety Executive (www.hse.gov.uk) website [PM_10_20_82]
- c) contain substances that deplete the ozone layer, as identified by the United Nations Development Programme. [PM_10_20_82]

2.5.1.4 All materials shall be selected with due regard to their suitability for purpose and performance, durability, safety and hygiene, ease of maintenance and repair, resistance to accidental or malicious damage and to their environmental impact. [PM_10_20_82]

2.5.1.5 Materials shall take account of local requirements or planning conditions specified in the CSB. [PM_10_20_82]

2.5.1.6 Robust materials and finishes shall be used that stand up well to the heavy use typical of a College and the prevailing weather conditions. [PM_35_10_25]

2.5.1.7 The possibility of damage including the wear and tear caused by Mobility Equipment shall be mitigated. [PM_35_10_25]

2.5.1.8 The effect that colours, patterns and textures can have on building users shall be considered. [PM_10_20_82]

2.5.2. Roofs

2.5.2.1 Any roof system and associated rainwater goods provided shall meet the following requirements:

- a) Flat roofs are capable of being overlaid, over-coated, upgraded or Replaced without difficulty and without adversely affecting the deck below. [PM_10_20]
- b) Roof construction and design addresses movement, compatibility of components and lightning protection. [PM_10_20]
- c) Appropriate measures are taken to deter animals or birds from sheltering under overhanging eaves and canopies. [PM_10_20]
- d) Rainwater pipes are detailed and arranged so that they prevent climbing, are easy to maintain, have uniform finishes and do not show signs of oxidation on their external surfaces at completion, and are robust enough to withstand accidental damage (for instance from ladders) during maintenance works, as well as vandalism. [PM_10_20]
- e) Safe access measures are permanent, and form part of the design. [PM_10_20]

2.5.2.2 Plant shall not be located on roofs or on exposed plant decks unless it is enclosed and protected from severe weather and shall be in accordance with Technical Annex 2F and any local requirements or planning conditions specified in the CSB. [PM_10_20_90]

2.5.3. External Walls

2.5.3.1 External walls shall be constructed to be secure, robust, vandal resistant and suitable for use in their proposed location. [PM_35_10_25]

2.5.3.2 Materials selected shall require minimal maintenance and periodic cleaning to avoid future disruption to the College. [PM_80_10_50]

2.5.3.3 Where external walls are provided in areas subject to vehicle movement, they shall incorporate additional measures to protect the façade from damage. [PM_35_10_25]

2.5.4. External Doors and Windows

2.5.4.1 The positions of external doors, windows and vents shall be coordinated with the ventilation strategy and shall be in accordance with Technical Annex 2F. [PM_10_20_90]

2.5.4.2 The positions of external doors, windows and vents shall ensure compliance with Technical Annex 2E. [PM_10_20_90]

2.5.4.3 Measures shall be taken to reduce the effects of direct sunlight and glare through external glazing to satisfy the requirements outlined in Technical Annex 2E. [PM_10_20_90]

2.5.4.4 Ironmongery, shading and ventilator actuators shall be robust, tamper-proof and be easy to operate from floor level. [PM_35_10_25]

2.5.4.5 Any specific requirements for ironmongery for SEN identified in the CSB shall be met. [PM_10_20]

2.5.4.6 Windows, vents and shading shall be designed and constructed to:

- a) provide sufficient light and natural ventilation (or supplement other ventilation as required) [PM_10_20]
- b) be of a type that does not create a noise nuisance [PM_10_20]
- c) take account of the acoustic requirements and have regard to local acoustic conditions [PM_35_60]
- d) be safe in closed or open positions, and not be hazardous to persons passing by windows internally or externally [PM_35_50]
- e) be safe in operation [PM_35_50]
- f) prevent building users from falling out at all levels [PM_35_50]
- g) require minimum maintenance to avoid future disruption to the College [PM_80_10_50]
- h) not compromise the security of the Building. [PM_10_20]

2.5.4.7 External doors provided shall:

- a) be robust enough to withstand the heavy use typical of a College, require minimal maintenance, be weatherproof, and maintain the safety and security of the facility [PM_35_10_25]

- b) be vandal-resistant and incorporate appropriate controls and/or fittings to discourage misuse, but afford safe operation and adequate security [PM_35_10_25]
- c) allow disabled access, including access for motorised electric wheelchairs [PM_35_50_01]
- d) have locking requirements that are appropriately suited such that the number and complexity of lock suiting is minimised. All such proposals are to be agreed with the College and Employer during the CEM process. [PM_10_20]

2.5.4.8 External doors and windows shall comply with BB93. [PM_10_20_90]

2.5.5. Minimum Life Expectancy

2.5.5.1 The Minimum Life Expectancy requirements set out in Table 5 shall be met for any external fabric provided. [PM_35_10_47]

Element	Element Name	Minimum Life Expectancy (Years)
Structure	Foundations	50
Structure	Slab	50
Structure	Walls	50
Structure	Upper floors	50
Structure	Roof structure	50
Structure	Structural frame	50
Structure	Stairs	50
Underground drainage	Pipes, inspection chambers	60
External envelope	Roof covering	30 years and easily overlaid, over-coated, upgraded or replaced without affecting the roof structure below

Element	Element Name	Minimum Life Expectancy (Years)
External envelope	External walls / cladding	40
External envelope	Windows and external doors	25
External envelope	Rooflights	25
Rainwater disposal installations	Rainwater pipes, hoppers and gutters	25
Canopies	Frame and roof covering	20

Table 5 Minimum Life Expectancy for external fabric

2.6. Internal Elements and Finishes

2.6.1. General Requirements

2.6.1.1 The design of any internal elements and finishes shall meet the requirements in Technical Annex 2D, to assess, measure and mitigate the following:

- a) The acoustic performance of internal elements and finishes in an integrated way and shall satisfy Building Bulletin 93: 'Acoustic design of schools – performance standards' (BB93) and clause 2.7.7. [PM_35_60]
- b) Safety and hygiene including specific focus on SEND provision. [PM_10_20]
- c) To prevent surfaces, fabric and fittings from being damaged by accidental and deliberate impact from teaching, maintenance and Mobility Equipment. [PM_35_10_25]
- d) The effect that colours, patterns and textures have on building users. [PM_10_20]
- e) The higher risk of harm and infection for the most vulnerable. [PM_10_20]

2.6.2. Internal Walls

2.6.2.1 The finishes of all internal walls, including the internal face of external walls, shall be adequately protected from damage. [PM_10_20]

2.6.3. Internal Doorsets

2.6.3.1 The materials and finishes used for new internal doorset shall be:

- a) suitably robust for normal college use and perform their necessary protective and decorative functions [Ss_25_30_20_25]
- b) from sustainable sources, and able to be recycled at the end of the product's life [Ss_25_30_20_25]
- c) suited to the capability of the user (in terms of dexterity, strength and visual acuity) in accordance with AD M [Ss_25_30_20_25]
- d) non-reflective so as not to affect those with visual impairments and limit their ability to use the doorset, in accordance with AD M. [PM_10_20_90]

2.6.3.2 Measures shall be in place to prevent damage to faces and edges of doors. [Ss_25_30_20_25]

2.6.3.3 New doors shall be wide enough to allow Mobility Equipment access (where specified in Annex CS1), with good visibility maintained on both sides of the door. [Ss_25_30_20_25]

2.6.3.4 Vision panels, as required in Technical Annex 2D, shall be fitted in all door leaves wider than 450mm, except those leaves on doorsets leading into changing rooms; plant rooms; service ducts; and storerooms. [Ss_25_30_20_25]

2.6.4. Internal Door Hardware

2.6.4.1 The following general requirements shall be met in any new doorsets or Replaced doors:

- a) Hardware shall provide functionality and performance of that doorset and not undermine the performance of the doorsets to which they are fitted. [Ss_25_38_20_20]
- b) Doors to rooms, stores etc. shall be lockable, with a suited manual key system, unless specified otherwise within the CSB. [Ss_25_38_20_20]
- c) Lock suiting shall be developed to minimise the number of suites to those considered essential to manage the access and lock down to the College. [Ss_25_38_20_20]
- d) All hardware including door closers and door seals shall take account of the ability of the building users operating the doors. [Ss_25_38_20_20]

- e) All proposals shall be agreed with the College and Employer during the CEM process. [PM_10_20]

2.6.4.2 Access control devices shall:

- a) not undermine the performance provided by the doorsets on which they are fitted [Ss_75_40_02]
- b) not inhibit escape in the case of a fire or other emergency [Ss_75_40_02]
- c) comply with relevant directives for electronic devices [Ss_75_40_02]
- d) be able to be operated by disabled users [Ss_75_40_02]
- e) offer appropriate durability [Ss_75_40_02]
- f) offer the range of functionality required [Ss_75_40_02]
- g) be repairable or replaceable [Ss_75_40_02]
- h) all lock suiting and access control proposals are to be agreed with the College and Employer during the CEM process. [PM_10_20]

2.6.5. Internal Stairs and Balustrades and Guarding

2.6.5.1 The planning and design of any stairway shall:

- a) contribute to an efficient and balanced circulation provision, with enclosed fire escape stairs being available for normal use (unless otherwise agreed with the Employer) [EF_35_10_40]
- b) take account of the effect of the staircase locations on potential future expansion [EF_35_10_40]
- c) provide fire escape stairs with a level exit directly to the outside of the Building [EF_35_10_40]
- d) minimise travel times between lessons [EF_35_10_40]
- e) minimise congestion by being sized to enable the efficient flow of students and staff, in both directions, during class changeovers [EF_35_10_40]
- f) allow carry-down evacuation for Mobility Equipment users where necessary [EF_35_10_40]

- g) assist navigation and wayfinding around the building [EF_35_10_40]
- h) be easy to find and clearly differentiated [EF_35_10_40]
- i) meet the requirements of Section 6 in Technical Annex 2D. [PM_10_20_90]

2.6.5.2 External staircases are not permitted except when refurbishing Existing Buildings, if there is no alternative, and between changes in roof level for maintenance. [PM_10_20_82]

2.6.5.3 Prevention from falling shall be addressed in the design of staircases and guarding. [PM_35_50]

2.6.6. Floor Finishes

2.6.6.1 The choice and installation of any new floor finish shall comply with the following requirements in all internal areas of the Buildings, in addition to any required in the CSB:

- a) Resilience - floor finishes shall support the FF&E listed in Technical Annex 3 and Annex CS1 and be able to withstand pedestrian traffic without deformation or permanent marking. [Ss_30_42]
- b) Resilience - floor finishes shall accommodate thermal and structural movement in both the finish and the sub-floor. [Ss_30_42]
- c) Continuity - there are minimal joints, and flush joints between different finishes. [Ss_30_42]
- d) Cleaning - the ease and frequency of cleaning is considered, as well as the level of hygiene required. [Ss_30_42]
- e) Suitability - the finish including texture and colour is suitable for the needs of students including those with SEND. [Ss_30_42]
- f) Safety - including slip resistance where specified in Technical Annex 1A, 1B and Annex CS1. [PM_10_20_90]

2.6.6.2 Barrier matting shall be provided at all external entrances. [Ss_30_42]

2.6.6.3 Server room and hub rooms shall be provided with antistatic flooring and all extraneous metal parts, including door frames, shall be electrically earth bonded. See Section 4.2. [Ss_30_42]

2.6.7. Ceilings and Soffits

2.6.7.1 The following requirements shall apply to all internal areas of New Buildings and in any Replaced ceilings:

- a) Finishes to the soffit do not compromise the thermal performance of the surface in relation to the radiant heat exchange. [Ss_30_47]
- b) Services and horizontal surfaces are accessible for cleaning. [Ss_30_47]
- c) Ceilings within toilets and changing rooms are robust, moisture resistant, easy to clean and inaccessible to building users. [Ss_30_47]
- d) Ceilings within showers, Changing Places rooms and drying areas are robust, monolithic, moisture resistant, easy to clean and inaccessible to building users. [Ss_30_47]
- e) Where equipment or plant is located within a false ceiling, a suitable, robust, permanent means of access for maintenance is provided. [Ss_30_47]
- f) Any joints or holes in precast floor systems are to be filled and sealed and left smooth. [Ss_30_47]

2.6.8. Decorations and Finishes

2.6.8.1 In all internal areas of the Buildings, decorations and finishes shall:

- a) be suitable for the activities taking place in the area, and for the age and any special needs of the occupants [PM_80_10_30]
- b) take account of safety [PM_80_10_30]
- c) be able to withstand heavy use typical of a College [PM_80_10_30]
- d) be easy to clean and maintain, such that light surface markings can be removed with warm water and a mild detergent; and such that that special cleaners and solvents are only required to remove indelible stains [PM_80_10_30]
- e) contribute to the level and quality of light in a space and ensure visual comfort, with any concrete soffits painted white, and comply with the requirements of Technical Annex 2E [PM_10_20_90]
- f) have VOC limits that comply with Schedule 2 of the 'Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations

2012', SI 1715, 2012; for example, water-borne one pack performance coatings with a maximum VOC content of 140g/l of ready-to-use product [PM_80_10_30]

g) be resilient to impact (robustness rating greater than severe) [PM_80_10_30]

h) take account of finishes in reverberation calculations. [PM_80_10_30]

2.6.8.2 Decoration and finishes shall not be left in a rough, unfinished condition following completion of the Works. [PM_10_20]

2.6.8.3 Account shall be taken of the requirements of students with SEND and all those with disabilities, such as providing suitable colour schemes, textures and contrasts on walls, floors, stairs and doors to assist those with visual impairments to orientate themselves. [PM_10_20_82]

2.6.8.4 Where building users are especially vulnerable to infection, all surfaces shall be smooth and easy to clean to minimise the collection of dust and pathogens. [PM_80_10_30]

2.6.8.5 Anti-bacterial coatings shall be provided where there are building users with health problems. Any specific requirements shall be given in the CSB. [PM_80_10_30]

2.6.9. Wayfinding and Signage

2.6.9.1 In New Buildings, the wayfinding system shall be designed to guide visitors from the Site boundary to an individual building and then a particular room, displaying only the level of information required at each decision point. [Ss_40_10_20_96]

2.6.9.2 In Whole College Projects, the main site entrance sign and external directional signage shall be provided to give wayfinding guidance to pedestrians and vehicles, especially for visitors, directing them from the site entrance (via visitor parking if arriving by car) to the main reception. [Ss_40_10_20_96]

2.6.9.3 Site signs shall give clear indications of directions for all users, including those new to the College, and shall define the purpose of the Buildings, providing reassurance and confirmation that they are moving in the right direction. [Ss_40_10_20_96]

2.6.9.4 Signs shall clearly identify assembly points, public and staff parking, externally accessed stores and plant rooms, delivery routes, restrictions and limitations, warnings and hazards etc. [Ss_40_10]

2.6.9.5 For New Buildings and Refurbished Buildings, the Contractor shall provide internal directional signage from the main building entrances and arrival points at each level (including lifts and stairs) to guide users. [Ss_40_10_20_96]

2.6.9.6 Signage shall inform people of which Department, room, facility etc. is on each floor, as well as informing them which floor they are currently on. [Ss_40_10_20_96]

2.6.9.7 Room numbering shall be provided in logical blocks, using the building layout and architecture to provide suitable sequenced areas. [PM_10_20_82]

2.6.9.8 Signs shall be provided for every room and space as agreed with the College or detailed in Annex CS1 or the CSB. [PM_10_20_90]

2.6.10. Sanitaryware

2.6.10.1 All sanitaryware provided shall meets the specification detailed in Technical Annex 2A and Annex CS1. [PM_10_20_90]

2.6.10.2 The needs of students with SEND described in the CSB shall be addressed. [PM_10_20_82]

2.6.10.3 All serviced sanitaryware shall be integrated with the artificial lighting in the Building as defined in Technical Annex 2E. [PM_10_20_90]

2.6.10.4 All serviced sanitaryware shall be integrated with the power and other systems in the Building as defined within this GDB and Technical Annex 2F and Technical Annex 2G, and it shall be clear where the responsibility lies for the various fitting and connections in each case. [PM_10_20_90]

2.6.10.5 All sanitaryware that incorporates water and drainage shall be installed to ensure hygienic conditions and the effective disposal of wastewater and all liquid waste from the College. [Ss_40_15_75]

2.6.10.6 Any sanitaryware provided shall:

- a) be manufactured from durable materials, and easy to clean and maintain [PM_35_10_25]
- b) be suitable for any special needs as detailed within the CSB [PM_10_20]
- c) meet the Minimum life Expectancy requirements in Table 6 and ensure minimum inconvenience and disruption from breakdowns, repairs and maintenance activities [PM_35_10_47]
- d) be simple in construction, to reduce maintenance and replacement costs [PM_80_10_50]
- e) for adjustable fittings, be easy to operate (but difficult to misuse), repair or replace [PM_80_10_50]
- f) be housed in such a way that it is easy to access or remove for maintenance purposes. [PM_80_10_50]

2.6.11. Minimum Life Expectancy

2.6.11.1 The Minimum Life Expectancy requirements are set out in Table 6 for any internal element provided. [PM_35_10_47]

Element	Element Name	Minimum Life Expectancy (Years)
Internal partitions	Non-loadbearing partitions	30
Internal doors	Internal doors	20
Internal ironmongery	Internal ironmongery (including finger guards)	10
Roller shutters	Internally and those within facades (including fire rated variants)	20
Internal guarding	Internal Guarding to voids, stairs and ramps	20
Finishes	Floor finishes	10
Finishes	Decorations	5
Finishes	Tiling	15
Finishes	Ceiling finishes (suspended and plasterboard)	20
Finishes	Sanitary fittings	20
Finishes	Integrated plumbing system (IPS)	15

Table 6 Minimum Life Expectancy for internal elements and finishes

2.7. Internal Environmental Conditions

2.7.1. Overview

2.7.1.1 The design of the internal environmental conditions of all spaces shall meet the requirements in Technical Annex 2E, Technical Annex 2F, Technical Annex 2G, Technical Annex 2H, Technical Annex 2I and Technical Annex 2J, Building Bulletin 93: 'Acoustic design of schools – performance standards' (BB93) and the requirements within this section. [PM_10_20_90]

2.7.2. Daylight and Electric Lighting

2.7.2.1 The quality of light provided shall support a positive teaching and learning environment. [PM_10_20_82]

2.7.2.2 Any lighting system provided shall:

- a) create a sufficient, effective and pleasant visual environment whilst minimising glare [PM_10_20]
- b) meet the needs of students with SEND as required in the CSB [PM_10_20]
- c) exploit energy saving opportunities without compromising the quality of the visual environment [PM_10_20]
- d) employ low maintenance solutions. [PM_10_20]

2.7.3. Emergency Lighting

2.7.3.1 Emergency lighting shall be delivered to the legal standards outlined in the Health and Safety at Work Act. An emergency lighting risk assessment shall be produced by the College's responsible person to inform the design team of the specific emergency lighting requirements. The Contractor shall prompt the College to provide the required detail to develop the contractors' design. [Ss_70_80_33_12]

2.7.3.2 The emergency lighting designer shall be the coordinator of all information that pertains to emergency lighting of all third parties. In addition, refer to Annex 2E Section 5. [Ss_70_80_33_12]

2.7.4. Specialist Lighting

2.7.4.1 Refer to the CSB to identify any specific lighting requirements. [Ss_70_80]

2.7.4.2 Where lighting is designed by a specialist (such as theatre lighting), the Contractor shall:

- a) provide infrastructure as required by the specialist [Ss_70_80]
- b) provide general lighting to the entire space [Ss_70_80]
- c) ensure the Contractor's design is coordinated with the specialist's design. [Ss_70_80]

2.7.4.3 All stage lighting systems shall be provided in accordance with Technical Annex 2E. [PM_10_20_90]

2.7.5. Thermal Comfort

2.7.5.1 All spaces provided shall be designed to meet the design criteria for thermal comfort set out in Technical Annex 2F. [PM_10_20_90]

2.7.5.2 All parts of New and Refurbished Buildings shall comply with the temperature requirements given in Technical Annex 2F. [PM_10_20_90]

2.7.5.3 For summertime thermal comfort, an Overheating Risk Assessment (ORA) of free running designs shall be carried out by following the procedure set out in Technical Annex 2F. [PM_10_20_90]

2.7.5.4 All heating systems shall be designed and installed to limit the maximum internal temperatures in line with Technical Annex 2F. [PM_10_20_90]

2.7.5.5 For wintertime thermal comfort, all heating systems shall be designed and installed to ensure that the minimum temperatures are in line with the design conditions set out in Technical Annex 2F. [PM_10_20_90]

2.7.5.6 All systems provided to control thermal comfort for SEND students shall be designed and installed in accordance with Technical Annex 2F and such that:

- a) they meet any specialist requirements of the students described in the CSB [PM_35_10_13]
- b) they do not have a detrimental effect on the learning environment of the students [PM_35_10_13]
- c) they provide a safe and secure environment for the occupants. [PM_35_10_13]

2.7.6. Indoor Air Quality

2.7.6.1 The indoor air quality shall be in line with Sections 5, 6 and 7 of Technical Annex 2F. [PM_10_20_90]

2.7.6.2 As required by Technical Annex 2F, systems shall be provided to monitor indoor air quality and systems shall be designed and installed to effectively control the indoor air quality within the spaces. [PM_10_20_90]

2.7.6.3 The following aspects of indoor air quality shall be effectively controlled in all spaces, in accordance with Technical Annex 2F:

- a) Odour control [PM_35_70_94]
- b) Carbon dioxide content [PM_35_70_94]
- c) Particulate and/or pollution control [PM_35_70_94]

- d) Dust, moisture and fumes [PM_35_70_94]
- e) Battery fumes [PM_35_70_94]

2.7.6.4 Dedicated local exhaust and local extract ventilation shall be provided as required by Technical Annex 2F. [PM_10_20_90]

2.7.6.5 Systems shall be provided to monitor and control the indoor air quality for SEND students and shall be designed and installed in accordance with Technical Annex 2F, such that:

- a) they consider the specialist requirements of the students as described in the CSB [Ss_75_70_54_05]
- b) there is no detrimental effect to the learning environment of the students [Ss_75_70_54_05]
- c) they provide a safe and secure environment for the occupants. [Ss_75_70_54_05]

2.7.7. Acoustics

2.7.7.1 The Contractor shall apply all the performance standards and acoustic requirements in BB93 to all spaces in FE Colleges including non-teaching spaces, temporary accommodation and refurbishment work and the college grounds. [PM_35_60]

2.7.7.2 For space types not specifically covered by BB93 the Contractor shall consult an acoustician and propose performance standards based on BB93 criteria as far as possible. The performance standards for these spaces shall be agreed with the Authority and included in Technical Annex 1A. [PM_35_60]

2.7.7.3 The design of all spaces in both New and Refurbished Buildings shall:

- a) comply with the sound insulation, reverberation time, and indoor ambient noise levels in BB93 unless agreed with the Employer [PM_35_60]
- b) comply with BB93 for speech intelligibility and STI standards in all open plan teaching areas unless alternative performance standards (APS) are proposed and agreed with the Employer [PM_35_60]
- c) consider site and internal room layouts, the provision of noise attenuation barriers and the choice of ventilation systems [PM_35_60]
- d) accommodate the needs of students with SEND such as hearing impairments or communication difficulties. [PM_35_60]

2.7.7.4 Acoustic absorption shall be provided in corridors, entrance halls and stairwells. The amount of absorption required shall be calculated according to AD E, Section 7. This describes two calculation methods (A and B) for controlling reverberation in the common internal parts of domestic buildings. Either of these methods can be used to determine the amount of absorption required in corridors, entrance halls and stairwells. [PM_35_60]

2.7.7.5 The Institute of Acoustics (IoA)/Association of Noise Consultants (ANC) guide on how to achieve the Standards in BB93 should be considered. [PM_10_20_90]

2.7.7.6 The Contractor shall liaise with the Employer on the specification of data projectors, ICT equipment, process extract and local exhaust equipment and other equipment that the College have running during teaching activities in order to limit the operational background noise levels in accordance with Section 2.21 of the IoA/ANC guide. If a College has Legacy equipment which would result in excessive background noise levels in teaching and learning spaces, the Contractor shall advise the Employer how to improve the performance of spaces, for example by fitting acoustic absorption and acoustic barriers or by providing partial enclosures. [PM_35_60]

2.7.7.7 For spaces and internal walls in Refurbished Buildings, there shall not be an entitlement to any lower performance standard than those given for refurbishment in BB93, other than in exceptional circumstances. [PM_35_60]

2.7.7.8 A full Alternative Performance Standard (APS) shall be put forward to the Employer in accordance with BB93, clearly outlining the practical implications of the suggested alternative. [PM_35_60]

2.7.7.9 Information shall be provided as described in BB93 to demonstrate compliance with the acoustic standards in Section 2 of BB93. [PM_35_60]

2.7.7.10 Information to be provided as described in BB93 to demonstrate compliance with acoustic standards shall include plans, construction details, material specifications, and calculations, as appropriate for each area of the College. [PM_35_60]

2.7.7.11 Information demonstrating compliance with acoustic standards shall be included in the acoustics section of the Environmental Strategy Report, as required in the DfE's EIR and shown on acoustics drawings and calculations for Building Control approval. [PM_35_60]

2.7.7.12 Pre-completion and post-completion testing shall be carried out in accordance with the ANC Good Practice Guide: Acoustic Testing of Schools. [PM_35_60]

2.7.7.13 For Special Colleges, Designated Units, SRP or where a need is identified in the CSB, acousticians and audiologists specialising in hearing impairment and teachers of the deaf shall be consulted to identify the needs of the students. The solution(s) to meeting these needs shall be agreed with the Employer. Specialist provision such as radio aids or similar shall be provided by the Contractor where needed. [PM_35_60]

2.8. Building Services – Common Principles

2.8.1. Overview

2.8.1.1 The design of Building Services shall meet the requirements in Technical Annex 2E, Technical Annex 2F, Technical Annex 2G, Technical Annex 2H, Technical Annex 2I, Technical Annex 2J and the requirements within this section. [PM_10_20_90]

2.8.1.2 The Building Services systems shall:

- a) be designed and installed to be effective, safe, clean and hygienic for all users [PM_40_30_52]
- b) be easy to use and avoid complex systems that require specialist maintenance [PM_40_30_52]
- c) be energy efficient in line with current best practice [PM_40_30_52]
- d) be zoned in accordance with Technical Annex 2I. [PM_10_20_90]

2.8.1.3 The use of passive measures shall be considered before active measures are proposed as part of the integrated building design. [PM_40_20_85]

2.8.1.4 The requirements listed above shall be included in the Environmental Strategy Report, in accordance with the DfE's EIR. [PM_40_20_85]

2.8.1.5 The distribution of services throughout shall provide flexibility for future refurbishment, expansion and renovation. [PM_10_20_82]

2.8.1.6 The services distribution shall allow ease of access for maintenance. Where services are exposed, they shall be fully co-ordinated to ensure the aesthetics of spaces are not negatively impacted and to reduce the risk of personal injury, vandalism and harm. [PM_80_10_50]

2.8.1.7 The Building Services engineering design and installation shall:

- a) take account of the requirements of the end users and occupants, including those with SEND [PM_40_20_42]
- b) be robust [PM_35_10_25]
- c) be tamper-proof and not easily vandalised or adjusted to the detriment of the system, users or Building itself. [PM_35_10_25]

2.8.1.8 Any utility services shall follow best practice guidance and be compliant with all relevant legislation and regulations including the 'Environmental Protection Act 1990'. [PM_60_60_26]

2.8.1.9 All authorities shall be notified in accordance with their regulations, obtaining any required approvals for the installation and negotiating new provisions where required to meet the ERs. [PM_40]

2.8.1.10 Utility company infrastructure work requirements shall be complied with, including undertaking any necessary reinstatement, protection or diversions of existing services within the Site with minimal disruption to services, surrounding public and College activities. [PM_35_10_60]

2.8.1.11 Any incoming utility supplies shall run within the Site boundary and shall be routed in accessible locations throughout the Site. [En_90_90_80]

2.8.1.12 Incoming services shall be installed from the Site boundary to the College Buildings to follow roadways, paths etc. [En_90_90_80]

2.8.1.13 Routing of incoming services across sports fields shall be avoided. [En_90_90_80]

2.8.1.14 Any electrical substations and gas meter houses shall be located on the Site boundary in an accessible, unobtrusive and convenient location to allow for out of hours access by the utility companies. [En_90_90_80]

2.8.1.15 Liaison shall be undertaken with the utility companies to ensure that the locations and design of the substations and gas meter housings are in line with the utility suppliers' specific requirements. [En_90_90_80]

2.8.2. Refurbishment Requirements

2.8.2.1 Works to Building Services systems in Refurbished Buildings shall satisfy the requirements of the RSoW and take account of:

- a) health and safety issues [Ac_10_70_70]
- b) maintenance and condition issues [Ac_10_70_70]
- c) an energy audit to improve energy performance [Ac_10_70_70]
- d) over or under heating assessment of the Building on the Site prior to the Works [Ac_10_70_70]
- e) results of Electrical Installation Condition Report (EICR) [Ac_10_70_70]
- f) results of recent gas safety inspections. [Ac_10_70_70]

2.8.3. Minimum Life Expectancy

2.8.3.1 The Minimum Life Expectancy requirements set out in Table 7 shall be met. [PM_35_10_47]

Element	Element Name	Minimum Life Expectancy (Years)
Building Services	Engineering services (major components)	In accordance with CIBSE Guide M table appendix 13.A1
Building Services	Catering kitchen ventilation canopy	20

Table 7 Minimum Life Expectancy for Building Services

2.9. Mechanical Services

2.9.1. Overview

2.9.1.1 The requirements for mechanical services are set out in the Technical Annexes. [PM_10_20_90]

2.9.2. Integration with Existing Services

2.9.2.1 Building Services systems shall be integrated with existing Site services and systems. [PM_10_20]

2.9.3. Heating and Cooling Systems

2.9.3.1 A heat loss assessment shall be undertaken to establish the required heating load of the Works. The predicted thermal performance of the building fabric shall meet the requirements in Technical Annex 2H and Technical Annex 2J, exceeding Part L and local planning requirements. [PM_10_20_90]

2.9.3.2 An Overheating Risk Assessment (ORA) shall be undertaken, and from this it shall be established whether enhanced mechanical or natural ventilation and/or cooling is required within any part of the Works in accordance with the ventilation hierarchy in Technical Annex 2F. [PM_10_20_90]

2.9.3.3 The heating and cooling systems shall cater for any specialist requirements (including any highlighted in the CSB) in the proposed development including areas of high-density ICT, server and hub rooms, SEND or specialist teaching spaces. [EF_60_40]

2.9.3.4 Any heating or cooling plant and/or emitters shall be appropriately sized for the application within the proposed development. [EF_60_40]

2.9.3.5 The heating and cooling system shall be capable of intermittent operation with appropriate automation and capacity to ensure the College is raised to the design temperature to suit the College opening hours. [EF_60_40]

2.9.3.6 The systems shall be designed and controlled to allow for flexibility in the patterns of usage of the College. [EF_60_40]

2.9.4. Ventilation Systems

2.9.4.1 Note: Technical Annex 2F includes all the requirements from Building Bulletin 101 - 'Guidelines on ventilation, thermal comfort and indoor air quality in schools' (BB101) where applicable to suit the spaces defined in the CSB. [PM_10_20_90]

2.9.4.2 Where there is any inconsistency between Technical Annex 2F and BB101, Technical Annex 2F shall take precedence. [PM_10_20_90]

2.9.4.3 Full mechanical ventilation systems shall only be considered where natural and assisted natural systems are not feasible to achieve the requirements outlined in Technical Annex 2F because of outdoor noise, pollution, security or other environmental issues. [PM_10_20_90]

2.9.5. Gas Services

2.9.5.1 Any gas installation provided to serve the Works shall be designed and installed to be safe and secure and in line with the requirements in Technical Annex 2F. [PM_10_20_90]

2.9.5.2 The design and installation shall meet the requirements and guidelines set out in IGEM-UP-11 'Gas installations for educational establishments' and other applicable IGEM standards. [PM_10_20_90]

2.10. Electrical Services

2.10.1. Overview

2.10.1.1 The design of electrical services shall meet the requirements for the design, installation and commissioning of the Electrical services as given in Technical Annex 2G and the requirements below. [PM_10_20_90]

2.10.2. Power, Connections, Supply and Generation

2.10.2.1 Allowance shall be made in the design for the safe access to, and maintenance of, all parts of the electrical installation. [PM_80_10_50]

2.10.2.2 The electrical services shall be arranged so that they do not impede access to other services. [Ss_70]

2.10.2.3 An electrical connection shall be arranged with the Distribution Network Operator (DNO) making allowance for equipment to be located on site if necessary. [Ss_70]

2.10.2.4 Incoming electricity supplies shall be established in consultation with the DNO. It shall be determined if the supply should be at high voltage or low voltage. [Ss_70]

2.10.2.5 The required capacity of the new electrical supply shall be assessed with consideration to diversity factors and the anticipated load profile. [Ss_70]

2.10.2.6 Electrical supplies shall be of appropriate voltage and phase for the size of premises. [Ss_70]

2.10.2.7 Power factor correction equipment shall be provided to achieve the appropriate power factor with balanced loads for each phase, as necessary. [Ss_70]

2.10.2.8 Where the Works are Refurbished Buildings, an assessment of the capacity of the existing electrical supply shall be carried out. Where necessary, arrangements shall be made for an enhancement to the supply. [Ss_70]

2.10.2.9 Where it is proposed to connect to existing electrical systems, an evaluation shall be undertaken of those electrical systems, including an assessment of their capability and suitability to be connected to or modified in accordance with a valid Electrical Installation Condition Report (EICR). [Ss_70]

2.10.2.10 In consultation with the Employer, an assessment shall be made of potential expansion and change throughout the life of the Building and shall make appropriate provision in the design of the electrical distribution system. In the absence of guidance from the Employer, or any student number forecasts as part of the CSB, allowance shall be made for 10% future expansion of the College. [PM_10_20_82]

2.10.2.11 The selected energy using equipment and the electrical installation shall comply with appropriate directives and standards and be installed following good Electro Magnetic Compatibility (EMC) installation practice. [PM_10_20_82]

2.10.3. Electrical Distribution and Networks

2.10.3.1 The distribution strategy adopted shall be well-planned, logical, maintainable and cost effective. [Ss_70_30]

2.10.3.2 Electrical rooms and cable routes shall be determined during the early stages of the design to ensure that adequate floor space and horizontal and vertical distribution zones are provided. [Ss_70_30]

2.10.3.3 Cable containment shall be selected and arranged as EMC considerations. [Ss_70_30]

2.10.3.4 Each containment run shall carry cables of only one voltage band and cable containment shall not be suspended from other services. [Ss_70_30]

2.10.3.5 Steel cable trays, baskets, ladders and trunking shall have an appropriate finish, shall be electrically continuous where metallic and shall have fire barriers where appropriate. [Ss_70_30]

2.10.4. Lift Installations

2.10.4.1 When calculating the number, size and location of lifts the following factors shall be taken into account, as well as any outlined in the CSB, the:

- a) number of Students, staff and visitors expected [EF_80_50]
- b) number of Students using wheelchairs and other aids, the size of these aids and how many need assistance alongside [EF_80_50]
- c) maintenance strategy i.e., action in the eventuality of breakdowns and repairs [EF_80_50]
- d) arrangements for using lifts – whether they are to be available to all occupants or restricted to disabled people (e.g., with a close proximity fob or key operation) [EF_80_50]
- e) use of the lift in the event of a fire and in response to security incident, as part of the College's planned emergency strategies. [EF_80_50]

2.10.4.2 The design and installation of any lifts shall:

- a) meet current and appropriate BS EN81 documents [PM_10_20_90]
- b) be capable of being restricted for use by disabled students, staff and visitors only, using a close proximity fob or key operation [EF_80_50]
- c) contain alarm communication devices, compliant with BS EN 81-28, such that the College is aware of a trapped person and communication can be made with a 24-hour help line, via a direct link, to arrange their release [PM_10_20_90]

- d) have a lift capacity and internal finishes appropriate for their expected use [EF_80_50]
- e) have an emergency evacuation mechanism operable by college staff trained to lower it to floor level and open the lift door [EF_80_50]
- f) be energy efficient. [EF_80_50]

2.10.4.3 Any lift shall be large enough for a wheelchair user (or users if there are likely to be several users at the same time) to enter and leave the lift independently or assisted by a support worker alongside as appropriate. [EF_80_50]

2.10.4.4 Significantly larger size lifts are essential for groups of students in wheelchairs moving around alongside their peers. [EF_80_50]

2.10.4.5 Platform lifts shall not be used except in exceptional circumstances and with the agreement of the Employer and shall comply with Annex 2G. [PM_10_20_90]

2.10.4.6 The draft Fire Safety Management Plan for a college shall have adequate provisions and resources to be able to assist mobility-impaired people to a place of safety outside the Building. The minimum number of evacuation lifts and the minimum inner dimensions of lift cars shall be related to the number of students and storeys served. For Special Colleges, the evacuation lift provision shall be determined on an individual basis. [PM_10_20_82]

2.10.4.7 In Special Colleges, any lifts shall meet the particular requirements of the College as described in the CSB. [EF_80_50]

2.10.4.8 In Special Colleges, evacuation lifts shall be provided for multi-level Buildings. [EF_80_50]

2.10.4.9 In non-ambulant Special Colleges, lifts shall accommodate a student plus their Mobility Equipment and accompanying staff. [EF_80_50]

2.10.4.10 In non-ambulant Special Colleges, lifts shall be provided with very wide doors and very large lift car sizes to accommodate 'horizontal learning stations' and to ensure all children can be evacuated quickly and safely. [EF_80_50]

2.10.5. Communication Systems

2.10.5.1 The requirements for period bell systems and performance audio systems, as well as emergency voice communications to meet the College's planned emergency strategies, are given in Section 3 of Technical Annex 2G. The following shall also apply:

- a) Period bell systems shall be installed where specified in the CSB. [Ss_75_10_68_07]

- b) Audio amplification systems provided by the College shall be installed in drama, dance, halls, lecture theatres, music and performance spaces and where required in Annex CS1 or the CSB. [Ss_75_10]
- c) Sound field systems shall be installed where required (refer to clause 2.7.6). [Ss_75_10]

2.10.5.2 An emergency voice communication system shall be provided at each fire refuge point to enable occupants to alert others that they need assistance and to receive reassurance that this shall be forthcoming. [Ss_75_50_11_27]

2.10.5.3 ICT Infrastructure shall be provided to meet the requirements set out in Section 4. [PM_10_20_90]

2.10.5.4 For data cabling and telecommunications, when locating data points within teaching spaces, this shall take account of the teaching and learning activities proposed for each space and provide the most appropriate means of data access, including, but not limited to, dado mounted, furniture mounted, floor box mounted or wireless. [Ss_75_10_21_21]

2.10.5.5 For Special Colleges, Designated Units and Specially Resourced Provision additional installations shall be provided, specific to students with SEND if required in the CSB, including:

- a) intercom, assistance alarms and access control systems [Ss_75_10]
- b) attack alarms and/or staff-call systems, subject to risk assessment, where staff need to call for rapid assistance. [Ss_75_50_11_25]

2.11. Public Health Engineering Services

2.11.1. Overview

2.11.1.1 The requirements for public health services are set out in Technical Annex 2F. For whole site Sustainable Drainage Strategy (SuDS) refer to Annex 2J. [PM_10_20_90]

2.11.2. Integration with Existing Services

2.11.2.1 Building Services systems shall be integrated with existing Site services and systems. [PM_10_20]

2.11.3. Public Health Systems

2.11.3.1 Drinking water facilities and hot and cold-water supplies shall comply with the School Premises (England) Regulations 2012. [PM_10_20_90]

2.11.3.2 Separate foul and rainwater drainage systems shall be designed and installed to serve the proposed development. [Ss_50_35]

2.11.3.3 Drainage installations shall be sufficient to accommodate the proposed level of occupancy and operate under gravity to connect to the public utility sewer, rather than utilise pumped systems. [Ss_50_35]

2.11.3.4 The foul and rainwater drainage systems shall be robust throughout. [Ss_50_35]

2.11.3.5 Systems shall be routed such that the location of pipework, downpipes and other drainage connections do not impact on the learning environment in the College. This shall include but not be limited to the acoustic breakout caused by the water within the pipework and all necessary provisions shall be made to minimise this. [Ss_50_35]

2.11.3.6 The design and installation of any domestic water services systems shall be provided to serve the Works to be:

- a) sufficient to accommodate the proposed level of occupancy and in line with all relevant standards and statutory requirements [Ss_55_70_38]
- b) robust [Ss_55_70_38]
- c) not routed such that the location of pipework and connections impact on the learning environment within the College [Ss_55_70_38]
- d) designed and installed to be safe, clean and hygienic for all users [Ss_55_70_38]
- e) designed and installed such that they minimise unnecessary water usage. [Ss_55_70_38]

2.11.3.7 Drinking water shall be provided around the College, both internally and externally and labelled accordingly. [Ss_55_70_38_15]

2.11.3.8 A drinking water fountain or bottle fillers shall be provided on each floor of each New or Refurbished Building and labelled, with one fountain serving a maximum floor area of 1000m². [Ss_40_15_75_25]

2.11.3.9 A water fountain shall be provided in an inside area easily accessible from external areas used for play and sport, unless specified otherwise in the CSB. [Ss_40_15_75_25]

2.12. Energy

2.12.1. Overview

2.12.1.1 The design shall meet the energy requirements in Technical Annex 2E, Technical Annex 2H, Technical Annex 2I, Technical Annex 2J and Technical Annex 2K. The requirements within this section shall also be met. [PM_10_20_90]

2.12.2. Optimising Energy Use

2.12.2.1 Energy consumption, carbon and the operational costs of the College's Buildings shall be reduced in line with the energy efficiency hierarchy: be lean, be clean, be green, be seen. [PM_40_20_26]

2.12.2.2 The Building shall operate within the energy targets detailed in Technical Annex 2H. [PM_10_20_90]

2.12.2.3 To demonstrate compliance and aid energy efficient design decisions, two models shall be developed for New Buildings: The Concept Energy Model and the Developed Energy Model. [PM_30_30_86]

2.12.2.4 An energy performance prediction for any New or Refurbished Building shall be included in the Environmental Strategy Report; the statement shall detail the approach to energy efficient design, analyse the results from the energy models produced and explain the energy management and targeting strategy. [PM_40_20_26]

2.12.2.5 The College's operational costs (energy and maintenance) shall not be negatively impacted by the selection of low carbon plant and equipment. [PM_10_20_82]

2.12.3. Energy Targets

2.12.3.1 A Concept Energy Model shall be developed for New Buildings to ensure the Building can meet the regulated and unregulated energy as detailed in Technical Annex 2H. [PM_10_20_90]

2.12.4. Energy in Refurbishment

2.12.4.1 Where the Works include Refurbished Building(s), an energy audit shall be undertaken including comparison of the existing energy usage with the predicted energy usage of the Refurbished Building to show the improvement associated with the design, in line with the requirements set out within Technical Annex 2H; this is instead of preparation of the energy models for New Buildings described in Sections 2.12.2 and 2.12.3. [PM_10_20_90]

2.12.4.2 Energy audits shall comprise:

- a) identification of principal energy uses for core items and comparison against DfE energy benchmarks given in Technical Annex 2H [PM_10_20_90]

- b) analysis of data available for the main utility meters (and billing information) and sub meters [Ac_15_55_26]
- c) recommendations of the most favourable energy initiatives for the Building with a predicted simple payback of 6-8 years. [PM_40_20_26]

2.12.5. Sub-metering and Zoning

2.12.5.1 Metering and sub meters shall be provided as described in Technical Annex 2I. [PM_10_20_90]

2.12.5.2 Building Services systems shall be effectively zoned to reflect the operational use of the different areas of the College development to ensure effective control and to minimise energy consumption. [PM_10_20_82]

2.12.6. In Use Monitoring

2.12.6.1 The iSERV methodology shall be used to monitor and report on the College's energy, water, CO₂ and temperature, as described in Technical Annex 2H and Technical Annex 2I using the internet connection provided. [PM_10_20_90]

2.12.6.2 The College staff shall be trained how to use the iSERV monitoring system as part of the building performance evaluation and Soft Landings phases, taking account of any requirements in the CSB about the way in which the training is delivered. [Ss_75_70_54_10]

2.12.6.3 Annual energy and water data from fiscal meters shall be provided to DfE via K2n or a similar approved platform. In order to do this the following shall take place:

- a) The Contractor shall arrange for the provision of either a Client Access Device by the Distribution Network Operator, or a direct connection to the fiscal meter or via an internet portal. [Ss_75_70_54_10]
- b) The Contractor shall arrange GDPR permissions from the College for the sharing of the utility data with DfE, and with the Contractor up until the end of the defects and Soft Landings periods and provided to the Energy Supplier and DfE. [Ss_75_70_54_10]
- c) The GDPR permissions shall be arranged by the Contractor with the College so that with the permission of the College, ongoing monitoring via iSERV or equal and approved, and DfE can take place after the end of the Defects Liability Period. [Ss_75_70_54_10]

2.13. Controls and Building Management Systems

2.13.1. General Requirements

2.13.1.1 The design of any Building Services controls and Building Management Systems shall meet the requirements in Technical Annex 2F, Technical Annex 2H and Technical Annex 2I, and the requirements within this section. [PM_10_20_90]

2.13.2. Lighting Control Systems

2.13.2.1 Lighting Controls shall be designed and installed in accordance with Technical Annex 2E, to effectively manage the lighting. [PM_10_20_90]

2.13.2.2 The contractor shall liaise with the College over the exact functionality of the lighting control system and shall present and demonstrate the system at design, commissioning and handover stages. [Pr_70_70_47]

2.13.2.3 Each space provided shall have an appropriate control strategy that shall optimise the teaching and learning experience and minimise energy consumption. [PM_40_20_26]

2.13.2.4 User override and control over all automated systems shall be designed and installed throughout. [Pr_70_70_47]

2.14. Safety and Security

2.14.1. Overview

2.14.1.1 Any New Buildings, Remodelled Areas or new external works on the Site shall be designed to be safe and secure, so that students and staff feel safe and secure, and that all statutory requirements for fire safety and evacuation are met. [PM_10_20_82]

2.14.1.2 Whilst security of both buildings and occupants is clearly paramount it shall not be to the detriment of the overall appearance of buildings; a 'fortress' appearance should be avoided. [PM_10_20_82]

2.14.1.3 Colleges need clear, well-defined and secure boundaries as appropriate to help control who gains access as defined in the CSB, and to ensure that vulnerable building users are supported. [PM_10_20_82]

2.14.2. Security

2.14.2.1 An Access and Security Strategy shall be produced as required in the DfE's EIR. [PM_10_20_28]

2.14.2.2 The Access and Security Strategy shall be based on a Security Risk Assessment. [PM_80_50_80]

2.14.2.3 The Access and Security Strategy shall take account of the Secure Line agreed for the College which separates members of the public from students. [PM_80_50_80]

2.14.2.4 The Secure Line shall not necessarily be the perimeter of the Site; it may be appropriate and more economical to have an inner perimeter excluding, for example, community car parks or team game playing fields. [PM_80_50_80]

2.14.2.5 In areas with a higher security risk, it may be necessary to provide security measures for the areas outside the Secure Line such as the car park. [PM_80_50_80]

2.14.2.6 In some cases, Buildings may form part of the Secure Line. [PM_80_50_80]

2.14.2.7 The level and type of security measures vary from site to site and shall be appropriate to the location as well as the level and type of security risk(s). [PM_80_50_80]

2.14.2.8 The Access and Security Strategy shall take account of the merits of different types of fencing, hedges and defensive landscaping and security measures. [PM_80_50_80]

2.14.2.9 The following sections describe the normal security provision for a College. The CSB shall indicate where more complex systems may be required for higher risk colleges as a result of a Security Risk Assessment: 'Secure by Design' guidance and DfE publications provide further guidance on the range of security options for areas of higher risk; and NaCTSO's 'Crowded Places Guidance 2017' provides guidance on increasing the protection of crowded places from a terrorist attack. [PM_10_20_90]

2.14.2.10 The Design shall:

- a) ensure that the College has clear and well-defined boundaries, fences and gates to help control who gains access to its Site and Buildings [PM_80_50_80]
- b) provide secure informal and social play areas as appropriate and defined in the CSB. [PM_80_50_80]
- c) meet the requirements of Sections 2.2.3 and 2.4.11. [PM_10_20_90]

2.14.2.11 In New Buildings, external building security shall be enhanced by:

- a) avoiding complex building forms that may result in creating areas which cannot be easily supervised [PM_80_50_80]
- b) ensuring physical barriers do not obstruct views towards or away from College Buildings and grounds [PM_80_50_80]
- c) avoiding designs incorporating recessed doorways and alcoves that could provide cover for intruders [PM_80_50_80]

- d) positioning windows and glazing to facilitate passive supervision of external areas from inside Buildings [PM_80_50_80]
- e) designing canopies and drainpipes so that they do not provide access to high level windows and roof lights [PM_80_50_80]
- f) designing roofs and surrounding elements to prevent unauthorised access and avoid the provision of cover for intruders [PM_80_50_80]
- g) designing external walls and the materials chosen for them to prevent unauthorised access to roofs or secure/restricted areas. [PM_80_50_80]

2.14.2.12 For internal building security, any Buildings in the Works shall be capable of being zoned to isolate areas that may be used outside of the normal College opening hours. [PM_80_50_80]

2.14.2.13 A panic alarm shall be provided for the main reception area staff and other staff as specified in the CSB. [Ss_75_50_11_25]

2.14.2.14 The panic alarm system shall provide alarm indication in the general office or other staff area specified in the CSB and shall alert other staff in the event of emergencies. [Ss_75_50_11_25]

2.14.2.15 In New Buildings and Remodelled Areas, and where required in the RSoW, the appropriate internal glazing shall be provided, as specified in Technical Annex 2D to enable passive supervision of circulation spaces from adjacent spaces. The following shall also apply:

- a) Internal glazing shall comply with BS6262: Part 1:2017 General methodology for the selection of glazing. [PM_10_20_90]
- b) Where safety glass is required as part of internal glazing, all safety glass in critical locations (defined in Section 5 of AD K4 Protection of Impact with glazing) shall be third party certificated and marked in accordance with BS 6262-4; the standard requires that safety glass is indelibly marked with key information so that it is visible after installation. [PM_10_20_90]
- c) Where toughened glass is required for internal glazing, this shall meet the requirements of the relevant product standard, BS EN 12150. [PM_10_20_90]
- d) Where toughened glass is required for internal glazing, it shall be heat soak tested to minimise the extent of NiS (Nickel Sulphide Inclusions) and other impurities, which may lead to the failure of glazed components in-situ. [Ss_25_60_35]

- e) Where internal glazing is included, annealed (float glass) shall not be specified in any instance. [Ss_25_60_35]
- f) Where internal glazing is included, all windows and doors shall retain their structural and dimensional stability over the life cycle of the component including all working parts. [Ss_25_60_35]

2.14.2.16 Security measures shall be in accordance with the requirements in the following sections of the GDB:

- a) 2.2.3: Site Access. [PM_10_20_90]
- b) 2.3.15: Entrances and Circulation - for access control. [PM_10_20_90]
- c) 2.5.4: External Doors and Windows, Section 2.6.3: Internal Doorsets and 2.6.4: Internal Door Hardware - for doors, and locks and suiting details. [PM_10_20_90]
- d) 2.5.4 External Doors and Windows - for windows, glazing and roof lights. [PM_10_20_90]
- e) 2.3.13: Non-teaching Storage - for secure storage. [PM_10_20_90]
- f) 2.6.9: Wayfinding and Signage - for wayfinding, warning signs and notices. [PM_10_20_90]
- g) 2.10.5: Communication Systems. [PM_10_20_90]
- h) 2.10.4 for lift installations. [PM_10_20_90]
- i) Technical Annex 2B for fencing. [PM_10_20_90]
- j) Technical Annex 2E for external and security lighting. [PM_10_20_90]
- k) Technical Annex 2G: Section 5 for electronic security systems, including access controls, CCTV and intruder alarms. [PM_10_20_90]

2.14.2.17 Training, a Building User Guide and a Log Book, in accordance with the Soft Landings protocol, shall all be provided to the relevant college users to ensure that the security system is understood. [PM_70_85_55]

2.14.3. Fire Safety and Evacuation

2.14.3.1 Any means of escape, fire-fighting equipment, automatic detection systems and fire signage provisions shall comply with Building Regulations 2010 Part B, 'Fire Safety'. [PM_10_20_90]

2.14.3.2 A draft Fire Safety Management Plan shall be produced, as detailed in the DfE's EIR and as defined in Section 2.10.4.6. [PM_10_20_28]

2.14.3.3 All elements of the structure, finishes, fixtures and fittings in the Works shall comply with all relevant legislation, codes of practice and guidance. [PM_10_20_82]

2.14.3.4 Fire doors which are subject to heavy usage e.g., circulation routes, shall have the facility to be held open by electro-magnetic contacts wired into the fire alarm system (see Section 2.6.4 Internal Door Hardware). [PM_35_30]

2.14.3.5 Fire stopping and fire doorsets shall only be installed by:

- a) a third-party accredited company or [PM_35_30]
- b) a trained individual who has been assessed as competent through third party accreditation. [PM_35_30]

2.14.3.6 All fire stopping, fire dampers and fire protection measures shall be documented using photographic records. [PM_70_15_31]

2.14.3.7 On completion, all passive protection measures installed shall be labelled, photographed, scheduled and recorded on plans by the third-party installer. [PM_70_15_31]

2.14.3.8 On Completion, the Contractor and the Employer shall have a comprehensive record and audit trail to demonstrate compliance which the end user can manage and update during the buildings' life (note: this information shall be housed within the H&S File and in Regulation 38 statement). [PM_70_15_31]

2.14.3.9 A fire strategy shall be agreed with the approving authorities i.e., the Local Authority Building Control or Approved Inspector. It is a requirement for the Contractor to carry out a preliminary fire risk assessment to inform the draft Fire Safety Management Plan (FSMP). [PM_80_50_30]

2.14.3.10 For evacuation of students with SEND the Building shall be designed to enable all occupants to escape unaided so far as is practicable; where this is not achievable, the Contractor shall ensure that there are suitable provisions to enable any occupant with mobility difficulties to wait in safety for assistance (e.g., in wheelchair refuges) and the Fire Strategy must make adequate provision for assisting those that require it in an evacuation. [PM_80_50_30]

2.14.3.11 In multi-storey buildings passenger lifts shall also act as evacuation lifts. The provision shall be related to the number of students and storeys served.

2.14.3.12 The emergency lighting shall be coordinated with the fire strategy. Details on the emergency lighting requirements are contained within section 2.7.3 and Annexe 2E. [PM_10_20_90]

2.14.3.13 In accordance with the DfE's EIR, at handover the Contractor shall provide the College all relevant fire safety information in a usable form that will allow the College to

develop plans to manage the College safely should a fire occur. This shall be in the form of a draft Fire Safety Management Plan produced in consultation with the Employer and the School in order to meet their responsibilities under the Regulatory Reform (Fire Safety) Order 2005. Regulation 38 of the Building Regulations requires that the fire safety information is given to the “responsible person” at the College not later than the date of completion of the work and describes what that information should cover. The Contractor shall provide a plan showing the location of fire protection measures. The Contractor shall also set out any implications for the management of the building arising from the fire strategy, to include how occupants requiring assistance will be evacuated. [PM_80_50_30]

2.14.4. Fire Detection and Alarm Systems

2.14.4.1 Any fire detection and alarm systems provided shall comply with the requirements given in Technical Annex 2G. [PM_10_20_90]

2.14.5. Water Based Fire Suppression Systems

2.14.5.1 Fire Suppression systems shall be provided if required by the CSB, if they form part of the proposed fire strategy and/or as expressly required below. [Ss_55_30]

2.14.5.2 Water Based Fire Suppression Sprinkler Systems are expressly required in:

- a) all new college multi-storey buildings with a storey height over 11m above ground level. The height is measured from ground level on the lowest side of the building to the top of the floor surface of the top storey [Ss_55_30_98_85]
- b) all new Special College buildings [Ss_55_30_98_85]
- c) all new boarding accommodation. [Ss_55_30_98_85]

2.14.5.3 Where water-based fire suppression systems are installed, they shall comply with Technical Annex 2F. [PM_10_20_90]

3. Fittings, Furniture and Equipment (FF&E)

3.1. Overarching Requirements

3.1.1 This section sets out the general requirements for Fittings, Furniture and Equipment (FF&E) for all colleges. It should be read in conjunction with Technical Annex 3 [PM_10_20_90]

3.1.2 Information shall be exchanged in accordance with the DfE's EIR. [PM_10_20_28]

3.1.3 Where the Project includes Supplementary Area, the requirements for FF&E set out in Technical Annex 3 and in the CSB, including its Technical Annexes shall be met. [PM_10_20_90]

3.1.4 In all spaces in the Works in which FF&E is to be provided, the following requirements shall be met:

- a) FF&E items provided with similar attributes to the FF&E listed in Annex CS1 shall be approved by the Employer. FF&E shall allow the user activities listed in Annex CS1 to be carried out safely, effectively and efficiently by the maximum number of students and/or staff, as shown in Annex CS1. [Ss_40_15_35_35]
- b) Any FF&E provided shall meet the specifications detailed in Technical Annex 3. [PM_10_20_90]
- c) When legacy items are re-used, the Contractor shall be responsible for ensuring they are in safe working order. [PM_10_20]
- d) The layout of any FF&E shall be coordinated with the Building Services, in line with the requirements in Technical Annex 3, and shall be demonstrated in an FF&E layout. [PM_10_20_90]
- e) There shall be careful co-ordination between FF&E suppliers, fitters, ICT installation and mechanical and electrical (M&E) design and installations. [PM_10_20_82]
- f) Internal wall elevations shall be provided as part of the detailing of fitted FF&E, taking account of any preferences for teaching wall elevations identified in the CSB. [PM_10_20_82]
- g) Legacy equipment requiring service connections shall be tested and certified by the Contractor before connection to fixed supply systems. [PM_10_20_82]

- h) Safety and ventilation systems shall be in place for gas equipment. [PM_10_20_82]

3.1.5 A schedule of testing and servicing requirements shall be developed by the Contractor, in a format to the satisfaction of the Employer. The schedule shall:

- a) contain a list agreed with the Employer, of all FF&E requiring ongoing servicing and testing [PM_70]
- b) include any initial installation certification referencing, and copies of the certificates [PM_70]
- c) highlighting both Legacy and New FF&E provisions [PM_70]
- d) include a unique item identifier and their location references [PM_70]
- e) shall enable the College to manage the servicing and testing of FF&E after handover. [PM_70]

3.1.6 FF&E manufacturers used by the Contractor shall have current BS EN ISO 14001 accreditation. [PM_10_20_90]

3.2. FF&E Definitions

3.2.1 FF&E comprises:

- a) Fittings, including worktops, sinks etc. [Ss_40_15_35_35]
- b) Fitted Furniture, which is fitted to the fabric of the Building, including under-bench cupboards. [Ss_40_15_35_35]
- c) Fixed Furniture and Equipment (F&E) which is fixed to a structure for stability, including tall library shelving units. [Ss_40_15_35_35]
- d) Loose F&E, including chairs and tables. [Ss_40_15_35_35]

3.2.2 FF&E does not include services such as electrical outlets, public address and alarm systems, passive ICT Infrastructure such as cabling, extraction systems, and fittings such as partitioning and sanitaryware. [PM_10]

3.3. General Layout Requirements

3.3.1 Layouts shall demonstrate and allow for:

- a) spaces which are not cramped or overcrowded for the maximum number of students to be accommodated in the relevant area [PM_10_80]
- b) the vocational activities listed in Technical Annex 1A, 1B, and Annex CS1 [PM_10_20_90]
- c) a number of different settings to suit different teaching styles and the educational objectives of the College [PM_10_80]
- d) more than one teaching position or focus, where possible or where required in the CSB [PM_10_80]
- e) good sight lines to and from the teacher and all students in the space [PM_10_80]
- f) all building users to access all activities effectively and safely [PM_10_80]
- g) disabled building users to be able to access all activities on offer in at least one space of each type or within each Department [PM_10_80]
- h) safe movement by building users and easy access to fire escape routes, with no fitted F&E blocking exits [PM_10_80]
- i) the safe positioning and use of equipment in operation in line with manufacturers' guidance and as required by the CSB, away from circulation areas or door swings [PM_10_80]
- j) fitted F&E to be placed at 90° to windows to avoid glare for ICT use [PM_10_80]
- k) ICT equipment proposed for the room to be safely located with access to appropriate power and data [PM_10_80]
- l) central parts of the space to be clear for moveable items by restricting fitted and fixed F&E to the perimeter of the space [PM_10_80]
- m) easy supervision of equipment where appropriate by placing them in one activity zone [PM_10_80]

3.3.2 FF&E layouts shall be used to determine the optimum location of servicing outlets such as, but not limited to, gas, power and water, and to ensure that these are safely positioned. [PM_10_80]

3.3.3 In all spaces, the layouts shall illustrate that any ICT required can be accommodated. [PM_10_80]

3.4. Space-specific Requirements

3.4.1 For FF&E layouts the following requirements shall be met as well as those outlined in the CSB. [PM_10_20_82]

3.4.2 In Practical Teaching spaces, the FF&E used, and the associated FF&E layouts shall meet the following requirements:

- a) Practical spaces are suitable to be used safely as registration bases where required by the CSB. [PM_10]
- b) Sinks are positioned to avoid congestion when used by several students. [PM_10_20_82]
- c) Specialist fitters are used to fit specialist equipment. [PM_10_20]
- d) The serviced system in a science laboratory is suitable for the size and shape of the proposed science space, its service arrangement and the priorities of the College. [PM_10_80]
- e) Rooms provided for art shall have space for both horizontal and vertical display of two and three-dimensional work. [PM_10_80]

3.4.3 In large spaces and other performance spaces:

- a) a number of large spaces and performance options shall be possible for the given seating capacity using generic furniture and any bleacher seating provided, allowing for access and circulation [PM_10_80]
- b) specialist suppliers shall be consulted on the most appropriate location of any new audio-visual equipment [Ss_40_25_80]
- c) specialist suppliers shall be consulted on the most appropriate equipment specification and fixing method. [Ss_40_25_80]

- d) there shall be space to manoeuvre chairs, examination tables and staging when not in use where required by the CSB [PM_10_80]
- e) in a performance space a proscenium arch and/or curtains shall not block entrances and fire exits, while good sight lines are available from the audience seating. [Ss_40_25_80]

3.4.4 College performance spaces shall be provided with either: retractable bleacher seating at one end and a floor-level performance area at the other; or a permanent raised stage area, extendable by demountable staging, to provide a performance area at one end of the space. [Ss_40_25_80 and Pr_40_30_29_72]

3.4.5 A performance area shall be designed to ensure that:

- a) it has a performance area of at least 90m² [SL_25_10_05]
- b) it has at least one exit to the open air [SL_25_10_05]
- c) changing/dressing rooms are nearby [SL_25_10_05]
- d) a height of at least 4.3m is achieved for clearance between the stage lighting and the height of staging and any raked/tiered seating [SL_25_10_05]
- e) it is the full width of the space, accessed from doors at either side of the end wall at the appropriate height [SL_25_10_05]
- f) the end wall is behind the performance area and suitable as a cyclorama [SL_25_10_05]
- g) the minimum performance area shall meet the requirements of the CSB. [SL_25_10_05]
- h) the maximum performance area, for major performances, is at least 6.9m deep. [SL_25_10_05]

3.4.6 Where bleacher seating is used advice from a specialist supplier shall be sought, and the following criteria shall be met:

- a) It shall be retractable and extend to approximately half of the length of the hall and, wherever possible, the full width of the hall, with minimal gaps at each side. [Pr_40_30_29_72]

- b) It shall be electronically operated by a hand-held control and, when retracted, fit within the storage area for retractable bleacher seating identified in Annex CS1, at the back of the hall. [Pr_40_30_29_72]

3.4.7 Where a permanent raised stage is used, it shall provide the minimum performance area described above on a permanent stage, with stair and disabled access provided to access the doors in the end wall. [Ss_40_25_80]

3.4.8 Where a permanent raised stage is used, the following FF&E shall be provided:

- a) Sufficient demountable staging with equal access (or other staging options) to extend the stage to accommodate the maximum performance area set out in Section 3.4.5 (as well as other staging options) [Ss_40_25_80]
- b) Demountable steps to the front of the stage [Ss_40_25_80]
- c) Sufficient loose chairs to provide seating to the remainder of the space and not compromise escape and transitional routes. [Ss_40_25_80]

3.4.9 Where a demountable raised stage is used, the staging shall be chosen to be easily stored, with the chairs within the furniture store identified in Annex CS1 which shall open directly off the performance space. [SL_90_50_32]

3.4.10 In dining spaces, the FF&E and the associated FF&E layout shall demonstrate:

- a) a logical flow for building users around the catering and café environments from arrival, queuing to collect food (both hot and cold) eating and self-clearing, the number of pay stations (where relevant) and the hot/cold food offering split, as outlined in Annex CS1 and CSB [Ss_40_45_70_22]
- b) space and services for food vending trolleys and dirty/waste collection points [Ss_40_45_70_22]
- c) sufficient circulation space for building users to move between dining tables and to enable wheelchair users' access [Ss_40_45_70_22]
- d) agreed seating capacity for dining, social and study, as specified in the CSB [Ss_40_45_70_22]
- e) furniture storage provision with sufficient space around it, as required in Annex CS1 and CSB. [SL_90_50_32]

3.4.11 In catering, training kitchen and café spaces, the FF&E and the associated FF&E layout shall provide:

- a) catering equipment necessary for the preparation of hot and cold meals in a cost effective and efficient manner as required in the CSB [Ss_40_45_37_45]
- b) a functional layout that allows for efficient operations and any special dietary requirements, by arranging the main activity areas of delivery, storage, preparation, cooking and wash-up in a logical sequence to ease workflows (further details on catering environment planning are given in Technical Annex 3) [Ss_40_45_37_45]
- c) coordination of services and facilities to suit the requirements for third party offerings in a shell and core arrangement as required in the CSB [PM_10_20_90]
- d) a sensible 'flow' from the self-clearing facility to the kitchen pre-clean area and dish wash, and from dishwasher to crockery/cutlery/tray storage [Ss_40_45_37_45]
- e) high efficiency catering equipment, to achieve the good practice benchmarks for energy usage. [PM_35_70]

3.4.12 In College learning resource centres (LRC), along with any specific requirements within the CSB, the FF&E used, and the associated FF&E layout shall allow for:

- a) flexibility to take on board different uses of the space [Ss_40_25_26_47]
- b) low shelving or seating positioned near windows to achieve maximum benefit from natural lighting [Ss_40_25_26_47]
- c) coordination with any catering offer that supports the LRC as required in the CSB. [PM_10_20_90]

3.4.13 In SEN support spaces (flexible spaces), the FF&E used, and the associated FF&E layout shall contribute to a calming environment. [Ss_40_15_35_35]

3.4.14 Storerooms for SEN flexible spaces shall have enough clear space for any specialist equipment, including both Teaching Resources and aids for building users with additional needs. [PM_10_80]

3.4.15 In storerooms, shelves shall be provided for the number and type of items to be stored therein. Space provided adjacent to shelving shall allow items to be safely manoeuvred. [Ss_40_15_35_35]

3.4.16 For personal storage (lockers), the FF&E provided and the space in front shall meet the following requirements:

- a) Building user personal storage is provided, in line with Annex CS1 and any requirements in the CSB. [Ss_40_15_35_35]
- b) Provision for localised storage of personal effects in vocational spaces, where PPE or other requirements to change are required, shall not compromise the area required for teaching. [PM_10_80]
- c) Lockers shall not be placed alongside guarding or balustrades, shall not restrict movement along main circulation routes and shall not be congested by creating banks of multiple units. [Pr_40_30_87_48]
- d) Lockers shall not compromise the safe use of circulation space and be as defined in Technical Annex 3 and the CSB. [PM_10_20_90]
- e) Lockers above 1.2m high shall be fixed to the wall and secured by the College's preferred method e.g., combination locks, as defined in the CSB. [Pr_40_30_87_48]

3.4.17 In Sports changing rooms, FF&E shall be provided which allows comfortable and safe conditions for building users. The positioning of lockers and benches shall not compromise the safe use of the space, as defined in Technical Annex 2A, 3 and CSB. [PM_10_20_90]

3.4.18 Noticeboards in circulation areas shall be fitted to satisfy the requirement of Technical Annex 3. [Pr_40_30_25_58]

3.4.19 In protected corridors (those used for means of escape) noticeboards shall be fitted with a cover. The preference is for this to be top hung. [Pr_40_30_25_58]

3.5. Services within FF&E

3.5.1. General Requirements

3.5.1.1 All serviced FF&E shall be connected by suitable means. Coordination of responsibilities for fittings and connections shall be the responsibility of the Contractor. [PM_10_20_82]

3.5.1.2 All equipment requiring connection to Building Services shall be connected using an integrated and responsive system of mechanical, electrical, protective and communication installation. [PM_10_20_82]

3.5.1.3 All services and installations associated with equipment shall meet the relevant standards as outlined in Technical Annex 2F and Technical Annex 2G. [PM_10_20_90]

3.5.1.4 Pipework or cables associated with equipment shall be easily accessible for maintenance (but hidden from view wherever possible), shall not provide dust traps, and shall be protected from potential damage or vandalism. [PM_10_20_82]

3.5.1.5 Any connections, distribution systems, components and containment systems within FF&E shall be safely protected, tamper-proof, correctly insulated, and free from exposed contacts and clearly labelled. [PM_10_20_82]

3.5.1.6 Specialist suppliers shall install serviced equipment, whether new or Legacy. [PM_10_20_82]

3.5.1.7 All user controls on equipment used by students shall be comprehensible and accessible. [PM_10_20_82]

3.5.1.8 All controls shall be securely fixed to the item of FF&E or the internal fabric of the Building (i.e., not remote controls) and shall not rely upon batteries for power. [PM_10_20_82]

3.5.1.9 Controls such as isolator switches on FF&E shall only enable use by authorised personnel. [PM_10_20_82]

3.5.1.10 All FF&E incorporating water and drainage (such as serviced appliances in D&T workshops, food rooms and science laboratories) shall be installed to ensure hygienic conditions and the effective disposal of wastewater. [PM_10_20_82]

3.5.1.11 Socket outlets shall be positioned away from sinks to reduce the risk of electrically powered equipment being placed in water, as required in Technical Annex 2G. [PM_10_20_90]

3.5.1.12 In food rooms, socket outlets shall be positioned to ensure that an electrical cable attached to a piece of equipment does not have to cross a hot cooking surface. [PM_10_20_82]

3.5.2. Integration with ICT

3.5.2.1 The use of new and Legacy furniture shall take account of the College's ICT solution as outlined in the CSB and CS5, the cabling requirements of user devices and the link between technology and specialist equipment e.g., CAD CAM systems. [PM_10_20_82]

3.5.2.2 Where ICT furniture is provided that has not been specifically designed to accommodate computer equipment, it shall not compromise space and comfortable, effective and safe use of the technology and, where appropriate, cable management. [PM_10_20_82]

3.6. Blinds and Curtains

3.6.1 In a New or Refurbished Building, blinds and/or curtains shall be provided in line with the CSB, Annex CS1, and Technical Annex 3. [PM_10_20_90]

3.6.2 Blinds or curtains shall be provided to internal glazing for dim/black-out, as required in Section 4.2 of Technical Annex 2D, 3 and the CSB. [Pr_30_59_07]

3.6.3 Blinds or curtains shall be provided to internal glazing where privacy is required, as required in Section 4.2 of Technical Annex 2D, Annex 3 and the CSB. [Pr_30_59_07]

3.6.4 Where curtains are provided to form a proscenium arch at the front of the maximum performance area in a hall, they shall be as required in Section 5.2.7 of Technical Annex 3. [Pr_30_59_07]

3.6.5 The installation within the sample room shall demonstrate the effectiveness of blinds. [Pr_30_59_07]

3.7. Performance and Quality

3.7.1. General Requirements

3.7.1.1 All FF&E shall be provided to satisfy the quality and performance requirements specified below and within Technical Annex 3 and the CSB to ensure it is safe. [PM_10_20_90]

3.7.1.2 All FF&E provided shall comply with current British and, where appropriate, European Standards. [PM_10_20_90]

3.7.1.3 Certificates and reports of tests shall be carried out in accordance with the DfE's EIR and Government Soft Landings. [PM_70_15]

3.7.1.4 New FF&E shall be ergonomically designed to ensure comfortable use and to meet the needs of different ages and physical abilities, as set in Technical Annex 3. [PM_10_20_90]

3.7.1.5 External FF&E provided shall be chosen to allow a variety of layouts and easy rearrangements, including movement over distances but sufficiently robust to withstand rigorous use. [Ss_40_45_37_28]

3.7.1.6 New FF&E shall not have any sharp edges or corners that may cause injury and chairs will be designed so that legs do not protrude beyond the top of the back or present a tripping hazard. [Ss_40_15_35_35]

3.7.1.7 Furniture screens shall be stable with a suitable mechanism for fixing together, lightweight enough to be re-organised quickly and easily and shall not present a tripping hazard. [Ss_40_15_35_35]

3.7.1.8 Serviced furniture shall meet the requirements in Technical Annex 1A and Annex CS1. [PM_10_20_90]

3.7.1.9 Serviced furniture shall allow students to carry out a wide range of practical activities individually, in pairs and in small groups. [Ss_40_25_75_45]

3.7.1.10 Laboratory layouts shall enable all students to observe practical demonstrations by staff, as defined in the CSB. [Ss_40_25_75_45]

3.7.1.11 In order to allow visually impaired students to differentiate between furniture components and interior finishes they shall adopt contrasting colours. [Ss_40_15_35_35]

3.7.1.12 Where FF&E is height adjustable it shall be easily, safely and discretely operable by the user. [Ss_40_15]

3.7.2. Materials

3.7.2.1 Materials used in furniture shall be selected to suit the required activity and needs of the building users as identified in the CSB and shall also meet the relevant standards, as listed in Annex 3. [PM_10_20_90]

3.7.2.2 The fire retardancy of any F&E provided shall be compliant with current British and, where appropriate, European Standards. This is particularly important where a high volume of furniture shall be stacked and stored. [PM_10_20_90]

3.7.2.3 Upholstered furniture shall meet the relevant British and European standards particularly for flammability, strength and stability and fabric wear and tear. Where Legacy furniture is to be transferred it is required to be 'fire safe' for use in New Buildings. [PM_10_20_90]

3.7.3. Design Life and Maintenance

3.7.3.1 All FF&E provided shall be easily cleaned and maintained and all materials and components shall have a suitable design life to ensure minimum inconvenience and disruption from breakdowns, repairs and maintenance activities. All F&E provided shall:

- a) be durable and easy to maintain [Ss_40_15_35_35]
- b) be simple in construction, to reduce maintenance and replacement costs [Ss_40_15_35_35]
- c) be easy to operate where adjustable (but difficult to misuse), repair or replace [Ss_40_15_35_35]

- d) be housed in such a way that it is easy to access or remove for maintenance purposes. [Ss_40_15_35_35]

3.7.4. Warranties

3.7.4.1 All items of FF&E provided shall have warranties as set out in the DfE's EIR.
[PM_10_20_28]

4. ICT Design Requirements

4.1. Introduction

4.1.1 This section sets out the requirements for the ICT elements of the building design and works; College-specific information, for example the type of Legacy equipment that shall be transferred, is contained within the College-specific Brief including Annex CS5. Read together, these shall provide sufficient information to develop proposals, along with other relevant sections in this GDB, where referenced in the section. [PM_10_20_90]

4.1.2 New infrastructure, initial training, AV installation and the decant and installation of Legacy ICT equipment shall be provided. [PM_10_20]

4.1.3 Where the Project includes Supplementary Area, such as a residential facility, requirements for ICT in the GDB, and CSB, including its Annexes, shall be met. [PM_10_20_90]

4.1.4 A detailed statement applicable to all sections shall be provided showing the approach taken by the Contractor, manufacturers, distributors and installers towards carbon neutrality including, but not limited to, carbon offset, use of sustainable resources and recycling of materials. [PM_10_20_82]

4.1.5 ICT Infrastructure means:

- a) Passive ICT Infrastructure – cabling infrastructure for data and voice services, including data outlets, containment, patch panels and cabinets. [Ss_75_10]
- b) Active ICT Infrastructure – Core and Edge network switches and associated network switches and routers, including support for Power over Ethernet and wireless Active Equipment – Controllers and Access Points for an enterprise whole-college wireless network. [Ss_75_10]
- c) Telephony – an enterprise level, VOIP telephony solution including core equipment and handsets, and incoming connectivity and digital backup connectivity for Building Services, including but not limited to alarms, fire prevention systems and lifts. [Ss_75_10]
- d) Internet provision – the provision or relocation of a gigabit capable fibre broadband internet connection. [Ss_75]

4.2. Server Rooms and Hub Rooms

4.2.1 General requirements are as follows:

- a) A dedicated, secure environment shall be provided including, but not restricted to, cabinets holding servers and associated storage and backup equipment, core switches, edge switches, wireless controllers, telephony systems, distribution points and terminating equipment for broadband and telephone lines, and for connections to additional Server and Hub Rooms containing supplementary equipment, such as edge switches, as required. [SL_90_90_77]
- b) Services (including but not limited to pipework, hoses, ducting and containment) that are not supplying the Server or Hub Rooms shall not to be routed through, above, or on adjacent walls to the room. [PM_10_20_82]
- c) Server Rooms and hub rooms shall not be adjacent to or below rooms with any water services. [SL_90_90_77]
- d) Server Rooms and hub rooms shall not be susceptible to flooding from any adjacent location on the same level or above. [SL_90_90_77]
- e) Server Rooms and hub rooms shall not be located on the roof or below ground floor level. [SL_90_90_77]
- f) All service and delivery access routes to the Server Rooms or hub rooms shall allow easy movement and installation of equipment and fittings without dismantling large items. [SL_90_90_77]
- g) Access to the Server Rooms or hub rooms should not be through another room. [SL_90_90_77]

4.2.2 Design requirements:

- a) Anti-static flooring shall be provided, and all extraneous metal parts, including door frames, shall be electrically earth bonded. See Section 7.2 of Technical Annex 2D. [PM_10_20_90]
- b) Circulation space shall be provided for ease of servicing and maintenance activities without the need for moving any cabinets. [SL_90_90_77]
- c) The main Server Room shall be the termination point for any Internet and telecommunications services to the College and any rooftop aerial or satellite

dish for receiving digital broadcast transmissions, as described in the CSB.
[SL_90_90_77]

- d) Server Rooms and hub rooms shall be designed to meet the requirements of BS EN 50174, and the locking requirements in Technical Annex 2D. [SL_90_90_77]
- e) All cabinets shall be accessible from the front and rear with space for the cabinet doors to open fully when the door(s) to the room are closed. The minimum clearance on all faces of the cabinets where access is required shall be 1.2m. [SL_90_90_77]
- f) All cabinet doors shall open in a direction to ensure a person cannot be trapped in the case of an emergency. [SL_90_90_77]
- g) The minimum depth of a Server Room or hub room for a 1000mm deep cabinet (see Section 4.5.1) shall be 3.4m. The minimum width of a Server Room or hub room for an 800mm wide cabinet (see Section 4.5.1) shall be 2.2m. For each additional cabinet the same minimum depth shall be maintained, and the width shall increase by 0.8m, leaving 1.4m to the side wall as per BS EN 50174-2 and its associated drawings. [SL_90_90_77]

4.3. Server Rooms and Hub Rooms - Power

4.3.1. Power requirements

The following shall be provided:

- a) A dedicated clean power supply on a separate circuit to enable the Server Room and hub room supplies and associated services including, but not limited to, air environmental control units and lighting, to be left running while power in other sections of the Building is switched off. [Ss_70_30_45_45]
- b) A sub-meter to the Server Room and hub room power supply, see Technical Annex 2H. [Pr_80_51_51_28]
- c) Restart settings for environmental control units to be as when the shutdown occurred. [Ss_75_70_52]
- d) Sufficient power supplies that support the equipment planned to be housed within the Server Room and hub rooms. [Ss_70_30_45_45]

- e) Power distribution units to support all active infrastructure, servers and associated components. [Ss_70_30_45_45]
- f) An accessible socket outlet adjacent to each cabinet, of a rating appropriate to the respective load, as a minimum this shall be 1 x 32A for each server/core equipment cabinet and 1 x 16A for each edge switch cabinet. [Pr_65_72_97_84]
- g) Server and data cabinet surge protection to prevent damage to equipment. [Pr_65_72_27_48]
- h) Reference should be made to Technical Annex 2G. [PM_10_20_90]

4.3.2. Uninterruptible Power Supplies (UPS)

4.3.2.1 With regards to UPS the following requirements shall be met:

- a) Uninterruptible Power Supplies (UPS) shall be provided in the form of rack-mounted battery systems that shall provide 30 minutes autonomy, as a minimum, in any cabinet containing any of the following:
 - i) Servers and associated storage and backup systems [Pr_60_70_64_93]
 - ii) Core switches [Pr_60_70_64_93]
 - iii) Wireless controllers [Pr_60_70_64_93]
 - iv) Broadband terminating equipment and/or routers [Pr_60_70_64_93]
 - v) Core telephony equipment and/or routers. [Pr_60_70_64_93]
- b) The ratings of the UPS shall be compatible with the load, the connecting cable(s) and the incoming power supply to which they are connected. [Pr_60_70_64_93]
- c) Relevant software shall be provided to enable a controlled shutdown (if required), with notification for all Servers, within the available runtime of the UPS battery(s). [Pr_60_70_64_93]
- d) UPS shall comply with BS EN 62040-1 and BS EN 62040-3 or their replacements. The mode of operation shall be on-line. [Pr_60_70_64_93]
- e) Batteries shall be integral to the UPS enclosure, have an autonomy of 30 minutes, are Valve Regulated Lead-Acid (VRLA) to BS EN 60896-21 and BS EN 61056-1. [Pr_60_70_64_93]

- f) Non-gassing valve regulated batteries are required for the UPS and do not off-gas except under fault conditions. [Pr_60_70_64_93]
- g) Devices with dual power supply units shall not have both connected to the same UPS. The UPS shall not create a single point of failure. The UPS shall have a sufficient quantity of power output connections, of an appropriate rating and type, to support the required range of equipment to be protected, including the use of PDU's of an appropriate rating, type and length, as required. [Pr_60_70_64_93]
- h) Each cabinet containing a UPS shall be fitted with a system for monitoring temperature in and above the cabinet, and to enable safe shutdown in the event of temperature rise – to be specified by the College. [Ac_05_50_54]

4.4. Server Rooms and Hub Rooms – Environmental Control

4.4.1. Environmental Design

4.4.1.1 The environmental design shall be implemented to provide stable conditions for ICT equipment as required. [PM_10_20_82]

4.4.1.2 Any environmental design shall maintain an optimal working temperature and environment for the specified ICT equipment in accordance with the manufacturer's guidance. Operating temperature range should be rated as per the requirements of a working space, occupied by staff as per Technical Annex 2H Table 7. [PM_10_20_90]

4.4.1.3 Server Rooms and hub rooms shall be provided with filtration to prevent dust ingress. [SL_90_90_77]

4.4.1.4 The UPS should have temperature sensors fitted to the top of the cabinet, so that when the temperature rises 10 degrees Centigrade above that specified for the space in the Server room and/or hub room, the UPS is activated. [Pr_75_50_76_03]

4.4.1.5 Environmental control units shall be positioned for maximum effectiveness and easy maintenance. The units and their pipework shall not be located above equipment cabinets in case of leakage. The condensate should be taken to the nearest drain outside the room. [PM_10_20_82]

4.4.1.6 A rationale shall be provided for the Environmental Control Strategy in all Server and Hub Rooms, which should be in line with the overall design of the College, and its approach to Net Zero. [PM_40_30_52]

4.5. Server Rooms and Hub Rooms - Furniture

4.5.1 All cabinets shall be 1000mm x 800mm, 42u, with full height perforated mesh doors to front and rear. [Pr_80_77_28_21]

4.5.2 Sufficient server cabinets shall be provided to house the Legacy servers and other equipment including, but not limited to, MIS servers, curriculum servers, controllers, routers, that form part of the ICT solution identified in the CSB or provided within this FE-OS. The design and layout of the cabinets shall support the cooling strategy of the room. [Pr_80_77_28_21]

4.5.3 Sufficient cabinets shall be provided to house patch panels and cable management for copper and fibre termination and active network distribution equipment, for example core and edge switching. [Pr_80_77_28_21]

4.5.4 Patch panels shall be provided for data, telephony and fibre distribution to complete the network topology. [Pr_75_80_50_60]

4.5.5 All outlets shall be appropriately labelled. [Pr_75_80_50_60]

4.5.6 Patch panels, cables, RJ-45 modules, and patch leads shall be from one manufacturer. [PM_10_20_82]

4.5.7 A rationale for the cable management strategy shall be provided. [PM_10_20_82]

4.5.8 Service containment and routing shall be provided in the form of dado, tray, riser, and basket containment to match the cable specification and design aesthetics required. To provide redundancy, there shall be two separate, independently routed, conformant fibres linking each hub room to the server room. [Ss_70_30_10]

4.6. Passive Network Infrastructure

4.6.1 The following shall be provided: passive network infrastructure (cables, ducting, containment, routing, termination, patch and fly leads and presentation) including data cabling for the ICT and wireless network and integrated systems which rely on data connections to function, for example, including but not limited to, cashless catering systems, digital signage, telephony, CCTV, Access Control, BMS etc. [PM_10_20_82]

4.6.2 All cabling shall be handled, installed and tested according to the manufacturer's guidance and warranty terms and conditions and to the following British Standards:

- a) BS EN 50173: Cabling standards and requirements [PM_10_20_90]
- b) BS EN 50174 series: Installation planning and practices [PM_10_20_90]

- c) BS EN 50310: Bonding/Earthing [PM_10_20_90]
- d) BS EN 6701: Installation, operation and maintenance. [PM_10_20_90]

4.6.3 Where fibre cabling is used the following requirements shall be met:

- a) The installation shall conform to the relevant sections within the BS EN50173 standards for the type of cable being installed. [PM_10_20_90]
- b) Fibre shall be a minimum 16 core (per cable) multi-mode OM4 (50/125). [Pr_65_70_15]
- c) Each fibre connection shall consist of 2 x 16 core cables via separate, diverse, direct routes back to the server room to ensure that both cannot be severed at the same time. [Pr_65_70_15]
- d) Where fibre connects hub and/or server rooms in separate buildings, routes shall be in separate underground ducts, no less than 1m apart. [Pr_65_70_15]
- e) No intermediate splices or patch panels shall be used in the cable runs and the minimum and maximum bend radius shall be adhered to. [Pr_65_70_15]
- f) Where fibre is over the maximum specified length for the standard, an appropriate higher specification of fibre and terminations shall be used to support the dependent active infrastructure. [Pr_65_70_15]
- g) Cables shall be a minimum of Euroclass Cca fire rating, as outlined in the latest iteration of BS 6701 or its replacement. [PM_10_20_90]
- h) Sufficient slack of no less than 3m per cable and coiled to manufacturer's guidelines shall be left at each end of the cable to facilitate re-termination or relocation. [Pr_65_70_15]
- i) A minimum 20-year manufacturer's warranty shall be provided for the complete full channel cabling system i.e., from switch to device including patch and fly leads. [PM_10_20_82]
- j) The cabling system shall meet or exceed the Permanent Link and Channel performances for Class EA and Category 6A, as defined in the respective standards. [Pr_65_70_15]

4.6.4 Where copper cabling is used the following requirements shall be met:

- a) The installation shall conform to the relevant sections within the BS EN 50173 standards. [PM_10_20_90]
- b) Copper cabling shall be Category 6A/Class EA, U/FTP - Unshielded outer shell/Foil Shielded Twisted Pair as a minimum, with all terminations and installations following the manufacturer's guidelines. [Pr_65_70_15]
- c) No intermediate splices or patch panels shall be used in the cable runs and the minimum and maximum bend radii shall be adhered to. [Pr_65_70_15]
- d) 30cm (minimum) shall be provided as slack at high level on each end of a cable run, and installation shall conform to manufacturer's requirements. [Pr_65_70_15]
- e) The length of any individual copper cable shall not exceed 90 metres between termination points. [Pr_65_70_15]
- f) All cables shall conform to a colour specification agreed with the College and Employer and be suitable for users with Colour Visual Deficiency. [Pr_65_70_15]
- g) All cables shall be terminated on labelled and numbered RJ-45 sockets. Labelling and numbering shall be agreed with the College. [Pr_65_70_15]
- h) All data cables shall be low smoke and zero halogen type. [Pr_65_70_15]
- i) Cables shall be a minimum standard of Euroclass Cca fire rating, as outlined in the latest iteration of BS6701 or its replacement. [PM_10_20_90]
- j) The Contractor shall provide patch leads consistent with the cabling specification and warranty. The patch leads shall reflect the College specific requirements for any colour scheme and be suitable for users with Colour Vision Deficiency. [Pr_65_70_15]
- k) A minimum 20-year manufacturer's warranty shall be provided for the complete full channel cabling system i.e., from switch to device including patch and fly leads. [PM_10_20_82]
- l) The cabling system shall meet or exceed the Permanent Link and Channel performances for Class EA and Category 6A, as defined in the respective standards. [PM_10_20_90]

4.6.5 Cable testing shall be undertaken in accordance with the following requirements:

- a) Successful test results shall be provided for the performance of and length of 100% of the cables that have been installed. [PM_70]
- b) Test results shall be made available to the Employer prior to active infrastructure installation. [PM_70]
- c) A sample of installations shall be selected by the Employer for checking by the manufacturer to ensure sub-contractors are accredited by the manufacturer and follow all the manufacturer's installation guidance and requirements. Any star passes shall be considered a fail. [PM_10_20_82]
- d) Test results shall include the name of the equipment used to carry out the test, the calibration date of the test equipment, and the date the test was completed. Cable lengths shall be given in metres. [PM_70]
- e) All relevant documentation shall be handed over to the College including as built drawings, cabling test results (in metres), cabling warranty certificates and evidence of installer accreditation. [PM_70]

4.6.6 The number of data ports shall be that given in the CSB. Where this information is not provided, it shall be assumed that for Colleges 1.0 data point shall be required per student. The final number and location of data points shall be finalised through the design process. [PM_10_20]

4.6.7 ICT equipment shall require one double power outlet, consisting of two sockets, for each data point provided. The type, number and location of power sockets shall be finalised through the design process. [PM_10_20]

4.7. Active ICT Infrastructure

4.7.1. Network Security

4.7.1.1 A secure wired and wireless environment shall be provided by:

- a) Configuring the wired and wireless infrastructure to support network segregation, security, and quality of service (QOS); this shall not impact on the network's deployment or performance and shall be aligned with the College environment and GDPR guidance. A rationale for how this is achieved specific to the College's requirements shall be provided. [PM_10_20]

- b) Implementing Network Access Controls and Policy Management that ensure authorised mobile user devices and/or guest user roles are securely authenticated onto the network, and that network traffic is protected from external and unauthorised internal interception, as per GDPR guidance. The Contractor shall detail how this is to be achieved. [PM_10_20]

4.7.2. Network Design

4.7.2.1 As a minimum the following information shall be provided:

- a) A logical diagram of the proposed solution topology, illustrating stacking, switch interconnects, server connections and Server Room and hub room links. All switch models to be identified, all connections to be labelled for speed and to illustrate bonding where applicable. [Ss_75_10]
- b) A detailed ICT cost matrix using the template document including component names, manufacturer part numbers, description and quantity for the proposed solution including potential cost options for the College such as external wireless access points. [PM_10_20]
- c) Current costs for elements of the solution that require revenue funding at the end of the licensing or support period proposed. For example, continuing support for cloud-based wireless management. [PM_80_30_63]

4.7.2.2 Enterprise-level Active switching, edge, and core shall be provided that:

- a) Takes account of the maximum bandwidth of the server network interface, including an analysis of those proposed in the CSB and/or the College-specific ICT Equipment Summary. [Pr_70_75_52_56]
- b) Provides as a minimum the following bandwidth between the core switch/es and edge switch stack/s via a minimum of 2 bonded (Active/Active) links per stack. [Pr_70_75_52_56]

Number of edge switches in a stack <i>Assuming a maximum of 48 ports per switch</i>	Bandwidth back to the core
1 to 4	20 Gbps
5 to 6	30 Gbps
7 to 8	40 Gbps
9 to 10	50 Gbps

Table 8 Number of edge switches in a stack

c) Maximises the bandwidth between switches within each stack so that:

- i) Edge switches shall be stacked using specific and dedicated stacking port(s) to enable high speed communication between each switch in the stack as a part of a dedicated resilient architecture. [Pr_70_75_52_56]
- ii) Edge switch stacks shall be configured with a single IP address so that the stack can be managed as a single entity. [Pr_70_75_52_56]
- iii) Stacking methodology shall support 40 Gbps interconnects between switches in a stack, without the use of link aggregation, bonding of links or similar technologies. A rationale for stacking technology(s) used shall be provided. [PM_10_20]
- iv) Where multiple core switches are provided, these shall be connected/stacked with appropriate bandwidth coherent with the wider infrastructure design. A rationale for the bandwidth proposed shall be provided. [PM_10_20]
- v) Provides a minimum of 1Gbps connectivity to the user device deployed to the desktop. [Pr_70_75_52_56]
- vi) Provides Multi-gigabit ports to support devices and infrastructure equipment that require a higher bandwidth, including but not limited to media devices and Wi-Fi Access Points. [Pr_70_75_52_56]
- vii) Shall be configured to support network segregation, security, and quality of service; this should not impact on the network's deployment or performance and should be aligned with the College environment. [Pr_70_75_52_56]
- viii) A rationale on how this is to be achieved shall be provided. [PM_10_20]

d) Can accommodate existing or future:

- i) 10Gbps connections, including but not limited to servers [PM_10_20]
- ii) All Legacy equipment [PM_10_20]
- iii) Any upgrades identified in the CSB [PM_10_20]

- iv) Any additional equipment as identified in the CSB [PM_10_20]
- e) Can accommodate at least one additional module per chassis (where a chassis is provided) or can otherwise be upgraded when additional capacity is required in the future. [Pr_70_75_52_56]
- f) Has a manufacturer warranty and support arrangement (telephone, email and web), including but not limited to, licences, software and firmware updates, providing 5 years of cover as a minimum. [PM_10_20_82]
- g) Outlines any expected ongoing revenue costs and implications for the College following the proposed 5 years' warranty/support period. [PM_80_30_63]
- h) Includes an on-site, manufacturer approved, system administrator training package, appropriate to the scale of the solution as recommended by the manufacturer. [PM_10_20]
- i) Is Energy Efficient Ethernet compliant to a minimum of 802.3az standard or equivalent. [Pr_70_75_52_56]
- j) Has central management tools for a minimum period of five years that can be used to configure the switching (core and edge), monitor performance and provide alerts in the event of a failure. [Pr_70_75_52_56]
- k) Can support the elements of the proposed solution that require POE, in compliance with the IEEE 802.3af/at/bt standard or its replacement including, but not limited to, wireless access points, CCTV cameras, Access Control systems, automated registration points and VOIP equipment. [PM_10_20_90]
- l) Has sufficient active and patched ports to support connectivity for 100% of terminated data points across the Site. [Pr_70_75_52_56]
- m) Includes an appropriate quantity of POE ports for the devices that require it, as specified in the CSB. [PM_10_20]
- n) Has a core switch design that is resilient against the failure of any single component, including but not limited to redundant power supply and management modules. [Pr_70_75_52_56]
- o) Is suitable for integration into a wider technical solution or support arrangement, if necessary, for example an existing college or estate wide solution, providing details on the standards which shall enable this to occur. [Pr_70_75_52_56]

- p) Provides for each switch a configuration file that allows it to be reset to the configuration set at Practical Completion (PC), with logging of any changes made to configuration up to and including the Rectification Period.
[PM_10_20_82]
- q) Provides confirmation that the proposed solution supports the following conditions and standards as a minimum:
 - i) That LLDP-Med is implemented in POE+ switches
[Pr_70_75_52_64]
 - ii) That all switches have a minimum of 512MB of memory
[Pr_70_75_52_56]
 - iii) That the switch topology supports a minimum of 16000 MAC addresses [Pr_70_75_52_56]
 - iv) That the network supports standards for spanning tree, for example MST/RST [Pr_70_75_52_56]
 - v) Uses non-blocking switch fabric [Pr_70_75_52_56]
 - vi) That all active equipment including but not limited to switches, access points and controllers has a valid UK warranty
[Pr_70_75_52_56]
 - vii) Designs meet any recommendations published by the manufacturer.
[Pr_70_75_52_56]

4.7.2.3 An enterprise-level wireless solution shall be provided which shall support a high number and high density of educational users by:

- a) Maximising the bandwidth between the Access Point (AP) and the switch providing a minimum of 2.5Gb bandwidth per AP. [Pr_70_75_52_42]
- b) Multi-gig switches providing a minimum bandwidth between the wireless access point (WAP) and the switch of 2.5Gbps. [Pr_70_75_52_42]
- c) Maximising the bandwidth between the AP and the user device by providing high performance access points; a rationale shall be provided for the number of aerials, spatial streams and specific technology used in the AP, and how this supports the wireless standards associated with new and Legacy devices.
[PM_10_20]
- d) Maximising AP numbers to ensure high backhaul bandwidth to each space, in line with the planned occupation level, to support simultaneous use without

degradation in performance, an explanation shall be provided for the number of access points proposed and demonstrate how this maximises the available bandwidth. [PM_10_20]

- e) Providing blanket coverage throughout the College and wider estate (excluding plant rooms and toilets) which ensures connectivity/performance is not lost whilst users roam around the building. [Pr_70_75_52_42]
- f) Providing active signal management and load balancing of user/device connectivity and provide rationale for how this is achieved. [Pr_70_75_52_42]
- g) Providing dual band connectivity. [Pr_70_75_52_42]
- h) Using the latest standard ratified by the Wi-Fi Alliance at the time of installation and be backwards compatible with previous standards. [Pr_70_75_52_42]
- i) Configuring to support network segregation, security, and Quality of Service (QOS); the contractor should demonstrate how the initial configuration meets the College's specific requirements. [PM_10_20]
- j) Having central management tools that can be used to configure the wireless access points, monitor performance and provide alerts in the event of a failure for a minimum period of five years after handover. [Pr_70_75_52_42]
- k) Having a manufacturer warranty and support arrangement (telephone, email and web) including, but not limited to, licences, software enhancements and firmware updates, providing 5 years of cover as a minimum. [PM_10_20_82]
- l) Outlining any expected ongoing revenue costs and operational implications for the College following the proposed 5 years' warranty/support period. [PM_80_30_63]
- m) Including an on-site, manufacturer approved, system administrator training package, appropriate to the scale of the solution as recommended by the manufacturer. [PM_10_20]
- n) Providing guest access and automated authentication for authorised users. [PM_10_20]
- o) To install any existing or new licensed external Wi-Fi access points procured by the College as 'new legacy' equipment and identified in the CSB, including appropriate lightning protection, grounding, and surge protection. [PM_10_20]

- p) The system is scalable at the central controller and is able to accommodate future higher bandwidth requirements and/or the implementation of a resilient dual controller system including reference to licensing, hardware/software capacity, and failover process. [PM_10_20]
- q) The system minimises the impact of interference from Building Services systems and adjacent networks and provide details of how this shall be accomplished. [PM_10_20]
- r) The system is suitable for integration into a wider existing technical solution or support arrangement if necessary, for example an existing College or estate wide solution, and which standards enable this to occur. [PM_10_20]
- s) Each wireless controller is provided with a configuration file that allows it to be reset to the configuration set at PC, with logging of any changes made to configuration up to and including the Rectification Period. [PM_10_20_82]

4.8. Local Technology

4.8.1. Local Technology – Core

4.8.1.1 Where required, all Local Technology systems, as set out in the Decant Protocol and the CSB, shall be decanted. [PM_10_20]

4.8.2. Local Technology - AV

4.8.2.1 Where required, all AV equipment, as set out in the Decant Protocol and the CSB, shall be decanted. [PM_10_20]

4.8.2.2 Any ceiling mounted classroom display technologies including pole mounted and short throw projection shall be securely fitted to eliminate vibration. [Pr_40_70_67]

4.8.2.3 The design shall consider the nature of the specific display technology to be used and should provided way of allowing the display to be viewed clearly and without reflections. [PM_10_20]

4.8.2.4 An AV wiring loom shall be supplied and installed in every teaching space, hall, and meeting room (as required for the respective equipment). The loom shall be presented via an AV faceplate and support the current AV requirements of the College including, but not limited to:

- a) 1 x VGA + 3.5mm Audio [PM_10_20]
- b) 1 x USB [PM_10_20]

c) 2 x HDMI [PM_10_20]

4.8.2.5 AV patch cables shall be provided for each of the above connections to link between the AV faceplate and the user equipment in each space. The length of the AV patch cables shall be selected to suit the specific layout in each room, with a minimum length of 2m. [Pr_65_70_15]

4.8.2.6 The AV cabling shall be installed in accessible containment and managed to eliminate any interference from adjacent power cables. [Pr_65_70_15]

4.8.2.7 In specialist areas, for example science, food rooms, vocational curriculum and design & technology rooms, the faceplate location shall take into account the teacher desk and demonstration position to ensure that appropriate connectivity can be maintained between the teacher PC/device and the classroom AV equipment – and that sight lines and viewing angles for students are maintained. [Pr_70_75_04]

4.8.2.8 Where partitions support other display solutions, such as digital signage screens, or cashless revaluation units, pattressing shall be installed across a suitable area, at a suitable height for the respective equipment, and be coordinated with appropriate power and data sockets concealed within or behind the respective unit. [PM_10_20]

4.8.2.9 Where a 'Teacher Wall' is required, it should have agreed power and data to accommodate the equipment, interactive displays and/or associated projector specified in the CSB or agreed during detailed design; the interactive display area shall be free from obstructions, not limited to dado, to enable the display to be installed at any height for staff and student use. [PM_10_20]

4.8.2.10 Where the Legacy AV equipment from drama, dance, halls, and music spaces is suitable, it shall be decanted and reinstalled. All necessary fixtures, fittings, cabling and infrastructure shall be provided. [PM_10_20]

4.8.2.11 Where the Legacy AV equipment from drama, dance, halls and music spaces is not suitable for decant, the College may procure equivalent new equipment which shall be decanted and reinstalled. All necessary fixtures, fittings, cabling and infrastructure shall be provided. [PM_10_20]

4.8.3. Automated Systems

4.8.3.1 Any cashless catering system identified in the CSB shall be installed. [Pr_40_30_65_12]

4.8.3.2 Where an indoor dining room is required in Annex CS1, it shall be designed so that there is adequate space for till points, revaluation units, digital signage and serving areas to service the number of diners in any sitting, as given in the CSB. Small power and data as specified for this equipment shall be installed. [PM_10_20]

4.8.3.3 Any Automatic Registration System identified in the CSB shall be installed and tested. [PM_10_20]

4.8.4. CCTV equipment

4.8.4.1 Where indicated as a requirement in the CSB, an Enterprise Level Video Management System shall be provided and installed meeting ACPO Secured by Design guidance (2014). The system shall meet the following requirements:

- a) Enterprise level dedicated IP-rated Network Video Recorders (NVRs) (physical, server or cloud) appropriate to the number of cameras to be installed. [Ss_75_40_53_86]
- b) Any physical NVRs shall be installed in a secure, locked cabinet within a Comms Room identified by the College and have secure keyed or password coded access. [Ss_75_40_53_86]
- c) The NVRs shall incorporate remote secure access to a second secure cloud or physical location identified by the College. [Ss_75_40_53_86]
- d) NVRs shall provide a minimum of 31 days storage of images at a minimum of 24 frames per second (fps) for the first 14 days and 15fps thereafter. [Ss_75_40_53_86]
- e) NVR storage shall be replicated in a second location physical or cloud, to be backed up at a time when the College is not active. Backups can be compiled at 15fps every 14 days. [Ss_75_40_53_86]
- f) File formats shall be capable of being exported to an external storage device for viewing by an appropriate and accredited third party. [Ss_75_40_53_86]
- g) Cameras with a minimum of 1080p resolution and 24fps video rate shall be used in internal locations. [Ss_75_40_53_86]
- h) IP66 rated cameras with infra-red night capability with sufficient infra-red illumination for the desired coverage area, and a minimum of 1080p resolution and 24fps video rate shall be used in external locations. [Ss_75_40_53_86]
- i) The CCTV system shall sit behind a firewall, be segregated from the network, and shall be protected from any external interference. [Ss_75_40_53_86]
- j) Provides configuration files that allows it to be reset to the configuration set at PC, with logging of any changes made to configuration up to and including the Rectification Period. [Ss_75_40_53_86]

- k) The number of internal and external cameras required shall be specified in the CSB. Final numbers and locations shall be identified as part of the design process. [PM_10_20]
- l) The design solution shall be based upon the specific issues for the Site and shall determine the placement of internal and external cameras. [Ss_75_40_53_86]
- m) The requirements of GDPR as applicable to the specific site shall be the operational responsibility of the GDPR Administrator at the College. [PM_10_20_82]
- n) Durable panels with statutory information shall be supplied and fitted to walls adjacent to external college entrances and at the entrance to the Secure Line. [Pr_40_10_57_86]
- o) The system shall be provided with a minimum of 5 years warranty on the equipment, and 1-year on-site support including 2 site visits for checking and cleaning, firmware updates and maintenance. [PM_10_20]
- p) The system shall be provided with any licensing and storage costs covered for 5 years. [PM_10_20]
- q) The solution shall include an on-site, manufacturer approved, system administrator training package, appropriate to the scale of the solution as recommended by the manufacturer. [PM_10_20]
- r) Any expected ongoing revenue costs and implications for the College, following the warranty/support period and licensing/storage period, shall be provided. [PM_80_30_63]
- s) Where an existing Video Management Solution is in place, for example in a multi-academy trust, the solution shall be integrated with this system to the minimum standard given in this GDB. [PM_10_20]

4.8.5. Telephony and Internet

4.8.5.1 Broadband and Backup Connections:

- a) The ordering and installation of the broadband connection (last mile, on site equipment and an active connection to the internet) and digital telephone lines shall be coordinated. This shall include, but not be limited to, Redcare, Alarm,

Lift and SIP trunking services and the relocation of existing connections or provision of new. [Ss_75]

- b) Where SIP trunking services are provided, backup connectivity shall be provided using Redcare or a GSM solution approved by the Alarm and lift supplier. [Ss_75]
- c) Where required, existing communication connections from the Existing Buildings to other locations both inside and outside of the red line shall be maintained as well as provision of new connections where necessary. [Ss_75]
- d) Internet connections are to be live onsite before ICT Implementation or the 1st commissioning requirement (e.g., Lift). [Ss_75]
- e) All revenue costs incurred during this commissioning period are the responsibility of the Contractor. [PM_10]
- f) Works shall be carried out in a way that minimises disruption to the College, including but not limited to maintaining connectivity during exam result delivery. [PM_10_20]
- g) Capital cost for works sit with the Contractor, revenue costs after handover sit with the College. [PM_10]

4.8.6. Telephone Systems

4.8.6.1 An enterprise level VOIP telephone system shall be provided. The system shall include:

- a) A central switchboard with the following features:
 - i) Call management of internal and external calls including hold, transfer, divert, forward, paging, call back when free [Ss_75_10]
 - ii) Call information including caller ID and call waiting [Ss_75_10]
 - iii) Hunt groups including group pick up and rules-based call queues [Ss_75_10]
 - iv) Call recording to allow a user of the system to record an incoming or outgoing call [Ss_75_10]
 - v) Voicemail functions including playing a pre-recorded message if the number dialled is not answered, allowing the caller to record a voicemail message, and automatically sending an email notification to the extension's user containing the voicemail as an attached

sound file [Ss_75_10]

- vi) Hot desk working allowing users to log into a shared phone that then behaves like their own extension so that they can make and receive calls and check their messages [Ss_75_10]
 - vii) Mobile twinning allowing users to link an external number to their desk extension so that incoming calls ring on both devices at the same time [Ss_75_10]
 - viii) An out-of-hours service which plays pre-recorded messages to inform callers of details such as opening hours, website address and when the College is closed [Ss_75_10]
 - ix) Automated attendant functions, provided through voice and/or key menu options, allowing callers to choose to be transferred to an operator, or to a named person/role/Department or to an extension number without going through a telephone operator [Ss_75_10]
 - x) Date and time-based scheduling of call routing and auto attendant menus [Ss_75_10]
 - xi) Monitoring and manipulation of call queues with caller priority [Ss_75_10]
 - xii) Establishment and management of multiple conference calls [Ss_75_10]
 - xiii) Be capable of interfacing to PA or Tannoy systems where these are provided in the College by other parties [Ss_75_10]
 - xiv) System administration functions to facilitate the configuration of the system and reporting of its usage – these should be accessible remotely, as well as from the college LAN, to allow changes to be made from an authorised user connecting via the Internet [Ss_75_10]
 - xv) Be resilient against the failure of any single component [Ss_75_10]
 - xvi) Support diversion of phone numbers in the event of an emergency including, but not limited, to a power failure [Ss_75_10]
 - xvii) Be scalable to accommodate future developments and flexibility of deployment. [Ss_75_10]
- b) Fixed handsets, making use of the structured cabling and IP network. [Ss_75_10]
- c) Headsets for hands-free operation for reception staff. [Ss_75_10]

- d) The telephony solution shall be integrated with the network services including the incoming telephony and broadband services, and which allows users to make and receive calls without using a physical handset. [Ss_75_10]
- e) The telephone system equipment shall have a manufacturer warranty for five years, and a hardware support arrangement, including firmware and software upgrades (telephone, email, and web), providing 1 year of cover as a minimum. [PM_10_20]
- f) Manufacturer approved training shall be provided for all staff in use of the telephone system, and administrative training for nominated staff. [PM_10_20]

4.9. ICT Decant

4.9.1. ICT Decant Protocol

4.9.1.1 Where decant is required, all resources to decommission, package, store, move and re-commission Legacy ICT equipment shall be provided. [PM_60_20_26]

4.9.1.2 An ICT Decant Equipment Schedule shall be agreed between the Employer and the Contractor in collaboration with the College. The Contractor and Employer shall specify the date on which the list is frozen. [PM_60_20_26]

4.9.1.3 Where the College is procuring new Legacy equipment for delivery to the new/refurbished Building (see section below), the delivery, storage, and insurance for installation before handover shall be coordinated with the College. [PM_60_20_26]

4.9.1.4 The resources to decommission, decant and recommission existing ICT equipment and services shall be provided. This includes:

- a) Testing [PM_60_20_26]
- b) De-installation [PM_60_20_26]
- c) Packaging [PM_60_20_26]
- d) Transport [PM_60_20_26]
- e) Storage [PM_60_20_26]
- f) Un-packing [PM_60_20_26]
- g) Installation [PM_60_20_26]

- h) Testing (as the Implementation and User Acceptance Testing UAT Schedule).
[PM_60_20_26]

4.9.1.5 ICT equipment shall be decanted to the correct locations and onto the FF&E specified by the College and the Employer. This shall include the placing of the ICT Equipment in situ. Where FF&E has not been decanted or installed prior to the ICT equipment, the decant of ICT equipment shall be delayed until the correct FF&E is in place.
[PM_60_20_26]

4.9.1.6 Where the College has a technical support team or a service provider, they shall be liaised with through the Employer to ensure a smooth transition of the College's ICT solution, including the technical decant process. [PM_60_20_26]

4.9.1.7 Where an incumbent technical support team or service provider is required to manage the integration or installation of equipment on behalf of the Contractor, the following shall be provided:

- a) Access to the site as required [PM_60_20_26]
- b) Insurances as required [PM_60_20_26]
- c) Health and safety and other site training to enable access. [PM_60_20_26]

4.9.1.8 The Contractor is responsible for ICT equipment from the point of de-installation until it has been tested and accepted by the College and agreed by the Employer. Any damage or failure of equipment is the responsibility of the Contractor. [PM_60_20_26]

4.9.1.9 In the event of equipment damage or failure, the equipment shall be returned to its previous condition or Replaced with suitable new, as agreed with the Employer, at no cost to the Employer or College. [PM_60_20_26]

4.9.1.10 The relevant conditions for maintaining existing warranties for equipment shall be adhered to throughout the decant process, for example where a certified installer is required for decommissioning and re-installing a piece of equipment such as any Class AV equipment or leased devices. [PM_60_20_26]

4.9.1.11 Where decant is not required and an alternative ICT provider is in place, the necessary access, secure storage and insurances to the nominated third-party suppliers shall be provided so that the installation and testing of ICT equipment is not delayed beyond college opening. [PM_60_20_26]

4.9.1.12 Where there is Legacy ICT sitting on Legacy FF&E and both are required to be decanted, the Contractor shall coordinate the decant and relocation of both. [PM_60_20_26]

4.9.2. New Legacy ICT equipment

4.9.2.1 If the College procure new ICT equipment to replace any unsuitable Legacy equipment, this shall be the latest version and an equivalent type or specification to the

original equipment. To be agreed with, delivered by and installed by the Contractor. This includes, but is not limited to:

- a) Classroom and hall A/V equipment [Ss_75_10]
- b) Digital signage [Ss_75_10]
- c) Internal CCTV cameras [Ss_75_40_53_86]
- d) Internal access control systems, including locks [Ss_75_40_02]
- e) External Wireless Access Points [Pr_70_75_52_42]

4.9.2.2 Coordination with suppliers and the College shall be undertaken to ensure delivery of ICT Equipment is not before the Building is ready to receive it. Installation standards for new legacy equipment shall be the same as if provided by the Contractor. [PM_10_20]

4.9.3. Local Configuration Support Package

4.9.3.1 In addition to Decant, technical support to help the College configure and administer the ICT equipment in the Building shall be provided. This should include access to a key contact to be available to direct any requests for assistance. The scope of the support shall be subject to the College’s own capacity, capabilities and type of College and should be confirmed during dialogue. [PM_10_20]

4.9.3.2 The following support days shall be provided, to be allocated by the Employer, after discussion between the College, the Employer, and the Contractor, and shall be in addition to any training delivered. [PM_10_20]

4.9.3.3 Support shall be provided during the Rectification Period. [PM_10_20]

Student numbers	Network Engineer (Switching)	Network Engineer (Wireless)	Server Engineer	Core
up to 250	1	2	2	1
251 to 500	1	2	2	2
501 +	2	2	2	2
Up to 1000	2	2	3	2
1001+	3	3	3	3

Table 9 Contractor Support Days

5. Operability and Maintenance

5.1. Operability

5.1.1 All New Buildings and any systems provided shall have services and controls that are straightforward and efficient to operate, and integrated where necessary into the whole College estate. This includes fire and security alarms, external lighting controls and access controls. [PM_35]

5.1.2 The Works shall be designed and constructed so that they are easy to clean and maintain and incorporate materials and components that can be easily and safely replaced when necessary. [PM_80_10_50]

5.1.3 The choice of materials, services and components shall be selected to cause minimum inconvenience and disruption from breakdowns, repairs and maintenance. [PM_35]

5.1.4 Any environmental and safety systems provided shall be designed, coordinated, commissioned and re-commissioned to respond to seasonal and occupation changes in accordance with the Technical Annexes: for example, the design of the window openings and the provision of free opening area for ventilation is an integral part of the Building's environmental systems. [PM_35]

5.1.5 New Buildings shall be designed so that cleaning and repair can be undertaken easily and with the minimum of disruption to the College. [PM_80_10_50]

5.1.6 New Buildings shall be designed so that they weather well and withstand wear and tear and minor vandalism. [PM_35_10_25]

5.2. Maintenance Access

5.2.1 Access for external maintenance shall be designed to comply with current regulations. [PM_80_10_50]

5.2.2 All necessary permanent means of access to the roof shall be provided for Planned Preventative Maintenance in accordance with CDM Regulations and as required in Section 3.5 of Technical Annex 2C. [PM_10_20_90]

5.2.3 Safe working space shall be provided around plant and equipment in accordance with manufacturers recommendations. [PM_80_10_50]

5.2.4 Any walkways provided shall be compliant with all health and safety standards as well as manufacturers' requirements. [PM_80_10_50]

5.2.5 Walkways to roofs shall be adequately secured, free from corrosion, and decorated in accordance with Section 2.6.8: Decorations and Finishes. [PM_10_20_90]

5.3. Operation and Maintenance Manuals

5.3.1 The Contractor shall prepare Operation and Maintenance (O&M) Manuals as set out in the Soft Landings Protocol. The O&Ms shall contain all 'as built' (record) information. [PM_70_85_56]

5.4. Planned Maintenance Plan/Programme (PMP)

5.4.1 A 5-year Planned Maintenance Plan and Planned Maintenance Programme shall be provided as per the DfE's EIR. For all relevant works:

- a) safety and security measures shall be provided for internal and external maintenance purposes including boarding, fixed ladders and handrails within roof spaces [PM_80_10_52]
- b) measures shall be incorporated to prevent birds roosting or nesting on or in the structure, especially around building entrances and rainwater goods [PM_10_20]
- c) there shall be no visible signs of entry to weather caused by a breakdown in the building fabric or its installations [PM_10_20]
- d) there shall be no discomfort to occupants due to weather penetration (any water penetration shall be measured by electrical conductivity tests). [PM_10_20]

5.4.2 The design of all parts of the Works shall facilitate future maintenance in particular by:

- a) using Good Industry Practice [PM_80_10_52]
- b) using industry standard construction methods likely to be in use for the foreseeable future [PM_80_10_52]
- c) providing ease of access for maintenance [PM_80_10_52]
- d) complying with CDM Regulations. [PM_80_10_52]

5.4.3 Where SEND is part of a College, the Planned Maintenance Programme shall take particular account of the need to minimise disruption and discomfort to building users.
[PM_80_10_52]

6. References

In addition, the design and installation shall take into account the following general references.

- a) Further education: guide to the 0 to 25 SEND code of practice, 2014, DfE. [FI_70]
- b) Equality Act 2010. [FI_70]
- c) The SEND Code of Practice, January 2015. [FI_70]
- d) Building Bulletin 93 'Acoustic design of schools - performance standards' (BB93). [FI_70]



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