



Estates
Directorate

Technical Standards

**Design Guidance:
Core Requirements for ALL PROJECTS**

Standard Number: STD/Z/DG/053

Design Guidance: Core Requirements for ALL PROJECTS

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ISSUE NO.	PURPOSE	DATE
1.00	Initial version for New-Build tender (first NOMS SAA contract)	c.2005
1.01	Version for Refurbishment tender (NOMS SAA contract)	c.2005
1.02	Post tender issue – requirements for refurbishment works included.	c.2005
2.00	Updated generally to include sustainability requirements.	2008
3.00	Significantly updated to reflect the requirements of all departments represented by Estate Directorate and to include latest sustainability requirements.	Jan 2017
4.00	Clause 9.4 added.	Mar 2017
5.00	Preventing water leaks from affecting buildings and services, external cladding, food waste disposal methods (all changes in red text).	Jan 2018
6.00	Additional clauses to remind project teams of responsibilities for Environmental permits required under the Medium Combustion Plant Direct and cross ref to new BREEAM guidance – additions shown in red text.	Mar 2019
7.00	Amended clause on GSL champions, cross reference to Defence Works Functional Standard DMG8, and additional section on product labelling – all shown in red text in this Issue.	Nov 2019
8.00	Changes throughout, all revised and new wording shown in red text in Issue no.8.	Aug 2020
9.00	Updated imposed loading table	Aug 2021

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Purpose, vision and outcomes

MoJ's technical standards have been developed to ensure that capital works delivered on behalf of the client meet the over-arching objectives of the estate, namely to provide safe and secure environments for staff, visitors, users of the justice system and detainees, and support the rehabilitation of offenders.

Government has recently introduced a legally binding target for the UK to be 'net zero' emissions by 2050. This means we need to go further than the 'bare minimum', particularly given what we build today will likely be in operation well beyond 2050.

MoJ is strongly committed to supporting 'net zero' and has that new construction projects will have 'net-zero-ready' at the heart of their design. 'Net-zero-ready' means reducing emissions as far as possible during the original construction programme, and future proofing the design to enable a smooth, low cost transition to 'net zero' when technology and/or investment allows. However, MoJ's carbon emissions extend across the whole of the operational estate and achieving Government's target will require refurbish and retrofit projects to also move towards net zero emissions.

MoJ's sustainability objectives extend beyond carbon emissions and are aligned to the Greening Government Commitments, and require all projects to:

- Deliver operational water use savings
- Achieve a net gain in biodiversity
- Reduce the embodied carbon impact of estate
- Minimise construction waste
- Boost climate change resilience
- Achieve BREEAM Excellent (new build) and Very Good (major refurbishments).

Adopting these Core Requirements will ensure that the following **outcomes** are delivered by capital projects across MoJ by:

- Improved operational efficiency
- Reduced environmental impact
- Improved outcomes for prisoners and more motivated and engaged staff
- Improved climate change resilience.

1. Scope

- 1.1. These `Core Requirements for ALL PROJECTS` shall apply to new construction and refurbishment projects which Estates Directorate have commissioned on behalf of MoJ, Home Office, Crown Prosecution Service, any other of their constituent bodies, or any other departments which Estates Directorate represents. They must be read in conjunction with the following sources of information which shall be regarded as mandatory:
 - 1.1.1. Estates Directorate Policy documents
 - 1.1.2. Estates Directorate Design Guides
 - 1.1.3. Estates Directorate Technical Specifications
 - 1.1.4. Estates Directorate Standard Drawings
 - 1.1.5. Estates Directorate BIM Guides and Component Library
 - 1.1.6. Estates Directorate Sustainability Priorities
- 1.2. For access to the full current range of the documents, drawings and models available under the above headings, consult the `Standards & Protocols` area of the MoJ Estates Directorate extranet hosted by Viewpoint 4Projects. Any queries regarding these documents should be emailed to moj_ed_technicalstandards@justice.gsi.gov.uk
- 1.3. Attention is also drawn to the LETI Climate Emergency Design Guide, UK Green Building Council guidance documents and the Green Construction Board's Buildings Energy Mission 2030 and the Office for Government Commerce (OGC) Achieving Excellence in Construction Guides (or their successors), to which Estates Directorate require compliance. Note that the OGC website and guides are now archived by the National Archives, but remain available to public access.
- 1.4. Construction Projects shall comply with both the requirements herein and accommodation-specific requirements published by Estates Directorate under the document headings stated above.
- 1.5. Projects covered by this document may include any type of building or facility and may encompass projects of a relatively specialist nature. Where this document describes `detained persons` or `secure accommodation` or similar wording, it shall be taken to mean any person or facility of the nature of prisoner/prison, immigration detainee/immigration removal centre, defendants/court custody, and so on.

1.6. MoJ defines projects into 4 categories:

1.6.1. New Build – Any project where a new structure is constructed.

1.6.2. Major Refurbishment – a refurbishment project that alters building fabric **and / or** services with a capital value >£500,000

1.6.3. Minor Refurbishment - -a refurbishment project that alters building fabric **and / or** services with a capital value of between £50,000 and £500,000

1.6.4. Minor works – alterations or replacement of end-of life building services **and / or** elements of building fabric with a capital value of <£50,000.

At the beginning of each section from Section 4. onwards of this document you will find a table designed to indicate the Project Scale, RIBA Stage, and parties with responsibility for the subject matter covered by that section.

2. Police Forces and Police Custody

2.1. Although Police Forces come under the umbrella of the Home Office, they are not bound by Government and are not part of the estate routinely managed by Estates Directorate. Accordingly, and unless otherwise indicated, this document shall not be taken as being applicable to police authorities. Separate briefing will be issued if or when Estates Directorate become responsible for a police authority project.

3. Project Team and responsibilities

- 3.1. Within this document the term 'Project Team' is deemed to include all personnel with the ability to make significant decisions affecting the outcome of the project, whether they be Estates Directorate staff, other departmental staff, consultants employed by Estates Directorate, or persons working on behalf of the Constructor - whether directly employed by the Constructor or not. The Constructor is ultimately responsible for the delivered project; however, members of the Project Team cannot be held responsible for decisions made prior to, or after, their involvement in the project.
- 3.2. All Project Team members shall demonstrate a commitment to sustainability of the delivered project and especially shall show evidence of their commitment to:
 - 3.2.1. Passive / energy conscious design
 - 3.2.2. The use of natural light
 - 3.2.3. The use of natural ventilation where possible
 - 3.2.4. Avoiding the use of air conditioning / mechanical ventilation
 - 3.2.5. The use of low carbon or renewable energy technology
 - 3.2.6. Health and wellbeing
 - 3.2.7. Fire safety
 - 3.2.8. The use of materials of a low environmental impact
 - 3.2.9. Waste minimisation and recycling
 - 3.2.10. Protection of ecology
 - 3.2.11. Reducing transport requirements
 - 3.2.12. Working as part of an integrated supply team
 - 3.2.13. Considerate construction and development
 - 3.2.14. The employment of local suppliers and producers
 - 3.2.15. Whole life cycle costing
 - 3.2.16. Low embodied energy
 - 3.2.17. Supply chain impacts and sourcing
 - 3.2.18. Minimising water use
- 3.3. The Project Team in each project are encouraged not only to meet Estates Directorate minimum standards, but also innovate and offer higher sustainability and Value for Money solutions.
- 3.4. Constructors' compliance with sustainable proposals should be tested throughout the construction process by the client-side team and suppliers should be asked to set out in a separate section how they meet or exceed the Department's requirements.

- 3.5. This document references Statutory and Mandatory standards that the Project Team is obliged to comply with. Where alternative solutions and/or innovative approaches might conflict with such standards the Project Team shall in the first place seek to comply. If alternative solutions and/or innovative approaches are the best solution to resolving a conflict with Standards, or where a significant Value for Money advantage would be achieved, then it shall be the Constructor's responsibility to put forward grounds to enable a Derogation Request to be submitted in accordance with the procedures indicated in the following Section 15.
- 3.6. This document references Statutory and Mandatory standards that the Project Team is obliged to comply with. Project teams are encouraged to develop alternative or innovative solutions that achieve the **outcomes** required by these standards, where those alternative solutions demonstrate a life-cycle benefit to MoJ. Formal derogation approval will be required for such approaches in accordance with the procedures indicated in the following Section 15.

4. Building Information Modelling (BIM)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 4.1. The Project Team must follow Estates Directorate standard STD/BIM/P001.1 and shall make use of the BIM2AIM SIG suite of documents which form part of the Project Control Framework. Those documents include:
- Organisation Information Requirements;
 - Plain Language Questions;
 - Information Delivery Plan;
 - Asset Information Requirements;
 - Employer’s Information Requirements; and,
 - BIM Execution Plan.
- 4.2. BIM Level 2 is mandatory for all centrally procured projects across the Government Estate. Estates Directorate require the use of BIM methods as a communication tool for projects ranging from small scale capital maintenance, partial refurbishments, to building and campus level projects.
- 4.3. Full BIM functionality should be used by the Project team to assess embodied carbon within the development and inform the full life cycle cost analysis and asset management strategy.
- 4.4. There are very few projects where BIM standards and methods may not be applied and the expectation is that BIM will be used unless specifically agreed or directed otherwise by Estates Directorate. The extent to which BIM is to be applied shall be in line with the recommendations of STD/BIM/P001.1. and will be agreed with the MoJ BIM Team on a project by project basis.
- 4.5. Designs shall be developed using elements contained in the Estates Directorate BIM Component Library hosted on Viewpoint 4Projects.
- 4.6. Minor works projects on buildings with an existing BIM model should be captured in the BIM model to ensure the model contains current asset information.

5. Lifespan

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 5.1. The accommodation shall be designed to have an appropriate lifespan consistent with the long-term management of the Client’s estate, maintaining an appropriate quality of safe, secure living/working environment and in the interests of sustainable development.
- 5.2. The accommodation shall have a minimum design life of 60 years except as may be varied in Design Guidance relating to specific accommodation types, project specific briefing, or where accommodation is specifically stated to be for temporary or short-term use. Design life is to be assessed against the anticipated life to failure through normal weathering externally and through normal wear and tear expected of that building type. The **most likely** projection within high emissions scenario of the UK Climate Projections (UKCP) current at the time of the project should be utilised in lifespan modelling for risks including thermal, flood, wind or otherwise. The +50-year projection at the most local geographic projection to the site should be used for all assessments. MoJ is preparing for a potential 4°C rise by 2100 as a part of resilience planning. Premature deterioration through deliberate vandalism or attack is accepted to be an immeasurable factor that cannot be meaningfully included in this requirement, but elements shall also be designed and constructed to be adequately robust as required in the section below. They shall resist weathering and/or wear and tear in normal use in this environment for the periods stated.
- 5.3. The targets for anticipated lifespan of buildings, components and materials may be demonstrated by testing, track record, or expert opinion. The minimums required by the Client may be regarded as the “required service life” as stated in BS 7543. Where the life of a system would rely upon the continuing supply of replacement parts or consumables, reasonable steps must be taken to ensure that they will be available over the stated period. In assessing the lifespan of building services systems, the Constructor may assume that adequate periodic maintenance would be undertaken. It is accepted that the lifespan required may exceed the commercially available guarantee.

5.4. The elemental breakdown of lifespan requirements is as follows:

Element	Minimum lifespan required	Qualifications
Foundations, structural frames and primary elements of structure.	Indefinite and normally in excess of 100 years	
External walls generally, disposal and drainage installations	60 years	
Movement control joints in walls	20 years	
Roof coverings and claddings	30 years	Coated materials must have a life to first significant maintenance of 25 years
Windows and doors	30 years	Gaskets, weather-strips and the like must have a life of not less than 20 years Double glazed unit should have an assessed life of 20 years
Internal floor finishes	15 years	
Internal liquid applied finishes generally	5 years to re-application	
Internal fittings generally	20 years to replacement	
Mechanical installations generally	20 years	
Electrical installations generally	25 years	
Electrical Accessories	12 years	
CCTV and comms network cabling	10 years	Excepting changes required as a result of changing requirements or standards
Lift installations (where provided)	20 years	Period to major lift refurbishment. Life of static components shall exceed this target

- 5.5. These periods should be regarded as minima and actual lifespan predictions should be factored into analyses of Whole Life Cycle Costs. Elemental lifespan should be considered in conjunction with the objectives stated regarding sustainable development.
- 5.6. The Constructor shall avoid the use of construction materials or methods of construction that have been shown to be short-lived, prone to failure or might be injurious to health and safety. The actual circumstances of proposed use shall be accounted for, including any special circumstances that relate to secure accommodation. For example, materials normally considered as relatively robust might not be used in prisons if the degree of abuse anticipated could lead to premature failure.
- 5.7. The impact of refurbishment works on any construction or services forming part of the accommodation that is to remain shall not reduce its lifespan. When any part of the fabric or any building system is refurbished then any remaining parts or components of the existing building shall be refurbished or replaced as necessary to ensure that the lifespan requirements are achieved. For example, if a refurbished component is to be installed upon an existing support or within existing containment then the installation shall be compliant only if the support or containment has a remaining lifespan equal to, or exceeding, that required of the refurbished parts.
- 5.8. The Constructor may offer alternative approaches that rely upon shorter-lived materials or components subject to demonstrating that their performance in all other respects will be no less than if they had been fully compliant. The Constructor shall demonstrate by means of a Whole Life Cycle Cost comparison and by an analysis of environmental impact that the alternative is advantageous to the Client.
- 5.9. Proposals should aim to minimise Total Cost of Ownership, including minimising use of energy, water and other material resources, and shall demonstrate that the Proposals deliver the best whole-life outcome without compromising future flexibility of the building.

6. Whole Life Cycle Cost (WLCC)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 6.1. A Life Cycle Cost (LCC) analysis should be conducted during the **concept design stage** in accordance with BS ISO 15686-5. The LCC shall include operation of the building, including maintenance, the consumption of utilities, the respective carbon emissions (and the costs associated with these emissions), and the 'End of Life' costs of the building. The LCC should compare the key design decisions to be taken to ensure that the optimal LCC decision is taken and the project delivers the maximum long-term benefit.
- 6.2. In addition, two of the following four components must be analysed at both a strategic and system level: Structure; Envelope; Services; and Finishes; in line with BS ISO 15686: Service Life Planning, Part 5 (Life Cycle Costing), to be assured the development will utilise that which best meets its requirements.
- 6.3. Staffing costs are a major contributor to operational costs and often in secure accommodation are greater than costs for utilities. Building design is an important factor in determining the levels of staffing required and for this reason the following objectives are given:
- 6.3.1. The most significant aspect of staffing that building design can influence is the facility for surveillance and supervision. Designs with good lines of sight over a maximum area will generally improve the ease of surveillance with consequent reductions in the levels of staffing required. It is equally essential that staff should have direct and rapid access that allows intervention in any disturbance as soon as possible.
- 6.3.2. The provision of a good quality of environment is believed to have a direct impact upon the behaviour of detained persons and in consequence upon the staffing levels required.
- 6.3.3. The provision of an appropriate quality of accommodation for staff is essential in order to provide a working environment that will assist in countering staff dissatisfaction, absenteeism and a high staff turnover rate.
- 6.4. The Project Team should use the WLCC exercise and Client requirements to identify key priorities for the development. In line with both MoJ's specific strategic considerations, as well as those of the wider Government, sustainability should always be identified as a key priority for every development. ***ALL VALUE ENGINEERING OPTIONS CONSIDERED FOR PROJEC MUST BE ASSESSED AGAINST THE WHOLE LIFE COST ANALYSIS AND ONLY THOSE THAT DELIVER A WLC BENEFIT MAY BE ACCEPTED.***
- 6.5. For works involving existing secure accommodation the Constructor's proposals shall consider alterations that improve internal or external surveillance, rationalise physical safety provisions, improve circulation, or utilise other means to improve the operation of the accommodation.

7. Greening Government Commitments and Climate Change Act 2008 (2050 Target Amendment) Order 2019

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 7.1. All Government Departments, including MoJ, are required to meet Government wide environmental targets and standards known as the Greening Government Commitments (GGCs). These set stretching targets for reducing greenhouse gas (GHG) emissions, water use and waste by 2020, as well as a range of other sustainability commitments including sustainable procurement and biodiversity. MoJ is committed to reducing GHG emissions from its operations and estates, including the custodial estate, by 22% by 2020 compared to the 2009/10 baseline year. There is also a specific target to reduce GHG emissions from the custodial estate by 14% by 2020. All projects shall demonstrate that they contribute to achieving, all the relevant targets set in current Greening Government Commitments.
- 7.2. On the advice of the Committee for Climate Change, the emissions target for 2050 has been amended to mandate a 100% reduction in greenhouse gas emissions against the 1990 baseline. MoJ is committed to achieving this target by 2050 at latest, and thus all developments must be 'net zero ready'. All projects shall demonstrate how they will reduce energy consumption and carbon emissions. This may be through specific energy and carbon emissions analysis typically undertaken on larger capital projects or via the Sustainability Checklist for minor works and minor refurbishment projects. *Note that the Sustainability Checklist referred to in the preceding sentence is planned to be developed into more of an assessment tool and will then be made available.*

8. EU Energy Efficiency Directives

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 8.1. All purchasing shall comply with relevant Crown Commercial Services (CCS) Procurement Policy Notes (PPN). In particular, PPN Action Notes and Information Notes on implementation of Article 6 of the 2012/27/EU Directive must be followed, including PPN 07/14 and PPN 01/15.
- 8.2. Buildings shall achieve or better the EPC ratings stated in Annex 2 of PPN 07/14, or future amendments or additions to the PPNs. Display Energy Certificates (DECs) will be obtained for public areas post occupation.
- 8.3. Equipment and systems shall comply with the Annex of PPN 01/15, or later amendments or additions to the PPNs. Links to PPNs can be found on the www.gov.uk website.
- 8.4. For new buildings, Article 9 of the Directive 2010/31/EU shall apply to each project unless superseded or amended by a PPN or other Directive. Article 9 of 2010/31/EU states that *Member States shall ensure that by 31 December 2020 all new buildings are nearly zero-energy buildings; and after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings.*
- 8.5. Directive 2010/31/EU defines that 'a nearly zero-energy building means a building that has a very high energy performance, as determined in accordance with Annex I (of that Directive). The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, which may include energy from renewable sources produced on-site or nearby'.
- 8.6. The 2012 Energy Efficiency Directive establishes a set of binding measures to help the EU reach its 20% energy efficiency target by 2020. Under the Directive, all EU countries are required to use energy more efficiently at all stages of the energy chain from its production to its final consumption. This includes buying efficient plant and equipment, which must meet regulations for products with Energy Labels, listed in the Energy-Related Products Regulations or in the Energy Star Decision.

9. Sustainable Procurement and Government Buying Standards (GBS)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 9.1. All equipment and materials procured in connection with any Estates Directorate project must be procured sustainably providing environmental, social and economic benefits. As a minimum, they must comply with the relevant Government Buying Standards published by DEFRA – taking note of CCS PPN 01/15 described in the previous section. Further guidance is contained in the Estates Directorates’ Government Buying Standards and Sustainable Procurement guide
- 9.2. Links to GBS can be found by searching the www.gov.uk website or at <https://www.gov.uk/government/collections/sustainable-procurement-the-government-buying-standards-gbs>
- 9.3. Procurement in relation to projects must take account of the [Public Services \(Social Value\) Act](#) 2013 which requires people who commission public services to think about how they can also secure wider social, economic and environmental benefits. It must also comply with the Transparency in Supply Chains provision in the Modern Slavery Act which seeks to address the role of businesses in preventing modern slavery from occurring in their supply chains and organisations. Procurement in relation to projects should also enhance opportunities for Small and Medium Sized Enterprises (SMEs), supporting the target of 33% of Government procurement expenditure to go to SMEs.
- 9.4. All steel must be procured in accordance with [Procurement policy note 11/16: procuring steel in major projects - revised guidance - Publications - GOV.UK](#)

10. Energy Technology List

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

10.1. Where applicable, machinery and equipment supplied for use on the estate managed by Estates Directorate shall be sourced from products listed in the Energy Technology List (ETL), or proven to meet the qualifying criteria for inclusion on the ETL. The ETL is managed by the Carbon Trust on behalf of BEIS <https://etl.beis.gov.uk/>. The ETL contains items considered to be within the top quartile of energy efficient products.

11. Climate Change Adaptation

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

11.1. A departmental climate change adaptation strategy was due to be published in January 2020.

11.2. All project should undertake a climate change risk assessment in line with the climate change adaptation strategy, and should include any mitigation indicated by the risk assessment. When required, modelling design work must be conducted for Climate Change Adaptation and the results implemented. See CIBSE TM48 (Use of climate change scenarios for building simulation) for further information. Also see Section 18 (Site Selection).

12. BREEAM (Building Research Establishment Environmental Assessment Method)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 12.1. This section must be read in conjunction with the Estates Directorate BREEAM policy document and the Estates Directorate BREEAM Policy Guidance Document. For each project, whether it be new construction, refurbishment, or a combination thereof, Estates Directorate will require the appropriate BREEAM rating to be achieved in accordance with the Estates Directorate BREEAM Policy.
- 12.2. New construction projects over the stated value should achieve BREEAM ‘excellent’ and refurbishments should achieve ‘very good’. The ‘policy’ document includes a ‘decision making tree’ that explains this, giving the project value (excluding fees) above which BREEAM will apply to a type of project. It is not acceptable for projects to be split to falsely bring their project value below those financial thresholds.
- 12.3. Where a project value and/or scope alters during its life-cycle, then the applicability of BREEAM must be reviewed against the Estates Directorate policy. Any derogations from the policy must be submitted to the Sustainability Team via procedures and pro-forma provided in the Estates Directorate ‘Mandatory Derogation Procedures’ (STD/PM/MP/052), and signed off by the Head of Sustainability.
- 12.4. A BREEAM Sustainability Champion should be appointed and involved early in the process to help advise on the most suitable strategy and approach to achieve the desired BREEAM rating. The BREEAM assessor or a BREEAM Accredited Professional shall be appointed as soon as it is known that BREEAM will apply to a project. The BREEAM assessment requires detailed design information to be made available to the assessor throughout the project lifecycle therefore the BREEAM assessor or a BREEAM Accredited Professional should attend all design meetings and advise the project accordingly.
- 12.5. The BREEAM New Construction and BREEAM Refurbishment schemes can be used at the following stages of development:
- 12.5.1. Design Stage – leading to the issue of an interim BREEAM Certificate
 - 12.5.2. Post Construction stage – leading to the issue of a final BREEAM Certificate
- 12.6. Where a BREEAM rating is to be achieved, Estates Directorate will require assessments to be conducted at both stages.

13. Government Soft Landings (GSL)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 13.1. Government Soft Landings is mandatory on all Estates Directorate construction and refurbishment projects and requires that project teams address five key themes as a minimum:
- 13.1.1. Functional effectiveness
 - 13.1.2. Operating cost
 - 13.1.3. Energy consumption
 - 13.1.4. Facilities Management (FM)
 - 13.1.5. Training, commissioning and handover
- 13.2. The project team must make use of and follow the requirements of the Estates Directorate GSL framework. The Estates Directorate GSL framework is described in the Guide to Government Soft Landing (STD/BIM/P07). The guide describes the extent to which GSL should be applied to each project.
- 13.3. Project teams must also ensure that the GSL Recording Sheets that form Annex 'A' of STD/BIM/P07 are completed and uploaded to the appropriate project on Viewpoint4Projects at each of the required stages of the project as described in the framework. It is the responsibility of the Client Representative and Project Sponsor to ensure that the latest version of the GSL record sheet have been uploaded to the appropriate area of Viewpoint 4Projects.
- 13.4. Any general queries on GSL should be directed to the appropriate GSL Champion with responsibility for that part of the estates.

14. Statutory control

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 14.1. The Constructor shall take full account of statutory control over the proposals.
- 14.2. For information regarding Statutory Control over the Proposals including Planning Consent, Listed Building Consent and compliance with the Building Regulations see the Client Requirements that form part of Volume 4 of the Strategic Alliance Agreement – Framework for Construction.
- 14.3. The Client has an obligation to comply with all applicable Legislation and all mandatory standards. The Client has limited powers to derogate its own standards and some specific requirements of the Building Regulations. The appointed Building Control Body should use the Estates Directorate Building Regulations Compliance System in place of the normal procedural element of the Building Regulation when the project falls under Crown Immunity. The compliance system consists of three documents: 'Building Regulations Compliance System - Works over £150k', 'Building Regulations Compliance System - Building Notice works under £150k' and 'Integrated Building Regulations and Custodial Estate Standards Guide', all of which can be found on Viewpoint4Projects.
- 14.4. In addition to obligations to comply with the Building Regulations the fire strategy for the project may be subject to approval or comment by the Crown Premises Fire Inspection Group and/or a departmental fire authority (such as HMPPS Fire Safety Advisors) prior to implementation. It shall be the Project Team's responsibility to ensure that those bodies are aware of the project and are provided with such information as they may request. Where such bodies make recommendations the Project Team must take those into account.

15. Derogation Requests

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 15.1. Where there are any proposals that deviate from standards published by Estates Directorate, or standards published by any of the departments that Estates Directorate represents, then those proposals must be submitted to the Estates Directorate Technical Standards Team for consideration using the procedures and pro-forma provided in the Estates Directorate 'Mandatory Derogation Procedures' (STD/PM/MP/052).
- 15.2. Derogations should be accompanied by a completed Sustainability Impacts Capture Sheet to indicate the implications the change will have on delivering MoJ's sustainability requirements

16. Delivery Timetable

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 16.1. The accommodation shall be capable of construction within a period that is consistent with the needs of the Client. This requirement may have a direct bearing on the design of the Proposals and the construction techniques proposed.
- 16.2. Specific requirements for the Delivery Timetable will form part of the Project Brief. Other constraints such as normal limitations of working hours are given in the Client Requirements that form part of Volume 4 of the Strategic Alliance Agreement – Framework for Construction.
- 16.3. Sufficient allowance shall be made within all stages of the Constructor’s Delivery Timetable for Client appraisal of the Proposals. In this the Constructor shall allow for the multi-faceted nature of the Client Organisation that may give rise to multiple and sequential appraisals of the Proposals.
- 16.4. See section 36 regarding requirements for ‘continuity of service’ during the execution of projects.
- 16.5. It is a requirement that the implications of adopting either implementation strategy shall be considered fully where required by the Project Brief. In considering the design and construction of Works the Constructor shall take account of the following:
- 16.5.1. The necessary interdependence of elements of fabric or building services systems;
 - 16.5.2. Sequence of construction;
 - 16.5.3. The need to contain construction within a limited number of work-faces;
 - 16.5.4. Environmental constraints, including working time restrictions and ecological seasons
 - 16.5.5. Avoidance of abortive work;
 - 16.5.6. Minimizing enabling works;
 - 16.5.7. The facility to test and commission systems progressively and successfully hand-over in line with the GSL standard STD/BIM/P07;
 - 16.5.8. Measures required prior to reoccupation of the building between the phases of implementation;
 - 16.5.9. Incidental repairs or other works that become apparent during implementation.
- 16.6. Subject to compliance with the Project Brief, the Delivery Timetable shall be the Constructor’s responsibility.

17. Design – General Requirements

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 17.1. The design requirements differ according to the type of accommodation or the nature of the works. This document should be assumed to provide overarching design guidance for all types of accommodation and/or construction and refurbishment projects.
- 17.2. Proposals shall meet the evolving aspirations and demands of the Client and shall deliver whole-life best-value solutions. For these reasons, the brief permits scope for innovative design at both strategic design and component design levels.
- 17.3. Alternative solutions and/or innovative approaches to meeting the Client’s requirements will be considered provided that the main objectives are satisfied. Such alternatives shall first demonstrate adequately that they would provide no lesser quality of accommodation than this document envisages before any Value for Money advantages will be considered.
- 17.4. The broad objective of the accommodation and facilities is the provision of secure, safe accommodation for all users (including but not restricted to prisoners, detainees, defendants, staff, judiciary, visitors, and members of the public) and utility functions necessary to support it. It must provide a decent and humane environment and in each case the design and construction shall seek to provide an appropriate quality of accommodation. The accommodation must provide living and working space, as appropriate, that accounts for not only the activities and functions that may be envisaged but also the provision of a quality of environment that is appropriate to the length of occupation. A purely utilitarian approach will not be regarded as compliant.
- 17.5. Staff shall be provided with no lesser quality of working environment than they might reasonably expect if they were employed at an equivalent grade in a different branch of public service or in the private sector. The quality of environment, finish, fit-out and furniture which would be expected in new, good quality, commercially lettable space would be an example of a compliant standard, subject to the requirements in this document regarding security, robustness and other functional criteria.
- 17.6. The design must demonstrate that personal and group social and psychological factors have been considered.
- 17.7. The design shall, as a priority, utilise simple rational means to achieve a living/working environment that fully addresses all the Client’s objectives. This is not intended to mean simplistic design or design governed primarily by the rationale of the construction method.

- 17.8. Refurbishment works and new construction within existing buildings/facilities shall be so designed and constructed as to permit continuity of the function of the areas of the building/facility that remains operational during the implementation of the Project.
- 17.9. The design of Refurbishment Works shall not be limited to consideration of the refurbishment of specific elements or aspects of the existing building that are identified in the Project Brief. It shall be the Constructor's responsibility to consider any consequential impact the works would be likely to have upon any other parts of the building/systems or in relation to the satisfaction of any other objectives or matters of design policy. The Constructor shall identify these consequential impacts in its Proposals.
- 17.10. Design targets shall be provided as part of the RIBA Stage 2 design and be incorporated in the Constructors Proposals for each building to demonstrate the intended performance of the Proposal in relation to following indicators:
- 17.10.1. Operational Energy use and Carbon Dioxide Emissions (annual kWh and CO₂ emissions per m² area)
 - 17.10.2. Operational Water Consumption (annual m³ per m² floor area and per person - or for prisons m³ per prisoner)
 - 17.10.3. Embodied Energy in Construction (CO₂ per m²)
 - 17.10.4. Construction Waste (tonnes per m²)
 - 17.10.5. Design targets for biodiversity and transport will be considered as site-specific matters that will be subject to project-specific briefing.
- 17.11. Where m² is the indicator it shall be total floor area based on Gross Internal Area (GIA).

18. Site Selection and Related Considerations

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 18.1. A statement should be included in the Site Appraisal Report by the Consultant Estate Surveyor on each of the following aspects, for each of the sites under consideration, and shall remain with the project information for the selected site:
- 18.1.1. Re-Use of Site
 - 18.1.2. Local Transport Infrastructure
 - 18.1.3. Ecological Value of the Site
 - 18.1.4. Heritage Value of the Site
 - 18.1.5. Radon
 - 18.1.6. Flood Risk
 - 18.1.7. Noise
 - 18.1.8. Harnessing the Microclimate
- 18.2. Estates Directorate encourages the re-use of previously developed sites and the site search should favour the reuse of a site or existing building (particularly listed buildings), the use of contaminated land (with suitable remediation), or land that already has low ecological value. Where sites are derelict or suspected of being contaminated, the remedial action required should be investigated and the ensuing report shall form part of the project information.
- 18.3. If the site contains existing structures that are not being retained, the Project Team should appoint a party to undertake a Pre-Demolition Audit, in line with the ICE 'Report on Demolition Protocol'. This will allow the Project Team to understand the materials and resources that may be re-used within the new development and will raise awareness of any hazardous materials within those existing structures that will need to be appropriately dealt with by the Constructor.
- 18.4. The Project Team should undertake a study into the existing transport infrastructure and the impact of the proposed development on it. If public transport is currently insufficient for the predicted needs of the development, then preliminary talks should be had with the relevant bodies (local authority, service operator, etc.) around the possibility of developing new additional public transport links, or improving the existing, and the likely contribution that would be sought from the Client, if any.

18.5. The relative ecological value and impact of the development must be considered for each prospective site. If necessary, advice should be sought at this stage from MoJ's principal ecologist, or a consultant who is a member of any of the following organisations:

- 18.5.1. The Association of Wildlife Trusts Consultancies (AWTC)
- 18.5.2. The Institute of Environmental Management Assessment (IEMA)
- 18.5.3. The Institute of Ecology and Environmental Management (IEEM)
- 18.5.4. The Landscape Institute (LI)

The project should be delivered in line with the MoJ Biodiversity Policy and achieve a net gain in biodiversity post-development, measured using the DEFRA Biodiversity Metric 2.0.

18.6. Appropriate bodies must be consulted to confirm whether prospective sites contain, occupy or neighbour any features of local heritage value, including such as:

- 18.6.1. Areas of outstanding natural beauty and national parks;
- 18.6.2. Archaeological interest;
- 18.6.3. Scheduled ancient monuments buildings in historic parks and gardens, or those in proximity to scheduled ancient monuments;
- 18.6.4. Local architectural or historical interest referred to in a local authority development plan;
- 18.6.5. Distinguishing local architectural characteristics.

18.7. Where such features are present the restrictions that those would place on the project must be factored into the site selection considerations and the information retained within the project information for the selected site. The Department for Culture Media and Sport's Protocol for the Care of the Government Historic Estate should be followed where applicable.

18.8. A Flood Risk Assessment must be carried out in line with current Environment Agency guidance, to confirm the land-use has a low annual probability of flooding and that the development will not contribute to local flooding or worsen the risk of flooding to neighbouring areas. Assessments should utilise the **most likely** projections within high emissions scenarios with documented in the version of the UK Climate Projections (UKCP) current at the time of the project. They should also fully consider fluvial, pluvial and groundwater flooding. This survey will then guide the Structural Engineer in their design of a suitable Sustainable Urban Drainage System (SUDS) – see later sections on drainage. Where a site is selected that has a medium or high risk of flooding, the site should be de-selected unless a full justification for the need for the site is approved by the relevant project or programme board. Where sites are medium or high risk, mitigation measures shall be designed to ensure the safety and security of the building and its occupants.

- 18.9. A Site Investigation should be conducted prior to the commencement of enabling works. This must assess:
- 18.9.1. Groundwater conditions, in line with BS5930: Code of Practice for Site Investigations;
 - 18.9.2. Soil properties, in line with BS1377: 1990: Methods of Test for Soils for Civil Engineering Purposes;
- 18.10. A Phase 1 land quality assessment should be undertaken in line with Environment Agency guidelines. The Phase 1 preliminary land quality assessment should be used to design additional Phase 2 intrusive soil and groundwater contamination investigations in line with BS10175: 2001: Investigation of Potentially Contaminated Sites. If contamination is detected, the Project Team shall determine and state the measures needed to adequately remediate the affected land.
- 18.11. The Project Team shall establish whether the site is in a radon risk area and, if so, seek appropriate expert advice that states the measures that would be required to safely construct on that site. Radon is a radioactive gas that results from the radioactive decay of uranium. It can percolate through the ground and accumulate within buildings and structures and, where present, is a threat to indoor health.
- 18.12. Noise – see later section on ‘Sound and Noise’
- 18.13. The project team shall consider how the building performance may be enhanced by its integration with the immediate surroundings. The factors to be taken into consideration shall include prevailing wind, sun paths, shading, and landscaping to shield the building, and how those factors may influence energy consumption and the internal environment in a positive way. The site location and surrounding land uses should be reviewed to identify opportunities for off-site renewable energy generation that can support the prison, for example land available for solar installations.

19. Overshadowing

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 19.1. Proposals should seek to ensure that new buildings will not cause substantial overshadowing of neighbouring properties and future development land. Guidance should be sought from the BRE Report “Site layout planning for daylight and sunlight: a guide to good practice”. Site layouts should be reviewed to optimise the use of self-shading of buildings by others to reduce solar gains and the penetration of daylight in to buildings.
- 19.2. The Project Team should provide the Client Representative with initial calculations which demonstrate that the building complies with these good practice criteria.
- 19.3. The Constructor should recheck the analysis undertaken at the Outline Sketch Design of the building, to ensure that satisfactory conditions are still being met.

20. Wind Effects

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 20.1. Designs should avoid creating excessive wind speeds at ground level to ensure satisfactory conditions around the building. The Lawson Criteria for comfortable standing should be the target performance level. A suitable wind assessment study should be undertaken. The following aspects of the design are particularly important to take account of:
- 20.1.1. Selecting a form and arrangement of buildings to avoid draught and shelter external spaces;
 - 20.1.2. Avoiding large facades facing the dominant or critical wind direction;
 - 20.1.3. Choosing stepped or set back forms for tall buildings;
 - 20.1.4. Avoiding flat roofed buildings and large cubical forms;
 - 20.1.5. Provision of draught lobbies or revolving doors at building entrances;
 - 20.1.6. The use of landscaping to provide wind shelter.
- 20.2. For new construction the Project Team, in consultation with the Client Representative, should commission a wind tunnel study or other suitable wind assessment to establish the wind conditions around the base of the building where there is a possibility the building, in combination with the local topography, will amplify wind unacceptably. A desk top analysis by a suitably qualified organisation may be an acceptable alternative to a wind tunnel study for some developments. The results of the wind tunnel test or desk-top study should clearly say whether, in the opinion of the consultant, wind conditions will be acceptable to pedestrians. Any design changes required to improve wind conditions should be incorporated.

21. Transport and Access to Site

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 21.1. Access to the site by public transport should be assessed at an early stage in the project design in accordance with Departmental commitments such as 'access to justice for all', and an overall reduction in the wider carbon dioxide emissions associated with buildings. The Government-wide mandate to electrify 25% of its fleet, as a prerequisite to a 100% commitment, applies here. If a development or building is likely to support part of MoJ's fleet, consideration must be given to the need for provision of electric vehicle charging points for those electrically powered vehicles.
- 21.2. The buildings should be as accessible to cyclists, and to pedestrians and people with disabilities using public transport, as it is to those using private cars. The provision of additional public transport services within the area should be reviewed in consultation with the Project Sponsor where it is deemed they are required.
- 21.3. A staff transport calculator should be used to identify the potential carbon dioxide emissions of staff travelling to and from the building. The number of car parking spaces should be kept to a minimum to encourage travel by public transport. Designs should be developed to promote car sharing to minimise single-occupant car journeys.
- 21.4. Local authorities and service providers should be engaged at an early stage of transport planning to assess the current situation in the surrounding area with regards to public transport and the implications this will hold for the new development. Where possible, alterations to services should be explored to enhance potential for access to site by public transport. A Travel Plan should be produced and used to influence the site layout, with regard to pedestrians, cyclists and car park users.
- 21.5. Proposals should ensure an allowance is made for adequate cyclists' facilities that will encourage staff and visitors to cycle rather than drive to their destination. The Project Team should discuss the exact nature of cyclists' facilities with the Client Representative.

22. Existing Site Ecology and Enhancing the Ecological Value of the Site

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 22.1. Estates Directorate is committed to the Government’s Sustainable Construction Strategy (2008) and requires all construction projects exceeding £1m to have biodiversity surveys carried out and necessary actions instigated. All applicable projects should demonstrate that they deliver a net gain in ecological value at the site following completion of the project, measured using DEFRA’s Biodiversity Metric 2.0.
- 22.2. When scoping projects, the mitigation hierarchy shall be applied (avoid impact first, mitigate unavoidable impact, compensate for losses). Sites that are assessed as already being of low ecological value shall be preferred for new construction. The current ecological value of the site must be surveyed at the first possible opportunity and certainly before any work, including site clearance, commences. Where BREEAM is applicable, the BREEAM checklist or a report produced by a ‘suitably qualified ecologist’ (as defined in BREEAM) may be used to confirm that the land is of low ecological value.
- 22.3. Unless there are exceptional circumstances pertaining to the site in question, the Project Team shall employ a suitably qualified ecologist to calculate the ecological value of the site both pre- and post-construction to determine the impact of the development, and to provide recommendations on protecting and enhancing the site ecology. The Project Team shall implement all those recommendations unless otherwise agreed through the Derogation Request procedure (see Estates Directorate standard STD/MP/001).
- 22.4. A biodiversity strategy should be developed for the site by the ecologist in collaboration with the estates management and design team. This should outline the biodiversity priorities to be delivered by the project, with the aim of achieving a net gain in biodiversity following the project. The strategy should identify key outcomes to be delivered for priority species and habitats, including design and maintenance considerations to ensure the outcomes are delivered. The relevant local authority Biodiversity Action Plan should be consulted to determine local priorities.
- 22.5. A Biodiversity Management Plan for both the development process and long-term management for at least 5 years after project completion, shall be included in the project brief in accordance with the OGC: Guide to Achieving Excellence in Construction. This plan shall include a statement of commitment to preserving and enhancing biodiversity and set out how performance will be measured.

- 22.6. It should be noted that all site features that are of ecological value not directly affected by the works shall be protected throughout the works and the Constructor will be responsible for ensuring that protection, and protection of features adjacent to the site. The Constructor shall be responsible for repairing, replacing, remediating, any such features adversely affected by the works that was not suitably protected.
- 22.7. Construction, refurbishment and grounds maintenance projects shall implement enhancements to the site or building ecology as appropriate. Guidance can be found in the MoJ Climate Change Adaptation Strategy, in consultation with the MoJ Principal Ecologist (Anna Bright; Mobile: 07562433979):

23. On-Site Good Practice

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

23.1. The Constructor must register the development under the Considerate Constructors Scheme, or equivalent, and achieve a score of at least 35 out of 50, and preferably greater than 40.

23.2. In addition, the Constructor must ensure that the following is undertaken:

23.2.1. Monitoring and reporting of CO₂ and energy consumption arising from site activities;

23.2.2. Monitoring and reporting of transport to and from site to enable CO₂ emissions from transport to be calculated;

23.2.3. Monitoring and reporting on water consumption on site;

23.2.4. Monitoring, sorting into at least five waste streams, and recycling of construction waste produced on site – in accordance with the agreed waste management plan;

23.2.5. Adherence to best practice policies with respect to air and water pollution;

23.2.6. Sourcing of construction materials locally wherever possible and from suppliers / manufacturers holding suitable responsible sourcing accreditation, including FSC and BES 6001;

23.2.7. The Constructor shall operate a certified environmental management system.

23.3. The Constructor shall report performance monthly against each objective to demonstrate compliance with the contract sustainability key performance indicators.

24. Structural Design

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 24.1. The design shall withstand externally and internally applied loadings and transmit them through the structure safely. It shall account for local circumstances, such as the local climate and the substrate or ground conditions. The design should be assessed against the **most likely** projection within high emissions scenario of the UK Climate Projections (UKCP) current at the time and location of the project. The design shall incorporate the recommendations made in The Climate Change Adaptation strategy.
- 24.2. The design shall account for the anticipated use of the spaces in the assessment of floor loadings. As a minimum, the following values for superimposed loading shall be used for design. Allowance shall be made for dynamic loads appropriate to the intended use. The structural design shall consider foreseeable adaptations to avoid unduly limiting future adaptability. Allowance shall be made for loadings imposed by building services and partitions in addition to the loadings given below:

Space, element or activity	Minimum superimposed loading kN/m ²	
Accommodation generally	2.5	
Corridors	3.0	Include any additional loads anticipated from maintenance equipment or its transportation
Stairs	4.0	
Plantrooms	Actual plant loadings and/or maintenance loadings to be designed for unless agreed otherwise between Structural Engineer and MoJ client	

- 24.3. Roofs shall be designed for standard loadings including allowance for loads imposed during maintenance or repair. Flat roofs shall be designed to take additional loads imposed by extensive green roof systems and photovoltaic panels. It may be assumed that significant maintenance operations would include the erection of temporary protection for safe working.
- 24.4. The structural design shall be optimised to use the minimum volume of materials possible to reduce the embodied carbon footprint of the construction. Low carbon alternatives shall be implemented where practical, such as cement replacement and the use of recycled materials.

- 24.5. The Constructor shall assume that in the event of a disturbance within a prison or other type of detention facility that there is a likelihood that detained persons would attempt to occupy the roofs of buildings and that if this should be the case staff might be obliged to access the roof to restore control. Whilst as a priority the design shall seek to inhibit roof access, the structural design of the roof and its cladding shall account for concentrated pedestrian loading of this type. This requirement shall include the design of any roof-light. In the structural design for this special loading condition the Constructor may apply factors that reflect the short-term and “emergency” nature of the loading. Further issues that affect the structural design of roofs are included in the sections herein that deal with physical security and delay by design.
- 24.6. It is essential that the safe maintenance of the accommodation is considered but it will be permissible for the Constructor to consider alternative approaches to the provision of safe permanent anchorages if conventional designs might compromise security objectives.
- 24.7. Balustrades in areas occupied by detained persons shall be designed to account for the robustness required of the building fabric generally and the possibility of intense loads due to “crowd pressure”. The loading requirements for the design of balustrades or screens shall be assessed in relation to the function of the space and the location of the balustrade. In areas occupied by detained persons, where balustrades might be required to withstand abnormally intense pressure in the event of a disturbance, these shall be designed for loadings as given in BS 6399 Part 1 for areas subject to crowd pressure.
- 24.8. Balustrade heights shall be as stated in the Building Regulations except that the heights of balustrades to open-sided balconies in secure accommodation areas shall be a minimum of 1500mm high. Such balustrades or screens shall be designed to safely resist the stated loads at a line of application 1100mm above finished floor level. Balustrade tops shall be designed to discourage persons sitting on the top rail.
- 24.9. Balustrades in detained person areas shall be designed to afford no assistance to climbing, with components that cannot be deformed by hand, with gaps between members sufficiently close as to limit risks of falling (or being pushed) through, but as open as possible to permit surveillance, taking account of the obscuring effect parts may have when viewed from an oblique angle.
- 24.10. The approach to the foregoing shall respect the overarching objectives of the provision of an appropriate quality of environment. The visual design of the components and their impact upon internal spaces shall be properly considered to provide an interior that is safe, purposeful and health-promoting in the broadest sense and not industrial or utilitarian in quality.
- 24.11. In secure accommodation, accessible voids and open areas may require protection to prevent self-harm and incidents at height. The design of measures to prevent this will include consideration of abnormal loading that shall be considered as part of the structural design. Unless omission can be substantiated by risk assessment, open wells and voids shall be protected against risks from falling from a height as described in the specific accommodation Design Guidance.
- 24.12. Accommodation that adjoins vehicular circulation routes shall be designed to eliminate where possible the likelihood of accidental vehicular impact.

- 24.13. For refurbishment projects, the structural adequacy of existing buildings shall be considered as part of the design of the works in compliance with the standards stated in the Core Requirements and/or Design Guidance for new construction. The structural adequacy shall also be considered if the execution of non-structural works would have a structural impact, for example where new finishes would increase dead loads or where enlarged openings might compromise the adequacy of existing walls to resist lateral loads. The assessment of structural adequacy shall also account for any loadings that would be imposed by the construction works envisaged.
- 24.14. If the structure of an existing building is such that full compliance with the stated standards would lead to significantly increased cost, disruption or environmental impact and in any case if alteration would lead to significant risks to the health or safety of site occupants or construction operatives, the Constructor may offer alternative solutions.

25. Building Envelope, Fabric and Design

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 25.1. The design and construction of the external envelope shall respond positively to the requirements for internal accommodation and external form and shall successfully integrate the building structure and services. It shall also account for envisaged requirements influencing its size and shape and respond to its visual context such that it successfully integrates requirements arising from internal accommodation, external form, building structure and services.
- 25.2. There is no Core Requirement for the overall size and shape of the external envelope. See accommodation-specific Design Guidance and related BIM component library for further information related to different building types.
- 25.3. External constraints commonly encountered that shall be considered as part of the Proposals include the need to adopt specific external materials to relate to the local context. The need to submit projects for Planning consent is described elsewhere in this document and this might give rise to these requirements.
- 25.4. The envelope design shall effectively exclude precipitation including rain, driving rain and driven snow. Fog exclusion is not a generic criterion. The design shall account for the local microclimate, and demonstrate that it still functions effectively under the future climate scenarios listed in the UK Climate Projections and required by the Climate Change Adaptation strategy. Section 6.2 details the future climate scenarios against which the building must be proven to comply.
- 25.5. The design of disposal systems shall be such as to prioritise avoidance of damage to the building fabric or contents through flooding including a redundancy of n+1 in the provision of downpipes to any gutter length. Disposal system design shall take in to account future climate change scenarios as required by section 6.2.
- 25.6. The building envelope shall not deteriorate prematurely through exposure to extremes of heat or cold normally encountered at the site, or expected to occur in the future over the building's lifespan. Prematurely shall mean deterioration within the lifespan periods given elsewhere in this document. The operation of the building shall not be fundamentally compromised by such extremes. The limits for acceptance of compromise of internal comfort conditions shall be as defined in the Building Services sections of these requirements.
- 25.7. The overall objective to provide an appropriate quality of living/working space shall be considered. In this context, architectural design that counters monolithic, bleak or bland appearance in favour of visual reduction of scale and visually softer approaches should be considered. The Proposals shall demonstrate consideration of the elevational design treatment and the scale, texture and colour of materials.

- 25.8. New buildings shall be designed and orientated as far as is practical to avoid non-beneficial solar gains through windows, door openings, and through roof-lights whilst allowing correct levels of daylight, views-out of the building, beneficial solar heat gain and natural ventilation. Wherever practicable the building design shall afford solar shading to openings utilising methodologies expressed in CIBSE TM37: Design for improved solar shading control, but with due regard to the Client's requirements for anti-climb features.
- 25.9. Refurbishments, within the constraints of the project and the constraints of any historical listing or planning restriction, shall take advantage of the opportunity to improve thermal properties of the building fabric and to increase levels of solar shading where practicable.
- 25.10. For all projects, the Project Team should achieve the following:
- 25.10.1. Designs and specifications that minimise waste generated in the construction process and to adopt techniques of standardisation and off-site pre-assembly where effective in reducing waste and/or embodied energy content.
 - 25.10.2. Specification of new building materials and composite materials with the lowest possible Embodied Energy;
 - 25.10.3. Specifications that maximise use of recycled materials and materials with high recycled content (target 10% minimum recycled content for the development as a whole) and re-use of materials including demolition materials;
 - 25.10.4. Specification of materials and components sourced as local as practicable to the site and that maximise the use of natural materials, and that in turn are sourced/manufactured from local materials;
 - 25.10.5. Specification of new materials that are recyclable;
 - 25.10.6. Maximise, for refurbishment projects, the continued use and/or refurbishment of existing materials, components and fittings;
 - 25.10.7. Deliver adaptable solutions to accommodate future needs;
 - 25.10.8. Minimise facilities maintenance requirements;
 - 25.10.9. Complete avoidance of new materials containing Ozone Depleting Products (ODP);
 - 25.10.10. Ensure that all timber and timber containing products are sourced legally and sustainably in accordance with the relevant Government Buying Standard for timber procurement, and that it is correctly documented;
 - 25.10.11. Make use of the Green Guide to Specification <http://www.thegreenguide.org.uk/> to select products with the highest possible ratings subject to WLCC;
 - 25.10.12. Provide building design details that ensure continuity of insulation and air-tightness, and that are buildable;
 - 25.10.13. Provide building design details that completely avoid thermal bridging across insulation that would lead to increased heat-loss. The design of the building envelope shall, as a minimum, be such as to achieve thermal performance and air tightness to levels equal to or better than a design that would be fully compliant with the Building Regulations;
 - 25.10.14. Provide details for service penetrations through building fabric that minimise breaks in insulation;
 - 25.10.15. Specification for creation of service penetrations on site that are of the minimum size to accommodate the service or its sleeve and that are fully sealable to prevent uncontrolled air infiltration;

- 25.10.16. Provide designs that are 'net zero ready', in the light of the amendment to the 2008 Climate Change Act which mandates a 100% reduction in greenhouse gas emissions by 2050 against the 1990 baseline;
- 25.10.17. Design building and site layouts that, as far as practicable, minimise the length of service runs (pipework, cables and ductwork) between central plant and points of use, with respect to the load-centre;
- 25.10.18. Deliver energy efficient solutions with low energy use in construction (including transport) and low energy consumption in operation;
- 25.10.19. Ensure that all heat gains are accounted for in the development of an integrated approach to the management of building energy use. The design shall adopt measures to limit and/or deal with fabric heat gains to minimise discomfort and minimise energy use;
- 25.10.20. Deliver water efficient solutions that minimise mains water consumption and maximise water recycling and reuse;
- 25.10.21. Specification of methodologies that will be used to ensure that all the aforementioned design features and details have been achieved. For instance, by continuous inspection during construction and use of a comprehensive thermographic inspection of the building fabric undertaken after completion undertaken in line with recognised standards such as BS EN 13187: Qualitative Detection of Thermal Irregularities in Building Envelopes and CIBSE TM23:2000 Testing Buildings for Air Leakage.

26. Robustness and related issues

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 26.1. The accommodation shall be designed and constructed to resist damage to the building fabric motivated by escape, incursion, sabotage, vandalism, in addition to expected wear and tear from normal movement of people and equipment. The design and/or incorporation of components must preclude the possibility of removal or dismantling that might provide devices that would aid escape and/or facilitate an attack.
- 26.2. The parts of accommodation occupied by detained persons may be subjected to abuse of a very serious nature. It must be assumed that in NORMAL OPERATION such areas will be subjected to one of the most destructive uses to which any building can be put and that all components exposed to detained persons are vulnerable. Particularly exposed surfaces such as floor coverings, stair treads, etc., exposed building services elements, and moving parts such as doors and windows.
- 26.3. The structure or construction of detained person areas shall not be able to be broken, penetrated or opened by those persons with or without the assistance of any types of tools that could be concealed about them or by the use of any parts of the building fabric, services, fittings and furniture or by:
- 26.3.1. Pressure exerted by pushing or pulling on the elements of the structure
 - 26.3.2. Cutting through the elements of the structure
 - 26.3.3. Peeling back elements of the structure
 - 26.3.4. Bursting open elements of the structure
 - 26.3.5. Unbolting, removal or reversal of any mechanical fixings
 - 26.3.6. Progressive removal of intrinsically secure elements of the structure
- 26.4. Resistance of building envelopes and internal surfaces and fixture at low level should effectively resistant damage by hand propelled trolleys and wheelchairs. In addition, all surfaces shall resist permanent marking by graffiti within the zone where it may be reached.
- 26.5. As far as is reasonably practicable, all internal parts of buildings housing wet services, including service areas, shall be designed to prevent water penetrating other parts of the building in the event of leaks and catastrophic failures. To be achieved by inclusion of measures such as waterproof floors and bund walls capable of containing the water until safely discharged to outside of the building.

27. Physical Security Strategy

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 27.1. The accommodation shall incorporate building elements and forms of construction necessary to provide adequate physical and operational security measures.
- 27.2. The nature and extent of physical security measures that will be incorporated in the finalised design and construction of the accommodation will be related to an assessment of risk that will be provided to the Constructor as part of the Project Brief.
- 27.3. The design of physical security measures shall be integrated with related aspects covered elsewhere in this section or in accommodation specific Design Guidance. It is particularly important that all aspects of surveillance and clear visibility are considered in parallel with the physical containment of space.
- 27.4. Physical security in all secure accommodation shall be considered as a layered system. Generally, the most secure space will be the cell beyond which internal space shall be subdivided, and then contained by the envelope of the building. External space shall be subdivided to limit or delay free movement within a secure perimeter. These elements shall be carefully designed and coordinated to function as an integrated whole in order to achieve the objectives of safe and secure custody and to meet staff expectations of a safe working environment.
- 27.5. Access by detained persons to the staff zone, plant rooms or any other areas to which they are not permitted access, shall be precluded as part of the Proposals.
- 27.6. Except where specifically briefed otherwise in accommodation-specific design guidance, the perimeter of secure accommodation shall be designed as a continuously secure envelope with controlled access and egress. The fabric of the secure envelope shall extend in both horizontal and vertical planes. The construction of the secure envelope shall provide a degree of resistance to attack related to the building element, the type of accommodation and the location of the element within the accommodation. All elements shall be designed to this standard including the security of openings and penetrations such as windows, doors and service ducts.

- 27.7. Roofs and roof-lights shall be designed and constructed to resist penetration from outside or inside. The Constructor is advised that in the event of a disturbance in a secure facility, persons may have access to devices that would enable them to penetrate many “normal” materials used in roof construction. If a roof is above spaces that are secure and yet the level of the underside of the roof is sufficiently distant from the nearest means of access below, the provision for the physical security of the construction may be moderated to consideration of resistance to penetration from above provided that other aspects of these requirements are complied with.
- 27.8. Where any part of the construction is penetrated by an opening that could compromise the degree of security of the element of which it forms a part, adequate consideration shall be given to the protection of the opening. For secure accommodation, the maximum acceptable dimensions of openings that require no additional protection provided they are bounded by construction that cannot be deformed, dismantled or removed are given in the Physical and Special Security Guide (STD/Z/DG/068).
- 27.9. In the case of refurbishment projects, the Project Team may take account of the benefit to security against attack that would be provided by any existing construction that is to remain. However, it should be stressed that the severity of attack both in testing and in actuality is extreme and consequently forms of construction that in normal circumstances would be regarded as relatively secure may not be adequate in the construction of secure accommodation. For example, masonry alone will not usually withstand attack to the degree required for the enclosure of cells.
- 27.10. The Proposals shall include adequate consideration of the need to inhibit the passing of objects between detained persons or between the secure buildings and external spaces. This will include prohibiting the use of weighted lines to ‘fish’ and retrieve items from outside of the building, the delivery of items by hand, or delivery by means of drones. Openings in any construction between internal spaces intended to be secure shall not facilitate passing of objects. For instance, the clearance gap between a service pipe and its sleeving through a secure wall should not allow objects, including strips of paper or other items, to be fed from one side to the other.
- 27.11. The construction of doors and gates shall be given special consideration and advice on the requirements for cell doors is given in accommodation-specific Design Guidance. Doors and gates shall be of such construction that they will accept the locks and other ironmongery that their function requires. Doors or gates shall be located wherever access is required through a line of containment. Where there is a requirement for door performance such as weather protection or fire resistance that would give rise to proposals that would be compromised in operation, maintenance or value for money, then it will be compliant for both a door and a grille gate to protect the same opening.
- 27.12. The Constructor is advised that consideration of the specification and details of locks will be dealt with by the Client. Unless specifically stated otherwise all locks will be provided by the Client. Proposals for the design and construction of accommodation shall include consideration of the overall strategy for locking that would be adopted and adequate provision for incorporation of locks in the construction.

28. Delay by design

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 28.1. This section concerns escape attempts from secure accommodation facilities. The layout planning of the site, the access and circulation design and the provision of alarm and monitoring systems shall be such that the maximum time needed for staff intervention within the secure perimeter area / building shall be minimised and in no case more than a period of 5 minutes.
- 28.2. The minimum delay or resistance time required for elements of the building fabric or other constructions shall be as stated in the following table unless varied in accommodation-specific design guidance. The times given relate to attack under specific test conditions intended to emulate the worst case envisaged:

Table 28A

Minimum Delay Times to be provided		
Element	Minimum delay time	
	Physical attack	Climbing
High security window grille (unsupervised areas)	24 hours resistance to continuous cutting	n/a
Low security window grille (supervised areas)	12 minutes resistance to continuous cutting	n/a
Building structure (frame and envelope)	1½ hours	n/a
Roof including whole of roof construction	30 minutes	See 29.4below
Security gates and side grilles	20 minutes resistance to continuous cutting	n/a
Cell doors	1½ hours	n/a
Building perimeter doors and/or gates	1½ hours	n/a
Subdivision fences within the prison generally	3 minutes	
Perimeter fences or walls (including any form of anti-climb provision at top)		8 minutes delay against assisted escape by ladder

Notes on Table 28A:

1. *See accommodation-specific design guidance related to specific building types.*
2. *Resistance to continuous cutting of bars means the minimum time taken to cut through one bar. Other physical attack delay times stated in the table mean that it shall not be possible to create an opening of sufficient size for a person to pass completely through within that time.*
3. *The Constructor shall assume that prior to acceptance of Proposals the resistance of any construction proposed will be subject to assessment in order to establish that it will achieve the requirements. If the Proposals include construction that has not previously been adopted, then this assessment may require physical testing emulating the type of attack envisaged.*
4. *Make provision for incorporation of locks in full accordance with instructions that will be provided. The Project Brief will describe the extent to which locks will be fitted by the Client.*
5. *Openings for building services shall have the same degree of attack resistance as the elements in which they are located.*

29. Resistance to climbing

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 29.1. This section largely relates to secure accommodation facilities, but some aspects will also apply to other publicly accessible buildings. The design solution shall not be climbable by gaining support from the envelope itself or with the assistance of hand held devices. The design of the external envelope and the design of internal walls or other features of more than one normal storey height should limit the risk of climbing by means of ropes or similar devices. Elevational features, including building services components, shall be designed and constructed to preclude their use as aids to climbing.
- 29.2. Buildings, structures or features of buildings that might assist climbing and that are less than two storeys above ground or any other accessible level should be avoided or contained to limit risks.
- 29.3. Unauthorised access via the external envelope or internally to the exterior of the roof, to the roof void, or to any internal space shall be limited by design.
- 29.4. In considering the prevention of access to the roof the Constructor shall take into account:
- 29.4.1. Preventing access to the roof by avoidance of features that would aid climbing including avoidance of roof eaves or verge details that could assist climbing from the vertical wall plane to the roof surface.
 - 29.4.2. Preventing access to the roof by penetration from below as described above
 - 29.4.3. Preventing access from the roof surface to spaces below that could enable persons to occupy areas from which they would be more difficult to remove
 - 29.4.4. Design of the roof surface and pitch so that free movement across it is made more difficult
 - 29.4.5. Avoidance of any components or features that could be detached from roofs and used as weapons or projectiles.

30. Avoidance of concealed spaces

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

30.1. The Proposals shall not include concealed spaces that could be accessible to detained persons and in which objects or people could be hidden. Voids, ducts, manholes, services containment, and the like, shall be securely protected to prevent access.

31. The design of internal elements

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

31.1. The internal elements of the building shall be designed and constructed to take account of all aspects of the intended use of the accommodation and constructed to give satisfactory performance in relation to the envisaged use.

31.2. In general, the performance criteria for the design of internal elements shall be derived from this Design Guidance document and the accommodation-specific design guidance.

31.3. It is not intended to prescribe the general design approach further. It is a requirement that the Constructor shall provide an informed and justifiable response in the context of the objectives and performance criteria given herein and in accommodation specific guidance.

32. Fittings, Fixtures and Finishes

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 32.1. Client specific requirements for the provision of fittings and fixtures in individual spaces are given in other design guidance. The Constructor shall consider the fittings and fixtures that are necessary for the activities envisaged in each space and shall make such additional inclusion as needed for those activities.
- 32.2. It is essential that the approach to both the design and construction of fittings and fixtures consider requirements for robustness. The facility to dismantle or use parts of fittings maliciously must be avoided.
- 32.3. Furnishings and finishes should be specified and selected that do not contain glues and solvents which give off VOCs (Volatile Organic Compounds) or contain formaldehyde.
- 32.4. Finishes must be appropriate to the spaces and envisaged use. Basic requirements for the type of finishes to be adopted in individual spaces are given in other design guidance. Low VOC or water-borne plant-based paints must be specified and used for internal areas.
- 32.5. Flooring shall conform to the Estates Directorate Flooring Guide and relevant accommodation specific Design Guides.
- 32.6. Resin-free softwood fibreboard rather than ply or particle board should be specified and used where it will suffice.

33. Hazardous Materials

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

33.1. The Project Team should ensure that the specification incorporates the following criteria:

33.1.1. If used, urea formaldehyde foam insulation should be specified in accordance with British Standards BS 5617, and BS 5618.

33.1.2. Formaldehyde levels in particleboard should be in accordance with BS EN 312, for cement bonded particle board BS EN 634-2, for fibre board BS EN 622, and Oriented Strand Board BS EN 300.

33.1.3. All materials comply with the Construction Products Regulations 2011

33.1.4. Aggregates are free of silica dust (also known as respirable crystalline silica (RCS))

33.1.5. Concrete to be free from

33.1.5.1. calcium chloride admixtures in reinforced concrete

33.1.5.2. High alumina cement

33.1.5.3. Mundic (aggregates from mining waste)

33.1.5.4. Wood wool

33.1.5.5. Containing silica or vermiculite

33.1.6. Decorations to be free from azoic dyes, lead, mercury, cadmium, asbestos, vermiculite or tributyl tin (TBT)

33.1.7. Flame retardants to be free from Hexabromocyclododecane (HBCD), Polychlorinated Biphenyls (PCBs), Polychlorinated Terphenyls (PCTs), Tetrabromodiphenyl ether and Vermiculite unless fibre free

34. Design for people with disabilities

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 34.1. The accommodation shall make reasonable provision for the inclusion of people with disabilities. Those people may comprise, but not be limited to, prisoners, detainees, defendants, members of staff, judiciary, official visitors, and members of the public.
- 34.2. The criteria imposed by the Building Regulations may be taken as a guide to the provision to be made for those with motor disability or sensory impairment. The design shall make provision for the relevant requirements of the Equalities Act.
- 34.3. No person with disability shall be disadvantaged in terms of access to communal facilities, but it is not a rigid requirement that every part of every accommodation must be accessible and usable by people with disability or that permanent adaptations will always be necessary. Proposals and design decisions shall be based on a holistic assessment of the building complex.
- 34.4. Where the scope of the Project Brief or the nature of an existing building inhibits full compliance with the objectives stated here and in the Design Guidance, the Constructor shall make proposals that comply as far as reasonably possible. It shall be the Constructor’s responsibility to report to the Client any compromise to the objectives inherent in its proposals.

35. Fire

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 35.1. The accommodation shall be designed and constructed to limit the risk of fire and to control its impact upon occupant safety and the integrity of the building.
- 35.2. All projects shall take account of STD/E/SPEC/014 for fire alarm systems. Prison projects shall also take account of the HMPPS Fire Safety Design Guide and STD/E/SPEC/038 for performance of in-cell fire detection.
- 35.3. The approach to fire related issues in prison and other secure accommodation cannot be directly related to Building Regulations requirements in every instance. Where special circumstances apply, the divergence is stated below and in other sections of this document or in the accommodation specific design guidance. The Constructor is advised that prior to acceptance of Detailed Project Proposals, comment and/ approval of the proposals shall be sought from the relevant bodies. Those relevant bodies may include departmental fire safety staff, the appointed Building Control Officer, the local Fire and Rescue Service, or members of the enforcing authority, normally the Crown Premises Fire Inspectorate Group (CPFIG) in England or the equivalent body in Wales or Scotland. It shall be the Constructor's responsibility to obtain such comments and approval and to include for any necessary modification to the proposals.
- 35.4. To a far greater degree than normal, fire in secure accommodation may have malicious rather than accidental cause. For this reason, it is important that those buildings are designed and constructed to limit the opportunities to start fire and limited in the extent, flammability, and toxicity of materials that might support combustion. Both the external envelope and internal elements shall be made of materials that are inherently non-combustible or are treated or encased to adequately limit combustibility. Minor exceptions may be tolerated in the case of small elements such as timber battens that are not visible, have no critical function and are out of reach. The combustibility of materials or surfaces in staff areas or in areas to which prisoners, detainees and defendants are only admitted under supervision should be as normally permissible under the Building Regulations and BS 9999 in buildings of a comparable type.
- 35.5. The materials that form part of the construction of the internal elements of the building, including internal fittings and furniture and those elements that form part of the external envelope that could, in fire, give rise to toxic products of combustion in occupiable areas, shall produce toxic gas concentrations of an acceptable level as determined and assessed in accordance with a relevant BS or EN standard for that material or component.
- 35.6. Only non-combustible roof finishes will be acceptable. Spread of fire by radiant means between buildings shall be limited to the same degree as would be the case for buildings designed fully in accordance with the Building Regulations and BS 9999.

- 35.7. Secure accommodation for detained persons and many other areas within secure accommodation, where security is an over-riding concern, cannot comply with normal standards in relation to the provision of means of escape. Nevertheless, occupant safety in fire shall be integrated into the design by provision of adequate means of escape that accords with an agreed fire strategy for that building.
- 35.8. The principles that would be adopted by operational staff to deal with the outbreak of fire in secure areas rely upon assessment of the severity of the fire and foreseeable risks so that a response may be implemented that is appropriate in terms of both occupant safety and maintaining security. A strategy of progressive horizontal evacuation is preferred unless either the fire can be safely contained and extinguished without evacuation, or the severity of the fire, its location or associated risks are such as to demand that the occupants are evacuated directly to the outside. The Constructor's Proposals must support the fire evacuation strategy for the department in question.
- 35.9. The implication of this principle for the design and construction of secure accommodation and large custody suites is that they shall be subdivided into "sub-compartments" of adequate size and fire resistance to permit escorted evacuation of detained persons in safety and securely to an adjacent sub-compartment in a reasonable period. Sub-compartmentation of staff and plant areas shall also be provided where it is necessary to support the fire strategy. Sub-compartment construction shall have a minimum of half hour fire resistance and no compartment shall be designed to accommodate more than 60 detained persons. For prisons, this shall be taken to mean designed in uncrowded accommodation conditions.
- 35.10. Sub-compartments into which detained persons may be evacuated include only those in which control may be maintained, such as building entrance areas, whole site circulation, secure escort vehicle locks, and the like. Evacuation into the staff zone or services accommodation will not be acceptable.
- 35.11. Collapse or excessive damage to the building by fire should be prevented. The adequacy of fire resistance of building elements for containment of fire, protection of escape routes and/or protection of the building itself shall be assessed as part of the design of the Proposals and appropriate provision made.
- 35.12. Where indicated within design guidance, adequate means of first aid firefighting or fixed suppression systems shall be provided. Specific attention shall be paid to the special problems of fighting fires in cells including security, occupant safety and the robustness required of any proposal. Where first aid firefighting equipment is to be provided in secure areas it shall conform to Estates Directorate Technical Specification STD/M/SPEC/045 and where a fixed misting suppression system is to be provided it shall comply with STD/M/SPEC/054.
- 35.13. Access for firefighting within the accommodation shall be no less than would be required under the Building Regulations. Specially protected firefighting stairs or lifts shall be considered as part of the Proposals where the size of the project, the quality of fire-fighting access or the nature of the risks suggest that they should. Dry risers shall be provided in all accommodation more than two storeys and hydrants provided in locations required and agreed with the local Fire and Rescue Service.

- 35.14. The design and construction of refurbishment works shall not compromise fire safety. Particular attention shall be paid to the continuity of safe and secure means of circulation and evacuation during the works. The Constructor shall provide evidence that such concerns have been fully accounted for in the design of the works in addition to any other requirements regarding the control of the construction process or procedures.
- 35.15. Estates Directorate requires relevant buildings / parts of buildings, and in particular secure accommodation, to be provided with smoke ventilation and/or other smoke control measures as necessary to assist safe evacuation. Please also see Estates Directorate Technical Specification STD/M/SPEC/050.
- 35.16. Estates Directorate requires relevant buildings / parts of buildings, and in particular secure accommodation, to be provided with means of providing first aid fire-fighting by use of handheld misting equipment complying with STD/M/SPEC/045 or a combination of fixed misting systems and hand-held equipment complying with STD/M/SPEC/054, as detailed in the particular specification.
- 35.17. Any building that is proposed to be clad externally with a rain-screen cladding system, especially any such system including Aluminium Composite Material (ACM) panels, shall only be clad with systems that consist of materials and installation methods that in combination have been successfully tested in accordance with BS 8414 and have been certified as meeting the requirements of the Building Regulations.
- 35.18. In some locations locks required by MoJ Estates or its client departments for security purposes will be of a size that requires more material to be removed from a door than is permissible under that door's fire-door test certification. Where that is the case the effect of installing the lock shall be mitigated by use of an intumescent sleeve/pocket that separates the metal casing of the lock from the timber door material and for the striker plate where necessary. That intumescent material shall be of a standard that would be applicable to an FD60 door-set. Any such proposal must be notified to, and agreed by, the relevant Building Control Officer and, for new doors, evidence of the original fire certification must be provided. The absolute minimum of material necessary to accommodate the lock and intumescent sleeve/pocket must be removed from the door-set. Note that this clause does not apply to cell doors.

36. Continuity of Service

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 36.1. It is essential to the Client's operation that works within existing establishments and Refurbishment Works within 'live' buildings shall permit the operation of the facility to continue during construction and between construction phases.
- 36.2. The extent to which operation of a building or facility is to be unhindered will be set-out in the project brief following full consultation between the Project Team and the client department and building/facility operator. The Constructor shall consider continuity of the Client's operations during construction as part of its Proposals.
- 36.3. The Constructor shall consider the design, construction and procedures to be adopted to ensure continuity of service in all respects including but not limited to:
- 36.3.1. Security;
 - 36.3.2. Occupant health and safety;
 - 36.3.3. Fire;
 - 36.3.4. Continuity of supply to all building services systems;
 - 36.3.5. Adequacy of circulation;
 - 36.3.6. Deliveries and refuse removal;
 - 36.3.7. Maintenance access;
 - 36.3.8. Access or other requirements in the event of a disturbance.

37. Design for flexibility/adaptation

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 37.1. The design and construction shall make provision for flexibility and/or adaptation in use.
- 37.2. Except for certain single purpose accommodation such as kitchens, the accommodation shall be so designed as to permit reasonable flexibility in the use of spaces and should permit internal spaces to be altered and adapted to meet future needs. The value that might be derived from flexibility or adaptability cannot be stated in general terms and is referred to further in accommodation specific design guidance.
- 37.3. Cell accommodation may be constructed as a permanent part of the building and any site-specific requirements that might vary the numbers of specially adapted cells will be provided on a project specific basis.
- 37.4. Within communal areas, and within the staff zone as a whole, the opportunity for future adaptation of the size and shape of spaces provided to meet future needs must be considered. For example, wherever internal walls do not form part of essential security containment or where there is no need for them to be permanent for other reasons they should permit future removal or relocation. The restriction of future flexibility by the adoption of a highly bespoke structural solution or construction system is discouraged unless the Constructor demonstrates that it would not unduly inhibit adaptability.
- 37.5. The need for robustness in the detained person zone has been stated. In this context it may be assumed that adaptability is secondary to the need for robustness. It will be regarded as compliant if adaptation could take place reasonably and safely whilst accepting that significant constructional work involving closure of a building or a part thereof might be required to achieve it. Nevertheless, opportunities should be sought in the provision of building structure, access and services to limit the impact of alteration where possible.
- 37.6. In the staff zone adaptability of the accommodation to permit differing approaches to staffing and management with minimal operational impact would be an advantage. Alternative approaches to the provision of space to accommodate the activities in this zone may be proposed by the Constructor where these can be demonstrated to be a valid means of providing added flexibility.
- 37.7. Reasonable provision shall be made throughout the design and construction for changes to the more rapidly developing building services systems, particularly IT, communications and active security systems.

38. Design for safer custody

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 38.1. Premises intended for detention of persons as a whole, and the accommodation in particular, shall be designed as a safe, purposeful and health-promoting environment.
- 38.2. The facility shall be designed and constructed to positively contribute to the Client’s objectives of the provision of a safe, purposeful and health-promoting environment. All aspects of the environment shall be fully considered as expressed in the relevant design guidance. All possible steps shall be taken to avoid design that is inhumane, bleak or alienating and opportunities shall be sought to create spaces that are normal, unthreatening and appropriate for living or working.
- 38.3. Specific guidance on the fit-out requirements for safer cells is given in accommodation-specific design guidance.

39. Design for privacy and decency

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 39.1. The Proposals shall make provision for the reasonable needs of detained persons for privacy and decency.
- 39.2. In the interests of furthering the broad objectives of providing a living and working environment that is safe, healthy, decent and as normal as is possible, in all accommodation the design and construction shall make provision for persons to have control over their personal privacy so far as this is consistent with operational needs. The Constructor is advised there is no policy restricting the deployment of staff of either gender in accommodation generally and that this may heighten detained person’s perception of their needs for privacy.
- 39.3. Provision shall be made in the design and construction for enclosure, or where necessary limited enclosure provided by screening, of areas where detained people undress, wash or use the WC so that they are not overlooked by other detained persons or by staff except to the degree that essential surveillance or provision for the monitoring of all detained persons is necessary. Full enclosure of WC areas shall be assumed unless specifically briefed otherwise.
- 39.4. The degree to which privacy is provided shall be related to the gender of the prisoners accommodated, to the specific accommodation type and to the use of individual spaces. For example, the provision in communal shower facilities could be equated to that found in similar facilities in public buildings generally. Special consideration shall be given to Health-related accommodation in which the examination and treatment of persons shall be able to be carried out with no lesser degree of privacy than would be the case in equivalent public accommodation.

40. The internal visual environment

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 40.1. The quality of the internal visual environment of the building shall be such as to support and reinforce the objectives of providing an appropriate quality of living/working space.
- 40.2. The visual design of the internal environment shall be fully considered to respect the different types of activity and space within the accommodation and in relation to functional criteria.
- 40.3. It is accepted that where demands for security, robustness and the need to provide a clean and healthy environment are essential to the operation of the building, these demands shall be prioritised. However, within the constraints so imposed the design of internal space in respect of detail design and the selection of finishes and colour are to be regarded as having the same importance as in any other living/working environment. The need for appropriate design of the internal visual environment is of special importance in relation to the objectives of Design for Safer Custody as expressed in preceding sections. Design approaches that are crude, industrial or institutional in character will not be considered compliant. In this sense, the Proposals shall include the design of the building fabric and the visual design of the building services installation and its integration into the whole.
- 40.4. The character of the internal design shall vary to respect the nature of the activity in each type of accommodation and in each space, though approaches that maintain a coherent visual approach throughout each area are preferred. The actual design approach is not prescribed. The Constructor shall demonstrate that the visual design of the interior is consistent with the approach to the design of the building as a whole, but it is expected that insofar as possible:
- 40.4.1. Personal space shall have a domestic quality;
 - 40.4.2. Communal prisoner/detainee space shall be less domestic in quality but shall include positive steps towards a light, invigorating quality;
 - 40.4.3. The treatment of activity-specific spaces, such as the educational space, is to respond to the nature of the activities involved;
 - 40.4.4. All staff areas shall be designed to be equivalent to mid-quality commercial space as described earlier in this design guide.
- 40.5. The use of colour and finishes shall be integrated with the approach to natural and artificial lighting in living or working areas throughout the accommodation. The Constructor shall submit fully developed Proposals for the use of colour that embody adequate consideration of the interrelationship between the use of colour and other visual factors. For a commentary on the use of colour in prisons and other custodial settings see the MoJ Colour Design Guide.
- 40.6. The selection of colour and finishes shall consider the need to avoid the use of colours, textures or surface pattern that might camouflage objects that detained persons might wish to conceal. The use of small-scale flecks or dots is particularly to be avoided.

- 40.7. The use of colour shall respond to the needs of partially sighted occupants. Contrast to enhance orientation and wayfinding generally shall be adopted and colour contrast to aid identification of key fittings, such as sanitary ware shall be included.
- 40.8. The quality of the internal visual environment of the building shall be such as to support and reinforce the objectives of providing an appropriate quality of living/working to assist long term maintenance and to limit storage of stock on site, the number of differing colours and finishes used shall be rationalised to the reasonable minimum required consistent with the visual objectives as outlined above.
- 40.9. As far as possible the industrial quality that may result from exposed building services and their containment shall be avoided by concealment within the building fabric. Where it is proposed that building services would not be concealed within the fabric, it will not be acceptable that raw industrial components should be used without visually mitigating treatment except in plant accommodation and utility spaces.

41. Individual space design

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 41.1. Each internal space shall be designed and constructed to provide satisfactory accommodation for the envisaged activities.
- 41.2. Satisfactory shall mean satisfactory in relation to specified requirements in this and other Estates Directorate documents, not only in relation to functional requirements. It is a requirement that the design shall be fully resolved to provide the occupants with an appropriate quality of living/working environment.
- 41.3. Each space shall be adequate in size and layout. Basic information regarding space provision and activities is given above and in the accommodation-specific Design Guidance.

42. Circulation strategy including access and egress

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 42.1. Appropriate circulation shall be incorporated to permit all necessary communication to take place with proper regard for security, safety and the integration of the building into the site.
- 42.2. Access to and circulation within the accommodation shall provide for all envisaged activities. These include the facility to move furniture and bulk supplies freely and without compromise of the Health and Safety Manual Handling Operations Regulations 1992 (as amended). The Proposals shall provide access for cleaning, including trolleys and space to transport and erect access equipment of the size and type necessary for high level cleaning and maintenance.
- 42.3. The accommodation shall be designed to provide the greatest freedom of circulation consistent with security requirements outlined below.
- 42.4. All circulation routes shall be of adequate design in terms of their capacity for the numbers envisaged and shall be assessed to account for both normal circulation and emergency evacuation. Wherever in the accommodation it is envisaged that there would be a need for detained persons to be escorted the design shall consider the circulation requirements for a detained person and two escorting staff, one to either side of that person.
- 42.5. Circulation routes for detained persons within the accommodation and between the accommodation and the whole site circulation system shall be simple and rationally designed without re-entrant angles or alcoves to permit ease of supervision at all times and to support the objectives of providing for safer custody.
- 42.6. The design of circulation shall be such as would permit rapid intervention by staff in the event of a disturbance, i.e. access for Control and Restraint also referred to as C&R access. Principal circulation between parts of the accommodation and within individual buildings shall be designed to permit direct, rapid access. The design shall permit intervention to control minor incidents and also planned incursion of the type envisaged in the following section.
- 42.7. Circulation within staff accommodation shall similarly be adequately designed in terms of capacity. The design shall permit staff to enter and circulate within the staff zone independently of the detained person zones.
- 42.8. The design and construction shall make provision for safe access, egress and means of escape and shall resolve all conflicts in the safe circulation of pedestrians, vehicles and trolleys.

- 42.9. Emergency evacuation from secure accommodation cannot be considered in the same manner as other buildings and for this reason it is accepted that it may not be possible to achieve full compliance with Building Regulations in the detained person zone. Evacuation may be assumed to be an escorted procedure placing demands upon continuing control and containment of detained persons throughout the operation as described above. Nevertheless, the design of escape route widths may use normal standards as a basis and provision for escape of disabled occupants shall follow the same principles as other building types.
- 42.10. Escape from staff and plant areas shall be designed in accordance with the Building Regulations and the relevant parts of the Statutory Regulations. The use of trap doors and permanent or deployable ladders are not an acceptable means of providing means of escape.
- 42.11. Circulation to dedicated plant areas and any means of emergency escape shall be independently accessible though it may rely upon stairs that have controlled access and are only accessible for evacuation and/or Control & Restraint (C&R) purposes. For an explanation of C&R access see the following section.
- 42.12. The safe design of circulation shall include consideration of adequate width derived from the Constructor's circulation analysis with other factors such as the structural design and design for surveillance. The Constructor is advised that circulation design shall adequately consider the need for frequent and easy access to all areas and particularly those areas where food trolleys circulate.
- 42.13. Where secure control is required at specific locations in the circulation design the doors or gates provided shall be designed to provide adequate circulation and shall also meet objectives related to physical security, robustness and other requirements in this document or in accommodation specific guidance. Where wide openings are required the Constructor shall take special account of the locking arrangements that are required to provide adequate physical security.
- 42.14. Staircases for daily use by detained persons shall be sited and designed so as not to compromise surveillance of people on the staircase or beyond. It is accepted that staircases that might be used by ambulant disabled people need not have closed risers if necessary to meet the foregoing criterion and that this will be an acceptable non-compliance with Building Regulations subject to application for derogation.
- 42.15. Staircases provided for emergency escape purposes only and staircases for the exclusive use of staff or maintenance personnel will be compliant if designed in accordance with the Building Regulations.
- 42.16. Both staircases and open-sided balconies or galleries shall be protected with balustrades or screens performing the same function.
- 42.17. In addition to matters relating specifically to circulation outlined above, all other implications of the conjunction of the accommodation with existing buildings, building services systems and external spaces shall be resolved satisfactorily within the Proposals.

42.18. The Proposals shall include strategies for dealing with matters of building relationship that exist on site including but not limited to:

- 42.18.1. Changes of building floor levels between the building and adjoining circulation. Access for people with motor disabilities shall be resolved;
- 42.18.2. Variations in the location of access and egress points from the main circulation or from outside;
- 42.18.3. Connection to primary building services that vary in terms of location and level;
- 42.18.4. Abnormally limited site areas.

42.19. The accommodation shall provide access for frequent, periodic and long-term maintenance. Permanent and temporary forms of access are acceptable provided that the Proposals take account of the frequency, ease of access and safety of maintenance personnel together with operational factors including the avoidance of security compromise and the Client's need to maintain continuity of operations during building maintenance.

42.20. Provision shall be made for access needed for the replacement of plant and equipment during the life of the building.

43. Access in the event of a disturbance - Control & Restraint (C&R) access

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 43.1. Adequate provision shall be made for safe access and retreat by staff in the event of a disturbance.
- 43.2. On occasion staff will require access to areas occupied by detained persons within any type of accommodation used by those persons. This may be to restore control and order and deal with acts of concerted indiscipline. The need for immediate rapid access within the accommodation to control minor disturbance is described elsewhere.
- 43.3. In the event of major disturbance in custodial accommodation, staff will require a discrete access to all floor levels and any associated roof spaces directly from outside the building and without entering the detained person zone. The design of access routes shall permit access by staff to these areas when dressed in protective clothing, carrying portable equipment and polycarbonate shields. As a minimum, the design shall allow for staff to pass in opposing directions with relative ease.
- 43.4. The provision of dedicated staircases for C&R access as such is usually only required for detained person living accommodation or in healthcare accommodation used by them. However, the Constructor shall make adequate provision in the Proposals to ensure that access is available to all areas that detained persons might occupy. It will be compliant for a single staircase to fulfil the functions of C&R access, Fire Escape and maintenance access provided that the requirements for all these functions are fully catered for in the Proposals.
- 43.5. In the event of a disturbance provision shall be made to allow staff to take refuge in a safe lobby or similar enclosure, protected from incursion or assault where a means to summon assistance shall be provided. Staff access to this lobby from the detained person zone shall be by officer's standard keys. Doors from the detained person zone shall resist extremely severe attack and shall be capable of being secured from inside the refuge without reliance on standard locking arrangements alone. There shall be a means of egress from the lobby that emerges outside the detained person zone, either directly or via a C&R access route.
- 43.6. The Constructor may assume that C&R access will be provided with differently suited locks from accommodation generally. If the lobby referred to above forms part of the C&R access route then it will be regarded as compliant that staff would rely upon external assistance to egress from the lobby into the C&R access route.

43.7. The Constructor must assume that detained persons might obtain an officer’s standard set of keys during an incident and in this eventuality the design and locking arrangements of the lobby or other parts of the C&R access shall be designed so as not to assist them to gain access to other parts of the accommodation or to inhibit C&R access.

44. Deliveries and refuse

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

44.1. Adequate provision shall be made for the delivery of both food and non-food consumables both within the design of the operational facility and during the construction phase. The strategy for delivery and waste removal shall be included in the Project Brief insofar as possible. The Constructor’s Proposals shall be designed and constructed to accommodate the site delivery and waste removal strategy. Where such a strategy does not already exist, the Constructor shall create and agree a strategy with the client. Further requirements are given in accommodation specific Design Guidance.

44.2. Provision shall be made within the accommodation for the separate storage of food and non-food refuse at convenient points that permit internal and (if so designed) external access. Adequate space shall be provided to permit segregation of waste for recycling. Cleaning of refuse storage areas shall be given adequate consideration. Further requirements are given in accommodation specific Design Guidance. Sizing of the space required, and the scope of waste types generated shall be agreed with the operational team to ensure appropriateness for use.

44.3. Measures to control physical security at delivery and refuse access points shall be included in the Proposals.

45. Operational Waste Management

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 45.1. Reference must be made to the Estates Directorate Sustainable Development: Waste Management Policy (for operational waste). Projects involving new construction, demolition, or refurbishment, of any value shall consider how the requirements of the Waste Management Policy (for operational waste) will be achieved once the facility has been completed and handed-over.
- 45.2. Provision shall be made within the accommodation for the separate storage of food and non-food waste at convenient points that permit internal and (if so designed) external access. Adequate space shall be provided to permit segregation of waste for recycling. HMPPS / the Operator shall be consulted regarding appropriate sizing of waste and recycling storage areas. The ability and means for cleaning of waste storage areas shall be given adequate consideration and inclusion.
- 45.3. A dedicated, identifiable central storage area should be provided, to allow the accumulation of recyclable materials. An additional storage area should be provided for general waste that cannot be recycled. Food waste shall be dealt with by de-watering for either on-site composting or short-term storage for offsite composting, or for collection for offsite anaerobic digestion. Facilities for on-site composting shall only be provided where there is realistic scope for the resulting compost to be used on that site or for nearby non-commercial use.
- 45.4. Any organisation producing hazardous waste over 500kg/ annum has a legal duty to register with the Environment Agency any premises where this is produced. The potential production of hazardous waste, both in construction and operation of a site, should be assessed by the Project Teams at an early stage and the Environment Agency contacted to register the site as a hazardous waste producer, if required, and the necessary provisions made for the safe storage and removal of this waste. The Environment Agency can also provide information on safe working with hazardous waste via their website <https://www.gov.uk/government/organisations/environment-agency>

46. Construction Site Waste Management

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 46.1. It should be noted that all waste arising from construction, demolition and refurbishment projects is the legal responsibility of the constructor.
- 46.2. In addition to the requirements for waste management stated in the Client Requirements which form part of Volume 4 of the Strategic Alliance Agreement Framework for Construction; buildings and facilities shall be designed to minimise waste generated in the construction process and to adopt techniques of standardisation and off-site manufacture and pre-assembly where effective in reducing waste and/or embodied energy content.
- 46.3. A formal Resource Management Plan should be developed for larger projects (i.e. those projects that require BREEAM certification) to assess likely construction and demolition waste production, opportunities for minimisation of waste, reuse of materials and recycling of non-avoidable waste. The Constructor shall outline how performance data will be reported to the Client.
- 46.4. On smaller projects, the Constructor shall describe within their tender submission or design proposals how they plan to manage waste through all phases of the project, and how they will report on waste.
- 46.5. It is recommended that a Waste Management Co-ordinator (WMC) be appointed to guide the Project Team and constructor through these best-practice construction waste minimisation practices and influence their decisions to consider the waste hierarchy of: reducing waste; re-using the waste produced; recycling; considering energy recovery; and disposing the remaining waste to landfill.
- 46.6. Further information concerning waste management and resource management can be found at <http://www.wrap.org.uk/>

47. Storage and handling

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 47.1. Appropriate storage space of adequate size and location shall be incorporated in the accommodation. Details on storage provisions can be found in the spaces-specific design guides.
- 47.2. The accommodation shall incorporate sufficient storage for consumables and for furniture and equipment when not in use. In the case of storage for food, domestic consumables and recreational equipment guidance as to storage requirements is given in the accommodation-specific Design Guidance.
- 47.3. In every case the safe storage and handling of stored items is to be fully considered including the adequacy of access to stores and allowance for trolleys and the like for handling.
- 47.4. Storage shall be located as close as reasonably possible to the area in which the stored items are intended to be used.
- 47.5. The security of stores is to be considered. All stores in areas that are accessible to detained persons or members of the public shall be lockable and shall be constructed to prevent illicit entry. Where high risk items such as sharps, tools, medicines or dangerous substances are to be stored the attack resistance shall be at least the standard required for “normal construction” in the Security Guidance.
- 47.6. The types of storage to be provided are described in accommodation-specific design guidance.

48. Sound and Noise

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 48.1. For new construction projects, or refurbishment projects that will create a significant change in building use, at site investigation/selection stage the Project Team shall ensure that background noise levels have been assessed as part of a Noise Impact Assessment undertaken by a suitably qualified acoustician.
- 48.2. The Constructor will be responsible for further developing and acting on that Noise Impact Assessment to determine whether the project can achieve the Client's requirement for naturally ventilated buildings and openable windows without excessive noise intrusion. The Proposals shall include any mitigation and design adaptation that may be required to achieve this objective.
- 48.3. The Noise Impact Assessment report should also evaluate the project and completed building's impact on neighbouring noise sensitive buildings, (including those within the site or building to be refurbished / modified), local community amenity areas and local wildlife areas, both in terms of services' noise and the increase in vehicle movement. The Noise Impact Assessment must meet the requirements of BS4142: 1997: Method for Rating Industrial Noise, to confirm that noise emissions are adequately controlled and the development will not affect local noise-sensitive areas or amenity or wildlife areas.
- 48.4. For acoustic criteria relating to noise generation or attenuation requirements of mechanical services installations see the Building Services Design sections in this document, STD/M/SPEC/047, and in accommodation specific design guidance.

49. Internal room acoustics

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

49.1. It is an objective that the accommodation shall provide an appropriate quality of living/working space for the occupants.

49.2. Whilst secure accommodation does not include spaces with exceptional demands of internal room acoustics the influence of highly reverberant acoustics on communication, occupant comfort and occupant perception of the quality of the internal environment are significant issues in the design of the principal living and working spaces.

49.3. It is accepted that it is a characteristic of many building materials used for their high degree of impact resistance and ease of cleaning that they tend to be acoustically bright and as a priority these characteristics generally take precedence over their acoustic absorbance in the detained person zone where surfaces are within reach. However, a degree of absorption is desirable where feasible in all main occupied spaces and in circulation routes of secure accommodation. Numerical criteria are not given for acceptable reverberation times. The design shall appropriately limit reverberation and other detrimental acoustic effects in respect of the activities envisaged, the design requirements for each type of accommodation and the opportunities that the Proposals afford for the introduction of absorptive treatment.

50. Acoustic separation

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

50.1. The source of noise within the building is generally the internal activity itself, circulation, kitchen activity and plant. Measures to counter abnormal site-specific external noise sources are to be a matter for project specific briefing. Proposals for lightweight forms of construction that would be more likely to admit external noise shall consider measures to limit noise ingress.

50.2. Acoustic separation shall be provided to meet the overall objectives of provision of an appropriate quality of environment in the living/working space.

51. Airborne noise separation

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

51.1. The degree of acoustic separation between individual spaces shall in general be appropriate to uses of the spaces and the noise climate and to ensure appropriate levels of protection against confidential discussions being overheard in adjacent internal or external spaces. See accommodation-specific Design Guidance for further information.

52. Reduction of impact noise

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

52.1. In main circulation spaces, on stairs for normal daily use, and wherever impact generating activities take place over or adjacent to spaces with low sensitivity to noise transmission, the design shall take steps to limit the generation of airborne noise and structurally borne noise.

53. Rain noise

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

53.1. Noise generated by rain impact on roofing or cladding shall be limited by design so as not to compromise the intended use of the internal space. In general, the Proposals shall consider the intended use of internal space and its tolerance to rain noise intrusion. See accommodation-specific Design Guidance for further information. If potentially reverberant materials are proposed adequate damping of the noise generated should be demonstrated.

54. Incorporation of building services

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 54.1. It is essential that attention be paid to the incorporation of building services into the design from the outset. In all living, working and visitor areas a visually aware approach shall be adopted so to avoid “industrial” fittings or containment that would conflict with the objectives expressed elsewhere in these Core Requirements.
- 54.2. It is essential that the robustness of the containment of services be considered as fully as any other part of the building fabric. Access to exposed service routes shall be avoided, especially in cells.
- 54.3. Opportunities shall be sought to provide access to relevant services routes to permit safe, fast and effective maintenance, alteration or repair to minimise disruption and maintenance costs. The design shall adequately consider the security of maintenance operatives who carry out this work to a recognised standard such as Defence Works Functional Standard DMG8.
- 54.4. The incorporation of spare capacity in containment or at points of distribution shall be properly considered with a view to future flexibility/adaptation and in pursuit of broad sustainability objectives.

55. Efficient Building Services

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 55.1. Please also refer to Estates Directorate Technical Standards for building services and Estates Directorate Design Guides.
- 55.2. Estates Directorate requires the installation of energy efficient building services equipment and building services control systems to aid minimising the consumption of energy by its estate. All energy consuming equipment, including lighting and sundry items supplied under the project contract must be inherently reliable and efficient and where relevant comply with Government Buying Standards and be sourced from the Energy Technology List.
- 55.3. Each project shall include an energy efficient infrastructure of proven performance, such as, where relevant, the specification of lifts and escalators designed in line with BS EN ISO 25745: Energy Performance of Lifts, Escalators and Moving Walkways.
- 55.4. Water using and water heating fittings and appliances must be inherently reliable, low in volume/flow and efficient. To minimise the consumption of potable water from sanitary use, water efficient components should exceed the relevant BREEAM base level. They must also comply with Government Buying Standard for Water Using Products where applicable
- 55.5. Insulation of building services and building fabric must be of correct specification and thickness and applied in a continuous, unbroken, manner such that it fully abuts the next section of insulation or the next thermal element without gaps.

56. Internal environmental criteria

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 56.1. Internal environmental criteria are given in other Estates Directorate Design Guidance and specifications. Where these relate specifically to the design of building services systems they are not repeated here.
- 56.2. Where appropriate to the scope of works, i.e. a new project or major refurbishment, dynamic thermal modelling shall be used to investigate and optimise the building fabric and servicing options.
- 56.3. All projects will prioritise provision of an appropriate quality of internal environment and achieving optimum Whole Life Cycle Costs.
- 56.4. Not all Technical Standards presented in this document will apply to all projects. Works will be regarded as compliant if the Proposals comply with the requirements to the extent that the limited scope of the works permits.

57. Thermal Comfort

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 57.1. It is common but not prescribed that security requirements give rise to relatively heavyweight construction internally. The internal environmental strategy shall take this into account in the integration of building construction and building services approaches.
- 57.2. The designer must make full use of dynamic thermal simulation models to evaluate the effects of internal gains, solar heat gains, thermal mass and ventilation on internal temperatures throughout the year. All assumptions regarding occupancy levels and internal loads should be made clear and stated in an accompanying report and that report shall be uploaded to the project area on Viewpoint4Projects.
- 57.3. Values used for external design conditions must truly reflect conditions typically found in the geographical area that the building is located and be substantiated by recent historical weather data for at least the preceding 10 years and shall take account of current projections for climate change published by the Meteorological Office or other recognised institution.
- 57.4. Additional analysis must be carried out for future temperature scenarios using CIBSE Design Summer Year data files (<https://www.cibse.org/weatherdata>). The **most likely** projection within the high emissions scenario of the UK Climate Projections (UKCP) current at the time of the project should be used in lifespan modelling for risks including overheating and thermal comfort. The +50-year projection at the most local geographic projection to the site should be used for all assessments.
- 57.5. New buildings, and as far as possible refurbishments, shall adopt building designs that allow passive / natural ventilation and avoid the need for mechanical ventilation or cooling. All buildings shall be subjected to Building Energy and Environmental Modelling generally as described in CIBSE Applications Manual AM11 with reference to CIBSE TM34: Weather Data with Climate Change Scenarios and CIBSE TM52 The Limits of Thermal Comfort: Avoiding Overheating in European Buildings. Reference shall also be made to the BSRIA Guide BG 2/2009: (June 2010 Update) The Illustrated Guide to Ventilation.
- 57.6. In the case of an air conditioned or comfort cooled building, it must be demonstrated that the cooling load has been calculated in accordance with CIBSE Guide A: Environmental Design requirements to maintain thermal comfort conditions.

- 57.7. The thermal modelling must demonstrate compliance with the following:
- 57.7.1. Air conditioned and comfort-cooled buildings are required to meet the temperatures in Table 1.5 of CIBSE Guide A and the standards set out in Table A.1 of Annex A of ISO 7730:2005
 - 57.7.2. Naturally ventilated buildings are required to meet:
 - 57.7.2.1. In winter: the temperatures in Table 1.5 of CIBSE Guide A
 - 57.7.2.2. In summer: either CIBSE TM52 The Limits of Thermal Comfort, Avoiding Overheating in European Buildings; or CIBSE TM59 Design Methodology for the Assessment of Overheating Risk in Homes, as applicable
- 57.8. Further information and advice on modelling is available from several sources including; CIBSE AM10: Natural Ventilation in Non-Domestic Buildings; BSRIA; Building Regulations: Approved Document Part F: Means of Ventilation; BRE; and the Carbon Trust (Low Carbon Building Design Advice service).

58. Natural Ventilation

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 58.1. Estates Directorate require naturally ventilated design solutions wherever possible. For each alternative conceptual design a justification must be given of any restraint upon the provision of natural ventilation to any spaces. The overriding concern is for the design to provide acceptable thermal comfort conditions throughout the building by naturally ventilated means alone. It should be noted that higher internal temperatures may be accepted by Estates Directorate when the spaces are naturally ventilated. Please also refer to Estates Directorate Technical Specification STD/M/SPEC/047: Ventilation, air-conditioning, cooling and refrigeration.
- 58.2. Where appropriate a copy of “A Design Guide for Naturally Ventilated Courtrooms” should be obtained by both the Building Services Engineers and the Architect. The guide deals specifically with natural ventilation in courtrooms and gives important guidelines that should be followed and should be read with the Court and Tribunal Design Guide.
- 58.3. Where thermal modelling initially indicates that thermal comfort conditions (Section 59 Thermal Comfort) cannot be met through natural ventilation alone, then the project team must consider whether alterations or improvements to the building design or building fabric can be economically made to enable a viable naturally ventilated solution.
- 58.4. Where natural ventilation is used, the air distribution and ventilation design should be evaluated using a computational fluid dynamics (CFD) air flow modelling package. The designer shall produce a report on the predicted internal temperature conditions throughout the year in the building.
- 58.5. The designer must satisfy the Client Representative that the internal fresh air rates will meet the levels required by Building Regulations for each type of space, and that any requirement to meet carbon dioxide levels will be achieved, as part of the CFD assessment.
- 58.6. Natural ventilation shall be designed for ease of user control. Controllable trickle ventilators shall be available to provide background ventilation, with care taken in the specification and location of the ventilators to provide ease of control and minimise the risk of draughts.
- 58.7. Plantrooms shall be naturally ventilated to suit equipment needs for combustion air and/or operating temperatures.

59. Openable Windows and natural ventilation

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 59.1. The opening lights of windows in naturally ventilated spaces will be sized to provide sufficient fresh air movement to remove contaminants and control temperature.
- 59.2. In spaces that are normally mechanically ventilated, comfort cooled, or air-conditioned, the opening lights shall be secured shut by a means that prevents unauthorised opening.
- 59.3. Note that openable windows are not normally provided in court custody areas and therefore mechanical ventilation of those spaces will typically be required.
- 59.4. Window designs for other types of cell or holding room shall conform to current Estates Directorate cell window designs or be as described in the project brief. All such windows shall prevent detained persons from passing or receiving items from or to outside and prevent passing of items between cells by lowering or swinging of lines. Such windows must be of a design, and so installed, to meet the requirements for safer custody.

60. Mechanical Ventilation

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 60.1. Please also refer to Estates Directorate Technical Specification STD/M/SPEC/047: Ventilation, air-conditioning, cooling and refrigeration.
- 60.2. It should be ensured that mechanical ventilation is only provided where absolutely necessary.
- 60.3. If it is not possible to provide acceptable internal conditions by natural ventilation alone, then the next step will be to consider the use of mechanical ventilation to assist in maintaining acceptable air quality and temperatures.
- 60.4. Mechanical extract ventilation shall be provided to remove and safely discharge odours and contaminants as required.

61. Air-Conditioning / Comfort Cooling

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

61.1. Please also refer to Estates Directorate Technical Specification STD/M/SPEC/047: Ventilation, air-conditioning, cooling and refrigeration.

61.2. Where the designer calculates that environmental conditions (as defined by section 58) cannot be maintained through use of natural ventilation or mechanical ventilation, and where all avenues to improve the building design / fabric have been exhausted, then a case for comfort cooling or air-conditioning may be submitted to Estates Directorate for consideration.

61.3. Where the use of air conditioning or other forms of mechanical cooling are accepted by Estates Directorate, the designer must undertake a comparison of energy running costs (both in terms of utility cost and CO₂ emissions cost) for various air conditioning strategies and systems and evaluate the impact of the system on the Building's Emission and Target Emission Rates (BER and TER). The system with the lowest carbon emissions and whole life cost must be specified.

61.4. Wet cooling towers must not be used in any new development.

62. Fresh Air Supply Rates

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

62.1. In the case of air conditioned or mechanically ventilated buildings, the designer, constructor, and commissioning engineer shall ensure that the minimum fresh air requirements derived from the rates per person stated in Building Regulations Approved Document Part F are provided.

63. Local Exhaust Ventilation (LEV)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 63.1. During construction LEV shall be provided to supplement other respiratory protection measures as necessary where deemed necessary following a site and task specific risk assessment.
- 63.2. Permanent LEV systems shall be provided wherever the operational activities dictate and shall be in accordance with Health & Safety Executive guide to local exhaust ventilation HSG258.

64. Humidification

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 64.1. Please also see Estates Directorate Technical Specification STD/M/SPEC/047.
- 64.2. The need for humidification should be carefully evaluated by the designer and, if possible, it should be avoided.

65. Daylighting

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 65.1. Each project to which BREEAM applies should attempt to gain all the credits available under HEA 01: Visual Comfort, related to glare, daylight and view-out.
- 65.2. The following techniques should be used wherever applicable:
- 65.2.1. Locate spaces which do not require daylight (such as storage and circulation areas) in the centre of floors
 - 65.2.2. Consider cutting an atrium or light well into the centre part of the building
 - 65.2.3. Maximise window areas so that they are the optimum size, without comprising the need to minimise solar gain and heat loss.
 - 65.2.4. Consider use of passive devices, such as light-shelves and solar pipes as a means achieving a better distribution of daylight further into the building.
 - 65.2.5. Use should be made of computerised daylighting evaluation programs to optimise glazing areas and positions.
- 65.3. At Final Sketch Design a detailed daylighting analysis of the building shall be produced to demonstrate that the design criteria are being met. The methods of calculation are set out in Appendix C of the BRE report “Site layout planning for daylight and sunlight: a guide to good practice”, CIBSE LG10/14 Lighting Guide 10: Daylighting – A Guide for Designers and BS EN 17037:2018.
- 65.4. Visual comfort is a key component of designing buildings to promote occupant health and wellbeing. The design and construction shall respond positively to the following issues.
- 65.5. Daylighting criteria must be achieved for main occupied spaces, including all spaces that detained persons use as living space or for association, dining and educational purposes, staff rest spaces and office spaces, and spaces used by visitors and judiciary. Provision of natural light to other spaces used by detained persons, staff or visitors for more limited periods is desirable. Provision of natural light to control rooms, utility spaces or to kitchens is not a requirement. In this respect, the term occupied space includes, in principle, the definitions of habitable room and occupiable room used in the Building Regulations.
- 65.6. Where the correct location of operationally critical spaces conflicts with daylight provision operational effectiveness shall take precedence. Where natural light cannot be provided to such spaces the quality of artificial illumination shall be given special consideration to compensate.
- 65.7. In all habitable spaces, the window design and its incorporation into the external wall shall maximise available daylight subject to compliance with security requirements.

- 65.8. The provision of roof-lights as an alternative to windows is acceptable subject to compliance with other aspects of this specification such as security and Health and Safety requirements. Other passive means of transferring daylight to internal spaces using technologies such as sun-pipes or fibre optic systems may be offered based on advantageous WLCC against artificial lighting energy use.
- 65.9. The location of windows or roof-lights shall be designed to achieve a uniformity ratio of at least 0.3; a view to the sky from 80% of the room, at table-top height; and the room-depth criterion as defined by BRE.
- 65.10. In living or working accommodation the Proposals shall modify contrast glare including profiling of the window components and the window reveals. Appropriate finishes and colours shall be selected in these areas.
- 65.11. In any rooms in which display screen equipment is to be used, a means of controlling both sunlight penetration and sky glare shall be provided.
- 65.12. Dynamic thermal modelling shall be used to optimise the glazing design in terms of balancing beneficial solar gains with potential for overheating.

66. Artificial Lighting

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

66.1. The following considerations should be applied to all projects:

- 66.1.1. Lighting levels (in lux) should be appropriate to the tasks being undertaken and in accordance with Estates Directorate room data sheets and/or levels stipulated in other Estates Directorate documents;
- 66.1.2. Lighting technology used is the best suited to the application, achieves specified colour temperature (colour appearance of the light source) and colour rendering (colour appearance of objects being lit) and provides maximum energy efficiency possible subject to overriding requirements for robustness, ligature resistance, etc., where those aspects are specified;
- 66.1.3. Provision of luminaires which are appropriate to the amount of VDT use being undertaken and those lighting schemes are designed in accordance with the CIBSE Lighting Guide 7, sections 2.4, 2.13 – 2.15 and 6.10 – 6.20;
- 66.1.4. All new light fittings are to be designed to provide the highest efficacy possible within any constraints dictated by the client (such as those for robustness and protecting prisoner / detainee safety) and utilise the most current and appropriate technology;
- 66.1.5. Achieving current best practice targets for installed capacity (W/m²) for each lighting scheme;
- 66.1.6. Specify task lighting at workstations to reduce the need for high overall lighting levels;
- 66.1.7. Design the lighting control system to give occupants control. Aim for manual on/manual and auto off or automatic control and the provision for commonly required lighting settings to be quickly and easily adjustable;
- 66.1.8. Lighting and lighting controls are zoned appropriately to allow for varying occupancy levels and activities;
- 66.1.9. Use of appropriate lighting controls to reduce energy consumption e.g. occupancy sensing, daylight sensing and timers. The provision of a centralised control system or point is desirable to extinguish all lights (excluding security and emergency) when required, for example at the end of the working day;
- 66.1.10. Take account of potential conflicts between automatic lighting control and the need for staff to act covertly in custodial settings.

66.2. Internal and external lighting shall comply with Estates Directorate Technical Specification STD/E/SPEC/018 (LV & ELV) and additionally for prison cells also STD/E/SPEC/021 and STD/E/SPEC/022.

66.3. Emergency lighting shall comply with STD/E/SPEC/018.

67. Electrical Services

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 67.1. Electrical services shall comply with STD/E/SPEC/018 (LV & ELV), STD/E/SPEC/019 (HV), and STD/E/SPEC/017 (Standby Generators).
- 67.2. Each building shall be serviced separately and services installed to provide a means of local isolation of each individual space, each individual zone, and each floor level or other natural division of the building. In every case the means of isolation shall be contained in a plant area, lockable riser or enclosure so as to be inaccessible to unauthorised persons. A means of remote isolation of each building forming a site or complex shall also be provided.
- 67.3. The services installations shall be designed to account for all the relevant requirements expressed elsewhere in this document regarding robustness, physical security, Design for Safer Custody, and the provision of an appropriate quality of living and working environment in every respect.
- 67.4. The services shall be designed and installed with allowance for adaptability to accommodate future needs.
- 67.5. The services shall be designed so they are compatible with all existing services systems.
- 67.6. The services shall be designed and installed to ensure security of service and ease of maintenance.
- 67.7. The requirement is to operate the facility continuously, and the Constructor's proposals shall clearly demonstrate how this requirement can be met with respect to maintenance requirements and possible loss of service. Where the work is on an existing site it shall be the Constructor's responsibility to obtain information regarding the adequacy of existing standby supplies and the effectiveness of their operation. Arrangements for providing secondary supplies to life safety equipment shall be included.
- 67.8. The constructor shall be responsible for liaison and coordination with the local utilities companies to establish and procure core utilities to support works undertaken as part of the contract. Full supporting documentation and feasibility reports shall be included within the Proposals for review.
- 67.9. Earthing and lightning protection shall be provided in accordance with STD/E/SPEC/018.

67.10. For any generator that falls within the definition of a 'Specified Generator' under EU Directive '2015/2193/EU', a permit shall be sought from the relevant UK Regulator at the earliest opportunity of the project, and in any case before that generator is put into operation. The permit shall be provided to the Operator of that building or site.

68. General Power

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

68.1. General power shall comply with STD/E/SPEC/018.

68.2. Accommodation, plant and external spaces shall be provided with appropriate general power supplies. The supply for each building shall be provided from a dedicated electrical switch-room forming part of the building served. All small power distribution boards shall be 3 phase 400V rated with integral isolators. The distribution system and electrical demand shall be balanced evenly across the phases of the electrical supply. Distribution boards shall be of modular construction.

68.3. Low voltage (LV) distribution shall include main panel, mains risers and floor distribution boards. Risers shall be provided to supply the lighting and small power loads that are to be connected. The mechanical plant shall be fed separately. The main LV switchboard shall incorporate centralised automatic power factor correction equipment and, where necessary, harmonic filters.

68.4. Outlets for cleaning purposes shall be provided as necessary. Outlets shall be provided in all plant areas for maintenance/operational use. All socket outlets in any building without exception shall be 30mA RCD protected.

69. Telecom / IT incomers and systems

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 69.1. Provision shall be made for adequate telecoms and IT entry points and cabling into each building, and between buildings on a common site, via underground ducts. Where more than one incoming service is provided to a building they shall enter at diverse points and shall be routed separately as far as feasible.
- 69.2. All such infrastructure shall comply with the MoJ ICT Infrastructure Guide and/or other documents indicated within the project brief. Containment systems shall comply with STD/E/SPEC/018.
- 69.3. Containment routes and cabling shall be provided for IT and telecoms system distribution around each building including any containment provided for future use and shall be properly segregated from other services. Containment systems shall be designed to account for all the relevant requirements expressed elsewhere in this document regarding robustness, physical security, Design for Safer Custody, and the provision of appropriate quality of living and working environments in every respect.
- 69.4. The number of IT and telephone connection points shall be derived from project-specific briefing and from Design Guidance documents. Unless specifically briefed otherwise the Constructor will not be required to provide IT equipment or to terminate cables.

70. Security Systems

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

70.1. Systems shall be provided that monitor and raise awareness of security risks.

70.2. A General Alarm or affray alert system shall be provided, as appropriate, to buildings to enable staff and any other building users to summon assistance. The alarm system shall be unique to each building (i.e. capable of standing-alone) and capable of identifying the exact location of any activated call point. The alarm system shall report to a local control room (or a staff base fulfilling that function) within the accommodation and shall also give cross-site indication at a remote-control room or similar on that site, where such exists. Systems for use in prisons shall comply with STD/E/SPEC/014 - General Alarm Systems. Affray alarm systems shall comply with the requirements of the Courts Standards Design Guide.

70.3. Where indicated by the Project Brief, tamper alarms shall be provided and activated on unauthorised entry into plant areas and sensitive areas. All such alarms shall be wired back to visual and audible indicators in the Main Control Room in accordance with STD/E/SPEC/018.

70.4. Where indicated in the Project Brief, CCTV with digital recording (24 hour) shall be provided and shall comply with STD/E/SPEC/029, STD/E/SPEC/030, STD/E/SPEC/031, or STD/E/SPEC/039, as appropriate.

70.5. Where indicated by the Project Brief, perimeter intruder detection systems shall be provided that comply with STD/E/SPEC/032, STD/E/SPEC/033 or STD/E/SPEC/034, as appropriate.

70.6. Where the development is an extension to, or works within, an existing site or building, the alarm systems shall be an extension of the existing alarm systems, compatible with them, and capable of operation through a common panel.

71. Internal Aerial System

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

71.1. In secure accommodation and other locations indicated by the Project Brief, aerial systems shall be provided for the reception and distribution of television and radio signals for educational and recreational purposes. The television aerial system shall deliver clear quality reception of all analogue and terrestrial digital UHF TV signals. The radio aerial system shall be capable of delivering clear quality reception for all available VHF FM stereo analogue or digital radio signals.

71.2. For secure accommodation those systems shall comply with STD/E/SPEC/028 unless otherwise indicated. Where indicated by the Project Brief the systems shall have facilities to input and distribute material from other sources (for example, prison radio, local information channels, etc.).

71.3. Other systems shall be of good commercial quality components and installed to a standard that complies with the recommendations of the Confederation of Aerial Installers (CAI) and by registered members of that body.

72. Audio Frequency Induction Loop Systems (AFILS) and Infrared Systems

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

72.1. Systems shall be provided to enhance communication with hearing aid users in all appropriate spaces and in compliance with STD/E/SPEC/018.

72.2. Every public counter / reception desk shall be provided with a short-range AFILS and shall display a notice or sign to indicate its availability.

73. Lifts

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 73.1. Lifts shall be provided to satisfy disabled access requirements where necessitated by the Project Brief and/or the Constructor’s design response. Where lifts are to be provided in areas accessible to detained persons they shall be staff controlled and protected by a secure lobby or equivalent.
- 73.2. The specification and design of lifts and escalators should be in line with BS EN ISO 25745: Energy Performance of Lifts, Escalators and Moving Walkways
- 73.3. Where indicated by the Project Brief or Constructor’s design response, lifts shall be of a standard to act as evacuation lifts in the event of fire.
- 73.4. The design and specification of all new lifts must address the following:
- 73.4.1. Sizing and number of lifts to be determined by analysis of transport demand and usage patterns for the building
 - 73.4.2. Calculate the energy consumption using BS EN ISO 25745 for available options for system arrangements and controls, and regenerative drives. The option with the lowest energy consumption must be specified.
 - 73.4.3. Specify energy efficient features, including but not limited to: standby condition for off-peak periods; all lighting to be LED; and the use of variable speed, variable voltage and variable frequency control of the drive motor.

74. Low-to-Zero Carbon Technologies

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 74.1. All buildings must be designed and operated to minimise carbon emissions in accordance with MoJ Zero Carbon Ready policy.
- 74.2. For buildings and facilities, wherever Whole Life Cycle Cost analysis is favourable, energy shall be provided from on-site renewable generation, from Low-or-Zero Carbon (LZC) technologies, or from nearby LZC sources such as heating and cooling networks.
- 74.3. For all new construction projects and all major refurbishment projects a study shall be commissioned which examines the suitability of zero or low carbon emission technology within the development or suitability and availability of connection to a heating/cooling network in the locality. Options will be evaluated and worked through in consultation with the Estates Directorate Sustainable Operations Team. The following topics should be addressed in this study:
- 74.3.1. Energy generation from each LZC source, per year;
 - 74.3.2. Energy demand of the development;
 - 74.3.3. Whole life/ return on investment (in terms of both financial payback and carbon emission payback/ savings);
 - 74.3.4. Land use;
 - 74.3.5. Local or regional planning requirements;
 - 74.3.6. Noise;
 - 74.3.7. Feasibility of exporting or storing heat or electricity from the system;
 - 74.3.8. Availability of grants or payment schemes that could directly or indirectly benefit the Client.
 - 74.3.9. Contractual options for energy procurement
- 74.4. The Project Team shall design all new buildings to be 'Zero Carbon' through supplementation of energy efficiency measures with LZC technologies identified in the study.

75. Mechanical services

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

75.1. Mechanical services shall comply with STD/M/SPEC/040 and STD/M/SPEC047.

75.2. Each building shall be serviced separately and provided means of local isolation of each service to each space, each zone, and each floor or other discrete section of the building. In every case the means of isolation shall be contained in a plant area, lockable riser or enclosure to be inaccessible to unauthorised persons. A means of remote or external isolation of each building shall also be provided.

75.3. The services installations shall be designed to take account of all the relevant requirements expressed elsewhere in this document regarding robustness, physical security, Design for Safer Custody, and the provision of an appropriate quality of living and working environment in every respect. Attention should be paid to ensure operating temperatures eliminate the risk of injury due to burning and scalding.

75.4. The services shall be designed and installed with allowance for adaptability to accommodate future needs.

75.5. The services shall be designed so they are compatible with all existing services systems.

75.6. The services shall be designed and installed to ensure security of service and ease of maintenance.

75.7. Where indicated by the Project Brief, the requirement may be to operate the building continuously, and the Constructor's Proposals shall clearly demonstrate how this requirement can be met with respect to maintenance requirements and possible loss of service.

75.8. The electrical installations associated with the mechanical services and controls systems shall be designed and installed in accordance with STD/E/SPEC/018.

75.9. The constructor shall be responsible for liaison and coordination with the local utilities companies to establish and procure core utilities to support works undertaken as part of the contract. Full supporting documentation and feasibility reports shall be included within the Proposals for review.

75.10. Where the works are proposed to be an extension to existing utility supplies, then the Constructor will be responsible for proving the adequacy of those to serve the new development in terms of both volume and pressure.

75.11. For any boiler or other heat raising plant, such as CHP, with input >1MWth or that otherwise falls within the definition of a new Medium Combustion Plant (MCP) under EU Directive `2015/2193/EU', a permit shall be sought from the relevant UK Regulator at the earliest opportunity of the project and in any case before that plant is put into operations. The permit shall be provided to the Operator of that building or site.

76. Heating System

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 76.1. Heating systems and controls shall comply with Estates Directorate Technical Specifications STD/M/SPEC/040 and STD/E/SPEC/020.
- 76.2. A low emission high efficiency heating system shall be provided to serve each building, designed and controlled to meet the heating requirements and maintain the minimum design temperatures in each space. Consideration will be given to the use of planned or available heating networks, and to new low carbon technologies.
- 76.3. Electricity will be used as the primary heating energy source for all new prisons in the estate, with fossil fuels (in particular natural gas) no longer being used.
- 76.4. Designers should take note of the design temperatures for each room as listed in Design Guidance for each part of the building and ensure that heating systems are sized appropriately to avoid over or under burdening heating systems and maximise efficiency.
- 76.5. High boiler seasonal efficiency in operation shall be sought by designing systems that require one or more boilers to operate at or near full output for a high proportion of time under system part-load conditions whilst avoiding the need for supplementary boilers to come on-line at low-fire.
- 76.6. Controls shall be provided to optimise system efficiency and prevent overheating, and the systems shall be zoned and controlled to permit separate night setback of the temperatures to the relevant zones.
- 76.7. The heating system shall be designed to minimise potential for self-harm and attention shall be paid to ensure operating temperatures eliminate the risk of injury due to burning.
- 76.8. The heating system shall be designed and controlled to minimise energy usage, minimise NO_x and SO_x emissions, and minimise CO₂ emissions in support of MoJ Zero Carbon Ready policy. Analysis of Whole Life Cycle Costs shall be used to determine the benefits that would be provided from energy saving technologies including the use of condensing boilers, Combined Heat and Power systems, solar thermal collectors, etc. This should be done in the case of any development or project that involves heating systems, and analysis shared with the Estates Directorate Sustainability Team.

77. Cold Water Services (CWS)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

77.1. Cold water services shall comply with STD/M/SPEC/040.

77.2. Potable cold water shall be distributed throughout each building to serve cold water requirements in accordance with BS 8558 and the Water Regulations. CIBSE and HSE recommendations for legionella prevention shall be fully considered and complied with.

77.3. The Project Team should identify methods of promoting water economy on the project and at the earliest stage the following should be reviewed:

77.3.1. Minimise water demand through specification of efficient equipment and fittings that meet or exceed the requirements of the Water Technology List criteria:

- Taps that minimise water consumption shall be provided throughout
- WC and urinal flushing volumes and control mechanisms must comply with Estates Directorate Technical Specifications
- Maximum volume flow, pattern, and control arrangements for taps, showers, and other outlets must comply with Estates Directorate Technical Specifications

77.3.2. Collecting and storing rain water for non-potable use including WC flushing and irrigation (subject to Whole Life Cycle Cost analysis);

77.3.3. Grey-water collection from basins and other waste water outlets for flushing WCs (not permissible for prisoner accommodation buildings, and subject to WLCC analysis);

77.3.4. The use, if available, of any local water source to provide non-potable water;

77.3.5. The method of measuring, monitoring and reporting water consumption over time by each site, building, each significant water consuming area/floor, and each tenancy;

77.3.6. The installation of a programmable leak detection system on all the mains water supplies to the building which is capable of detecting variable flow rates over time.

77.4. The Constructor should develop in more detail any possibilities which exist for water economy which were conceived at the Outline Sketch Design.

77.5. The number of toilets should be carefully considered to prevent over-provision.

77.6. Maximum volume flow, pattern, and control arrangements for taps, showers, and other outlets must comply with Estates Directorate Technical Specifications.

78. Domestic Hot Water System (DHWS)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 78.1. Domestic hot water systems must comply with Estates Directorate Technical Specification STD/M/SPEC/040.
- 78.2. Equipment and systems must be designed to minimise energy consumption and associated carbon emissions through reduced demand, optimised performance, and application of technologies such as solar thermal panels or waste water heat recovery systems, subject to analysis of Whole Life Cycle Costs and in support of the Zero Carbon Ready standards.
- 78.3. Domestic hot water systems shall be designed in accordance with STD/M/SPEC/040 with hot water generated and/or stored within the plant room of the building served, and distributed throughout the building to serve the hot water requirements to sinks, basins, showers, etc. CIBSE and HSE recommendations for legionella prevention shall be complied with at all times.
- 78.4. In buildings / facilities where the energy required for generation of Domestic Hot Water (DHW) is a relatively small contribution to the overall energy consumption, then the system design shall avoid using the space heating boilers to provide the domestic hot water, especially in the summer months.
- 78.5. Where viable, the design shall include solar thermal systems to supplement DHW heating. Viability decisions shall be based on sufficiency of suitably orientated and secure roof area and favourable WLCC calculations.
- 78.6. Where single or small numbers of outlets are remote from central DHW storage, then point of use water heaters shall be considered in favour of re-circulatory pipework from central storage. The decision must demonstrate that energy use and carbon emissions from the point of use water heater will be less than those that would arise from a re-circulatory system to that point of use (i.e. from pumping and pipe losses).
- 78.7. The DHW system shall be designed to minimise potential for self-harm and special attention should be paid to ensure operating temperatures eliminate the risk of injury due to burning and scalding. Also refer to STD/M/SPEC/040.

79. Building Management System (BMS)

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 79.1. A Building Management system shall be provided to each individual building and to each multi-building site, depending on energy use and risk, and must be in accordance with STD/E/SPEC/020. As a general guide, buildings with a Net Internal Area greater than 1,000m², or energy use of over 500,000 kWh per annum, should have a BMS and / or be connected to a site-wide BMS.
- 79.2. The BMS shall provide fully distributed intelligent control with centralised plant start/stop, monitoring of plant, set point adjustment, dynamic colour graphics, print out facilities, historical information, compilation of energy and water usage trends, compilation of monitored data, and provision for interfacing with fire alarm and security systems and other equipment as indicated.
- 79.3. Motor control centres shall be provided in the plantrooms, including all isolators, starters, controls equipment and internal building wiring.
- 79.4. The BMS installation shall be capable of allowing remote monitoring and control of the operation of the services to each building, including monitoring and logging of electricity, gas, and water consumption from each of the meters.

80. Energy and Water Evaluation, Monitoring and Target Setting

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 80.1. Please also refer to Estates Directorate Technical Specifications STD/M/SPEC/040 (Mechanical Services) and STD/E/SPEC/020 (BMS).
- 80.2. Estates Directorate requires the ability to monitor and manage energy and water use in all its buildings and facilities and to that end projects shall include:
- 80.2.1. Water meters fitted on the supply to each site, each building, each significant service within a building (CWS, DHWS CW feed, Process water, rainwater harvesting system, etc.) and where indicated to further subdivisions within building distribution;
 - 80.2.2. Electricity meters on the supply to each site, each building, each lighting distribution board and/or each board serving a floor level, individual power loads / motors rated greater than 5kW input, wherever necessary to meet the requirements of the Renewable Heat Incentive/Feed-In-Tariff schemes or similar schemes, and on the output from each generator/CHP unit/solar PV array.
 - 80.2.3. Liquid fuel and gas meters shall be provided on the supply to each boiler-house, each boiler greater than 70kW rated output, each generator/CHP unit, each building using fuel for catering or process (such as laundry).
 - 80.2.4. Energy (heat) meters shall be provided on the supply to each building of a multi-building site served by a centralised boiler-house/energy centre, each large piece of energy consuming equipment (heater battery, heat exchanger, DHWS generator), and wherever necessary to meet the requirements of the Renewable Heat Incentive or similar schemes.
 - 80.2.5. In all cases tenanted areas shall be sub-metered for all services supplied to that tenant with appropriately certified metering equipment;
- 80.3. All metering and sub-metering shall comply with the specifications in Section 19 of the Technical Specification for Building Management Systems STD/E/SPEC/020.
- 80.4. Data from all meters (including utility provider meters where permitted) and sub-meters must be collected and collated by the Building Management System in compliance with Section 20 of STD/E/SPEC/020.
- 80.5. An accredited energy assessor must be appointed to carry out Energy Modelling, using the National Calculation Method (NCM) to produce an Energy Performance Certificate (EPC) for the development.
- 80.6. Energy performance targets for new buildings must support the Zero Carbon Ready prisons programme.

- 80.7. Energy performance targets should be set by the Building Services Engineer on a building by building basis and approved by the Project Sponsor and Estates Directorate. As a minimum, these should improve on the minimum standards set by Building Regulations, Part L, although projects are encouraged to achieve a greater improvement where feasible.
- 80.8. CIBSE TM54 analysis must be carried out for all new projects and major refurbishments to determine appropriate operational energy targets.

81. Sanitary Systems and Drainage

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

81.1. Sanitary and drainage systems must comply with STD/X/SPEC/010.

81.2. A fully ventilated sanitary pipework system shall be provided to each building to serve sanitary fittings and mechanical plant, connecting to the below ground drainage installation. The construction of the sanitary pipework shall prevent leakage including prevention of leakage into any concealed space through which the pipework passes.

81.3. The construction of above ground drainage systems shall be in materials that are inherently robust and that cannot be accessed, dismantled or tampered with by virtue of their construction or encasement.

81.4. Within secure accommodation the deliberate abuse of drainage systems must be assumed. Avoidance of design that would increase the risk of blockage and providing adequate access for clearing of blockages with minimum stack size 150mm shall be provided in such secure accommodation.

81.5. Above ground drainage installations shall be freely vented to atmosphere without the use of air admittance valves.

81.6. In general, the principles of drainage design reflected in the Building Regulations shall be regarded as a reasonable basis for design. Normal hydraulic design principles may be adopted and where specific design data are not available, justifiably comparable data for other types of building may be adopted.

81.7. The drainage shall be designed so that it is compatible with all existing drainage systems.

81.8. Above ground and below ground drainage shall be designed as separate foul and surface water drainage systems.

81.9. Adequate provision shall be made for inspection and maintenance. Illicit access to manholes, inspection chambers and the like, or unauthorised removal of covers, shall be prevented.

81.10. Adequate provision for the disposal or recovery of rainwater from both roofs and paved areas shall be provided. Analysis of the viability of rainwater recovery shall form part of the Constructor's assessment of Whole Life Cycle Costs and shall take into consideration its ability to contribute towards Sustainable Urban Drainage targets.

81.11. Design should be in accordance with BS EN 12056. Only eaves gutters that are at least 600mm clear of the wall face may be designed using a risk factor of 1.0. All gutters shall be provided with controlled overflows located so as not to compromise use of the building.

81.12. Downpipes shall be designed to be concealed, robustly encased in an unclimbable casing or designed to be both unclimbable and inherently robust.

81.13. Gratings and the like for drainage of paved areas shall be fully secured as manholes.

81.14. Sites identified as discharging significant amounts of illegal or inappropriate items via the foul sewer shall be provided with a sewage screening system designed and assessed in accordance with STD/X/SPEC/010.

82. Sustainable Urban Drainage

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

82.1. All Estates Directorate projects shall be designed and constructed to minimise the risk of flooding occurring outside or within the development area as a result of that project. This must take account of the results of a site-specific Flood Risk Assessment, and subsequent design must allow for a reduction in run-off based on the 1-year and 100-year return event period events, with a further allowance for climate change. There will be no discharge from site for rainfall up to 5mm, and pollution control measures as appropriate to site activities will be included.

82.2. Designers shall prioritise where feasible sustainable solutions such as green or brown roofs, swales, ponds or wetlands.

82.3. The recommendations of the following current documents must be followed:

82.3.1. DEFRA – Sustainable Urban Drainage Systems: Non-statutory technical standards for sustainable urban drainage systems (March 2015);

82.3.2. BS 8582: Code of practice for surface water management for development sites;

82.3.3. CIRIA C753: The SUDS manual;

82.3.4. Building Regulations Part H3.

82.3.5. The Interim Code of Practice for Sustainable Drainage Systems.

82.4. In the event of conflict between these or later publications the Project Team/Constructor shall consult with the Estates Directorate Sustainable Operations Team.

83. Commissioning of Building Services

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

83.1. Also see relevant Estates Directorate M&E Technical Specifications – each of which must be complied with.

83.2. For all projects involving the installation or replacement of building services a specialist commissioning engineer shall be appointed to advise, manage, monitor and programme commissioning activities during the design stage, throughout the installation stage, and thereafter to conduct the system(s) pre-commissioning, commissioning, seasonal commissioning and, if required, re-commissioning.

83.3. The post-completion seasonal commissioning should include the following tasks:

83.3.1. Reviewing the thermal comfort, ventilation and lighting at 3, 6 and 9-month intervals after initial occupation.

83.3.2. Testing of all building services under full-load and part-load conditions;

83.3.3. Testing of all building services during periods of extreme (high/ low) occupancy;

83.3.4. Interviews with building occupants should be carried out to identify problems or concerns regarding the effectiveness of the systems;

83.3.5. Re-commissioning of the building systems and BMS, if required.

84. Handover

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

84.1. Handover procedures for all projects must follow the Estates Directorate handover documents checklist, the Employer’s Information Requirements issued for that project and the Asset Information Requirements.

84.2. Building user guides and training schedules compliant with BREEAM guidance must be developed prior to handover.

85. Products

Project Scale:	Minor Works		Minor Refurb		Major Refurb		New Build	
RIBA Stage:	0	1	2	3	4	5	6	7
Responsibility:	Client		Designer		Constructor		Operator	

- 85.1. Where the Construction Product Regulations are relevant to the product being provided, then it must be CE marked and evidence of CE testing must be provided.
- 85.2. Unless otherwise agreed with Estates Directorate, each product must be indelibly marked with an identifier that gives the name of the manufacturer, date of manufacture and/or a batch code or serial number that can be traced to a date and place of manufacture. Where there is a legal requirement for said product to be uniquely marked that may satisfy this requirement. The marking shall be positioned as unobtrusively as possible. It may be located within products where those products incorporate covers that are intended to be removable for routine maintenance, otherwise they shall be external.

REFERENCE STANDARDS

A list of Legislation, Standards, Regulations and advisory documentation is included in the Client Requirements document. The following list includes reference to Standards, Regulations and advisory documentation that have relevance to the design of the buildings, facilities and infrastructure. The list is not exhaustive nor (except for mandatory regulations) should it be perceived as excluding alternative approaches that would be equally satisfactory.

Design standards and recommendations.

Current Relevant British Standards and EU Regulations

C.I.B.S.E Guide Books; C.I.B.S.E Codes of Practice; Institute of Plumbing Data Handbook.

C.I.B.S.E Lighting Guides; C.I.B.S.E Technical Reports; C.I.B.S.E Technical Memoranda;

BSRIA Application Guides, BS7671 IEE Wiring Regulations, EU Directives (current and proposed).

BPG Building Fabric Component Life Manual

British Standard BS 7543: Guide to durability of buildings

British Council for Offices, "Good Practice in the Selection of Construction Materials"

British Standard 8300:2018 design...to meet the needs of disabled people.

Publications by technical bodies such as Steel Construction Institute, Brick Development Association, Concrete Society, TRADA, CIRIA

DfES Building Bulletins

NHS Health Technical Memoranda, NHS Health Building Notes, NHS Fire Protection Notes

HMPPS Fire Safety Design Guide

Publications by or on behalf of manufacturers or suppliers if the information provided relates to their recommendations for use of their product. General design advice from manufacturers or suppliers will be accepted if based on properly gathered evidence and/or properly conducted testing.



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