



Department
for Education

Generic Design Brief

Output Specification

May 2020

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Summary

This document is the Generic Design Brief (GDB) and integral Technical Annexes which, together with the School-Specific Brief (SSB) and its Annexes, forms the Output Specification (OS).

Review date

The next planned review date for this document is November 2020.

Who is this publication for?

This document is for Technical professionals involved in the design and construction of school premises, to use as part of the Employer's Requirements of the DfE Construction Framework. It may also be used as the basis of similar documentation for other procurement routes using the Output Specification.

Document Updates

- **Version 12:** May 2020 - Amendments to ventilation systems, internal glazed screens, the interview room, decorations, external fabric, glazing and wireless networking.
- **Version 11:** May 2019 - Revised to incorporate end user feedback, evidence collected and updates to applicable standards.
- **Version 10:** November 2017 - Issued as OS 2017.
- **Versions 1-9:** July 2016 – November 2017 - Includes initial working towards OS 2017.

1. Context and Key Principles

1.1. Status of this Document

1.1.1. This document is the Generic Design Brief (GDB) and integral Technical Annexes which, together with the School-Specific Brief (SSB) and its Annexes, forms the Output Specification (OS). The Output Specification is part of the Employer's Requirements.

1.1.2. The OS sets out the required standards for School Buildings and grounds.

1.2. Document Structure

1.2.1. The OS is structured as shown in the diagram below.

Title	Content
Main document	N/A
Section 1	Context and Key Principles
Section 2	Buildings and Grounds
Section 3	Fittings, Furniture and Equipment
Section 4	ICT Design Requirements
Technical Annexes	N/A
Annex 1A	Definitions of Spaces: Mainstream Schools
Annex 1B	Definitions of Spaces: SEND and Alternative Provision
Annex 2A	Sanitaryware
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, Fire and Security Systems
Annex 2H	Energy
Annex 2I	Controls
Annex 3	Fittings, Furniture and Equipment
N/A	Building Performance Evaluation Methodology

Table 1: Generic Design Brief and its Technical Annexes

Title	Content
Main document	N/A
Section 1	Introduction
Section 2	Strategic Brief
Section 3	Project Brief
Section 4	ICT Design Requirements
Section 5	Building Quality (Off-site Schools Framework (MMC1) only)
SSB Annexes	N/A
Annex SS 1	School-Specific Schedule of Accommodation and Area Data Sheets
Annex SS 2	School-Specific Refurbishment Scope of Works (RSoW)
Annex SS 3	School-Specific Legacy Equipment Schedule (Primary and Secondary)
Annex SS 4	School-Specific Legacy Furniture Schedule (Primary and Secondary)
Annex SS 5	School-Specific ICT Equipment Summary

Table 2: School-Specific Brief¹ and it's Annexes

1.3. Definitions

1.3.1. This section identifies and explains the terms and acronyms used throughout the OS. Further definitions of space types are given in Annexes 1A and 1B.

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

Alternative Provision - 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)

¹ There is a School-Specific Brief for Mainstream Schools, for Special Schools & AP, and a further two for use with the DfE Off-site Schools Framework (MMC1) .

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...

Area Data Sheets - Spread-sheets identifying the requirements for each space, including area, services and environmental performance, and FF&E (excluding ICT). See School-Specific SoA and ADS

Balance Areas - Areas serving the whole School that are not associated with a particular Suite of Spaces, such as a Secondary School dining area

Basic Teaching Area – The area comprising all the teaching spaces (except halls and PE spaces) needed for the full range of curriculum subjects

Building - Any building or other erection on the Site

Building Elements – Different parts of any building, including roof and floor structure and coverings, stairs, ceilings, walls, finishes and doors

Building Services - Gas and water services, heating, ventilation, air conditioning, controls, access, security and alarm systems and electrical plant and installations, including pipework, ductwork and cabling

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

Department - A department or faculty within a Secondary School based on a subject (e.g. English) or a group of subjects (e.g. humanities)

Designated Unit - Additional specialist facilities on a Mainstream School Site for a small number of pupils, typically less than 30, who usually have an Education and Health Care Plan (EHCP) or a statement of special educational need. Pupils would usually spend the majority of their time there, only attending mainstream classes for a few lessons, such as PE, for assembly or for lunch

Design and Technology (D&T) - A blanket term for a number of practically based subjects requiring light and heavy practical spaces with specialist equipment, including resistant materials, textiles and graphics

Early Years – Refers to children aged 0 to 5 years. In schools this is typically children in Nursery and Reception aged 3 to 5 years

Early Years Outdoor Play – An external space directly outside Nursery and Reception classrooms for outdoor learning and play

Education and Health Care (EHC) Plan – A plan that identifies the educational, health and social needs of children and young people, and sets out the additional support needed. EHC Plans are gradually replacing statements of special educational need

Existing Buildings - The Buildings at the School prior to the relevant Completion Date but excluding any new facilities comprising the Works

Furniture and Equipment (F&E) – F&E may be fitted, fixed or loose

Fittings, Furniture and Equipment (FF&E) - FF&E is a blanket term which includes fittings, which are those items which are permanently fitted to the fabric of the Building, See Annex 3 for FF&E groups

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

General Teaching - Secondary School teaching that typically does not involve practical activities or specialist equipment, for example english, maths or humanities

Generic Design Brief (GDB) – the GDB (with the Technical Annexes) sets out the Employer's generic requirements for School Buildings and grounds. Together with the School-Specific Brief and its annexes it forms the Output Specification

Good Industry Practice - the exercise of that degree of skill, 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

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 by the Royal Institution of Chartered Surveyors (RICS). As defined in BB103, 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 will be needed if ventilation plant, chimneys or sprinkler tanks are included in the final gross area of the designed building

ICT Infrastructure – A blanket term which includes Passive ICT Infrastructure, active ICT Infrastructure, Telephony and internet provision. This is defined further in paragraph 4.1.4

Key Stage (KS) - The specific part of a child's education and relating to their age and year group

Legacy - Items which have been used at the Existing Site which are considered suitable for use in the Project

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

Loose Equipment Purchase Protocol - The protocol which will form part of the Contractor's Proposals to be agreed between the Employer and the Contractor for the procurement of loose equipment

Mainstream Schools - All schools except Special Schools and Alternative Provision

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)

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 School

National Curriculum - A set of subjects and standards used by Primary and Secondary Schools to enable children to learn the same things. It covers what subjects are taught and the standards children should reach in each subject. Schools can choose how they organise their school curriculum

Net Area - The usable area within the Gross Area of the Buildings, comprising basic teaching area; halls, dining and PE spaces; learning resource areas; staff and administration; and storage. It includes everything except Non-net Areas

Net Site area - The usable Site area available to pupils, this is also known as the 'playing field area' when considering land disposals ([Section 77 of the School Standards and Framework Act 1998](#))

New Buildings - Any Buildings constructed as new as part of the Works

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; school kitchen suites; and the area occupied by internal walls

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

Partial School Project – A project in which the Works are carried out on some buildings or parts of the grounds of a school, typically less than 75% of the overall building area

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

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

Primary School - Generally a Mainstream School for pupils aged 4 to 11 covering 3 educational stages: foundation (up to 5 years), key stage 1 (5 to 7 years) and key stage 2 (7 to 11 years). For the purposes of this OS, a Primary School includes Middle-deemed Primary Schools that provide for pupils aged 8 to 12

Profound and Multiple Learning Difficulties (PMLD) - Children 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

Refurbished Buildings - The Buildings on the Site prior to the Works which are to be refurbished, including redecoration, repairs, restoration, renovation, remodelling and any demolition of architectural and M&E elements of the buildings

Refurbishment Scope of Works (RSoW) – Annex 2 of the SSB 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

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

Renewed – A Building element or service designated ‘Renew’ in the RSoW (for instance a complete doorset in a new opening or a completely new replacement roof including roof structure)

Repaired - A Building element or service designated ‘Repair’ in the RSoW (for instance isolated repairs to an existing floor finish, window or radiator)

Replaced - A Building element or service designated ‘Replace’ in the RSoW (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)

Retained - A Building element or service designated 'Retain' in the RSoW, so left as existing

Schedule of Accommodation (SoA) - A schedule of all spaces required in the School, including their required size and type. An SoA tool is used to create a project SoA, based on the number and age range of pupil places, the school type and any existing spaces. This project SoA, listing every space in the Works, is then transferred to the School-Specific SoA and ADS

School - The school facility and the responsible body representing it

School-Specific Brief (SSB) – The SSB (and its Annexes) provides key data for a specific School and sets out any requirements for that School which are additional or alternative to the GDB (and the Technical Annexes), including where relevant the Refurbishment Scope of Works (Annex SS2)

School-Specific SoA and ADS – The School-Specific Schedule of Accommodation and Area Data Sheets, Annex SS1 of the SSB, 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 School-Specific Area Data Sheets for each space

Secondary School - Generally a Mainstream School for pupils aged 11 to 16 (or 19 if there is a sixth-form) covering 2 or 3 educational stages: key stage 3 (11 to 14 years), key stage 4 (14 to 16 years) and in some cases the sixth-form. For the purposes of this OS, a Secondary School includes middle-deemed Secondary Schools that provide for pupils aged 8 to 13

Secure Line - The agreed demarcation between secure and public areas of the School Buildings and grounds for the purposes of safeguarding and security

SEN (D) - Special educational needs (and disability)

Site - The work area or areas edged red on the relevant Site Plan(s) together with the Buildings or relevant part(s) of the Buildings within the aforementioned work areas and the service ducts and media for all utilities and services serving the Buildings or relevant part(s) of the Buildings

Special School - A school where all pupils have Education, Health and Care (EHC) Plans or statements of SEND. Special Schools cater for various age ranges including primary, secondary and all-age, and various types of SEND. Pupils are taught in small classes, and support staff and health professionals work alongside teaching staff. For simplicity, this OS refers to Special Schools that cater predominantly for ambulant pupils as 'ambulant' Special Schools and those that are specifically set up to accommodate pupils with PD and PMLD (as well as other

needs) as 'non-ambulant' Special Schools (in the OS the word School includes Special Schools unless otherwise stated)

Specially Resourced Provision (SRP) - Additional specialist facilities in a Mainstream School Site for a small number of pupils, typically less than 30, who usually have EHC plans or statements of special need. Pupils 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 suite or dispersed throughout the school

Suite of Spaces - A group of spaces, which could be teaching or non-teaching, associated by type of activity, such as General Teaching or Practical Teaching, and supported by smaller support spaces such as store rooms and toilets. Spaces can be grouped in different ways to form a suite

Supplementary Area - Net and Non-net Area which is used for non-school or support functions such as Specially Resourced Provision, a community health centre, or residential accommodation

Technical Annexes - The suite of documents integral to the GDB which sets out the detailed technical requirements for a school. Where the term GDB is used, it assumes inclusion of the requirements set out in the Technical Annexes

Teaching Resources - Material that supports teaching and learning including printed material and equipment

Whole School Project - A project in which the Works are carried out on most Buildings or most of the grounds of a school, typically more than 75% of the overall building area, and the Contractor has responsibility for providing the required facilities for the whole school with the Site

Works - All of the works (including design and works necessary for obtaining access to the Sites) to be undertaken to satisfy the Employer's Requirements, including without limitation the Early Works

1.4. Precedence of Documentation

- 1.4.1. The Contractor shall satisfy all elements of the Employer's Requirements, including the GDB (with the Technical Annexes), and the SSB. The SSB (and its Annexes) set out additional or alternative requirements to the GDB (and the Technical Annexes). In the event that there is any inconsistency between the GDB (with the Technical Annexes) and the SSB, the GDB (with the Technical Annexes) will take precedence.

- 1.4.2. The SSB should be read in conjunction with its Annexes including the School-Specific SoA and ADS and, where relevant, the RSoW - to fully understand the particular needs of the project.
- 1.4.3. For the avoidance of doubt, the Contractor shall also consider and address all requirements of Part A (General Conditions) of the Employer's Requirements, the SSB, the SoA and the ADS and the Contractor will need to provide its own versions of the SoA and ADS, using the standard format, in the Contractor's Proposals. In the event that there is any inconsistency between the RSoW and other parts of the SSB, the RSoW shall take precedence.

1.5. Compliance

1.5.1. General Requirements

- 1.5.1.1. The SSB will identify whether the Works shall be deemed a Whole School Project or a Partial School Project:
- a) in a Whole School Project, the Contractor shall be responsible for providing the required facilities for the whole School within the Site and shall comply with all requirements in this GDB and its Technical Annexes
 - b) in a Partial School 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 SSB, 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 School Project.
- 1.5.1.2. 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, as well as to any Building Elements or Building Services provided in Refurbished Building(s) which are designated Renewed or Replaced in the RSoW.
- 1.5.1.3. Where the requirements refer to an area, space or Suite of Spaces, these requirements shall apply to all spaces in any New Building(s) or Remodelled Area. Any area or space within New Buildings or Remodelled Area shall conform to all relevant requirements in this GDB and the Technical Annexes.
- 1.5.1.4. 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 or Primary School classrooms

- b) shall not apply to existing grounds within the Site except for any part that is specifically described in the SSB, or in a Whole School Project
- c) shall apply to all parts of the Site where designated a Whole School Project in the SSB
- d) shall not apply to existing grounds beyond the Site except for any part that is specifically described in the SSB (for instance for consequential work).

1.5.1.5. The Contractor shall ensure that all Buildings, grounds, ICT and FF&E provided comply with all relevant and current regulations, British and European standards and policies including without limitation those referenced in footnotes and/or listed in the Technical Annexes and the School-Specific Annexes. Where guidance documents are referenced or listed, it is to assist the Contractor, but compliance is not required.

1.5.1.6. 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 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.

1.5.1.7. FF&E manufacturers used by the Contractor shall have current BS EN ISO 14001 accreditation.

1.5.2. Refurbishment

1.5.2.1. In the School-Specific SoA and ADS, the following designations shall apply with respect to the work required to rooms, spaces or suites of spaces 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
- 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
- c) untouched Area: existing spaces or area not within the Works, to be left as existing with no work required.

1.5.2.2. Any work required to Refurbished Areas shall be as defined in the RSoW, under the headings of architectural elements (including FF&E) and M&E elements (including ICT Infrastructure). 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 element designed to satisfy the relevant outputs of the GDB and the Technical Annexes (and by the code in the ADS where relevant)
- b) replace: partially new and/or major repairs to existing element designed to satisfy the relevant outputs of the GDB and the Technical Annexes (and by the code in the ADS where relevant), where possible
- c) repair: isolated repairs to element, to satisfy the requirements in any project-specific specification or drawing issued as part of the SSB
- d) retain: existing element 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
- e) no work: No work required. To be left as existing.

1.5.2.3. Subject to paragraphs 1.5.1.2 to 1.5.1.4 and paragraph 1.5.2.4, in respect of refurbishment work to Refurbished Buildings, the required level of compliance with this GDB is set out in the RSoW.

1.5.2.4. Notwithstanding the requirements set out in the RSoW, the Contractor shall comply with the following when carrying out refurbishment work (references to paragraphs are to this GDB unless otherwise stated) statements:

- a) in all cases, Sections 1.1 to 1.6 inclusive, 2.15 (Operability), 2.16 (Maintenance), 2.17 (Phasing and Construction) and all relevant parts of Section 3 (FF&E) and Section 4 (ICT Design Requirements) apply
- b) except where refurbishment works to a space or suite of spaces are designated '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 health and safety legislation or if further works are required as a result of works to adjacent spaces
- c) except where refurbishment works to a space or suite of spaces are designated 'Untouched', all work shall be left clean, serviceable and

commissioned where necessary, as required in the Employer's Requirements Deliverables

- d) any elements provided as new by the Contractor shall have a Minimum Life Expectancy as described in paragraph 1.6.6. 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
- e) in carrying out refurbishment work, the Contractor shall comply with AD M. In Remodelled Areas, the building layout shall be clearly organised to enable ease of circulation for pupils, visitors and staff where possible, and to aid orientation and ease of movement to external areas, particularly in the event of emergency
- f) the Contractor shall ensure that works to Building Services systems provided in Refurbished Buildings take account of paragraph 2.8.2 and shall undertake an energy audit as described in paragraph 2.12.4.

1.5.3. Deliverables

- 1.5.3.1. The Deliverables identify the 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.

1.6. Key Principles

1.6.1. Overview

- 1.6.1.1. The Contractor shall ensure that the design and construction of all New Buildings, and Remodelled Area, and any FF&E and ICT Infrastructure provided by the Contractor, meet the following six overarching principles. Whilst these principles apply equally to Remodelled Areas, it is recognised that this will be within the limitations of the Buildings on the Site prior to the Works, where Building Elements or Services are only Repaired or Retained.

1.6.2. Functionality

- 1.6.2.1. The Buildings, grounds, FF&E and ICT Infrastructure provided by the Contractor shall be suitable for their intended purpose and provide an environment appropriate to a school, which supports the generic educational drivers outlined in Section 1.7: Educational Drivers. The design shall also meet any educational and

organisational requirements in the SSB, taking account of the age ranges of the pupils and of the constraints of each School Site and of any Buildings on the Site prior to the Works.

1.6.2.2. The design should result from an integration of the building design, structure and fabric, Building Services and ICT Infrastructure. It should include an integration of FF&E.

1.6.3. Health and Safety

1.6.3.1. The layout and design of the Buildings, grounds, FF&E and ICT Infrastructure provided by the Contractor are to provide a safe and secure environment for pupils and staff. People with disabilities, including those using Mobility Equipment and those with a visual or hearing impairment, must not be placed at a disadvantage by the design of the Buildings or grounds, or by the FF&E and ICT Infrastructure provided.

1.6.3.2. All Works shall be designed and constructed in line with The Construction (Design and Management) Regulations 2015.

1.6.4. A Standardised Approach

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

1.6.4.2. This could be achieved in a number of ways, including:

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

1.6.5. Future Proofing

1.6.5.1. 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. These would be in response to changes in curriculum

priorities, organisation, technology and, where required in the SSB, pupil numbers. Essential changes in room sizes should be achievable in the future without major building work.

1.6.6. Minimum Life Expectancy

- 1.6.6.1. The Contractor shall meet the Minimum Life Expectancy requirements set out in the life-expectancy tables in this GDB. This is to reduce the frequency at which the asset lifecycle replacement takes place for overall replacement of each element.
- 1.6.6.2. Where the Minimum Life Expectancy requirement is deemed to have a significant impact on capital expenditure which is disproportionate to the benefit, the Contractor is encouraged to offer best value components to achieve optimum solutions.
- 1.6.6.3. 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.
- 1.6.6.4. 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.
- 1.6.6.5. 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 School is balanced and justified against the overall whole life cost benefit to the School.

1.6.7. Sustainable Design and Construction

- 1.6.7.1. A sustainable approach to the design, construction and production of all new facilities provided, shall deliver a cost-effective and resource-efficient facility that:
 - a) optimises passive design measures, including fabric first principles
 - b) minimises the use of all resources
 - c) reduces the demand for energy and water use during the Works Period
 - d) minimises waste and CO2 emissions during the Works period
 - e) allows opportunities for recycling during the Works Period.

- 1.6.7.2. New Buildings and grounds and any new FF&E or ICT Infrastructure shall optimise the use of low-energy solutions and be designed and constructed to respond to specific Site constraints and opportunities²².
- 1.6.7.3. The Contractor shall provide the means for the effective measuring and monitoring of the performance of the New Buildings in operation. This requirement is set out in the Employer's Requirements Deliverables.
- 1.6.7.4. 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. This may include assessment against BREEAM UK New Construction criteria where this is a planning requirement, although BREEAM assessment is not a Deliverable. If BREEAM ratings are used the aim shall be to achieve a rating of 'Very Good'.
- 1.6.7.5. The Contractor shall ensure that the design facilitates an efficient approach to maintenance, life cycle replacement and facilities management, so that these can be provided in a cost-effective way. There shall be no inaccessible areas which are either difficult to clean or difficult to supervise.

1.7. Educational Drivers

1.7.1. Overview

- 1.7.1.1. The Contractor shall ensure that the design of each School takes account of the educational drivers of this GDB and any School-Specific educational drivers in the SSB.

1.7.2. Curriculum and Organisation

- 1.7.2.1. The Contractor shall design any New Building to provide enough adaptable space to be able to accommodate a range of learning scenarios, both now and in the future.

² See CIBSE TM 36, Climate Change and the Indoor Environment

1.7.2.2. Any facilities provided shall also support and encourage learning outside the formal timetable through innovative and thoughtful design, particularly in dining, social areas and any outdoor space.

1.7.3. Teaching and Pedagogy

1.7.3.1. The Contractor shall design any Buildings and grounds provided to create an environment conducive to effective teaching through the provision of:

- a) ICT Infrastructure and building design which allows the best use of the ICT available now and in the future
- b) designs which allow a range of potential furniture and equipment layouts, which are well co-ordinated with equipment, ICT and Building Services
- c) some internal transparency between the central circulation and teaching spaces so that users are visible to others in that suite
- d) a design that allows users to engage and interact with the external environment, so as to create practical hands-on learning, with a direct connection to the outdoors from Early Years classrooms in Primary Schools, and from Special School classrooms where it is specified in the SSB.

1.7.4. Behaviour and Pastoral Care

1.7.4.1. The Contractor shall design any Buildings and grounds provided to create an environment that supports behaviour and pastoral care through the provision of:

- a) entrance and circulation areas that allow space for safe and comfortable movement
- b) offices and staff workrooms that are located and designed to support passive supervision
- c) in Whole School Projects, distinct Suites of Spaces that break down the scale of Secondary and large Primary Schools
- d) toilets that are positioned for easy access and to facilitate passive supervision.

1.7.5. SEN and Disability

1.7.5.1. The Contractor shall design any Buildings and grounds provided such that a disabled pupil or pupil with SEN is not placed at a disadvantage in terms of access to teaching, learning and social spaces. The Contractor shall provide the

SEN(D) facilities listed in the School-Specific SoA and ADS, including any associated with Specially Resourced Provision or Designated Units, and to meet the particular requirements of the SSB.

1.7.5.2. The Contractor shall ensure that the environmental design and the building fabric are appropriate to the needs of disabled pupils or those with SEN, and in particular any SEN or disability described in the SSB.

1.7.6. Health and Well-Being

1.7.6.1. For any New Buildings, the Contractor shall provide an effective healthy indoor environment with daylight and electric lighting, ventilation, thermal comfort and acoustics which are designed to support educational attainment.

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 School. The Contractor shall consider and address all elements of the Generic Design Brief (GDB) and the School-Specific Brief (SSB). Although the Contractor may suggest alternative approaches, these Employer's Requirements shall only be changed or relaxed where specific derogations are agreed by the Employer.
- 2.1.2. Where the Project includes Supplementary area, such as a residential facility, the Contractor shall meet the requirements for the Buildings and grounds set out in the School-Specific Brief, including its Annexes.

2.2. Site Plan

2.2.1. Overview

- 2.2.1.1. The Contractor shall ensure that the design maximises the potential use of the Site, whilst dealing with any site-specific constraints. Any New Buildings shall be located and orientated in a manner that will create suitable internal and external spaces and allow possible future extensions.
- 2.2.1.2. The Contractor shall ensure that the design balances the needs of pedestrians, cyclists and vehicles; all users must be able to find their way safely and easily around Buildings and grounds in accordance with AD M and BS 8300:2009+A1 (2010).

2.2.2. Site Layout

- 2.2.2.1. The Contractor shall ensure that the layout of any New Building(s) or external works on the Site:
- a) ensures the safety and security of pupils, staff and visitors
 - b) provides clearly defined boundaries which discourage trespass and vandalism and, ensures good visibility to facilitate surveillance across the Site (within site constraints)
 - c) takes 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

- d) takes account of existing utilities service routes
- e) orientates New Buildings on the Site to balance passive environmental design principles with site constraints
- f) mitigates the effects of adverse environmental conditions, such as traffic noise and flooding, including any highlighted in the SSB
- g) locates quieter activities away from noisier activities and neighbourhood noise, wherever possible
- h) takes into account the needs of neighbours in close proximity
- i) provides car parking, in line with the planning requirements
- j) (for Secondary Schools in particular) allows easy movement between changing rooms and outdoor PE facilities, where relevant, and between parking areas and parts of the Buildings and grounds likely to be used outside the School day
- k) protects 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'.

2.2.3. Site Access

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

2.2.3.2. In a Whole School Project on an existing or new Site, the Contractor shall:

- a) ensure that there are no more than two easily controlled access points to each School Site, to be located to take account of pedestrian and vehicular routes adjacent to the Site (including public transport) and allow clear visual supervision in order for the School to manage the movement of pupils and visitors onto and off the School Site
- b) comply with any requirements for site access control systems specified in the SSB
- c) design the Site to be accessible to all (to be reflected in the Access Statement that the Contractor provides)

- d) ensure that all main access routes including roads, paths, ramps and entrances are clear, legible and fully negotiable, including by people with limited mobility in accordance with Part M and BS 8300:2009+A1
- e) 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
- f) 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
- g) ensure that entry/exit points for pupils are controllable either within the Building or within the overall Site
- h) ensure that when a New Building is some way back from the public highway, road access for fire appliances (and other large vehicles i.e. waste collection) is provided, and that any entrances through which appliances may need to pass satisfy AD B requirements, and that there is adequate space to enable appliances to turn.

2.2.3.3. Where a Nursery classroom is provided, the Contractor shall ensure that parents and/or carers can gain access to the Nursery to collect and drop off children without crossing any external play space, including the Early Years Outdoor Play Area.

2.2.3.4. The Contractor shall ensure that the access to any New or Refurbished Buildings or new external works provides for:

- a) fire and emergency escape routes leading to safe places of assembly
- b) access to and through soft landscape areas along defined pathways that do not require special footwear and are easily maintained
- c) in Whole School Buildings, any all-weather surfaces being located so that users do not have to cross grass to reach them
- d) separate and safe access for deliveries, maintenance vehicles and waste removal
- 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 should maintain or improve the accessibility for emergency vehicles on and around the Site)

- f) relevant adjustments for pupils with SEND when designing access routes to accommodate their particular needs, pupils with these needs are likely to be less aware of traffic risks and may not see or hear vehicles
- g) suitable access around the Building for maintenance of the grounds and building façade.

2.3. Internal Space

2.3.1. Overview

2.3.1.1. The Contractor shall ensure that the New and Refurbished Buildings provide all the teaching, support and other spaces specified in the School-Specific SoA and ADS, to suit the School's curriculum and organisation for the number of pupil places planned. The Contractor shall ensure that all such spaces are the right size, proportions and specification for their functions, as defined in the School-Specific SoA and ADS.

2.3.1.2. The Contractor shall ensure that the design of any internal spaces complies with the guidance in Building Bulletin 103: 'Area guidelines for mainstream schools' (BB103) and Building Bulletin 104: 'Area guidelines for SEND and alternative provision' (BB104). The Contractor shall also ensure that the internal spaces meet the requirements within this section.

2.3.1.3. In a Whole School Project, the Contractor shall ensure that the Building layout allows the School to be used outside of core hours. As a minimum, security systems, fire alarm systems, heating and cooling shall be zoned so that the following are provided with separate zones:

- a) sports facilities, including change areas and toilets
- b) main hall, including any catering facilities, and toilets
- c) any other spaces as identified in the SSB e.g. Nursery, community and before and after school clubs.

2.3.2. Organisation and Layout

2.3.2.1. The Contractor shall ensure that all spaces in New Buildings or Remodelled Areas are located so that there is a clear spatial diagram for the Building that is appropriate for the curriculum and organisation requirements of the School, as set

out in the SSB. Spaces shall be linked by well organised circulation space that suits the likely movement and numbers of pupils.

2.3.2.2. The Contractor shall ensure that the layout of any New Building has the right balance and distribution of space, in line with the School-Specific SoA and ADS and any requirements in the SSB.

2.3.2.3. Each School will comprise appropriate Suites of Spaces depending on the type of school. The School-Specific SoA and ADS for each School will be organised in a number of Suites of Spaces, avoiding small independent groups of rooms wherever possible. Any exceptions to this generic requirement, including Partial School Projects, will be identified in the SSB.

2.3.2.4. The Contractor shall design Suites of Spaces to accommodate the model of education that the School is proposing in the SSB, in particular:

- a) each Suite of Spaces shall provide the right number of spaces
- b) each suite of teaching spaces, other than a hall and performance spaces or heavy Practical Teaching areas, shall be adjacent to similar spaces wherever possible.

2.3.2.5. In a Whole School Project, the possibility of future changes shall be taken into account, including:

- a) each suite of teaching spaces shall be able to be linked to, or expanded into, an adjacent suite of teaching spaces in the future
- b) the configuration of spaces must be able to expand, contract and reform in as many ways as is economically feasible.

2.3.2.6. The Contractor shall ensure that all spaces provided are accessed from an adjacent circulation area, except store rooms and (where appropriate) toilet and hygiene facilities that are accessed directly from learning spaces or as stated otherwise in the SSB.

2.3.3. Dimensions and Proportions

2.3.3.1. The Net Area of any space shall be at least that required in the School-Specific SoA and ADS excluding:

- a) the area of any through circulation to adjacent spaces (as specified in paragraph 2.3.3.11)

- b) any area outside of the orthogonal shape required in paragraph 2.3.3.5 that provides only circulation (i.e. a lobby without a second door)
- c) the Net Area of any support area within the space such as coats and bags storage in a classroom.

2.3.3.2. Access to service risers within small rooms such as offices or stores shall not limit the required occupancy or furniture layout.

2.3.3.3. The Contractor shall ensure that the proportions and dimensions of any stores provided, and the location of store doors, allow ergonomically appropriate access to all shelves and an efficient shelving layout.

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. Where the area required in the School-Specific SoA and ADS cannot be achieved in a Remodelled Area, teaching spaces shall be within 10% of the minimum recommended area for that type of space. The total area of non-teaching spaces shall be as required in the School-Specific SoA and ADS, although the number of spaces may be different. Non-net Areas, such as circulation, shall be in line with the dimensions given in this section, where possible.

2.3.3.5. The Contractor shall ensure that spaces are an appropriate shape as well as size to accommodate the Employer's Requirements. In New Buildings and Remodelled Areas, any teaching spaces specified in the School-Specific SoA and ADS except those for Early Years shall be rectangular in plan and no narrower than to allow a ratio of 2:1 in either direction. The proportion of other spaces shall be orthogonal and be suitable for the required activities to take place.

2.3.3.6. In New Buildings, spaces shall be at least the minimum depth shown in Annex 1A and 1B: 'Definition of Spaces' and the School-Specific SoA and ADS and teaching spaces shall be based on the following depths (from the inside face of the external wall to the internal face of the opposite wall) to optimise the room's functionality and facilitate future adaptation. Where the Contractor proposes alternative dimensions, the functionality shall be demonstrated with an FF&E layout:

- a) for halls and 'large spaces', as defined in Annex 1A: 'Definitions of Spaces', over 115m², a depth of 10m, 12m or 18m
- b) for Primary School and Special School spaces between 35m² and 70m², a depth of 7.2m
- c) for Secondary School spaces between 70m² and 115m², a depth of 7.8m.

2.3.3.7. The proportions of any performance space shall allow the audience a clear view of the performance area.

2.3.3.8. Each space shall have at least the minimum ceiling height specified in Annex 1A and 1B: 'Definition of Spaces' and the School-Specific SoA and ADS. For New Buildings, this shall be as set out below:

- a) for teaching spaces (and medium-sized spaces such as a staff room or LRC) between 35m² and 115m²: a minimum floor-to-ceiling height of 2.7m, and minimum clear height of 2.7m in workshops and resistant materials prep rooms, and primary studios
- b) for dining areas: a minimum floor-to-ceiling height of 3.0m
- c) for all halls in Primary Mainstream schools, drama studios and dance studios: a minimum floor-to-ceiling height of 4.5m
- d) for Secondary Mainstream main halls: a minimum floor-to-ceiling height of 6.9m
- e) for activity studios and main halls in Special Schools and AP: a minimum floor-to-ceiling height of 5m
- f) for all Secondary sports halls: a minimum floor-to-ceiling height of 7.5m, or 6.9m if less than 300m², unless different in the SSB.

2.3.3.9. The minimum ceiling height above shall be to the underside of the ceiling or soffit. Isolated elements such as individual light fittings, 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 height, except in Design and Technology, PE spaces and dining spaces, where the ceiling height specified in Annex 1A and 1B: 'Definition of Spaces' and the School-Specific SoA and ADS shall be a clear height. A bulkhead can protrude below the ceiling line to 150mm below this height if it covers no more than 25% of floor area within the space.

2.3.3.10. Where there are light fittings in rafts or acoustic panels suspended below the ceiling, the ceiling height shall be measured to the underside of these elements.

2.3.3.11. The Contractor shall ensure that in New Buildings and Remodelled Area the clear width of any main circulation routes, including corridors, shall:

- a) be at least 1.8m in any Mainstream School
- b) in Secondary Schools, allow for the increased traffic flow where the entrances to Basic Teaching spaces are opposite each other
- c) be at least 1.8m in an Ambulant Special School or Alternative Provision, or at least 2m in an Ambulant Special School or Alternative Provision if pupils need more 'personal' space
- d) be at least 2.2m in any non-ambulant Special School
- e) be measured between walls, any permanent projections (such as a radiator) or the balustrade to voids, excluding skirting and small electrical fittings
- f) be unobstructed by opening doors e.g. from an accessible toilet
- g) exclude a minimum width of 0.75m for the Net Area required for any lockers, coat hooks or wheelchair storage, adjacent to the circulation route
- h) exclude any other Net Area immediately adjacent to the circulation route, to a sufficient width. This will include open-plan areas and space in front of reception desks.

2.3.3.12. The circulation in New Buildings and Remodelled Area shall also:

- a) allow for increased traffic flow at the entrances to stairways, halls and dining areas such that congestion is avoided at peak times
- b) allow for corridor doors to be held open to provide the required opening width, as specified in Annex 2D: 'Internal Elements and Finishes'.

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

- a) at least 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
- b) at least 1.2m if leading to one or two spaces of 25m² or less
- c) at least 1.5m if leading to three or more spaces of 25m² or less
- d) at least 1.8m if leading to any teaching spaces or if in a non-ambulant Special School.

2.3.3.14. Where lifts are provided, the clear lobby 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 school use.

2.3.4. Suites of Spaces

2.3.4.1. In a Whole School Project, the Contractor shall design the School to a standardised approach involving a number of Suites of Spaces, each of which will contain different types of space. In a Partial School Project, each Building will accommodate the Suites of Spaces described in the SSB. The Suites will vary depending on the type of school.

2.3.4.2. Whole School Projects for Primary Mainstream Schools shall provide the following Suites of Spaces:

- a) classrooms (including specialist spaces)
- b) hall, performance and dining, including the kitchen suite
- c) administration.

2.3.4.3. Whole School Projects for Secondary Mainstream Schools shall provide the following Suites of Spaces:

- a) general Teaching
- b) practical Teaching (art, science, D&T)
- c) music
- d) hall and performance
- e) dining and kitchen
- f) indoor PE (usually including a sports hall)
- g) Administration.

2.3.4.4. Whole School Projects for Special Schools and Alternative Provision shall provide the following Suites of Spaces, unless specified otherwise in the SSB:

- a) Classrooms
- b) practical Teaching (food, science etc.)

c) hall, performance and dining, including the kitchen

d) Administration.

2.3.4.5. In any Whole School Project, there will also be a number of Balance Areas not included in the Suites, including library, SEN resource areas, medical spaces, therapy spaces and toilets. Where a Designated Unit or Specially Resourced Provision is described in the SSB as part of a Mainstream School, there will be a further Suite of Spaces for additionally resourced SEND pupils listed on the School-Specific SoA and ADS.

2.3.4.6. The Contractor shall meet the following requirements in conjunction with any more detailed requirements set out in the School-Specific SoA and ADS and the SSB:

a) in Secondary Schools, staff accommodation within teaching Suites of Spaces, such as workrooms and pastoral offices, should be located to facilitate passive (informal) supervision of the suite and preferably any space outside toilets

b) teaching storage in any Suite of Spaces (in addition to local storage in furniture) should be designed to be in secure, enclosed and separate store rooms of the area required in the School-Specific SoA and ADS, except in Primary and Special School classrooms where the teaching storage opening off the classroom may be in a storage bay, provided it is divided by a curtain and the area is additional to that of the classroom itself

c) storage space shall be provided for personal items, such as coats and bags, Mobility Equipment and other appliances. These spaces are identified in the School-Specific SoA and ADS and shall be additional to, and not impede, circulation space, although they will often be directly 'off' the circulation route

d) in a Special School a convenient and secure store shall also be provided for sports Mobility Equipment, where listed in the School-Specific SoA and ADS

e) any Suite of Spaces shall include an accessible toilet if the Suite of Spaces is in a separate building or some distance from other toilet provision.

2.3.4.7. Any main hall provided shall be designed to accommodate assemblies, religious worship and examinations, presentations and activities for large groups, such as projects for a year group, and shall be able to be used outside the school day, for events such as performances and parent evenings.

2.3.4.8. In New Buildings the Contractor shall also take into account the following points:

- a) classrooms, General Teaching and Practical Teaching suites of Spaces, together with differing levels of support spaces, need to be accommodated within adaptable zones. These zones need to have a suitable consistent depth (from external wall with windows to internal wall) and an uninterrupted length such that a number of rooms of differing sizes and types can be accommodated
- b) classrooms, General Teaching and Practical Teaching spaces should be standardised sufficiently so that the function of these spaces can be altered to suit changes in pupil numbers or curriculum need, without structural change.

2.3.5. Classroom Suites (Primary Mainstream)

- 2.3.5.1. Any classroom suites for a Mainstream Primary School shall comprise classrooms and Practical Teaching spaces as listed in the School-Specific SoA and ADS. Where these include the option of shared teaching areas, they shall be able to accommodate a broad range of teaching activities. Classroom suites shall be designed to suit the age range of the pupils using them.
- 2.3.5.2. The requirements for services are specified in Annex 1A: 'Definition of Spaces' and the School-Specific SoA and ADS, but will typically include power, ICT Infrastructure and water.
- 2.3.5.3. Any classroom suite provided shall include the following support spaces, unless specified otherwise in the School-Specific SoA and ADS:
 - a) storage space for coats and bags
 - b) storage for Teaching Resources, directly off the classroom
 - c) in suites for Early Years, toilets (and where included in the School-Specific SoA and ADS, hygiene facilities), immediately adjacent to classrooms
 - d) small group rooms - discrete, enclosed, quiet spaces for learning support- within easy reach of classrooms
 - e) direct access to Early Years Outdoor Play for Nursery and Reception pupils.

2.3.6. General Teaching Suites (Secondary Mainstream)

- 2.3.6.1. Any Suites of Spaces provided for a Mainstream Secondary School shall accommodate a range of General Teaching activities and subjects and provide a registration base.
- 2.3.6.2. Any General Teaching suite provided shall include the following support spaces, unless specified otherwise in the School-Specific SoA and ADS:
- a) a store for Teaching Resources, close to the General Teaching spaces.
 - b) a staff work area, typically department based.
- 2.3.6.3. The Contractor shall ensure that any sixth-form provision provided meets any requirements described in the SSB and as shown on the School-Specific SoA and ADS. Some Schools with a sixth-form (usually those with a large post-16 cohort) will have a distinct General Teaching suite accommodating teaching and study activities as well as providing a registration, and perhaps, social base for sixth-form pupils. This will be supported by storage and toilet facilities. Alternatively, sixth-form seminar rooms will be distributed around the General Teaching suites with study areas attached to the library.

2.3.7. Classroom Suites (Special and Alternative Provision)

- 2.3.7.1. Any classroom suites in a Special School or Alternative Provision shall comprise classrooms and Practical Teaching spaces as listed in the School-Specific SoA and ADS. If required in the SSB, a school with Secondary-age pupils will have a distinct Practical Teaching suite (see Section 2.3.9). Any classroom suites shall be designed to suit the age range of the pupils and their SEND as described in the SSB.
- 2.3.7.2. The requirements for services are specified in Annex 1B: 'Definition of Spaces' and the School-Specific SoA and ADS, but will typically include power, ICT Infrastructure and water.
- 2.3.7.3. Any classroom suite provided shall include the following support spaces, unless specified otherwise in the School-Specific SoA and ADS:
- a) storage space for coats and bags and, where required, Mobility Equipment or other aids
 - b) storage for Teaching Resources, close to the classroom or, if required in the SSB, adjacent

- c) small group rooms - discrete, enclosed, quiet places for learning support, behaviour management or private counselling - within easy reach of classrooms or, if required in the SSB, adjacent
- d) direct access to Early Years Outdoor Play for Nursery and Reception pupils and, if required in the SSB, for older pupils.

2.3.8. Practical Teaching Suites (Secondary Mainstream)

- 2.3.8.1. Any Practical Teaching suites for a Mainstream Secondary School shall comprise teaching spaces listed in the School-Specific SoA and ADS which shall be serviced, at least with power and water, as identified in Annex 1A: 'Definition of Spaces'.
- 2.3.8.2. The Contractor shall ensure that Practical Teaching Spaces in New Buildings and Remodelled Area have the shape and proportions to allow flexibility in the range of possible FF&E layouts and that all Practical Teaching Spaces provided have enough space around FF&E for pupils to work safely, according to the requirements of Annex 3: 'Fittings, Furniture and Equipment'.
- 2.3.8.3. The Contractor shall ensure that all Practical Teaching spaces are designed to meet any requirements in the School-Specific SoA and ADS and to support safe practices.
- 2.3.8.4. Any Practical Teaching suite shall include the following support spaces, unless specified otherwise in the School-Specific SoA:
 - a) teaching stores (additional to storage in furniture in the room itself) adjacent to the Practical Teaching space, for resources and (where specified in the School-Specific SoA and ADS) for work in progress
 - b) preparation/storage rooms to service science, D&T workshops and food rooms
 - c) learning resource areas such as kiln rooms (kilns shall not be in the teaching space itself) and small group rooms.
- 2.3.8.5. Any Practical Teaching spaces provided for working with wood, metals, plastics and other materials shall have local exhaust ventilation, in accordance with the requirements of Annex 2F: 'Mechanical Services and Public Health Engineering' on local exhaust ventilation (LEV) systems and the School-Specific SoA and ADS.

2.3.8.6. Any Suite of Spaces 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. The location of the preparation room(s) shall not limit the adaptability of laboratories. Separate, secure storage should be provided for hazardous chemicals and other dangerous material, in a dedicated chemical store adjacent to and accessed from the preparation room.

2.3.8.7. Any central science preparation room shall be provided with a fume cupboard of the ducted type, fixed in position. Any fume cupboards provided in teaching spaces shall be ducted but able to be pulled out from the wall on flexible connections for demonstration purposes. Fume cupboards shall be provided in the ratio 1 per 3 science teaching spaces, rounded up, and meet the ventilation requirements in Annex 2F: 'Mechanical Services and Public Health Engineering'.

2.3.8.8. Any storage for D&T or engineering workshops provided shall be in a preparation room designed for safety, such that materials can be delivered, stored and cut to size. This room shall be located to allow easy and level access to the Practical Teaching spaces it serves.

2.3.9. Practical Teaching Suites (Secondary Special)

2.3.9.1. Any Practical Teaching suites in a Special School or Designated unit with secondary-age pupils shall comprise teaching spaces listed in the School-Specific SoA and ADS and shall be designed to suit the range of SEND at the School. For example, where there are pupils working to a mainstream curriculum, the Practical Teaching spaces will require services and specialist furniture and equipment similar to a Mainstream School.

2.3.9.2. Any Practical Teaching spaces provided in Special Schools, Alternative Provision or Designated Units shall have the flexibility to accommodate an individual's specialist equipment where necessary; and the adaptability to be used in other ways in the future. These spaces shall meet the requirements of the SSB

2.3.10. Music Suites (Secondary Mainstream)

2.3.10.1. Any Music suites shall include the following support spaces, unless specified otherwise in the School-Specific SoA and ADS:

- a) secure instrument storage positioned to allow access from a circulation area
- b) small group/practice rooms easily accessed and supervised from the main music rooms

- c) one large group/practice room, designed to accommodate a drum kit, located to minimise disturbance and directly accessible from a circulation area.

2.3.11. Hall and Performance Suites (Secondary Mainstream)

2.3.11.1. In any Whole School Project for a Secondary School, the Contractor shall provide a hall and performance suite, easily reached from the main entrance and reception, dining and kitchen suite and other support spaces.

2.3.11.2. Any main hall suite for secondary pupils shall include the following spaces, unless specified otherwise in the School-Specific SoA and ADS:

- a) a main hall with either retractable bleacher seating and a floor-level performance area or a floor-level seating area and a permanent raised stage area (unless specified otherwise in the SSB, any Secondary School of less than 900 places shall be provided with a stage and any Secondary School of 900 places or more shall be provided with retractable bleacher seating)
- b) an adjacent smaller teaching space for drama which can be used as a 'green room' for the hall
- c) storage spaces for equipment, furniture and costumes, which may be positioned to act as an acoustic buffer and lobby between the hall and drama spaces
- d) an adjacent control room which provides a view over the performance area and, if accessed from within the hall, is accessible when the bleacher seating is retracted.

2.3.11.3. The entrance doors from adjacent corridors into halls (and any spaces used for performance) shall be central to the side walls of the space, between the audience and performance areas, while doors to stores will typically be in the rear corners behind the performance area providing access via the stores to the adjacent drama space.

2.3.11.4. The Contractor shall ensure that any rooflights provided are coordinated with the layout of the hall, so they are not over the performance area.

2.3.11.5. The main hall shall accommodate the maximum occupancy given in the School-Specific SoA and ADS and the range of activities listed in Annex 1A: 'Definition of Spaces', including performance, assembly and exams. The Contractor shall ensure that the proposed furniture can be manoeuvred into an adjacent store without difficulty.

2.3.12. Dining and Kitchen Suite (including main halls in Primary Special and AP)

- 2.3.12.1. The Contractor shall ensure that the areas of any dining space(s) provided are as identified in the School-Specific SoA and ADS and are designed to accommodate any catering arrangements of the School set out in the SSB. Specific requirements, including whether dining will be dispersed around the School, rather than in a single location or, may be given in the SSB. Where required, the dining area shall be designed to allow other functions to take place, with the internal environment designed to cater for any different activities specified in the SSB.
- 2.3.12.2. Where a hall is used for a wide range of activities such as performance and PE, as well as dining (most often in a Primary School or a Special School), such spaces shall be designed to be able to accommodate all activities specified.
- 2.3.12.3. As well as responding to any specific requirements in the SSB, the Contractor shall ensure that any area provided for use as a dining space shall:
- a) in a Whole School Project, be easily accessible from all areas, conveniently positioned in relation to the kitchen and/ or serving areas, and be designed so that the space can be used during timetabled lessons without disturbing pupils who are working nearby
 - b) have sufficient circulation or other space next to the dining area for queuing and circulation at mealtimes, including for those using Mobility Equipment, without impinging on the dining tables
 - c) have an efficient layout with adequate seating capacity.
- 2.3.12.4. Where a specific dining area is required in the School-Specific SoA and ADS, the Contractor shall ensure that it is designed so that there is adequate space for till points, where required, and serving areas to service the number of diners in any sitting, as given in the School-Specific SoA and ADS or SSB. Where required in the SSB or the School-Specific SoA and ADS, the Contractor shall also design the space to facilitate the requirements for distribution of food to dining areas in other areas of the School.
- 2.3.12.5. Where a separate dining area is identified within the School-Specific SoA and ADS, it shall be provided as a discrete space to the main hall to enable the two areas to be used separately, for different functions, where the activities in one will not impinge on the requirements of the other space.
- 2.3.12.6. Any primary circulation within or across the dining area (for instance from a corridor area to the main hall) shall not be part of the dining area provided, in accordance with the area required in the School-Specific SoA and ADS.

2.3.12.7. Where specified in the SSB, parts of the overall dining spaces shall provide privacy for those that need it.

2.3.12.8. The Contractor shall involve a specialist consultant in the design of the main kitchen/catering area and associated areas, including office, toilets, changing and staff areas. The specialist consultant shall liaise with the School (and its catering provider) to determine the requirements. The kitchen suite shall have:

- a) adequate but secure servicing access for deliveries of ingredients and equipment and disposal, recycling and collection of waste
- b) the capability to prevent unauthorised access
- c) minimal impact on the School's educational functions, including avoiding noises and limiting smells in adjacent areas
- d) durable, hygienic, easily cleanable materials (see Annex 2D: 'Internal Elements and Finishes')
- e) adequate ventilation (see Annex 2F: 'Mechanical Services and Public Health Engineering')
- f) best practice design as described in Annex 3: 'Fittings, Furniture and Equipment'
- g) a toilet for catering staff, with a lobby between the toilet and main kitchen area providing a changing area
- h) a room or bay for catering staff to do admin work.

2.3.13. Sports Hall Suite (Secondary Mainstream)

2.3.13.1. In any Whole School Project for a Secondary School, the Contractor shall provide a sports hall and other indoor PE spaces, such as an activity studio, as required in the School-Specific SoA and ADS.

2.3.13.2. Any sports hall suite shall include changing facilities with showers for half a year group with equal and separate facilities for boys and girls in co-educational schools, located for easy access to internal and external sports spaces. There shall also be accessible/ staff changing rooms, storage and toilets.

2.3.13.3. Any sports hall shall be designed to allow examinations as well as sporting activities to take place, with the internal environment designed to cater for these different activities.

2.3.13.4. The sports facilities shall be designed to be accessed and used safely and easily by members of the community outside the school day.

2.3.13.5. The Contractor shall design storage in PE and sport areas to ensure that storage adjacent to the sports hall is easily accessible for storing large items of equipment.

2.3.14. Administration Suite

2.3.14.1. Any Whole School Project will have an administration suite including accommodation for administration staff and some senior management, such as a general office and head teacher's office, centrally located yet close to the main entrance of the School and the reception area. Other staff offices shall be located locally in teaching suites, as specified in the School-Specific SoA and ADS or SSB.

2.3.14.2. Any administration suite in a New Building or Remodelled Area shall include the general office and other spaces required in the School-Specific SoA and ADS for this suite. The main entrance used by visitors shall provide a secure entry sequence which meets the following requirements:

- a) the external doors lead into the entrance/reception area which accommodates a waiting area and space to access the reception desk, as well as the circulation route from the external doors to the internal doors leading into the School
- b) the interview room is directly accessible from the entrance/reception area, with an optional second door for staff use, providing this does not breach the secure line. The option of a second door would need to be appropriately assessed
- c) the entrance/reception area is adjacent to the general office and linked by a reception desk staffed from within the office area but accessible to visitors to sign in, via a secure hatch
- d) the entrance/ reception area is designed to ensure comfortable draught-free conditions and is separated from the rest of the School by doors which are remotely operated from the reception desk
- e) an accessible toilet for use by visitors is easily accessible from the entrance/ reception area, either directly or (in smaller Primary Schools) close by, such that visitors can be easily escorted
- f) the entrance/ reception is designed to accommodate displays and signage and generally create a welcoming and attractive appearance

2.3.14.3. The Contractor shall ensure that any general office provided is designed such that:

- a) there is a secure means of viewing the entrance from the general office
- b) there is a sick bay or sick room, for the short-term care of sick and injured pupils, adjacent to the general office for supervision, and with easy access to a toilet
- c) the reception desk meets the recommendations set out in BS 8300
- d) there is an openable and lockable glazed screen into the reception area
- e) where the general office is designed for more than four staff, the reception desk provides one workstation and is acoustically and visually screened from the rest of the general office; the balance of space shall accommodate the number of staff specified in the School-Specific SoA and ADS.

2.3.14.4. Access to service risers within staff rooms, offices and other administration spaces shall not limit the required occupancy or furniture layout.

2.3.15. Balance Areas

2.3.15.1. In a Whole School Project the Contractor shall ensure that the School has the balance areas listed in the School-Specific SoA and ADS and described in Section 2.3.16 to Section 2.3.22.

2.3.16. Studios and small halls (Primary)

2.3.16.1. Any studio provided in a Primary School shall be designed as a flexible space that can accommodate music and drama. Where a 'small hall', as defined in Annex 1A: 'Definitions of Spaces', is listed in the School-Specific SoA and ADS, it shall be able to accommodate PE without apparatus and any other activities required by the SSB.

2.3.17. Library and Learning Resource Centres

2.3.17.1. Any Whole School Project shall include at least one library, in a Primary or Special School, or one learning resource centre (LRC) in a Secondary School, positioned for easy access by all pupils. These will be additional to the learning resource areas, such as small group rooms, located locally in other Suites of Spaces.

2.3.17.2. Any library or LRC provided shall be designed:

- a) to accommodate formal and informal learning including individual study (using ICT and printed material) and reading
- b) to be accessible to all including those using Mobility Equipment
- c) with good sight lines for easy supervision
- d) so that mezzanine areas are avoided, unless there is a specific purpose for them that can be utilised without needing supervision from the main area
- e) to accommodate a whole class sitting at tables within a Secondary School LRC whilst part of the space remains a quiet area
- f) to accommodate half a class within a Primary School library
- g) to be adjacent to sixth form and other study areas within a Secondary School, if required in the SSB
- h) to have an adjacent secure store room
- i) to have one entrance and exit, via a book security system in a Secondary School.

2.3.18. SEND, Medical and Therapy Spaces

2.3.18.1. In any Whole School Project, the Contractor shall provide medical and therapy facilities and support spaces for SEND to include a SEN therapy/ MI room and a SEND resource base and/or other small group rooms as required in the School-Specific SoA and ADS for small group and individual support work with pupils with SEND. These spaces should be located for easy access whilst maintaining privacy for pupils.

2.3.18.2. Any SEN therapy/ MI room provided shall be designed for the medical examination and treatment of pupils and shall include a sink. This space shall also be designed to enable therapy activities for pupils requiring this, when not required for its primary function.

2.3.18.3. The Contractor shall design any Whole School Project for a Special School to include the following, in addition to the above:

- a) at least one therapy space for visiting therapists to see pupils and to carry out administrative tasks, there should be an equipment store and an accessible toilet/hygiene room nearby
- b) at least one sensory room for light and sound therapy using specialist equipment.

2.3.18.4. In a Whole School Project for a Special School, the Contractor shall also provide any additional spaces required in the School-Specific SoA and ADS or SSB, which may include:

- a) a physiotherapy room which shall have an accessible toilet/changing room nearby
- b) a soft-play room which allows children to move without inhibition and fear of injury (the room should be fitted out by a specialist)
- c) a quiet/ calming room which provides a quiet place, with materials, fittings and finishes chosen to safeguard against self-harm
- d) a nurse's base which provides a hygienic environment and includes secure and appropriate storage for medicines
- e) a hydrotherapy pool.

2.3.18.5. Where a hydrotherapy pool is provided the Contractor shall ensure that it is designed and installed by specialists, in close consultation with the Employer. It should be safe and accessible and designed to minimise the risk of infection. The Contractor shall design the pool area to have:

- a) "wet" changing rooms from which pupils can move directly to the pool, with hoisted assistance
- b) staff changing areas, adjacent to the pool
- c) a separate pool plant room with a bunded area for chemical storage.

2.3.18.6. Pool design and water treatment and maintenance shall be in accordance with PWTAG, 'Swimming Pool Water, Treatment and Quality Standards for Pools and Spas' and the PWTAG Code of Practice.

2.3.19. Non-Teaching Storage

2.3.19.1. The Contractor shall provide central and secure lockable stores where required in the School-Specific SoA and ADS, for instance for cleaning materials and

pupils' records. Where there is storage for examination papers it shall be secure and meet relevant exam board criteria (Joint Council for Qualifications (JCQ) or equivalent), or as listed in the SSB.

2.3.19.2. In a Whole School Project or in any Project in which the relevant area is provided, the Contractor shall identify the size and location of the external storage provision, including any legacy storage identified in the SSB which can be re-used, to demonstrate that it will provide easy access and be efficient to use.

2.3.19.3. Any store for medical gases shall be:

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

2.3.19.4. The Contractor shall obtain specialist advice on the use and storage of medical gas cylinders where provided.

2.3.20. Toilets

2.3.20.1. The Contractor shall ensure that in a Whole School Project or in any Project in which the relevant area is provided, the requirements for toilets stated in Annex 2A: 'Sanitaryware' are met in addition to the following requirements:

- a) the number of toilets are as listed in the School-Specific SoA and ADS
- b) the statutory requirements for toilets and washing facilities included in the School Premises Regulations or Independent School Standards are met
- c) the toilets are designed and fitted out to a standard that ensures privacy and discourages anti-social behaviour and vandalism
- d) toilets are located to provide easy access by pupils and allow for informal supervision by staff, without compromising pupils' privacy
- e) staff toilets are provided separately from pupils' toilets (except for shared accessible toilets) according to the School-Specific SoA and ADS

f) where school facilities are used by the community, there shall be toilets accessible to community users without breaching School security.

2.3.20.2. In a Whole School Project, the Contractor shall ensure that each School has sufficient toilets for disabled pupils, as specified in the School-Specific SoA and ADS. The School shall be designed such that any accessible toilet beyond the 'secure' line of the School will be for the use of pupils and staff but not visitors (except after school hours). Accessible toilets shall be designed to meet AD M.

2.3.20.3. In a Whole School Project every School shall have at least one hygiene room. In a Partial School Project, where the Project includes Nursery provision, or where it is required in the SSB, a hygiene room shall be provided. In a Primary School an accessible toilet within a hygiene room can be counted as one of the accessible pupil toilets required. The ceilings and/or walls and the supporting structure in hygiene rooms shall be designed to accommodate tracking for a hoist which can take the weight of a pupil (taking account of the age range at the school). The sanitaryware should be as listed in Annex 2A: 'Sanitaryware'.

2.3.20.4. The Contractor shall ensure that in a Whole School Project or in any Project in which the relevant area is provided, the following additional requirements are met in relation to toilet provision in Secondary Schools:

- a) except where individual toilets are specified, hand-washing facilities are made visible by being located as a direct extension to the circulation space, separate from the cubicle area
- b) at least one set of toilets is positioned to allow easy access from outdoor spaces used during lunch and break times and for sports events, as well as from indoor sports facilities and spaces used for examinations or performances.

2.3.20.5. The Contractor shall ensure that in a Whole School Project or in any Project in which the relevant area is provided, the following additional requirements are met in relation to toilet provision in Primary Schools:

- a) the toilets are located for easy access and supervision from the classrooms and some toilets are easy to access from the playground
- b) toilets for Reception and Nursery pupils are adjacent to or located directly off the classroom, as well as easily accessible from the playground
- c) each group of toilets for Reception and Nursery pupils includes one wider cubicle in to allow staff to give assistance, if required, as the School-Specific SoA

- d) where there is a Nursery the hygiene room shall double as a 'wash-down' facility for Nursery pupils which is directly accessible both from the nursery classroom and the circulation space.

2.3.20.6. The Contractor shall provide for the following additional requirements in relation to toilet facilities in Whole School Projects for Special Schools and Alternative Provision or Designated Units, to meet the particular needs of the children at the School and the School's specified approach to managing toileting arrangements, as outlined in the SSB:

- a) there are sufficient hygiene rooms, each with enough space for staff to assist and a range of sanitary equipment to suit the mix of pupil disabilities.
- b) there is a toilet facility immediately available to pupils on arrival into the School Building
- c) a unisex accessible toilet is provided close to the main entrance to allow a carer of either sex to provide assistance
- d) extract ventilation is in line with the requirements in Annex 2F: 'Mechanical Services and Public Health Engineering'
- e) in all-age Schools, there are separate facilities for primary-age and secondary-age children
- f) in Early Years, toilets and hygiene area(s) are located directly off the classroom
- g) there is a self-contained laundry, where specified in the School-Specific SoA and ADS.

2.3.20.7. Accessible toilet and hygiene facilities in Special Schools should be conveniently dispersed around the School, with suitable way-finding and clear sightlines.

2.3.21. Server Room and Hub Rooms

2.3.21.1. Refer to Section 4.2 'Server and Hub Rooms'.

2.3.22. Entrances and Circulation

2.3.22.1. The layout of any New Building shall be clearly organised and work efficiently to enable ease of circulation for pupils, visitors and staff, and to aid orientation and ease of movement to external areas, particularly in the event of emergency.

This shall be achieved through the design of the Building and not just rely on signage.

2.3.22.2. In designing any New Buildings, or carrying out works to relevant Remodelled Areas, the Contractor shall meet the following requirements:

- a) the main entrance is clearly defined, accessible and secure
- b) the Building provides shelter at principle entrances in line with AD M
- c) unauthorised access to the main School Buildings is not possible beyond the main entrance lobby, with visitors being subject to access control operated from the general office
- d) the main entrance, any main pupil entrance, any community entrance is through a draft lobby to avoid draughts and heat loss from the Building.
- e) all New Buildings are fully accessible to all people including those with impaired movement or other disabilities, in line with AD M.
- f) people with disabilities are able to use the same entrances and circulation routes as able-bodied users and sufficient space is provided on either side of doors to allow for operation by Mobility Equipment users
- g) corridors are of a suitable width as defined in Section 2.3.3: Dimensions and Proportions
- h) stairways meet the requirements of Section 2.6.5: Internal Stairs and Guarding
- i) all relevant fire legislation is adhered to, to allow safe egress from the Building in the event of a fire, taking account of any bags and coat storage pegs located off circulation areas (where this is agreed by the Employer).

2.3.22.3. In a multi-storey New Building, the Contractor shall ensure that every space in the Building is accessible to all. In a multi-storey Refurbished Building, the Contractor shall ensure that all the pupils can access every type of space in the Building, to ensure that all the pupils have full access to the curriculum.

2.3.23. Passive Supervision

2.3.23.1. The Contractor shall ensure that the design of New Buildings and Remodelled Areas allows for passive supervision, and the design of any New Buildings ensures that:

- a) internal glazed screens are required in staff work rooms and offices, as set out in Annex 2D: 'Internal Elements and Finishes', and these shall be located to allow passive supervision of corridors and staircases
- b) internal glazed screens are required to all teaching or learning spaces, to provide views into the teaching area and passive supervision to any parts of corridors or circulation where this cannot be achieved through staff work rooms or offices
- c) unsupervised areas are immediately adjacent to (and visible from) main circulation routes, and close to staff areas where possible, including open washing areas in toilets, wheelchair/ appliances bay, open lobby areas into the sides of halls, waiting areas in front of lifts and secondary corridors to smaller room
- d) vision panels in the door leaf are provided as identified in Annex 2D: 'Internal Elements and Finishes'
- e) toilets suites are planned so that the hand-washing areas can be seen from the circulation space without jeopardising privacy
- f) for Early Years, the toilet areas are visible from the teaching areas.

2.4. External Space and Grounds

2.4.1. Overview

2.4.1.1. The Contractor shall ensure that the design of any external spaces meets the requirements in Annex 2B: 'External Space and Grounds' and the guidance in Building Bulletin 103: 'Area guidelines for mainstream schools' (BB103) and Building Bulletin 104: 'Area guidelines for SEND and alternative provision' (BB104). The Contractor shall also ensure that the external spaces meet the requirements within this section.

2.4.1.2. In a Whole School Project on a new or existing Site, the Contractor shall ensure that the site layout:

- a) provides a safe and attractive environment for children and young people, offering a variety of different settings for sports, outdoor teaching, social and recreational activities
- b) provides secure play areas relative to the needs of the different age ranges of pupils and satisfying the School's safeguarding policies

- c) provides facilities for physical and non-physical activities to meet pupils' needs
- d) maximises opportunities for passive supervision, making positive use of overlooking, interaction and encounters with staff and other pupils
- e) takes account of climate change adaptation measures in planning transitional and external spaces, to reduce internal temperatures and provide outdoor shelter (Transitional spaces range from unheated atria and covered walkways to more minor spaces, such as covered verandas and porches); shelter for outdoor space can be provided by vegetation as well as by structures.

2.4.2. Typical Organisation

2.4.2.1. In any Whole School Project, the Contractor shall include the following types of outdoor space, to accommodate the formal curriculum and the informal and social activities of pupils, as outlined in the SSB:

- a) outdoor PE including hard surfaced areas marked out for games such as netball and tennis, and soft surface sports pitches to meet the School's curriculum needs.
- b) informal and Social Areas, including soft grassed/ planted areas, hard-surfaced recreational space, areas for formal learning activities to meet the School's curriculum needs and Early Years Outdoor Play
- c) habitat Areas, including supervised spaces and resources for teaching and learning to meet the School's curriculum needs
- d) non-Net Site Areas; such as access areas, cycle routes, roads, delivery, emergency access and bin storage areas, drop-off and parking.

2.4.2.2. In any Partial School 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
- b) to replace or relocate any outdoor spaces or facilities affected or removed due to the proposed Works, including play equipment and outbuildings
- c) to provide Early Years Outdoor Play area adjacent to any Early Years classrooms provided
- d) where required in the Refurbishment Scope of Works (RSoW).

2.4.2.3. The layout of any external spaces should allow for some overlap in the use of these areas. For example, the spaces around hard surfaced games courts may be used for informal and social activities.

2.4.2.4. The design and layout of these areas shall follow any hierarchy of outdoor sports facilities identified in the SSB.

2.4.2.5. The design and layout shall provide for any facilities identified in the SSB for pupils with SEN, especially in Special Schools.

2.4.3. Outdoor PE

2.4.3.1. The Contractor shall ensure that any hard-surfaced areas for games courts provided, and any adjacent or overlapping skills practice areas, accord with any requirements identified in the SSB.

2.4.3.2. The Contractor shall ensure that where several courts are provided, these are combined wherever possible to provide a multi-use games area (MUGA) and are of appropriate dimensions to suit a wide range of sports, including five-a-side football, basketball, hockey, netball, tennis (or short tennis) and volleyball. Where some sports require a higher priority, this is reflected in the SSB.

2.4.3.3. The Contractor shall ensure that, as well as meeting any requirements of the SSB, any general grass areas for multi-purpose PE use provided:

- a) have sufficient margins built into the design to allow for the pitch location to be moved annually to reduce wear
- b) are designed and constructed to a standard that allows the minimum use specified in the SSB for each School's year-round curriculum needs
- c) are economic to maintain, with easy access for maintenance equipment (and for irrigation if needed)
- d) are located and orientated to suit the activities
- e) provide sufficient pitch margins to ensure pupil safety.

2.4.3.4. The choice of surface for any all-weather pitches provided shall be based on performance, safety and durability, through:

- a) the properties best suited to the types of games to be played, such as the 'ball bounce'

b) slip resistance and abrasiveness

c) wear resistance

d) ease of maintenance.

2.4.3.5. Best practice for sub-structure preparation, cultivation, topsoil storage and placement, and for the alleviation of compaction during construction, will be followed for all areas to be grassed.

2.4.3.6. The Contractor shall ensure that any pitches provided are capable of sustaining both summer and winter use. Specialist advice should be sought to ensure an adequate pitch construction is provided.

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

2.4.3.8. Pitches and courts that are going to be used by the community must be sized in accordance with the relevant parameters detailed within Sport England 'Comparative Sizes of sports Pitches and Courts (Outdoor), 2015' and secure lines. After-hours access will require detailed consideration and shall be in accordance with any requirements in the SSB and any Planning requirements.

2.4.3.9. Where any existing outdoor PE facilities are used by the community, the existing support facilities must be retained, such as parking, access routes and lighting. Any new or additional facilities including floodlighting will require separate funding streams.

2.4.4. Hard and Soft Informal and Social Areas

2.4.4.1. The Contractor shall ensure that any informal and social areas provided cater for pupils according to their age and needs and the Contractor shall provide the following:

a) a main hard surfaced area such as a playground, marked out for activities such as informal team games, with an enclosed area if ball games could cause harm to pupils in adjacent spaces

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

- c) early Years Outdoor Play for Nursery and Reception class pupils, with direct access from classrooms
- d) other supporting hard informal and social areas where required in the SSB, or where already provided in a Whole school project, such as outside classrooms in Key Stage 1 (KS1) or outdoor dining space in Secondary Schools.

2.4.4.2. Any playgrounds provided for a Mainstream School shall be laid out to avoid small enclosed spaces and areas that make supervision difficult. They shall be of a size and shape to accommodate a typical range of playtime games and allow supervisory staff to deal quickly with any instances of bullying or undesirable behaviour. In Primary Schools in particular, playgrounds shall be accessed easily by pupils, but located so that activities do not disturb teaching in ground floor classrooms or in outdoor areas directly outside classrooms such as Early Years Outdoor Play.

2.4.4.3. For any playgrounds, the Contractor shall provide external furniture/play equipment. If not, then new items must be provided. Any outdoor FF&E provided shall be positioned for ease of access and supervision, and to minimise the risk of theft and vandalism. The specification and location of seating in social areas must include provision for use by pupils with physical disabilities and be suitable for the age range.

2.4.5. Habitat Areas

2.4.5.1. In Whole School Projects, the Contractor shall ensure that suitable outdoor spaces are included to provide various teaching and learning resources across the whole curriculum in accordance with any areas identified in the SSB, depending on the School's curriculum and the natural opportunities of the Site.

2.4.5.2. Any habitat areas provided shall be fenced, such that they can only be accessed by pupils when supervised, and can include meadowland, wildlife habitats, ponds, gardens and outdoor science areas. A portion of this area should not be developed but provide a framework to allow schools to develop parts of their grounds gradually in the future, with the participation of pupils.

2.4.5.3. Any planted areas should as a minimum conserve (and if possible, enhance) biodiversity, and be designed to allow site management without the use of hazardous pesticides.

2.4.6. Paths, Roads and Delivery Areas

2.4.6.1. The Contractor 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 pupils, staff or visitors to the School
- 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
- c) paths used for both pedestrians or cyclists are adequately dimensioned, and marked to show a separation
- d) account is taken of any local requirements specified in the SSB.

2.4.6.2. In Whole School Projects or where required as part of a Partial School Project, the Contractor shall provide access and turning facilities to suit delivery and refuse vehicles, buses and cars for staff and visitors. The Contractor shall seek appropriate advice in respect of road widths, turning radii and adequacy of construction from the relevant statutory bodies. Roadways are arranged to eliminate reversing movements in the vicinity of pupils.

2.4.7. Drop-off and Bus Turn-around Provision

2.4.7.1. In Whole School Projects or where required as part of a Partial School Project, the Contractor shall ensure that:

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

2.4.7.2. Whole School Projects including Special Schools shall have dedicated vehicle drop-off areas of a size and location to meet the School's arrangements set out in the SSB. Non-ambulant Special Schools shall have covered access from the vehicle drop-off place to the pupil entrance.

2.4.8. Parking and Cycle Storage

2.4.8.1. The Contractor shall design any parking and cycle storage areas so that:

- a) parking is segregated from other traffic movements
- b) the number of parking spaces meets planning requirements and any local requirements specified in the SSB
- c) the parking area is carefully positioned so that it does not dominate the main arrival area and entrance points round the Building, while being open and visible, where possible, from the main entrance
- d) separate bays are provided for disabled users and visitors
- e) cycle storage is easily accessible to cyclists without crossing vehicular routes wherever possible and includes a means of securing bikes; the storage should be located so that it is overseen from buildings, ideally including from the school office.

2.4.9. Outbuildings and External Storage

2.4.9.1. In Whole School Projects or in any Project in which the relevant area is provided, the Contractor shall provide appropriate external storage for the following:

- a) waste materials, including facilities for separation and recycling
- b) external equipment, e.g. for maintenance
- c) combustible waste materials, securely located in accordance with relevant legislation.

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

2.4.9.3. Any outbuildings or external storage used by the School that are affected by the Works shall be relocated or re-provided by the Contractor.

2.4.10. Groundworks and Surfacing

2.4.10.1. The Contractor shall undertake a detailed soil condition analysis of the areas to be used for outdoor PE to enable provision of pitches capable of sustaining both summer and winter use. Specialist advice should be sought to ensure an adequate pitch construction is provided.

2.4.10.2. Any hard-surfacing materials used shall meet the standards relevant to the proposed use. Refer to Annex 2B: 'External Space and Grounds' for suitable surfacing options for different external contexts.

2.4.11. Fencing and Guarding

2.4.11.1. Any fencing provided shall meet the standards relevant to the proposed use. Refer to Annex 2B: 'External Space and Grounds' for suitable fencing options for different external contexts.

2.4.11.2. All external guarding provided shall meet the requirements of AD K and BS 6180:2011 'Barriers in and about buildings', (see paragraph 8.4 in Annex 2B 'External Space and Grounds').

2.4.12. Minimum Life Expectancy

2.4.12.1. The Contractor shall meet the Minimum Life Expectancy requirements set out in Table 3.

Element	Element Name	Minimum Life Expectancy (Years)
External space	Roads and paving	40
External space	Fencing	15
External space	Hard surfaced play areas	20
External space	External furniture	10
External space	Door barriers	20

Table 3: Minimum Life Expectancy for external space

2.5. External Fabric

2.5.1. General Requirements

2.5.1.1. The Contractor shall ensure that the design of both New Buildings and Renewed elements in Refurbished Buildings meet the requirements in Annex 2C: 'External

Fabric' and the requirements within this section. The Contractor shall also ensure that the external fabric and structure 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
- 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, achievement of low elemental U-values resulting from insulation optimisation, achievement of suitable air tightness
- c) design calculations are provided to prove that thermal bridging is minimised and water ingress and interstitial condensation are prevented
- d) products and materials are used that comply with The Montreal Protocol and with British Standards or equivalent European industry standards as amended
- e) the contractor confirms that the design will be certified by an independent structural engineer and that it will meet the requirements of Building Regulations Approved Document A and BS EN Standards. Certification is required that the design has been carried out in accordance with Structural Engineering Eurocodes and the design recommendations in Annex A of BS EN 1991-1-7:2006. The design shall cover horizontal and vertical ties and designers shall check the integrity of the building following the notional removal of vertical members and the design of key elements. For structurally insulated panel systems and other large panel wall systems, certification is required for:
 - 1. hollowcore beams spanning onto wall panels
 - 2. prevention of progressive collapse for a Type 2B building
 - 3. means of support for services to be fixed to timber roof cassettes.

2.5.1.2. The Contractor shall not specify products and materials that:

- a) are generally known within the 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
- 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

- c) contain substances that deplete the ozone layer, as identified by the United Nations Development Programme.

2.5.1.3. The Contractor shall ensure that all materials are selected with due regard to their suitability for purpose and performance, durability, ease of maintenance and repair, resistance to accidental or malicious damage and to their environmental impact. The materials used must also take account of any particular local requirements or planning conditions specified in the SSB. The Contractor shall ensure that robust materials and finishes are used that stand up well to the heavy use typical of a school and the prevailing weather conditions.

2.5.1.4. In non-ambulant Special Schools particular account must be taken of safety and hygiene. The Contractor shall take account of: the possibility of accidental or deliberate damage including the wear and tear caused by Mobility Equipment; the effect that certain colours, patterns and textures can have on some people; and the higher risk of harm and infection for the most vulnerable children and young people (refer to the SSB).

2.5.2. Roofs

2.5.2.1. The Contractor shall ensure that any roof system and associated rainwater goods provided meet the performance requirements specified in Annex 2C: 'External Fabric' and that the following requirements are met:

- a) flat roofs are capable of being overlaid, over-coated, upgraded or replaced without difficulty and without adversely affecting the deck below
- b) roof construction and design addresses movement, compatibility of components and lightning protection
- c) appropriate measures are taken to deter animals or birds from sheltering under overhanging eaves and canopies
- 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.

2.5.2.2. Plant shall not be located in areas subject to severe weather or on exposed plant decks and shall be in accordance with any particular local requirements or planning conditions specified in the SSB.

2.5.3. External Walls

- 2.5.3.1. The Contractor shall ensure that external walls, and the materials chosen for them, are designed and constructed to be secure, robust, vandal-resistant and suitable for use in their proposed location. The Contractor shall ensure that they will require minimal maintenance, and only periodic cleaning, to avoid future disruption to the School.
- 2.5.3.2. Where external walls are provided in areas subject to vehicle movement, the Contractor shall incorporate additional measures to protect the façade from damage.

2.5.4. External Doors and Windows

- 2.5.4.1. The Contractor shall ensure that the positions of external doors, windows and vents are co-ordinated with the ventilation strategy and general requirements for daylight in spaces.
- 2.5.4.2. Measures shall be taken to reduce the effects of direct sunlight and glare through external glazing to satisfy the requirements set out in Annex 2E: 'Daylight and Electric Lighting'.
- 2.5.4.3. The Contractor shall ensure that ironmongery, shading and ventilator actuators, and mechanisms are robust and tamper proof and shall be easy to operate from floor level. Any specific requirements for ironmongery for Special Schools are identified in the SSB.
- 2.5.4.4. The Contractor shall ensure that windows, vents and shading are designed and constructed to:
- a) provide sufficient light and natural ventilation (or supplement other ventilation as required
 - b) be of a type that does not create a noise nuisance
 - c) take account of the acoustic requirements and have regard to local acoustic conditions
 - d) be safe in closed or open positions, and not be hazardous to persons passing by windows internally or externally
 - e) prevent children from falling out at all levels
 - f) require minimum maintenance to avoid future disruption to the School

g) not compromise the security of the Building.

2.5.4.5. The Contractor shall ensure that any external doors provided shall:

- a) be robust enough to withstand the heavy use typical of a school, require minimal maintenance, be weatherproof, and maintain the safety and security of the facility
- b) take into account the different ages and abilities of all users
- c) be vandal-resistant and incorporate appropriate controls and/or fittings to discourage misuse, but afford safe operation and adequate security
- d) allow disabled access, including access for motorised electric wheelchairs.

2.5.4.6. The Contractor shall ensure that any glazed external doors provided shall take account of the acoustic requirements and have regard to local acoustic conditions.

2.5.5. Minimum Life Expectancy

2.5.5.1. The Contractor shall meet the Minimum Life Expectancy requirements set out in Table 4 for any external fabric provided.

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
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 4: Minimum Life Expectancy for external fabric

2.6. Internal Elements and Finishes

2.6.1. General Requirements

- 2.6.1.1. The Contractor shall ensure that the design of any internal elements and finishes meet the requirements in Annex 2D: 'Internal Elements and Finishes'. The requirements within this section shall also be met.
- 2.6.1.2. The acoustic performance of all internal elements and finishes should be considered in an integrated way and shall satisfy Building Bulletin 93: 'Acoustic design of schools – performance standards' (BB93).
- 2.6.1.3. In non-ambulant Special Schools, particular account must be taken of safety and hygiene. The Contractor shall take account of: the possibility of accidental or deliberate damage including the wear and tear caused by Mobility Equipment; the effect that certain colours, patterns and textures can have on some people; and the higher risk of harm and infection for the most vulnerable children and young people (refer to the SSB).

2.6.2. Internal Walls

- 2.6.2.1. The Contractor shall ensure that new or replaced partition walls are fit for their intended use.
- 2.6.2.2. The Contractor shall ensure that the finishes of all internal walls, and the internal face of external walls, are adequately protected from damage, especially on corners of main circulation routes, and areas vulnerable to impact by mobility and teaching equipment.

2.6.3. Internal Doorsets

- 2.6.3.1. The Contractor shall ensure that materials and finishes used for new internal doorsets:
- a) are suitably robust for normal school use and perform their necessary protective and decorative functions
 - b) are from sustainable sources, wherever possible, and able to be recycled at the end of the product's life
 - c) take into account the capability of the user (in terms of dexterity, strength and visual acuity)
 - d) do not create any reflections likely to disturb pupils or affect visually impaired people's ability to use the doorset.
- 2.6.3.2. The Contractor shall take measures to prevent damage to faces and edges of doors provided, particularly from impact with mobility and teaching equipment, especially in high traffic areas or when there is regular movement of equipment and materials, for example in kitchens, workshops and laboratories, or in non-ambulant Special Schools.
- 2.6.3.3. The Contractor shall ensure that new doors are wide enough to allow Mobility Equipment access (where specified in the School-Specific SoA and ADS), with good visibility maintained on both sides of the door.
- 2.6.3.4. The Contractor shall ensure that vision panels, as required in Annex 2D 'Internal Elements and Finishes', are fitted in all door leaves wider than 450mm, except those leaves on door sets leading into changing rooms; medical inspection rooms; plant rooms; service ducts; and store rooms.

2.6.4. Internal Door Hardware

2.6.4.1. The Contractor shall ensure that the following general requirements are met in any new doorsets or Replaced doors:

- a) all hardware provides functionality and performance appropriate to the intended use of that doorset and does not undermine the performance of the doorsets to which they are fitted.
- b) all doors to rooms, stores etc. are lockable, with a suited manual key system unless specified otherwise within the SSB
- c) the detail of the locking and suiting requirements to individual rooms is agreed with the Employer
- d) all hardware including door closers and door seals takes account of the age of the pupils operating the doors.

2.6.4.2. The Contractor shall ensure that access control devices shall:

- a) not undermine the performance provided by the doorsets on which they are fitted
- b) not inhibit escape in the case of a fire or other emergency
- c) comply with relevant directives for electronic devices
- d) be able to be operated by disabled users
- e) offer appropriate durability
- f) offer the range of functionality required
- g) be repairable or replaceable.

2.6.5. Internal Stairs and Guarding

2.6.5.1. The Contractor shall ensure that the planning and design of any stairway:

- a) contributes to an efficient and balanced circulation provision, with enclosed fire escape stairs being available for normal use (unless otherwise agreed with the Employer)

- b) takes account of the effect of the staircase locations on potential for future expansion
- c) provides fire escape stairs with a level exit directly to the outside of the Building
- d) minimises travel times between lessons
- e) minimises congestion by being sized to enable efficient flow of pupils and staff during class changeovers
- f) allows carry-down evacuation for Mobility Equipment users where necessary
- g) assists navigation and wayfinding around the building, being easy to find and clearly differentiated
- h) meets the requirements of paragraph 6.1 in Annex 2D: 'Internal Elements and Finishes'.

2.6.5.2. The Contractor shall ensure that prevention from falling is addressed in the design of staircases and guarding. All guarding provided shall meet the requirements of AD K and BS 6180:2011 'Barriers in and about buildings', (see paragraph 6.1 in Annex 2D 'Internal Elements and Finishes'). In addition:

- a) guarding of walkways or staircases with voids on both sides shall be 1250mm high
- b) guarding of walkways or staircases with a void on one side shall be 1250mm high
- c) any occupied, furnished mezzanine area (such as a learning resource area) shall have guarding 1500mm high adjacent to the void
- d) any additional requirements for the height of guarding based on a risk assessment and specified in the SSB shall be met
- e) all safety glass in critical locations shall meet the requirements in paragraph 6.1 in Annex 2D and paragraph 8.4.1.3 in Annex 2B.

2.6.6. Floor Finishes

2.6.6.1. The Contractor shall ensure that the choice and installation of any new floor finish complies with the following requirements in all internal areas of the Buildings, in addition to any required in the SSB:

- a) resilience - floor finishes are able to support the F&E listed in Annex 3: 'Fittings, Furniture and Equipment' and the School-Specific SoA and ADS; withstand pedestrian traffic without undue deformation or permanent marking; and are able to accommodate thermal and structural movement in both the finish and the sub-floor
- b) continuity - there are minimal joints, and flush joints between different finishes
- c) cleaning - the ease and frequency of cleaning is taken into account, as well as the level of hygiene required.
- d) suitability - the finish including texture and colour is suitable for the age and needs of pupils including those with SEND
- e) safety - including slip resistance where specified in Annex 1A and 1B: 'Definition of Spaces' or the School-Specific SoA and ADS.

2.6.6.2. The Contractor shall provide suitable barrier matting at all external entrances, in order to remove dirt and moisture from the soles of shoes and wheeled traffic.

2.6.6.3. For any server room and hub rooms provided, the Contractor shall provide anti-static flooring and all extraneous metal parts, including door frames, shall be electrically earth bonded. See Section 4.2.

2.6.7. Ceilings and Soffits

2.6.7.1. The Contractor shall comply with the following requirements in all internal areas of New Buildings and in any Replaced ceilings:

- a) any finishes to the soffit do not compromise the thermal performance of the surface in relation to the radiant heat exchange
- b) services and horizontal surfaces are accessible for cleaning
- c) ceilings within toilets and changing rooms are robust, moisture resistant, easy to clean and inaccessible to pupils
- d) where equipment or plant is located within a false ceiling, a suitable, robust, permanent means of access for maintenance is provided.

2.6.7.2. In Special Schools and Alternative Provision, the Contractor shall ensure that any additional requirements, specified in the SSB, are met. The Contractor shall also comply with the following requirements:

- a) where a ceiling-mounted hoist or physiotherapy equipment is provided, tracking is coordinated with the ceiling, services and the structure is able to support the equipment and the person using the equipment
- b) in non-ambulant Special Schools, ceilings in medical treatment rooms are homogeneous with recessed light fittings
- c) ceilings in pool areas are designed to avoid mould growth.

2.6.8. Decorations and Finishes

2.6.8.1. In all internal areas of the Buildings, the Contractor shall ensure that any decorations and finishes:

- a) are suitable for the activities taking place in the area, and for the age and any special needs of the occupants
- b) take account of safety and fitness for purpose
- c) are able to withstand heavy use typical of a school
- d) are easy to clean and maintain, such that light surface markings can be removed with warm water and a mild detergent; and that special cleaners and solvents would only be required to remove indelible stains such as from a permanent marker
- e) contribute to the level and quality of light in a space and ensure visual comfort, with any concrete soffits painted white
- 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.

2.6.8.2. The Contractor shall ensure that decoration and finishes are not left in a rough, unfinished condition following completion of the Works.

2.6.8.3. The Contractor shall take account of the requirements of pupils 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. Where children are especially vulnerable to infection, all surfaces shall be smooth and easy to clean to minimise the collection of dust and pathogens. Anti-bacterial coatings may be necessary

where there are pupils with health problems. Any specific requirements will be given in the SSB.

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 room, displaying only the level of information required at each decision point.
- 2.6.9.2. In Whole School Projects, the Contractor shall provide a main site entrance sign and external directional signage to provide guidance for wayfinding by pedestrians and vehicles, especially for visitors, in directing them from the site entrance (via visitor parking if arriving by car) to the main reception. As people move around the site signs shall give clear indications of directions for all users, including those new to the School, and shall define the purpose of the Buildings, providing reassurance and confirmation that they are moving in the right direction. There shall be signs to clearly identify assembly points, public and staff parking, externally accessed stores and plant rooms, delivery routes, restrictions and limitations, warnings and hazards etc.
- 2.6.9.3. 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 at lifts and stairs) to provide guidance for internal wayfinding. These will inform people of which department, room, facility etc. is on each floor, as well as informing them which floor they are currently on. There shall also be room numbering provided in logical blocks, using the building layout and architecture to provide suitable sequenced areas.
- 2.6.9.4. The Contractor shall provide signs for every room and space as agreed with the School or detailed in the School-Specific SoA and ADS or SSB.

2.6.10. Sanitaryware

- 2.6.10.1. The Contractor shall ensure that all sanitaryware provided meets the specification detailed in Annex 2A: 'Sanitaryware' and the School-Specific SoA and ADS.
- 2.6.10.2. The Contractor shall ensure the needs of pupils with SEND described in the SSB are addressed.
- 2.6.10.3. The Contractor shall ensure that all serviced sanitaryware is integrated with the artificial lighting, power and other systems in the Building as defined within Section 2.7 to Section 2.11, and Annex 2E: 'Daylight and Electric Lighting' and Annex 2F: 'Mechanical Services and Public Health Engineering' and Annex 2G: 'Electrical Services, Communications, Fire and Security Systems', and it shall

be clear where the responsibility lies for the various fitting and connections in each case.

2.6.10.4. The Contractor shall ensure that all sanitaryware that incorporates water and drainage is installed so as to ensure hygienic conditions and the effective disposal of waste water and all liquid waste from the School and its activities.

2.6.10.5. The Contractor shall ensure that any sanitaryware provided:

- a) is manufactured from durable materials, and easy to clean and maintain
- b) is suitable for different ages and any special needs as detailed within the SSB
- c) meets the Minimum life Expectancy requirements in Table 3 and to ensure minimum inconvenience and disruption from breakdowns, repairs and maintenance activities
- d) is simple in construction, to reduce maintenance and replacement costs
- e) is easy to operate where adjustable (but difficult to misuse), repair or replace
- f) is housed in such a way that it is easy to access or remove for maintenance purposes.

2.6.11. Minimum Life Expectancy

2.6.11.1. The Contractor shall meet the Minimum Life Expectancy requirements set out in Table 5 in any internal element provided.

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
Fire roller shutters	Between the School kitchen server and hall and School reception hatch if required by Building Control (may need to be fire-rated depending on the Contractor's fire strategy)	20

Internal guarding	Internal Guarding to 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 5: Minimum Life Expectancy for internal elements and finishes

2.7. Internal Environmental Condition

2.7.1. Overview

2.7.1.1. The Contractor shall ensure that the design of the internal environmental conditions of all spaces meet the requirements in Annex 2E: ‘Daylight and Electric Lighting’, Annex 2F: ‘Mechanical Services and Public Health Engineering’, Building Bulletin 93: ‘Acoustic design of schools – performance standards’ (BB93) and the requirements within this section.

2.7.2. Daylight and Electric Lighting

2.7.2.1. The Contractor shall ensure that the quality of light provided supports a positive teaching and learning environment. The Contractor shall ensure that any lighting system provided:

- a) creates a sufficient, effective and pleasant visual environment whilst minimising glare
- b) meets the needs of pupils with SEND as required in the SSB
- c) exploits energy saving opportunities without compromising the quality of the visual environment
- d) employs low maintenance solutions.

2.7.2.2. These criteria shall be read in conjunction with Annex 1A and 1B: ‘Definition of Spaces’, the School-Specific SoA and ADS and any additional requirements in the SSB.

2.7.3. Specialist Lighting

2.7.3.1. The Contractor shall refer to the SSB in order to identify any specific lighting requirements. Where lighting is designed by a specialist (such as theatre lighting), the Contractor shall:

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

2.7.3.2. The Contractor shall provide a stage lighting system in any school hall or drama studio provided in accordance with Annex 2E: 'Daylight and Electric Lighting'.

2.7.4. Thermal Comfort

2.7.4.1. The Contractor shall ensure that all spaces provided are designed to meet the requirements for design criteria for thermal comfort as set out in Annex 2F: 'Mechanical Services and Public Health Engineering'.

2.7.4.2. All parts of New and Refurbished Buildings shall comply with the temperature requirements given in Annex 2F: 'Mechanical Services and Public Health Engineering'.

2.7.4.3. For summertime thermal comfort, the Contractor shall carry out an Overheating Risk Assessment (ORA) of free running designs by following the procedure set out in Annex 2F: 'Mechanical Services and Public Health Engineering' and shall design and install all heating systems so as to limit the maximum internal temperatures in line with Annex 2F: 'Mechanical Services and Public Health Engineering'.

2.7.4.4. For wintertime thermal comfort, the Contractor shall design all heating systems so as to ensure that the minimum temperatures are in line with the design conditions set out in Annex 2F: 'Mechanical Services and Public Health Engineering'.

2.7.4.5. The Contractor shall ensure that systems provided to control thermal comfort for SEND pupils are designed and installed in accordance with Annex 2F: 'Mechanical Services and Public Health Engineering' and such that:

- a) they take into account any specialist requirements of the pupils described in the SSB

- b) they do not have a detrimental effect on the learning environment of the pupils
- c) they provide a safe and secure environment for the occupants.

2.7.5. Indoor Air Quality

2.7.5.1. The Contractor shall ensure that the indoor air quality shall be in line with Sections 5, 6 and 7 of Annex 2F: 'Mechanical Services and Public Health Engineering'.

2.7.5.2. As required by Annex 2F: 'Mechanical Services and Public Health Engineering', the Contractor shall ensure that systems are provided to monitor indoor air quality and that systems are designed and installed to effectively control the indoor air quality within the spaces.

2.7.5.3. The Contractor shall ensure that the following aspects of indoor air quality are effectively controlled in all spaces, in accordance with Annex 2F: 'Mechanical Services and Public Health Engineering':

- a) odour control
- b) carbon dioxide content
- c) particulate and/or pollution control
- d) dust, moisture and fumes.

2.7.5.4. The Contractor shall provide dedicated local exhaust and local extract ventilation as required by Annex 2F: 'Mechanical Services and Public Health Engineering'.

2.7.5.5. The Contractor shall ensure that systems provided to monitor and control the indoor air quality for SEND pupils are designed and installed in accordance with Annex 2F: 'Mechanical Services and Public Health Engineering', such that:

- a) they take into account the specialist requirements of the pupils as described in the SSB
- b) there is no detrimental effect to the learning environment of the pupils
- c) they provide a safe and secure environment for the occupants.

2.7.6. Acoustics

2.7.6.1. The Contractor shall ensure that the design of all spaces in both New and Refurbished Buildings:

- a) complies with sound insulation, reverberation time, and indoor ambient noise levels in BB93 unless agreed with the Employer
- b) complies 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
- c) takes into account Site and internal room layout, provision of noise attenuation barriers and choice of ventilation systems
- d) accommodates the needs of pupils with SEND such as hearing impairments or communication difficulties, where additional requirements are highlighted in the SSB.

2.7.6.2. The IoA/ANC guide on how to achieve the Standards in BB93 should be taken into account³.

2.7.6.3. 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 School will be running during teaching activities in order to limit the operational background noise levels in accordance with Section 2.21 of the IoA/ANC guide³. If a School has Legacy equipment which would result in excessive background noise levels in the 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.

2.7.6.4. For spaces and internal walls in Refurbished Buildings, the Contractor shall not be entitled to any lower performance standard than those given for refurbishment in BB93, other than in exceptional circumstances; in which case the Contractor shall put forward a full Alternative Performance Standard (APS) in accordance with BB93 to the Employer, clearly outlining the practical implications of the suggested alternative.

³ Acoustics of Schools: a design guide published by IoA/ANC is available at <http://www.association-of-noise-consultants.co.uk/acoustics-of-schools-a-design-guide/>

- 2.7.6.5. The Contractor shall provide information as described in BB93 to demonstrate compliance with the acoustic standards specified in BB93 in accordance with Section 2 of BB93. This shall include plans, construction details, material specifications, and calculations, as appropriate for each area of the School. These shall be included in the acoustics section of the Environmental Strategy Report, as required under the Employer's Requirements Deliverables, and on acoustics drawings and calculations for Building Control approval.
- 2.7.6.6. The Contractor shall carry out pre-completion and post-completion testing in accordance with the Good Practice Guide for the acoustic testing of schools published by the Association of Noise Consultants, as required under the Employer's Requirements Deliverables.
- 2.7.6.7. Where required for Special Schools, Designated Units or SRP, acousticians and audiologists specialising in hearing impairment and teachers of the deaf shall be consulted to identify the needs of the pupils. The Contractor shall agree these needs with the Employer. Specialist provision such as radio aids shall be provided where specified in the SSB.
- 2.7.6.8. If Alternative Performance Standards (APS) are required, the Contractor shall put forward a full APS in accordance with BB93 to the Employer, clearly outlining the practical implications of the suggested alternatives.

2.8. Building Services – Common Principles

2.8.1. Overview

- 2.8.1.1. The Contractor shall ensure that the design of Building Services meets the requirements in Annex 2E: 'Daylight and Electric Lighting', Annex 2F: 'Mechanical Services and Public Health Engineering', Annex 2G: 'Electrical Services, Communications, Fire and Security Systems', Annex 2H 'Energy', Annex 2I 'Controls', and the requirements within this section.
- 2.8.1.2. The Contractor shall ensure that the Building Services systems:
- a) are designed and installed to be effective, safe, clean and hygienic for all users
 - b) are easy to use and avoid complex systems that require specialist maintenance
 - c) are energy efficient in line with current best practice

d) are zoned in accordance with Annex 2I 'Controls'.

2.8.1.3. The Contractor shall ensure that the use of passive measures are considered before active measures are proposed as part of the integrated building design.

2.8.1.4. The Contractor shall ensure that the requirements listed above are in the Environmental Strategy Report, as part of the Deliverables.

2.8.1.5. The Contractor shall ensure that the distribution of services throughout provides flexibility for future refurbishment, expansion and renovation. The services distribution shall allow ease of access for maintenance but should also be concealed throughout, where possible, to enhance the aesthetics of the school and to reduce the risk of personal injury, vandalism and harm.

2.8.1.6. The Contractor shall ensure that the Building Services engineering design and installation:

a) takes account of the requirements of the end users and occupants, including those with SEND

b) is robust and fit for purpose

c) is tamper-proof and not easily vandalised or adjusted to the detriment of the system, users or Building itself.

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

2.8.1.8. The Contractor shall notify all authorities in accordance with their regulations, obtain any required approvals for the installation and negotiate new provisions where required to meet the Employer's Requirements.

2.8.1.9. The Contractor shall comply with utility company infrastructure work requirements, undertaking any necessary reinstatement, protection or diversions of existing services within the Site with minimal disruption to services, surrounding public and School activities.

2.8.1.10. The Contractor shall ensure that any incoming utility supplies run within the Site boundary and are routed in accessible locations throughout the Site. The Contractor shall install the incoming services from the Site boundary to the School Building to follow roadways, paths etc. The Contractor shall avoid routing of incoming services across sports fields.

2.8.1.11. The Contractor shall locate any electrical substations and gas meter houses on the Site boundary in an accessible, unobtrusive and convenient location to allow for out of hours access by the utility companies. The Contractor shall liaise 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.

2.8.2. Refurbishment Requirements

2.8.2.1. The Contractor shall ensure that works to Building Services systems in Refurbished Buildings satisfy the requirements of the Refurbishment Scope of Works (RSoW) and take account of:

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

2.8.3. Minimum Life Expectancy

2.8.3.1. The Contractor shall meet the Minimum Life Expectancy requirements set out in Table 6.

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 6: Minimum Life Expectancy for Building Services

2.9. Mechanical Services

2.9.1. Integration with Existing Services

2.9.1.1. Building Services systems shall be integrated with existing Site services and systems.

2.9.2. Heating and Cooling Systems

2.9.2.1. The requirements for heating and cooling are set out in Annex 2F: 'Mechanical Services and Public Health Engineering'.

2.9.2.2. The Contractor shall undertake:

- a) a heat loss assessment to establish the required heating load of the Works, the predicted thermal performance of the building fabric shall meet or exceed Part L and local planning requirement
- b) an overheating risk assessment (ORA); from this the Contractor shall establish whether cooling and/or enhanced mechanical or natural ventilation is required within any part of the Works.

2.9.2.3. The Contractor shall ensure:

- a) the heating and cooling systems cater for any specialist requirements (including any highlighted in the SSB) in the proposed development including areas of high-density ICT, server and hub rooms, hydrotherapy pools in Special Schools or specialist teaching spaces
- b) any heating or cooling plant and/or emitters are appropriately sized for the application within the proposed development
- c) the heating and cooling system is capable of intermittent operation with appropriate automation and capacity to ensure the School is raised to the design temperature by the School start time or when the students arrive following a weekend, school holiday or normal day; the systems shall be designed and controlled to allow for flexibility in the patterns of usage of the School.

2.9.3. Ventilation Systems

2.9.3.1. The requirements for ventilation systems are set out in Annex 2F: 'Mechanical Services and Public Health Engineering'. Note: Annex 2F: 'Mechanical Services and Public Health Engineering' includes all the requirements from Building

Bulletin 101 – ‘Guidelines on ventilation, thermal comfort and indoor air quality in schools’ (BB101). Where there is any inconsistency between Annex 2F and BB101, Annex 2F shall take precedence.

2.9.3.2. Full mechanical ventilation systems shall only be considered where natural and assisted natural systems are not feasible to achieve the requirements set out in ‘Annex 2F: Mechanical Services and Public Health Engineering’ because of outdoor noise, pollution, security or other environmental issues.

2.9.4. Gas Services

2.9.4.1. The Contractor shall ensure that 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 Annex 2F: ‘Mechanical Services and Public Health Engineering’. In particular, 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.

2.10. Electrical Services

2.10.1. Overview

2.10.1.1. The Contractor shall ensure that the design of electrical services meet the requirements for the design, installation and commissioning of the Electrical services as given in Annex 2G: ‘Electrical Services, Communications, Fire and Security Systems’ and the requirements below.

2.10.2. Power, Connections, Supply and Generation

2.10.2.1. The Contractor shall make due allowance in the design for the safe access to, and maintenance of, all parts of the electrical installation. The electrical services shall be arranged so that they do not impede access to other services.

2.10.2.2. The Contractor shall arrange for an electrical connection to the public electrical supply (PES) and make allowance for Distribution Network Operator (DNO) equipment to be located on the Site if necessary.

2.10.2.3. The Contractor shall assess the required capacity of the new electrical supply taking into account diversity factors and the anticipated load profile. Electrical supplies shall be of appropriate voltage and phase for the size of premises.

2.10.2.4. The Contractor shall provide power factor correction equipment to achieve the appropriate power factor with balanced loads for each phase, as necessary.

- 2.10.2.5. Where the works are a modification or adaptation of existing premises, the Contractor shall assess the capacity of the existing electrical supply and if necessary, shall arrange for an enhancement to the supply.
- 2.10.2.6. Where it is proposed to connect to existing electrical systems, the Contractor shall evaluate those electrical systems. The Contractor shall make an assessment of their capability and suitability to be connected to or modified in accordance with a valid Electrical Installation Condition Report (EICR).
- 2.10.2.7. The Contractor shall, in consultation with the Employer, make an assessment 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 pupil number forecasts as part of the SSB, the Contractor shall allow for 10% future expansion of the School.
- 2.10.2.8. The Contractor shall ensure that selected energy using equipment and the electrical installation comply with appropriate directives and standards and is installed following good Electro Magnetic Compatibility (EMC) installation practice.

2.10.3. Electrical Distribution and Networks

- 2.10.3.1. The distribution strategy adopted shall be well-planned, logical, maintainable and cost effective.
- 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.
- 2.10.3.3. Cable containment shall be selected and arranged taking into account EMC considerations. Each containment run shall carry cables of only one voltage band and cable containment shall not be suspended from other services.
- 2.10.3.4. 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.

2.10.4. Lift Installations

- 2.10.4.1. Lifts are not required for general pupil and staff movement, but for ensuring access is available to all areas by those with physical disabilities and for assisting with the distribution of furniture and equipment.

2.10.4.2. When calculating the number, size and location of lifts the Contractor shall take account of the following factors as well as any outlined in the SSB:

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

2.10.4.3. The Contractor shall ensure that the design and installation of any lifts:

- a) meet current and appropriate BS EN81 documents
- b) can be restricted for use by disabled pupils, staff and visitors only, using a close proximity fob or key operation
- c) contain alarm communication devices, compliant with BS EN 81-28, such that the School 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
- d) have a lift capacity and internal finishes appropriate for their expected use
- e) are energy efficient
- f) have an emergency evacuation mechanism operable by school staff trained to lower it to floor level and open the lift door.

2.10.4.4. 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. Significantly larger size lifts are essential for groups of pupils in wheelchairs moving around alongside their peers.

2.10.4.5. Platform lifts shall not be used except in exceptional circumstances and with the agreement of the Employer; they shall not be used in Special Schools or in Buildings over 2 storeys. Where there is agreement to use a platform lift, it shall

not reduce the effective width of corridors or stairs. The platform lift shall have a Statement of Conformity and be compliant with BS EN 81-41 or Machinery Directive 2006/42/EC and have an enclosed lift car capable of being operated by a once applied control (i.e. not a continuous hold operation) and allow use by authorised personnel only. The lift must have an emergency evacuation mechanism operable by school staff trained to lower it to floor level and open the lift door.

2.10.4.6. The Contractor shall ensure that lifts that are used as a means of escape are full evacuation lifts, fire rated to at least one hour with a separate, secure electrical supply.

2.10.4.7. The Contractor shall ensure that in Special Schools:

- a) any lifts meet the particular requirements of the School as described in the SSB
- b) evacuation lifts are provided for multi-level special schools.

2.10.4.8. The Contractor shall ensure that in non-ambulant Special Schools:

- a) lifts are able to accommodate a child plus their mobility equipment and accompanying staff
- b) lifts are 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.

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 school's planned emergency strategies, are given in Section 3: Communication Systems of Annex 2G: 'Electrical Services, Communications, Fire and Security Systems'.

2.10.5.2. The Contractor shall ensure that:

- a) period bell systems are installed where specified in the SSB
- b) audio amplification systems provided by the school are installed in drama, dance, halls, music and performance spaces where required in the School-Specific SoA and ADS or the SSB
- c) sound field systems are installed where specified within the SSB.

- 2.10.5.3. An emergency voice communication system shall be provided at each fire refuge point (see Section 2.6.5: Internal Stairs and Guardings) to enable occupants to alert others that they are in need of assistance and to receive reassurance that this shall be forthcoming.
- 2.10.5.4. The Contractor shall provide an ICT Infrastructure to meet the requirements set out in Section 4: ICT Design Requirements.
- 2.10.5.5. For data cabling and telecommunications the Contractor shall, when locating data points within teaching spaces, 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.
- 2.10.5.6. For Special Schools, Designated Units and Specially Resourced Provision the Contractor shall provide additional installations specific to pupils with SEND if required in the SSB, for example:
- a) intercom, assistance alarms and access control systems
 - b) attack alarms and/or staff-call systems, subject to risk assessment, where staff need to call for rapid assistance.

2.11. Public Health Engineering Services

- 2.11.1. The Contractor shall design and install Public Health Engineering Services in accordance with Annex 2F: 'Mechanical Services and Public Health Engineering'. Drinking water facilities and hot and cold-water supplies shall comply with the School Premises Regulations.
- 2.11.2. The Contractor shall design and install separate foul and rainwater drainage systems to serve the proposed development. The Contractor shall ensure that the drainage installations are sufficient to accommodate the proposed level of occupancy and operate under gravity to connect to the public utility sewer, rather than utilise pumped systems.
- 2.11.3. Where provided, the Contractor shall ensure that the foul and rainwater drainage systems are robust and fit for purpose throughout. The Contractor shall ensure that the systems are not routed such that the location of pipework, downpipes and other drainage connections impact on the learning environment in the School. This shall include but not be limited to the acoustic breakout caused by the water within the pipework and thus the Contractor should make all necessary provisions to minimise this.

2.11.4. The Contractor shall design and install any domestic water services systems 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
- b) robust and fit for purpose
- c) not routed such that the location of pipework and connections impact on the learning environment within the School
- d) designed and installed to be safe, clean and hygienic for all users
- e) designed and installed such that they minimise unnecessary water usage.

2.11.5. The Contractor shall ensure that wholesome supplies of fresh palatable drinking water are provided around the School, both internally and externally. Drinking water outlets:

- a) may be taps over classroom sinks, fountains or bottle fillers
- b) shall be located as specified in the SSB and to avoid misuse, spillages and waste
- c) shall be easily accessible by all pupils at all times, but physically separate from toilets and hand washing areas
- d) shall have appropriate drainage facilities and be sufficiently robust to deter casual vandalism
- e) shall be provided in every dining area
- f) shall be as specified in Annex 2F 'Mechanical Services and Public Health Engineering'.

2.11.6. In Secondary Schools, a water fountain shall be provided on each floor of each New or Refurbished Building, with one fountain serving a maximum floor area of 1000m².

2.11.7. In Primary Schools, drinking water shall be supplied to all classroom sinks via a labelled tap. In any suite of spaces where there are no classroom sinks, drinking water fountains shall be provided that are easily accessible to all pupils in that suite.

2.11.8. A water fountain shall be provided in an inside area easily accessible from external areas used for play and sport.

2.12. Energy

2.12.1. Overview

2.12.1.1. The Contractor shall ensure that the design meets the energy requirements in Annex 2H: 'Energy' and Annex 2I: 'Controls'. The requirements within this section shall also be met.

2.12.2. Optimising Energy Use

2.12.2.1. The Contractor shall aim to reduce the energy consumption and the operational costs of the School's Buildings in line with the energy efficiency hierarchy: be lean, be clean, be green.

2.12.2.2. The Contractor shall ensure that the Building operates within the energy targets detailed in Annex 2H: 'Energy'.

2.12.2.3. To demonstrate compliance and aid energy efficient design decisions, the Contractor shall develop two models for New Buildings: the Concept Energy Model and the Developed Energy Model.

2.12.2.4. The Contractor shall include an energy performance prediction for any New or Refurbished Building in the environmental strategy report. The statement will detail the approach to energy efficient design, analyse the results from the energy models produced and explain the energy management and targeting strategy.

2.12.3. Energy Targets

2.12.3.1. The Contractor shall develop a Concept Energy Model for New Buildings to ensure the Building can meet the regulated and unregulated energy as detailed in Annex 2H: 'Energy'.

2.12.4. Energy in Refurbishment

2.12.4.1. Where the Works include Refurbished Building(s), the Contractor shall undertake an energy audit and compare 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 Annex 2H: 'Energy'. This is instead of preparation of the energy models for New Buildings described in Sections 2.12.2 and 2.12.3.

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 Annex 2H: 'Energy'
- b) analysis of data available for the main utility meters (and billing information) and sub meters
- c) recommendations of the most favourable energy initiatives for the Building with a predicted simple payback of 6-8 years.

2.12.5. Sub-metering and Zoning

2.12.5.1. Metering and sub meters shall be provided as described in Annex 2I: 'Controls'.

2.12.5.2. The Contractor shall ensure that Building Services systems are effectively zoned to reflect the operational use of the different areas of the School development to ensure effective control and in order to minimise energy consumption.

2.12.6. In Use Monitoring

2.12.6.1. The Contractor shall use the iSERV methodology (currently available through K2n or similar approved system) to monitor and report on schools energy, water, CO₂ and temperature, as described in Annex 2H: 'Energy' and Annex 2I: 'Controls' using the internet connection provided (see paragraph 4.6.1, Passive Network Infrastructure). The Contractor shall train the School staff 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 SSB about the way in which the training is delivered.

2.13. Controls and Building Management Systems

2.13.1. General Requirements

2.13.1.1. The Contractor shall ensure that the design of any Building Services controls and Building Management Systems meets the requirements in 'Annex 2F: Mechanical Services and Public Health Engineering', Annex 2H: 'Energy' and Annex 2I: 'Controls'. The requirements within this section shall also be met.

2.13.1.2. The principal aims of the controls systems for schools shall be:

- a) the effective management of the Building Services systems installed
- b) to maintain a comfortable environment

- c) to manage energy consumption and minimise carbon emissions
- d) to enable user control without undue complexity
- e) effective monitoring of energy consumption and associated carbon emissions.

2.13.1.3. The Contractor shall ensure that all controls systems are fully commissioned and set up effectively and that all settings are recorded in the Operation and Maintenance documentation.

2.13.1.4. The Contractor shall ensure that the design intent of the control's strategy is implemented through effective end user and facilities management team training through demonstrations and documentation including controls building user guides. The Contractor shall undertake seasonal commissioning and adjust the installed services settings accordingly throughout the Defects Liability Period.

2.13.2. Lighting Control Systems

2.13.2.1. The Contractor shall install Lighting Controls in accordance with Annex 2E: 'Daylight and Electric Lighting', in order to effectively manage the lighting. The Contractor shall ensure that each space provided has an appropriate control strategy that will optimise the teaching and learning experience and minimise energy consumption. The Contractor shall provide user override and control over all automated systems throughout.

2.14. Safety and Security

2.14.1. Overview

2.14.1.1. The Contractor shall ensure that any New Buildings, Remodelled Areas or new external works on the Site are designed to be safe and secure, and so that pupils and staff feel safe and secure, and that all statutory requirements for fire safety and evacuation are met.

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. Schools need clear, well-defined and secure boundaries to help control who gains access to their sites and buildings, and to ensure that vulnerable pupils do not wander off.

2.14.2. Security

- 2.14.2.1. The Contractor shall produce an Access and Security Strategy as required in the Employer's Requirements Deliverables. This will be based on a security risk assessment.
- 2.14.2.2. The Access and Security Strategy shall take account of the Secure Line agreed for the School which separates members of the public from pupils. The Secure Line will 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. In areas with a higher security risk it may also be necessary to provide security measures for the areas outside the Secure Line such as the car park. In some cases, Buildings may form part of the Secure Line.
- 2.14.2.3. The level and type of security measures will vary from site to site and will need to be appropriate to the location as well as the level and type of security risk(s). The Access and Security Strategy shall take account of the merits of different types of fencing, hedges and defensive landscaping and security measures.
- 2.14.2.4. The following paragraphs describe the normal security provision for a school. The SSB will indicate where more complex systems may be required for higher risk schools 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. NaCTSO's 'Crowded Places Guidance 2017' provides guidance on increasing the protection of crowded places from a terrorist attack⁴.
- 2.14.2.5. In Whole School Projects, the Contractor shall:
- a) ensure that the School has clear and well-defined boundaries, fences and gates to help control who gains access to its Site and Buildings
 - b) provide secure play areas relative to the needs of the different age groups of pupils
 - c) refer to Section 2.2.3: Site Access and Section 2.4.11: Fencing and Guarding.

⁴ National Counter Terrorism Security Office (NaCTSO) - <https://www.gov.uk/government/news/new-crowded-places-guidance-launched>

2.14.2.6. In New Buildings, the Contractor shall ensure that external building security is enhanced by:

- a) avoiding complex building forms that may result in creating areas which cannot be easily supervised
- b) ensuring physical barriers do not obstruct views towards or away from School Buildings and grounds
- c) avoiding designs incorporating recessed doorways and alcoves that could provide cover for intruders
- d) positioning windows and glazing to facilitate passive supervision of external areas from inside Buildings
- e) designing canopies and drainpipes so that they do not provide access to high level windows and roof lights
- f) designing roofs and surrounding elements to prevent unauthorised access and avoid the provision of cover for intruders
- g) designing external walls and the materials chosen for them to prevent unauthorised access to roofs or secure/restricted areas.

2.14.2.7. For internal building security, the Contractor shall ensure that any Buildings in the Works can be zoned to isolate areas that may be used outside of the normal school day. A panic alarm shall be provided for the main reception area staff and other staff as specified in the SSB. The system will provide alarm indication in the general office or other staff area specified in the SSB. The system will alert other staff in the event of emergencies.

2.14.2.8. In New Buildings and Remodelled Areas, and where required in the Refurbishment Scope of Works (RSoW), the Contractor shall provide appropriate internal glazing, as specified in Annex 2D: 'Internal Elements and Finishes' to enable passive supervision of circulation spaces from adjacent spaces, and to ensure:

- a) compliance with BS6262: Part 1:2017 General methodology for the selection of glazing
- b) that all safety glass in critical locations (defined in Section 5 of Approved Document K4 Protection of Impact with glazing) is 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. Toughened glass should meet the requirements of the relevant product standard, BS EN 12150.

c) that toughened glass is 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

d) that annealed (float glass) not to be specified in any instance

e) that all windows and doors retain their structural and dimensional stability over the life cycle of the component including all working parts.

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

a) section 2.2.3: Site Access

b) section 2.3.22: Entrances and Circulation - for access control

c) section 2.5.4: External Doors and Windows, Section 2.6.3: Internal Doorsets and Section 2.6.4: Internal Door Hardware - for doors and locks

d) section 2.5.4: External Doors and Windows - for windows, glazing and roof lights

e) section 2.3.19: Non-teaching Storage - for secure storage

f) section 2.6.9: Wayfinding and Signage - for wayfinding, warning signs and notices

g) section 2.10.5: Communication Systems

h) paragraph 2.10.4.2 – for lift installations

i) annex 2B: 'External Space and Grounds' for fencing

j) annex 2E: 'Daylight and Electric Lighting' for external and security lighting

k) annex 2G: 'Electrical Services, Communications, Fire and Security Systems' (Section 5) - for electronic security systems, including access controls, CCTV and intruder alarms.

2.14.2.10. The Contractor shall provide training, a Building user guide and a logbook to the relevant school users to ensure that the security system is understood.

2.14.3. Fire Safety and Evacuation

2.14.3.1. The Contractor shall ensure that any means of escape, fire-fighting equipment, automatic detection systems and fire signage provisions comply with Building Regulations 2010 Part B, 'Fire Safety'.

2.14.3.2. Building Bulletin 100, 'Design for Fire Safety in Schools' (BB100), advises how to design School Buildings so that they satisfy Part B. It is referred to in AD B, which says that Part B will typically be satisfied where the life safety guidance in BB100 is followed. BB100 contains guidance on an accepted way to meet Building Regulations Functional Requirements for fire safety B1 to B5, but also allows for alternative solutions to meeting Part B, using fire engineering or following BS 9999.

2.14.3.3. BS 9999, 'Code of Practice for fire safety in the design, management and use of buildings', provides guidance on how to meet Part B and is acceptable for school building design. It attributes a risk profile to the Building, based on the occupancy characteristics and the likely rate of fire growth. It also embodies elements of a codified approach to fire engineering by allowing increases in travel distances and reduction in exit widths if additional fire safety measures are provided; and similarly, reduction in periods of fire resistance if certain ventilation conditions are satisfied.

2.14.3.4. A Fire Safety Management Plan shall be produced by the Contractor, as detailed in the Deliverables.

2.14.3.5. The Contractor shall ensure that:

- a) all elements of the structure, finishes, fixtures and fittings in the Works comply with all relevant legislation, codes of practice and guidance
- b) fire doors which are subject to heavy usage, e.g. circulation routes, 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).

2.14.3.6. The Contractor shall ensure that a fire strategy is agreed with the approving authorities, i.e. the Local Authority Building Control or Approved Inspector. In accordance with the Employer's Requirements Deliverables, at handover the Contractor shall provide to the School all relevant fire safety information in a usable form that will allow the School to develop plans to manage the School safely should a fire occur. This shall be in the form of a 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 School 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.

2.14.3.7. For evacuation of pupils with SEND the Contractor shall design the Building to enable all occupants to escape unaided so far as is practicable. Where this is not achievable, e.g. with stairs, 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).

2.14.4. Fire Detection and Alarm Systems

2.14.4.1. The Contractor shall ensure that any fire detection and alarm systems provided comply with the requirements given in Annex 2G: 'Electrical Services, Communications, Fire and Security Systems'.

2.14.5. Sprinkler Systems

2.14.5.1. Sprinkler systems may be specified in the SSB or provided by the Contractor as part of their proposed fire strategy. Any sprinkler system provided shall comply with Annex 2G: 'Electrical Services, Communications, Fire and Security Systems'.

2.14.6. Building Performance Evaluation (BPE) and Seasonal Commissioning

2.14.6.1. The purpose of the BPE is:

- a) to give support to school users by contributing towards an objective understanding of what is successful and what are areas for consideration looking forward
- b) to monitor the result of fine tuning the building performance through seasonal adjustments to the building controls
- c) to establish across the range of schools where there are common issues in order to learn lessons for future school building projects.

2.14.6.2. The BPE is a process that looks at various interrelated aspects of school buildings. The assessment looks for areas that can be improved and then suggests required actions.

2.14.6.3. The Contractor shall support the school building users by carrying out BPE Reviews at 6 months and 12 months after handover in accordance with the Employer's Requirements Deliverables. This shall comprise:

- a) analysis of information on the project before the visit
- b) site visit and walk round/meeting with the school – generally the headteacher, school bursar, school site supervisor (caretaker/premises manager), the Contractor (including contract manager, M&E and controls specialist)
- c) photos of the school/ elements reviewed
- d) completion of an FM questionnaire
- e) completion of a teaching staff questionnaire
- f) review of the BMS system and energy data.

2.14.6.4. Follow up actions after the initial meeting shall comprise:

- a) analysis of the data collected for each school
- b) compilation of a long report on all findings, energy trends and observations from each school – aimed at the Employer and the Contractor
- c) compilation of a short summary report that will go back to the school
- d) overall report on the batch of schools for the Employer, if part of a batch project.

2.14.6.5. The Contractor shall refer to the Building Performance Evaluation Methodology on conducting BPEs. All reports shall follow the standard Employer's format for BPE reviews.

2.14.6.6. Seasonal commissioning adjustments shall be conducted throughout the first year of the Building's performance following handover by the Contractor.

2.15. Operability

2.15.1. General Requirements

2.15.1.1. The Contractor shall ensure that all New Buildings and any systems provided have services and controls that are straightforward and efficient to operate, and

integrated where necessary into the whole School estate. This includes fire and security alarms, external lighting controls and access controls.

2.15.1.2. The Contractor shall ensure that the School has sufficient information to enable all operators to understand how the relevant items and systems are designed to run effectively, efficiently and reduce running and maintenance costs.

2.15.1.3. As described in the Employer's Requirements Deliverables, the Contractor shall ensure that the following groups of school operators are provided, in a timely manner, with the appropriate level of information and training to satisfy their responsibilities:

- a) technical, i.e. facility management team with a detailed understanding of the building operation and maintenance including Building Management System (BMS).
- b) operational, i.e. users who need to understand certain operational systems but require a less technical application of knowledge including business managers.
- c) functional, i.e. teaching staff and students who need a basic operational understanding of how the Building works, e.g. ventilation of teaching spaces, lighting controls in communal teaching spaces.

2.15.1.4. The Contractor shall ensure that the Works are planned and managed to support collaborative working between the Employer's representatives, key design professionals and specialist contractors (such as the commissioning engineer) and that Government Soft Landings is adopted⁵. In doing so, the Contractor shall ensure that the following occur at key stages of the project, with data provided as detailed in the Employer's Requirements Deliverables:

- a) inception and briefing - roles and responsibilities are identified across the design team, construction team and client representatives for the full duration of the Works
- b) design development - the project team carry out reviews of the design at pre-agreed work stages, to consider usability and manageability, and to integrate lessons learned from comparable projects

⁵ Government Soft Landings (GSL) <http://www.bimtaskgroup.org/gsl-policy-2/>

- c) pre-handover, completion and commissioning - the Contractor develops a building readiness programme, align with Government Soft Landings⁶ including technical commissioning⁷. See the Employer's Requirements Deliverables.

2.15.2. Handover

2.15.2.1. By handover, the Contractor shall:

- a) ensure the School's technical and operational team have a thorough understanding of how the building systems work, how to check and adjust building systems and controls, and how to monitor and review the Buildings' environmental and energy performance in use
- b) ensure that appropriate school staff have been trained on the basic operational understanding of how the Building works, e.g. ventilation and lighting controls of individual teaching spaces, and communal teaching spaces
- c) complete all training, unless agreed with the Employer when it may be completed in the three months following handover, and in addition when seasonal variations of systems occur as agreed with the Employer and the School
- d) during the Defects Liability Period - support the School Building users in achieving building performance including evaluation and reporting.

2.15.2.2. The Contractor shall provide full technical operation and maintenance manuals and non-technical building user guides as detailed in the Employer's Requirements Deliverables.

2.15.3. Soak Testing

2.15.3.1. The Contractor, prior to Completion, shall carry out a 'soak test' of all the services and systems in their normal/auto operation mode, as if the building were occupied and in use. This shall be programmed to occur after completion of all setting to work, commissioning and testing and is to prove reliability and correct calibrations over a continuous period of 7 days. The Contractor shall

⁶ Government Soft Landings (GSL) <http://www.bimtaskgroup.org/gsl-policy-2/>

⁷ BSRIA "Commissioning Job Book" <https://www.bsria.co.uk/download/product/?file=TM5RV%2BU46Xw%3D>

carry out the testing according to the requirements in the relevant Technical Annex:

- a) technical Annex 2F, Section 13.2 (mechanical services)
- b) technical Annex 2G, Section 6.2 (electrical)
- c) technical 2I, Section 4.2 (controls).

2.15.4. Maintenance Access

2.15.4.1. The Contractor shall ensure that access for external maintenance is designed in accordance with current regulations. The Contractor shall provide all necessary permanent means of access to the roof for planned preventative maintenance in accordance with CDM Regulations⁸ and as required in Section 3.4 of Annex 2C 'External Fabric'.

2.15.4.2. Sufficient safe working space must be provided around plant.

2.15.4.3. The Contractor shall ensure that any walkways provided are compliant with all health and safety standards as well as manufacturers' requirements. Walkways to roofs shall be adequately secured, free from corrosion, and decorated in accordance with Section 2.6.8: Decorations and Finishes.

2.16. Maintenance

2.16.1. General Requirements

2.16.1.1. The Contractor shall ensure that the Works are 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. The Contractor shall ensure that the choice of materials, services and components causes minimum inconvenience and disruption from breakdowns, repairs and maintenance activities.

2.16.1.2. The Contractor shall ensure that any environmental and safety systems provided are designed, co-ordinated, commissioned and re-commissioned to respond to seasonal and occupation changes in accordance with the Employer's Requirements Deliverables. For example, the design of the window

⁸ The Construction (Design and Management) Regulations 2015

openings and the provision of free opening area for ventilation is an integral part of the Building's environmental systems.

2.16.1.3. New Buildings shall be designed so that:

- a) cleaning and repair can be undertaken easily and with the minimum of disruption to the School
- b) they weather well, and withstand wear and tear and minor vandalism.

2.16.2. Planned Maintenance Programme (PMP)

2.16.2.1. The Contractor shall provide to the Employer a Five-Year Maintenance Plan, and a Schedule of Programmed Maintenance, as detailed in the Employer's Requirements Deliverables.

2.16.2.2. The Contractor shall ensure for all relevant works that:

- a) safety and security measures are provided for internal and external maintenance purposes; including boarding, fixed ladders and handrails within roof spaces
- b) measures are incorporated to prevent birds roosting or nesting on or in the structure, especially around building entrances and rainwater goods
- c) there are no visible signs of entry to weather caused by a breakdown in the building fabric or its installations
- d) there is no discomfort to occupants as a result of weather penetration; (any water penetration shall be measured by electrical conductivity tests).

2.16.2.3. The Contractor shall ensure that the design of all parts of the Works facilitates future maintenance, in particular by:

- a) using Good Industry Practice and practical detailing of materials
- b) using industry standards construction methods likely to be in use for the foreseeable future
- c) providing ease of access for maintenance

d) compliance with CDM Regulations⁹.

2.16.2.4. The maintenance programme for a Special School shall take particular account of the need to minimise disruption and discomfort to vulnerable children and young people.

2.17. Phasing and Construction

2.17.1. The Contractor shall ensure that the Works are planned to ensure safety, to minimise environmental impact and to avoid disruption to the School's operations.

2.17.2. The Contractor shall ensure that the Works are designed and constructed to optimise low environmental impact materials. In particular, in order to meet the UK Government's timber procurement policy, the material must be:

- a) independently verifiable legal and sustainable timber or FLEGT-licensed or equivalent timber or
- b) 'recycled timber' or
- c) a combination of (a) and (b).

2.17.3. The Contractor shall implement Waste and Resources Action programme (WRAP) practices following DEFRA's waste hierarchy principles of a commitment to halve waste to landfill.

2.17.4. The Contractor shall ensure that:

- a) new and Refurbished Buildings are designed so that they can be safely constructed
- b) removal or containment of hazardous materials is managed safely
- c) there is minimal disruption to the School, particularly during refurbishment and where the New Buildings are being built on the Site of the existing School
- d) a reasonable time is allowed and pre-agreed for the placement and installation of FF&E and ICT, taking account of any FF&E delivery issues identified the SSB

⁹ The Construction (Design and Management) Regulations 2015

- e) the School is able to occupy any premises in the Works at least two weeks before the start of a new term
- f) the proposed timing of any landscaping ensures that sports pitches and hard surfaced games courts are available before, or as soon as possible after, the handover of completed Buildings
- g) separate access shall be provided for School deliveries, maintenance vehicles and waste removal during the Contract Period
- h) contractor deliveries to Site and collections from Site must be managed so as not to interfere with the delivery of education at the School or the pupil movement of School users about the Site.

2.17.5. Work to any Renewed, Replaced or Repaired element shall include the removal and disposal of any redundant existing material and temporary scaffolding and protection where necessary.

2.17.6. The Contractor shall be a member of the Considerate Constructor's Scheme (or equivalent) or demonstrate in its Contractor's Proposals that its policies and procedures are comparable to those required by the Considerate Constructor's Scheme.

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 schools. The Contractor shall provide information at key points throughout the contract as identified in the Employer's Requirements Deliverables.
- 3.1.2. Where the Project includes Supplementary area such as a residential facility, the Contractor shall meet the requirements for FF&E set out in Annex 3 'Fittings, Furniture and Equipment' and in the School-Specific Brief, including its Annexes.
- 3.1.3. In all spaces in the Works in which FF&E is to be provided, the Contractor shall ensure that the following requirements are met:
- a) FF&E is provided and specified as listed in Annex 3: 'Fittings, Furniture and Equipment' and the School-Specific SoA and ADS.
 - b) FF&E items provided with similar attributes to the FF&E listed in the School-Specific SoA and ADS are approved by the Employer, to allow the user activities listed in the School-Specific SoA and ADS to be carried out safely, effectively and efficiently by the maximum number of pupils and/or staff, as shown in the School-Specific SoA and ADS
 - c) any FF&E provided meets the specifications detailed in Annex 3: 'Fittings, Furniture and Equipment'
 - d) when legacy items are re-used, the Contractor is responsible for ensuring they are in safe working order
 - e) the layout of any FF&E proposed is well coordinated with the Building Services, in line with the requirements in Annex 3: 'Fittings, Furniture and Equipment', and that this can be demonstrated in an FF&E layout
 - f) the layout of any FF&E proposed is well coordinated with the building elements, in line with the requirements in Annex 3: 'Fittings, Furniture and Equipment', and that this can be demonstrated in an FF&E layout
 - g) there is careful co-ordination between FF&E suppliers, fitters, ICT installation and mechanical and electrical (M&E) design and installations.

- 3.1.4. The Contractor shall provide internal wall elevations as part of the detailing of fitted FF&E, taking account of any preferences for teaching wall elevations identified in the SSB.
- 3.1.5. Legacy equipment serviced by electric or gas shall be tested and certified by the Contractor before connection to fixed supply systems. Contractors shall ensure that suitable safety and ventilation systems are in place for gas equipment.

3.2. FF&E Definitions

3.2.1. In this OS, FF&E comprises:

- a) fittings, including worktops, sinks etc.
- b) fitted furniture, which is fitted to the fabric of the Building, including under-bench cupboards
- c) fixed furniture and Equipment (F&E) which is fixed to a structure for stability, including tall library shelving units and some serviced equipment
- d) loose F&E, including chairs and tables.

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.

3.3. General Layout Requirements

3.3.1. The Contractor shall ensure and demonstrate that all layouts allow for:

- a) spaces which are not cramped or overcrowded for the maximum number of pupils to be accommodated in the relevant area
- b) the School's curriculum and the activities listed in Annex 1A and 1B: 'Definition of Spaces' and the School-Specific SoA and ADS
- c) a number of different settings to suit different teaching styles and the educational objectives of the School
- d) more than one teaching position, where possible or where required in the SSB
- e) good sight lines to and from the teacher and all pupils in the space

- f) no-one to be placed at a disadvantage and all pupils able to access all activities effectively and safely
- g) disabled pupils to be able to access all activities on offer in at least one space of each type or within each suite
- h) safe movement by pupils and easy access to fire escape routes, with no fitted F&E blocking exits
- i) the safe positioning of equipment, away from circulation areas or door swings
- j) fitted F&E to be placed at 90° to windows to avoid glare, in ICT areas
- k) ICT equipment proposed for the room to be safely located with access to appropriate power and data
- 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
- m) easy supervision of equipment by placing them in one activity zone
- n) sufficient space for the safe operation of machinery and other equipment as defined in Annex 3: 'Fittings, Furniture and Equipment'.

3.3.2. The Contractor shall use FF&E layouts to determine the optimum location of servicing outlets such as gas, power and water, and to ensure that these are safely positioned. In all spaces, the layouts shall illustrate that any ICT required can be accommodated.

3.4. Space-specific Requirements

3.4.1. Where the Contractor is responsible for the layout of FF&E, the Contractor shall ensure that the requirements in the following sections are met, as well as any outlined in the SSB.

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

- a) light Practical Teaching spaces are suitable to be used safely as registration bases
- b) sinks are positioned to avoid congestion when used by several pupils

- c) specialist fitters are used to fit specialist equipment, for example suppliers of service pedestals in science laboratories
- d) the serviced system in a laboratory is suitable for the size and shape of the proposed science space, its service arrangement and the priorities of the School
- e) any rooms provided for art shall have space for both horizontal and vertical display of two- and three-dimensional work.

3.4.3. In halls and performance spaces, the Contractor shall ensure that:

- a) a number of assembly and performance options are possible for the given seating capacity using generic furniture and any bleacher seating provided, allowing for access and circulation
- b) specialist suppliers are consulted on the most appropriate location of any new audio-visual equipment
- c) specialist suppliers are consulted on the most appropriate equipment specification and fixing method, including stage lighting bars and lanterns
- d) there is space to manoeuvre chairs, examination tables and staging when not in use
- e) in a performance space curtains form a proscenium arch and do not block entrances and fire exits, and good sight lines are available from the audience.

3.4.4. Any new Mainstream Secondary School hall 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 hall. Unless specified otherwise in the SSB, any Secondary School of less than 900 places shall be provided with a stage and any Secondary School of 900 places or more shall be provided with retractable bleacher seating.

3.4.5. The performance area shall be the full width of the hall, accessed from doors at either side of the end wall at the appropriate height. The end wall shall be behind the performance area and suitable as a cyclorama. The minimum performance area, for assemblies, shall be 1.5m deep if floor-based or 2.4m deep if provided on a stage. The maximum performance area, for major performances, shall be at least 6.9m deep.

- 3.4.6. Where bleacher seating is used, 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. It shall be electronically operated by a hand-held control and, when retracted, fit within the storage area for retractable bleacher seating identified in the School-Specific SoA and ADS, at the back of the hall. It shall be positioned according to advice from a specialist supplier.
- 3.4.7. Where a raised stage is used, it shall provide the minimum performance area described above on a permanent stage, with stair and disabled access (for instance through a platform lift) provided to access the doors in the end wall. The Contractor shall provide sufficient demountable staging to extend the stage to accommodate the maximum performance area (or other staging options), steps to the front of the stage, and sufficient loose chairs to provide seating to the remainder of the hall, with aisles and a 1.8m gap between the front row and the stage. The staging shall be chosen to be easily stored, with the chairs, within the furniture store identified in the School-Specific SoA and ADS which shall open directly off the hall.
- 3.4.8. In dining areas, the Contractor shall ensure that the FF&E used, and the associated FF&E layout meets the following requirements:
- a) there is a logical flow of pupils round the dining space from arrival, queuing to collect food (both hot and cold) eating and self-clearing, based on the number of lunch sessions, the number of pay stations (where relevant) and the hot/cold split, as outlined in the School-Specific SoA and ADS and SSB.
 - b) space is provided for food vending trolleys and dirty/ waste collection points
 - c) there is sufficient circulation space for pupils to move between dining tables and to allow a wheelchair user to access some tables and dine alongside other pupils
 - d) the servery has a tray slide and supports to ensure an efficient service and pupils' safety
 - e) there is adequate seating capacity for the allocated amount of time and the number of pupils, as specified in the SSB
 - f) provision of storage furniture with sufficient space around it, as defined in the SSB.
- 3.4.9. In kitchens the Contractor shall ensure that the FF&E and the associated FF&E layout provides:

- a) catering equipment necessary for the preparation of hot and cold meals in a cost effective and efficient manner both in terms of staffing and energy use to allow the School to deliver the number of meals in accordance with the preparation model, at the frequencies specified in the SSB
- 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 kitchen planning are given in Annex 3: 'Fittings, Furniture and Equipment')
- c) 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
- d) High efficiency kitchen equipment, to achieve the good practice benchmarks for energy usage for schools given in CIBSE TM50 'Energy Efficiency in Commercial Kitchens', 2009.

3.4.10. In Secondary learning resource centres, along with any specific requirements within the SSB, the Contractor shall ensure that the FF&E used, and the associated FF&E layout allow:

- a) good sight lines from the librarian's desk, where provided, to all parts of the learning resource centre
- b) flexibility to take on board different uses of the space in the future
- c) low shelving or seating positioned near windows to get the maximise benefit from natural lighting.

3.4.11. In SEND support areas, the Contractor shall ensure that the FF&E used, and the associated FF&E layout shall contribute to a calming environment. Store rooms shall have enough clear space for any specialist equipment which may be needed, including both Teaching Resources and aids for pupils with physical disabilities.

3.4.12. In store rooms, the Contractor shall ensure that shelves are provided and fitted with sufficient area for the number and type of items to be stored therein, with sufficient space in front to allow reasonable access.

3.4.13. For personal storage, including pupil lockers and coat hooks, the Contractor shall ensure that the FF&E provided and the space in front of the lockers or hooks meets the following requirements:

- a) there is sufficient storage for the number of pupils at the School, in line with the School-Specific SoA and ADS and any requirements in the SSB
- b) where coats and bags are placed in the classroom (usually in Primary or Special Schools) sufficient and suitably positioned storage space is provided for coats and bags, over and above the required area of the classroom.
- c) lockers are not placed alongside guarding or balustrades, do not restrict movement along main circulation routes and are not congested by creating banks of multiple units
- d) lockers are positioned to avoid long travelling distances between lessons and have sufficient circulation space around them for safe use as defined in Annex 3: 'Fittings, Furniture and Equipment'
- e) lockers, if above 1.2m high, are fixed to the wall and secured by the School's preferred method, e.g. combination locks, as defined in the SSB.

3.4.14. In PE changing rooms the Contractor shall provide FF&E which allows comfortable and safe conditions for pupils, with sufficient distances between lockers and benches, as defined in Annex 3: 'Fittings, Furniture and Equipment'.

3.4.15. Noticeboards in circulation areas shall be fitted to satisfy the requirement of BB100 such that they are not more than 3m wide and have a gap between them of at least 1m. In protected corridors (those used for means of escape) they should also be fitted with a cover, preferably top hung.

3.5. Services within FF&E

3.5.1. General Requirements

3.5.1.1. The Contractor shall ensure that all serviced FF&E is integrated with the electric lighting, power and other systems in the Building, and it shall be clear where the responsibility lies for the various fitting and connections in each case.

3.5.1.2. The Contractor shall ensure that all equipment addresses the following points to provide an integrated and responsive system of mechanical, electrical, protective and communication installation:

- a) all services and installations meet the relevant standards as outlined in Annex 2F: 'Mechanical Services and Public Health Engineering' and Annex 2G: 'Electrical Services, Communications, Fire and Security Systems'

- b) pipe-work or cables are easily accessible for maintenance (but hidden from view wherever possible), do not provide dust traps, and are protected from potential damage or vandalism
- c) any connections, distribution systems, components and containment systems within FF&E are safely protected, tamper-proof, correctly insulated, and free from exposed contacts and clearly labelled
- d) specialist suppliers install serviced equipment, whether new or Legacy
- e) all user controls on equipment and used by Pupils are comprehensible and accessible
- f) all controls are securely fixed to the item of FF&E or the internal fabric of the building (i.e. not remote controls) and do not rely upon batteries for power
- g) controls such as isolator switches on FF&E only enable use by authorised personnel
- h) all FF&E incorporating water and drainage (such as serviced appliances in D&T workshops, food rooms and science laboratories) is installed so as to ensure hygienic conditions and the effective disposal of wastewater
- i) socket outlets are positioned away from sinks to reduce the risk of electrically powered equipment being placed in water, as defined in Annex 2G: 'Electrical Services, Communications, Fire and Security Systems'
- j) in food rooms, socket outlets are positioned to ensure that an electrical cable attached to a piece of equipment does not have to cross a hot cooking surface.

3.5.2. Integration with ICT

- 3.5.2.1. The use of new and Legacy furniture shall take account of the Schools ICT solution as outlined in the School-Specific ICT Equipment Summary, the cabling requirements of user devices and the link between technology and specialist equipment e.g. CAD CAM systems.
- 3.5.2.2. Where the Contractor is providing ICT furniture that has not been specifically designed to accommodate computer equipment, the Contractor shall ensure that there is adequate space for comfortable, effective and safe use of the technology and, where appropriate, cable management.

3.6. Blinds and Curtains

3.6.1. In a New or Refurbished Building, blinds and/ or curtains shall be provided in the following situations and in line with the School-Specific SoA and ADS and any additional requirements of the SSB:

- a) blinds to exterior glazing and rooflights for solar glare and daylight control, as required in paragraph 3.2.1, Annex 2E: 'Daylight and Electric Lighting'
- b) blinds to exterior glazing in science laboratories and science studios for dim-out during science experiments, as required in paragraph 5.2.6, Annex 3: 'Fittings, Furniture and Equipment'
- c) blinds or curtains to exterior glazing for dim-out in performance spaces, as required in paragraph 5.2.6, Annex 3: 'Fittings, Furniture and Equipment'
- d) blinds or curtains to internal glazing for dim-out, as required in Section 4.2, Annex 2D: 'Internal Elements and Finishes'
- e) blinds to internal glazing where privacy is required, as required in Section 4.3, Annex 2D: 'Internal Elements and Finishes'
- f) in a Secondary School, curtains to form a proscenium arch at the front of the maximum performance area in a hall, as required in paragraph 5.2.6, Annex 3 'Fittings, Furniture and Equipment'
- g) shower curtains in changing rooms, as required in paragraph 5.2.6, Annex 3 'Fittings, Furniture and Equipment'.

3.6.2. As required in the Employer's Requirements Deliverables, the installation within the sample room shall demonstrate the effectiveness of blinds.

3.7. Performance and Quality

3.7.1. General Requirements

3.7.1.1. The Contractor shall ensure that all FF&E provided satisfies the quality and performance requirements specified below and within Annex 3: 'Fittings, Furniture and Equipment' and the SSB to ensure it is safe and fit for purpose.

3.7.1.2. The Contractor shall also ensure that the following requirements are met:

- a) all FF&E provided complies with current British and, where appropriate, European Standards and with any that are known to be due to come into force, as listed in Annex 3: 'Fittings, Furniture and Equipment'
- b) certificates and reports of tests are carried out in accordance with Employer's Requirements Deliverables
- c) any new FF&E is ergonomically designed to ensure comfortable use and to meet the needs of different ages and physical abilities, as set in Annex 3: 'Fittings, Furniture and Equipment'
- d) any external FF&E provided is chosen to allow a variety of layouts and easy rearrangements, including movement over distances (for example moving rugby posts to storage at the close of season), but sufficiently robust to withstand rigorous use
- e) new FF&E does not have any sharp edges or corners that may cause injury and chairs are designed so that legs do not protrude beyond the top of the back or present a tripping hazard
- f) where furniture screens are provided, they are stable with a suitable mechanism for fixing together, lightweight enough to be re-organised quickly and easily and do not present a tripping hazard.

3.7.1.3. Laboratory furniture shall:

- a) meet the service requirements in Annex 1A and 1B: 'Definition of Spaces' and the School-Specific SoA and ADS
- b) allow pupils to carry out practical activities individually, in pairs and in small groups
- c) have sufficient flexibility to allow whole class discussion and presentation
- d) allow all pupils to be able to face the demonstration bench and be observed by the teacher.

3.7.1.4. In order to accommodate disabled pupils and those with SEN, the Contractor shall ensure that the appropriate size, colour, finish and height of FF&E is provided. Where FF&E is adjustable for variable heights it shall be easily and discretely operable by the user.

3.7.2. Fabric and Materials

3.7.2.1. The Contractor shall ensure that the fabric and materials used for the FF&E is compliant with the requirements specified below and in Annex 3: 'Fittings, Furniture and Equipment', to ensure they are safe and fit for purpose.

3.7.2.2. In all FF&E provided, the Contractor shall ensure that:

- a) appropriate contrasts of colour are used for pupils with visual impairment, for example the carpet and the chair colour shall differ from that of tables
- b) the finish chosen is appropriate for the activities taking place in the room
- c) edging materials are robust and are not susceptible to misuse
- d) complicated corners, edges and frames that can trap food are avoided for dining tables
- e) fittings and furniture provide the sound absorbent materials necessary to meet the acoustic requirements of that space
- f) all FF&E is manufactured to prevent 'off-gassing' pollutants like volatile organic compounds (VOC), contains low VOC materials, and is assembled with the use of low VOC materials, including cabling, paints and adhesives.

3.7.2.3. The Contractor shall ensure that the fire resistance of any F&E provided is compliant with current British and, where appropriate, European Standards as listed in Annex 3: 'Fittings, Furniture and Equipment' (and with any that are known to be due to come into force). This is particularly important where a high volume of furniture will be stacked and stored. Upholstered furniture shall meet the relevant British and European standards particularly for flammability, strength and stability and fabric wear and tear in order to be re-used in a different setting.

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.

3.7.3.2. All FF&E provided shall be:

- a) durable and easy to maintain
- b) simple in construction, to reduce maintenance and replacement costs

- c) easy to operate where adjustable (but difficult to misuse), repair or replace
- d) housed in such a way that it is easy to access or remove for maintenance purposes.

3.7.4. Warranties

- 3.7.4.1. All items of FF&E provided shall have warranties as set out in Employer's Requirements Deliverables.

4. ICT Design Requirements

4.1. Introduction

- 4.1.1. The aim of this section is to clarify the requirements for the ICT elements of the building design and works. School-Specific information, for example the type of legacy equipment that will be transferred, is contained within the School-Specific Brief including the ICT Equipment Summary. Read together, these will provide sufficient information to develop proposals. The Contractor should also refer to the other sections in this Generic Design Brief (GDB), where referenced in the section.
- 4.1.2. The Contractor shall provide new infrastructure, initial training, AV installation and the decant and installation of legacy ICT equipment.
- 4.1.3. Where the Project includes Supplementary area, such as a residential facility, the Contractor shall meet the requirements for ICT in the GDB, and School-Specific Brief, including its Annexes.
- 4.1.4. ICT Infrastructure means:
- a) Passive ICT Infrastructure - cabling infrastructure for data and voice services, including data outlets, containment, patch panels and cabinets
 - 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-school wireless network
 - c) Telephony – an enterprise level, VOIP telephony solution including core equipment and handsets, and incoming connectivity
 - d) Internet provision – the provision or relocation of a broadband internet connection.

4.2. Server Room and Hub Rooms

- 4.2.1. The Contractor shall provide a dedicated, secure environment 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 hub rooms containing supplementary equipment, such as edge switches, as required.

- 4.2.2. Where connections to Existing Buildings are required, they shall be provided using the infrastructure standards covered in this document and information provided in the School-Specific Brief.
- 4.2.3. The server and hub rooms shall conform to the requirements of the GDB and Technical Annexes.
- 4.2.4. The server room and hub rooms shall be designed to safely and effectively accommodate the cabinets required by the installed equipment, both new and decanted.
- 4.2.5. The location of the server and hub rooms shall ensure that all services not supplying the server room are not routed through, above, or on adjacent walls to the room.
- 4.2.6. Server and hub rooms shall not be adjacent to or below rooms with water services, including but not limited to toilets, bathrooms, wet areas. Contractors shall ensure their design shall prevent flooding of the server room from adjacent and other spaces. The location of the server room shall be such that it is not susceptible to flooding from internal as well as external forces.
- 4.2.7. Server rooms shall not be located on the roof or below ground floor level.
- 4.2.8. Server rooms and hub rooms shall be designed to meet the requirements of BS EN 50174, and the locking requirements in Annex 2D: 'Internal Elements and Finishes':
- a) adequate circulation space shall be provided for service and maintenance activities to be performed without moving any cabinets
 - b) all cabinets shall be accessible from front and rear with enough space for the cabinet doors to open fully when the door(s) to the room are closed. The minimum clearance on all faces of cabinets where access is required shall be 1200mm.
- 4.2.9. All service and delivery access routes to the server room and hub rooms must be designed to allow easy movement and installation of equipment and fittings without dismantling large items. Doors should open into the server/hub room and enable cabinet doors to open at the same time. Access to the room(s) should not be from a classroom.
- 4.2.10. The Contractor shall ensure that the server room is the termination point for any Internet and telecommunications services to the School and any rooftop aerial or

satellite dish for receiving digital broadcast transmissions, as described in the School-Specific Brief.

4.3. Server and Hub Rooms - Power

4.3.1. With regard to power, the Contractor shall provide:

- a) a dedicated clean power supply to enable the server 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
- b) a sub-meter to the server room and hub room power supply, see Annex 2H: 'Energy'
- c) restart settings for environmental control units to be as when the shutdown occurred
- d) sufficient power supplies to support the equipment planned to be housed within the server and hub rooms
- e) power distribution units to support all active infrastructure, servers and associated components
- f) an accessible socket outlet adjacent to each cabinet, of a rating appropriate to the respective load, a minimum this shall be 1 x 32A for each server/core equipment cabinet and 1 x 16A for each edge switch cabinet
- g) server and data cabinet surge protection to prevent damage to equipment.

4.3.2. The Contractor should also refer to Annex 2G: 'Electrical Services, Communications, Fire and Security Systems'.

4.3.3. With regards to UPS the Contractor shall ensure that the following requirements are met:

- a) uninterruptible Power Supply(s) (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
 - ii. core switches

- iii. wireless controllers
 - iv. broadband terminating equipment and/or routers
 - v. core telephony equipment and/or routers
- b) the ratings of the UPS are compatible with the load, the connecting cable(s) and the incoming power supply to which they are connected
 - 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)
 - d) UPS shall comply with BS EN 62040-1 and BS EN 62040-3 or their replacements. The Contractor shall ensure that the mode of operation shall be on-line
 - e) batteries are integral to the UPS enclosure, have an autonomy of 30 minutes, are lead-acid valve regulated (VRLA) to BS EN 60896-21 and BS EN 61056-1
 - f) non-gassing valve regulated batteries are required for the UPS and do not off-gas except under fault conditions.

4.4. Server Rooms and Hub Rooms – Ventilation

4.4.1. Ventilation

- 4.4.1.1. The Contractor shall implement environmental control to provide stable conditions for ICT equipment as required.
- 4.4.1.2. If a mechanical ventilation system is used this shall be provided with filtration to prevent dust ingress.
- 4.4.1.3. Environmental controls shall be provided to maintain an optimal working temperature and environment for the specified ICT equipment in accordance with the manufacturer's guidance.
- 4.4.1.4. The Contractor shall ensure environmental control units are 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.

- 4.4.1.5. The Contractor should demonstrate how the position of the environmental control systems and the location of the cabinets supports the cooling strategy of the cabinets.
- 4.4.1.6. Solutions shall conform to the requirements of Annex_2F,_'Mechanical_Services and Public Health Engineering'.

4.4.2. Sprinkler Systems

- 4.4.2.1. Sprinkler system requirements, if required, are included in Annex 2G: 'Electrical Services, Communications, Fire and Security Systems'. Contractors should demonstrate how sprinkler systems will be prevented from leaking, protected from damage or otherwise releasing water into any part of the server room inadvertently.

4.5. Server Room and Hub Room - Furniture

- 4.5.1. All cabinets shall be 1000mm x 800mm, with a minimum of 42u.
- 4.5.2. The Contractor shall provide sufficient server cabinets of appropriate dimensions 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 School-Specific Brief. The design and layout of the cabinets shall support the cooling strategy of the room.
- 4.5.3. The Contractor shall provide sufficient cabinets to house patch panels and cable management for copper and fibre termination and active network distribution equipment, for example core and edge switching.
- 4.5.4. The Contractor shall provide patch panels for data, telephony and fibre distribution to complete the network topology.
- 4.5.5. All outlets must be appropriately labelled Patch panels, cables, RJ-45 modules and patch leads shall be from one manufacturer.
- 4.5.6. Contractors shall provide a rationale for their cable management strategy.
- 4.5.7. The Contractor shall provide patch leads consistent with the cabling specification and warranty. The patch leads should reflect the school specific requirements for any colour scheme.
- 4.5.8. The Contractor shall provide service containment and routing in the form of dado, tray, riser and basket containment to match the cable specification and design

aesthetics required. In order to provide redundancy, there shall be two separate, independently routed fibres linking each Hub Room to the server room.

4.5.9. The Contractor shall provide anti-static flooring and all extraneous metal parts, including door frames, shall be electrically earth bonded.

4.6. Passive Network Infrastructure

4.6.1. The Contractor shall provide wired infrastructure (cables, ducting, containment, routing, termination, patch and fly leads and presentation) including the passive 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 etc.

4.6.2. All cabling shall be installed following the Manufacturer's instructions for handling and installation.

4.6.3. The Contractor shall ensure that where fibre cabling is used the following requirements are met:

- a) the installation conforms to the relevant sections within the TIA/EIA 568 standards for the type of cable being installed
- b) it is conformant 16 core (per cable) multi-mode OM4 (50/125) fibre as a minimum
- c) each fibre connections consists or 2 x 16 core cables, via different, separate, direct routes back to the server room to ensure that both cannot be severed at the same time. No intermediate splices or patch panels are used in the cable runs and the minimum and maximum bend ratios are adhered to
- d) where fibre is over the maximum specified length for the standard, an appropriate higher specification of fibre and terminations is used to support the dependent active infrastructure
- e) cables shall be a minimum of EuroClass Cca fire rating, as outlined in the latest iteration of BS 6701 or its replacement
- f) sufficient slack (3m+) is left at each end of the cable to facilitate re-termination or relocation
- g) a minimum 20-year manufacturer's warranty is provided for the complete cabling system

- h) successful test results are provided for the performance of and length of 100% of the cables that have been installed. Test results shall be made available to the Employer prior to active infrastructure installation
- i) all relevant documentation is handed over to the School including network topology details, cabling test results, cabling test certificates, cabling warranty information including evidence of installer accreditation, and other network documentation.

4.6.4. The Contractor shall ensure that where copper cabling is used the following requirements are met:

- a) the installation conforms to the relevant sections within the TIA/EIA 568 standards for the type of cable being installed
- b) it is 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
- c) no intermediate splices or patch panels are used in the cable runs and the minimum and maximum bend ratios are adhered to
- d) 30cm (minimum) is provided as slack at high level on each end of a cable run, and installation shall conform to manufacturer's requirements
- e) the length of any individual copper cable does not exceed 90 metres between termination points
- f) all cables conform to a colour specification agreed with the school and Employer
- g) all cables are terminated on labelled and numbered RJ-45 sockets. Labelling and numbering are agreed with the school
- h) all data cables are low smoke and zero halogen type
- i) cables shall be a minimum standard of EuroClass Cca fire rating, as outlined in the latest iteration of BS6701 or its replacement
- j) fly leads, consistent with the installed cabling manufacturer's specification and warranty requirements, are provided for each data point

- k) a minimum 20-year manufacturer's warranty is provided for the complete cabling system
- 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
- m) successful test results are provided for the performance and length of 100% of the cables that have been installed. Test results shall be made available to the Employer prior to active infrastructure installation. Any star passes shall be considered a fail
- n) all relevant documentation including network topology details, cabling test results, cabling test certificates, cabling warranty information including evidence of installer accreditation, and other network documentation is in the handover to the School
- o) the Contractor assumes that for Secondary Schools 1.0 data point will be required per pupil, for Primary Schools 0.7 data points per pupil and for Special Schools 2 data points per pupil. The final number and location of data points will be finalised through the design process.

4.7. Active ICT Infrastructure

4.7.1. Network Security

4.7.1.1. The Bidder shall provide a secure wired and wireless environment 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 school environment and GDPR guidance. The Bidder shall provide a rationale for how this will be achieved specific to the School's requirements
- 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 Bidder shall detail how this will be achieved.

4.7.2. Network Design

4.7.2.1. The Contractor shall provide as a minimum the following information:

- a) a logical diagram of the proposed solution topology, illustrating stacking, switch interconnects, server connections and server/hub room links. All switch models to be identified, all connections to be labelled for speed and to illustrate bonding where applicable
- 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 school such as external wireless access points
- 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.

4.7.2.2. The Contractor shall ensure that enterprise-level Active switching, edge and core, is provided that:

- a) takes account of the maximum bandwidth of the server network interface, including an analysis of those proposed in the SSB and/or the School-Specific ICT Equipment Summary
- b) provides as a minimum the following bandwidth between the core switch/s and edge switch stack/s via a minimum of 2 bonded (Active/Active) links per stack

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 7: Number of edge switches in a stack

- c) maximising the bandwidth between switches within each stack such 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

- ii. iedge switch stacks shall be configured with a single IP address so that the stack can be managed as a single entity
 - 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. The Contractor shall provide a rationale for stacking technology(s) used
 - iv. where multiple core switches are provided, these shall be connected/stacked with appropriate bandwidth coherent with the wider infrastructure design. The Contractor shall provide a rationale for the bandwidth proposed
- d) provides a minimum of 1Gbps connectivity to the user device deployed to the desktop
- e) 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 Aps
- f) 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 school environment. Contractors shall provide a rationale on how this shall be achieved
- g) can accommodate existing or future:
 - i. 10Gbps connections, including but not limited to server
 - ii. all legacy equipment
 - iii. any upgrades identified in the School-Specific Brie
 - iv. any additional equipment as identified in the School-Specific Brief.
- h) 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
- i) 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

- j) outlines any expected ongoing revenue costs and implications for the school following the proposed 5 years' warranty/support period
- k) includes an on-site, manufacturer approved, system administrator training package, appropriate to the scale of the solution as recommended by the manufacturer
- l) is Energy Efficient Ethernet compliant to a minimum of 802.3az standard or equivalent
- m) 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
- n) 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
- o) has sufficient active and patched ports to support connectivity for 100% of terminated data points across the Site
- p) includes an appropriate quantity of PoE ports for the devices that require it, as specified in the School-Specific Brief
- q) 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
- r) is suitable for integration into a wider technical solution or support arrangement, if necessary, for example an existing school or estate wide solution, providing details on the standards which will enable this to occur
- s) provides for each switch a configuration file that allows it to be reset to the configuration set at Practical Completion, with logging of any changes made to configuration up to and including the defects liability period
- t) provides confirmation that the proposed solution supports the following conditions and standards as a minimum:
 - i. That LLDP-Med is implemented in PoE+ switches
 - ii. That all switches have a minimum of 512MB of memory

- iii. That the switch topology supports a minimum of 16000 MAC addresses
- iv. That the network supports standards for spanning tree, for example MST/RST
- v. Uses non-blocking switch fabric
- vi. That all active equipment including but not limited to switches, access points and controllers has a valid UK warranty
- vii. Designs meet any recommendations published by the manufacturer.

4.7.2.3. The Contractor shall provide an enterprise-level wireless solution 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, and providing a rationale for the total available bandwidth between the AP and switch, and how this supports the wireless throughput of the AP
- b) maximising the bandwidth between the AP and the user device by providing high performance access points; the Contractor shall provide a rationale 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
- c) 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; the Contractor shall provide an explanation for the number of access points proposed and demonstrate how this maximises the available bandwidth
- d) providing blanket coverage throughout the school building (excluding plant rooms and toilets) which ensures connectivity/performance is not lost whilst users roam around the building
- e) providing active signal management and load balancing of user/device connectivity, and provide rationale for how this is achieved
- f) providing dual band connectivity
- g) using the latest standard ratified by the Wi-Fi Alliance at the time of installation and be backwards compatible with previous standards

- h) configuring to support network segregation, security and Quality of Service (QoS); the contractor should demonstrate how the initial configuration meets the school's specific requirements
- i) 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
- j) 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
- k) outlining any expected ongoing revenue costs and operational implications for the school following the proposed 5 years' warranty/support period
- l) including an on-site, manufacturer approved, system administrator training package, appropriate to the scale of the solution as recommended by the manufacturer
- m) providing guest access and automated authentication for authorised users
- n) to install any existing or new licensed external Wi-Fi access points procured by the school as 'new legacy' equipment and identified in the School-Specific Brief, including appropriate grounding and surge protection. 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.

4.7.3. The system minimises the impact of interference from Building Services systems and adjacent networks and provide details of how this will be accomplished.

4.7.4. The system is suitable for integration into a wider existing technical solution or support arrangement if necessary, for example an existing school or estate wide solution, and which standards enable this to occur.

4.7.5. Each wireless controller is provided with a configuration file that allows it to be reset to the configuration set at Practical Completion, with logging of any changes made to configuration up to and including the defects liability period.

4.8. Local Technology

4.8.1. Local Technology – Core

4.8.1.1. Where required the Contractor shall decant all Local Technology systems as set out in the Decant Protocol the School-Specific Brief'.

4.8.2. Local Technology - AV

4.8.2.1. Where required the Contractor shall decant all AV equipment as set out in the Decant Protocol and the School-Specific Brief.

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

4.8.2.3. The Contractor shall ensure that the design considers the nature of the specific display technology to be used and provides ways of allowing the display to be viewed clearly and without reflections.

4.8.2.4. The Contractor shall supply and install an AV wiring loom 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 School including but not limited to:

a) 1 x VGA + 3.5mm Audio

b) 1 x USB

c) 2 x HDMI.

4.8.2.5. The Contractor shall provide AV patch cables 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.

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

4.8.2.7. In specialist areas, for example science, food rooms 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.

- 4.8.2.8. The Contractor shall test the installed AV cabling loom, including the supplied AV patch cables, and submit test results for the audio, video and interactive status of each installation, as appropriate.
- 4.8.2.9. Where partitions support display equipment, including but not limited to interactive whiteboards, interactive projectors and interactive screens, suitable pattressing shall be installed as required in Annex 2D: 'Internal Elements and Finishes'.
- 4.8.2.10. 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, which may need to be concealed within or behind the respective unit.
- 4.8.2.11. 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 School-Specific Brief or agreed during detailed design; the interactive display area must be free from obstructions, not limited to dado, to enable the display to be installed at any height for staff and student use.
- 4.8.2.12. Where the Legacy AV equipment from drama, dance, halls and music spaces is suitable, the Contractor shall decant and reinstall, providing all necessary fixtures, fittings, cabling and infrastructure.
- 4.8.2.13. Where the Legacy AV equipment from drama, dance, halls and music spaces is not suitable for decant, the School may procure equivalent new equipment which the Contractor shall decant and reinstall, providing all necessary fixtures, fittings, cabling and infrastructure.

4.8.3. Automated Systems

- 4.8.3.1. The Contractor shall install and test any cashless catering system identified in the School-Specific Brief.
- 4.8.3.2. Where a specific dining area is required in the School-Specific SoA and ADS, the Contractor shall ensure that it is 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 SSB. A review of the small power and data requirements for this equipment should be conducted and these connections supplied.
- 4.8.3.3. The Contractor shall install and test any Automatic Registration System identified in the School-Specific Brief.

4.8.3.4. The Contractor shall decant, install, and test any Internal IP-based CCTV system, including cameras and digital video recorder(s) identified in the School-Specific Brief.

4.8.3.5. Where an existing or new legacy internal IP-based system is decanted/installed, the Contractor should integrate external CCTV cameras if provided, with the internal system.

4.8.4. Telephony and Internet

4.8.4.1. The Contractor shall co-ordinate the for ordering and installation of the broadband connection (last mile, on-site equipment and an active connection to the internet) and digital and analogue telephone lines. This shall include, but not be limited to Redcare, Alarm, Lift or SIP trunking services and the relocation of existing connections or provision of new. The Contractor shall maintain, where required, existing communication connections from the Existing Buildings to other locations both inside and outside the red line and provide new connections where necessary.

4.8.4.2. In the event that the contractor installs a private 'Telco Green Cabinet' (Customer premise equipment (CPE)), on the Site to facilitate and de-risk broadband works, the Contractor shall provide the following as a minimum:

- a) 1 x BT OpenReach duct
- b) 2 x Private ducts
- c) 1 x power outlets on a dedicated circuit
- d) 1 x 12 core 10gb/s fibre cable, with cable specification appropriate to the cable distance, terminated within the Private CPE and School Server room.

4.8.4.3. Where a private CPE is provided, the Contractor remains responsible for the termination of the broadband service within the server room, and for connectivity to the service providers main (Public) roadside Telco Green Cabinet.

4.8.4.4. Where an existing Primary Connection Point/Green Box is used, the Contractor shall provide all necessary cabling and connections (excess construction and last mile), routing and ducting between the telecoms provider's Primary Connection Point street cabinet/green box and the server room, or the location of the ISP router if elsewhere.

4.8.4.5. The Contractor shall inform the School or school-related party of the works to be ordered and when the orders should be placed.

- 4.8.4.6. New connections are to be live onsite 8 weeks before ICT Implementation or the 1st commissioning requirement (e.g. lift).
- 4.8.4.7. Where a B-End Shift is implemented, the new server room shall be provided with a live internet connection 8 weeks before ICT Implementation or the 1st commissioning requirement (e.g. lift).
- 4.8.4.8. All revenue costs incurred during this commissioning period are the responsibility of the Contractor.
- 4.8.4.9. Works shall be carried out in a way that minimises disruption to the School, including but not limited to maintaining connectivity during exam result delivery.
- 4.8.4.10. Capital cost for works sit with the Contractor, revenue costs after handover sit with the School.
- 4.8.4.11. The Contractor shall provide an enterprise level IP telephone system (core and handsets), with fixed handsets for offices and admin areas with the following functionality:
- a) a central switchboard
 - b) fixed handsets, making use of the structured cabling and IP network, for all SLT offices and all admin staff
 - c) headsets for hands-free operation for reception staff
 - d) voicemail forwarding as e-mail attachment for all staff
 - e) Auto-Attendant (or automated attendant) voice menu system allowing callers to be transferred to an extension without going through a telephone operator or receptionist.
- 4.8.4.12. The Contractor shall provide a solution to enable the School to make and receive calls in the case of a power failure.
- 4.8.4.13. The telephone system shall have a manufacturer warranty and support arrangement, including firmware and software upgrades (telephone, email and web), providing 5 years of cover as a minimum.
- 4.8.4.14. The Contractor shall provide manufacturer approved training for all staff in use of the telephone system, and administrative training for nominated staff.

4.9. Decant

4.9.1. Decant Protocol

- 4.9.1.1. Where decant is required, the Contractor shall provide all resources to decommission, package, store, move and re-commission legacy ICT equipment.
- 4.9.1.2. A decant list shall be agreed between the Employer and the Contractor in collaboration with the School. The Contractor and Employer shall specify the date on which the list is frozen.
- 4.9.1.3. Where the School is procuring new Legacy equipment for delivery to the new/refurbished Building (see paragraph below), the Contractor shall co-ordinate with the School the delivery, storage and insurance for installation before handover.
- 4.9.1.4. The Contractor shall provide the resources to decommission and decant and recommission existing ICT equipment and services. This includes:
- a) Testing
 - b) de-installation
 - c) packaging
 - d) transport
 - e) storage
 - f) un-packing
 - g) installation
 - h) testing (as the Implementation and User Acceptance Testing Schedule).
- 4.9.1.5. The Contractor shall ensure ICT equipment is decanted to the correct locations specified by the School and the Employer.
- 4.9.1.6. Where the School has a technical support team or a service provider, the Contractor shall liaise with them through the Employer to ensure a smooth transition of the School's ICT solution, including the technical decant process.

- 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 Contractor shall provide:
- a) access to the site as required
 - b) insurances as required
 - c) health and safety and other site training to enable access.
- 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 School and agreed by the Employer. Any damage or failure of equipment is the responsibility of the Contractor.
- 4.9.1.9. In the event of equipment damage or failure the Contractor shall return the equipment to its previous condition or replace with suitable new, at no cost to the Employer or School.
- 4.9.1.10. The Contractor shall ensure relevant conditions for maintaining existing warranties for equipment are 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 an Class AV equipment or leased devices.
- 4.9.1.11. Where decant by the Contractor is not required and an alternative ICT provider is in place, the Contractor shall provide the necessary access, secure storage and insurances to the nominated third-party suppliers so that the installation and testing of ICT equipment is not delayed beyond school opening.

4.9.2. 'New Legacy' ICT equipment

- 4.9.2.1. The School may procure new ICT equipment to replace any unsuitable legacy equipment, of an equivalent type or specification to the original equipment, to be agreed with the Contractor, for delivery to the New Building and installation by the Contractor. This includes, but is not limited to:
- a) classroom and hall A/V equipment
 - b) digital signage
 - c) internal CCTV cameras
 - d) internal access control systems, including locks

e) external Wireless Access Points.

4.9.2.2. The Contractor shall liaise with suppliers and the School to ensure delivery of ICT Equipment is not before the Building is ready to receive it.

4.9.3. Local Configuration Support Package

4.9.3.1. In addition to Decant, the Contractor shall provide technical support to help the School configure and administer the ICT equipment in the Building. 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 School's own capacity, capabilities and type of School and should be confirmed during dialogue. The Contractor shall provide the following support days, to be allocated by the Employer, after discussion between the School, the Employer and the Contractor, and shall be in addition to any training delivered. Support shall be provided during the Defects Liability Period.

Core	Pupil numbers	Network Engineer (Switching)	Network Engineer (Wireless)	Server Engineer	Core
Primary	up to 250	1	2	2	1
Primary	251 to 500	1	2	2	2
Primary	501 +	2	2	2	2
Secondary	Up to 1000	2	2	3	2
Secondary	1001+	3	3	3	3

Table 8: Contractor support days.



Department
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