Farington Cricket Ground Pavilion Building

BREEAM and Net Zero Carbon Report

Document number: P3000932-SUS-BREEAM-PRE
Rev: P03
Date: March 2022

BDP.

Rev.	Description	Issued by	Date	Reviewed by	Date
P01	First Issue	Kat Radford	16.02.2022	Mia Coleman	16.02.2022
P02	Update to BREEAM	Kat Radford	22.02.2022	Mia Coleman	22.02.2022
P03	Revision to text	Kat Radford	14.03.2022	Mia Coleman	14.03.2022

Contents

1. Introduction

This report outlines the proposed solution for achieving BREEAM 'Very Good' and the steps to be taken with regards to establishing a solution for achieving net zero operational carbon.

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's foremost environmental assessment and rating system for buildings. BREEAM works to raise awareness amongst owners, occupiers, designers and operators of the benefits of adopting a sustainable approach towards development. It also helps them to successfully and cost effectively adopt sustainable solutions, and provides market recognition of their achievements, whilst reducing the negative effects of construction and development on the environment.

BREEAM assessments are typically broken down into three stages:

1. Pre-assessment stage: During this phase of works the BREEAM assessor will liaise with the design team regarding the credit model for the project and propose a strategy for achieving the required rating based on these conversations and any available drawings, reports or other information relevant to the site. The pre-assessment stage is non-certified.

2. Design stage: The design stage assessment and interim BREEAM rating confirms the proposed development's performance at the design stage of the life cycle. Assessment and, ideally, certification will occur prior to the beginning of operations on site. Once the credit model has been established (at the pre-assessment stage), design team members will be required to provide evidence to confirm that the building's design complies with BREEAM requirements. This evidence will be in the form of drawings, specifications, contracts, reports, letters of intent etc.). On completion of this design stage assessment, an interim BREEAM certificate will be issued. This report marks the beginning of the design stage assessment.

3. Post construction stage: The post construction stage assessment confirms the final 'as built' performance of the buildings. This stage of assessment is carried out and certified after practical completion of the building works. As per the design stage assessment, design team members are required to provide evidence to confirm that the building complies with BREEAM requirements, and that the commitments made at the design stage have been adhered to. This evidence is supported by a BREEAM site visit report, completed by the BREEAM assessor.

As per the requirements of the Central Lancashire Core Strategy (2012), the development will be delivered in line with BREEAM New Construction 2018 "Other Buildings" criteria, targeting a rating of 'Very Good'.

In addition to this, during the early stages of design BDP undertook some high level analysis regarding a route to net zero operational carbon. This, as well as the proposed strategy for achieving BREEAM Very Good, is discussed within the following sections of this report.

2. Route to BREEAM 'Very Good'

The strategy for achieving BREEAM Very Good has been developed through a review of existing site information and consultation with the design team and Client. The current proposed strategy is detailed in Figure 1 and Table 2 (for full details on individual credits please refer to the pre-assessment document in Appendix A). Based on the current approach, a final score of 56.77% is anticipated, providing a 1.77% buffer beyond the minimum 55% requirement. A score above 55% will help secure the final rating should future changes to the design or new evidence come to light preventing any of the current targeted credits being awarded. A further 54.54% worth of credits have been identified as potentially achievable.

In addition to a score of 55%, there are a number of mandatory/minimum requirements that must be met (see Table 1). Where these requirements are not met, the targeted rating cannot be achieved.

Table 1: Minimum requirements for BREEAM Very Good

BREEAM issue	Minimum requirements
Final score	55%
Man 04: Commissioning and handover	One credit (commissioning – testing schedule and responsibilities)
Man 04: Commissioning and handover	Criterion 11 (building user guide)
Ene 02: Energy monitoring	One credit (first sub-metering credit)
Wat 01: Water consumption	One credit (12.5% improvement over the notional baseline)
Wat 02: Water monitoring	Criterion 1 only (provision of a compliant water meter on the mains water supply)
Mat 03: Responsible sourcing of materials	Criterion 1 only (all timber must be legally harvested and traded timber, as per the UK Government's TPP)

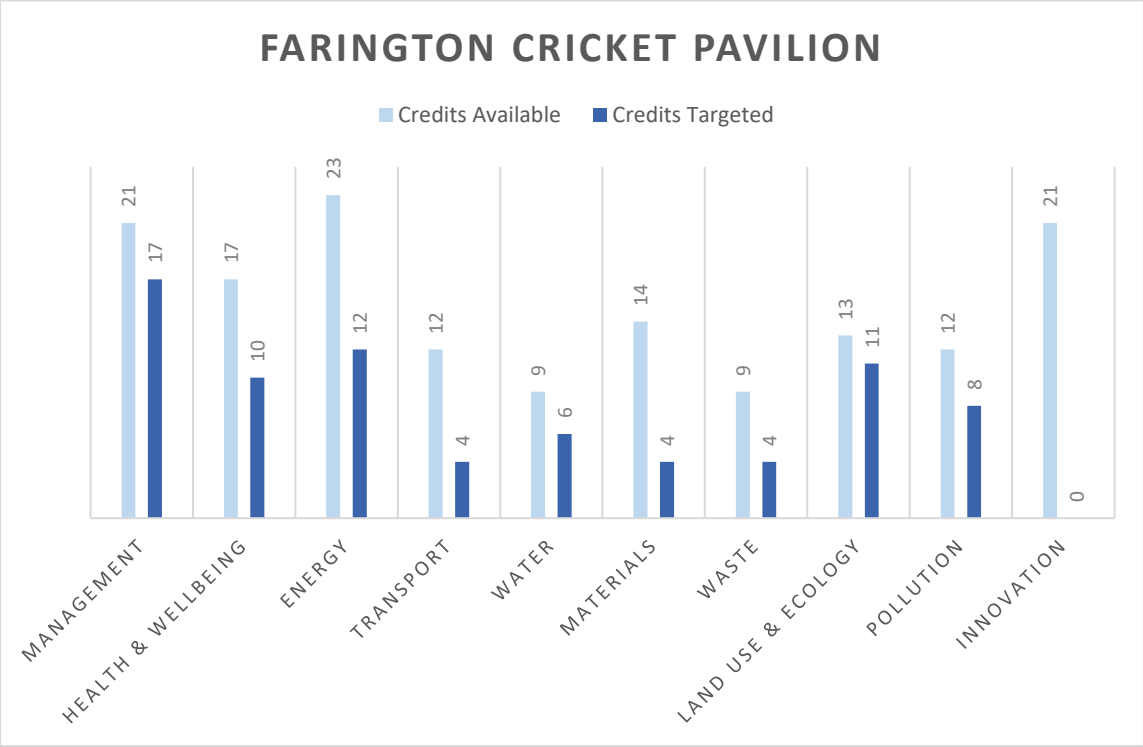

Figure 1: Anticipated score summary

Table 2: Credit summary

Category	Credit score (% per credit)	Issue	Credits		
			Available	Targeted	Additional potential
Management	0.52%	Man 01: Project design and brief	4	4	-
		Man 02: Life cycle cost and service life planning	4	2	2
		Man 03: Responsible construction practices	6	6	-
		Man 04: Commissioning and handover	4	3	1
		Man 05: Aftercare	3	2	1
Health and Wellbeing	0.82%	Hea 01: Visual comfort	4	2	2
		Hea 02: Indoor air quality	4	2	2
		Hea 04: Thermal comfort	3	3	-
		Hea 05: Acoustic performance	3	2	1
		Hea 06: Security	1	-	1
		Hea 07: Safe and healthy surroundings	2	1	1
Energy	0.70%	Ene 01: Reduction of energy use and carbon emissions	13	5	8
		Ene 02: Energy monitoring	2	2	-
		Ene 03: External lighting	1	1	-
		Ene 04: Low carbon design	3	2	1
		Ene 06: Energy efficient transportation systems	2	2	-
		Ene 08: Energy efficient equipment	2	-	2
Transport	0.83%	Tra 01: Transport assessment and travel plan	2	2	-
		Tra 02: Sustainable transport measures	10	2	8
Water	0.78%	Wat 01: Water consumption	5	2	3
		Wat 02: Water monitoring	1	1	-
		Wat 03: Water leak detection	2	2	-
		Wat 04: Water efficient equipment	1	1	-
Materials	1.07%	Mat 01: Environmental impacts from construction products – building life cycle assessment	7	0	2
		Mat 02: Environmental impacts from construction products	1	1	-
		Mat 03: Responsible sourcing of construction products	4	2	2
		Mat 05: Designing for durability and resilience	1	1	-
		Mat 06: Material efficiency	1	-	1
Waste	0.70%	Wst 01: Construction waste management	4	3	1
		Wst 02: Use of recycled and sustainably sourced aggregates	1	-	1
		Wst 03: Operational waste	1	1	-
		Wst 05: Adaptation to climate change	1	-	1
		Wst 06: Design for disassembly and adaptability	2	-	2
Land Use and Ecology	1.00%	LE 01: Site selection	2	-	2
		LE 02: Ecological risks and opportunities	2	2	-
		LE 03: Managing impacts on ecology	3	3	-
		LE 04: Ecological change and enhancement	4	4	-

Category	Credit score (% per credit)	Issue	Credits		
			Available	Targeted	Additional potential
		LE 05: Long term ecological management and maintenance	2	2	-
Pollution	0.67%	Pol 01: Impact of refrigerants	3	1	2
		Pol 02: Local air quality	2	2	-
		Pol 03: Flood and surface water management	5	4	1
		Pol 04: Reduction of night time pollution	1	-	1
		Pol 05: Reduction of noise pollution	1	1	-
Innovation and exemplary level credits	1.00%	Innovation and exemplary level credits (a maximum of 10 may be awarded)	10	-	10
Target weighted score rating:			**56.77%**		
Additional 'potential' credits (weighted rating)			**54.54%**		

As such, based on the current proposals the development will achieve a rating of BREEAM Very Good. Moving forward, the pre-assessment will be used to guide the design and construction of the pavilion building.

3. Net Zero Operational Carbon

BDP have been appointed undertake a study to determine a strategy for achieving to net zero operational carbon.

The principle component for achieving net zero or near-zero carbon is ensuring buildings are designed for low energy use. Best practice design for low energy use in buildings follows the energy hierarchy, as detailed in Figure 2. This seeks to limit demand through passive measures and efficient fabric, prior to considering system optimisation to satisfy demand, renewable technologies and offsets.

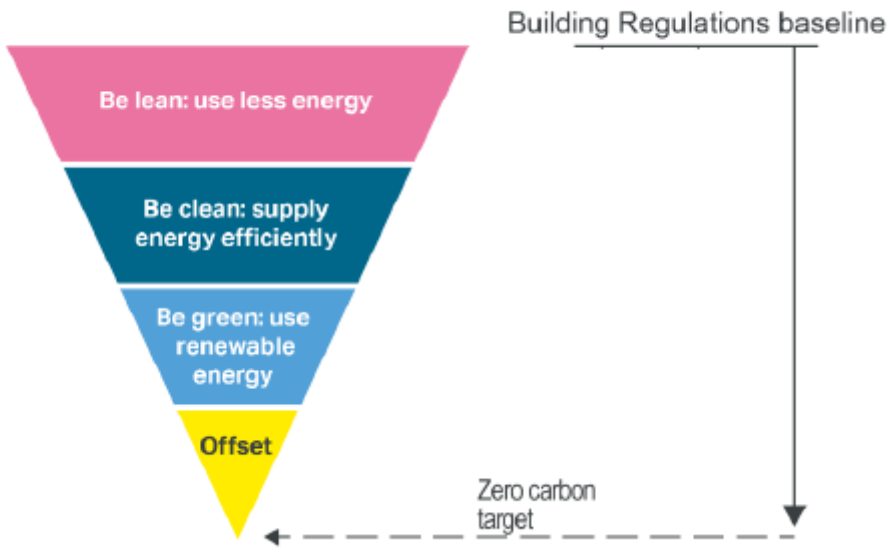

Figure 2: Energy hierarchy

Opportunities to reduce energy consumption and demand will be explored in line with the LETI guidance, as detailed in Figure 3.

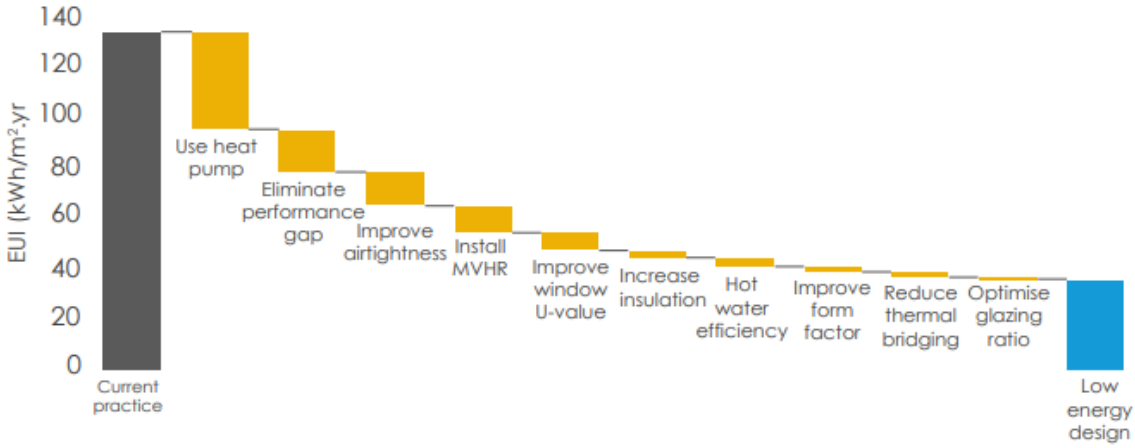

Figure 3: LETI opportunities to reduce energy consumption in new residential development

A summary of the passive design opportunities that will be considered as part of the net zero carbon study, in order to reduce energy demand, is presented below:

- Site location: The site is located at the Woodcock Estate in Farington. Whilst there are no air quality issues surrounding the site relevant to traffic that would impact the incorporation of passive design measures such as natural ventilation, due to the nature of the building's use natural ventilation is not possible.

- Site weather: The location provides a maritime climate (typical for the British Isles) with mild winters and cool summers. Precipitation levels are also typical of urban conditions in most UK towns with the potential for year-round storms and wet weather. CIBSE weather data was used in the energy simulations to account for the weather patterns for 2020-2040 timeframe. Wind blows mostly from South-West with good opportunities for natural ventilation on the SW/NE axis.

- Building orientation: The building faces the cricket pitches on the South East and North East. Sun path analysis will also be undertaken.

- Building form and layout: The building has a triangular shape facing North-East and South-East. The relatively compact form of the building results in a low surface to volume ratio meaning that there is less envelope area through which heat can escape.

- Building fabric: Consideration will be given to sustainable materials and materials with enhanced U-values. The specifications for insulation and glazing performance will be carefully selected from a range of simulations in order to decrease the impact of solar gains, reduce the need for cooling and reduce the total energy demand. Improved air tightness will also be considered.

- Thermal mass: The use of exposed timber and concrete in the building will be considered.

- Building occupancy type: The pavilion will mainly be used during the summer and therefore the energy strategy is focused on reducing the internal gains to keep the occupants comfortable in hot weather. In the absence of more granular data, NCM templates will be used for daily profiles.

- Daylighting strategy: The passive design strategy for the building will seek to incorporate the use of natural daylight.

The passive design study, due to be progressed at detailed design stage, will inform the fabric and systems efficiency measures required in order to achieve net zero carbon.

4. Conclusion

This report summarises the proposed strategy for achieving BREEAM Very Good and outlines the process to be undertaken in the next stages of design with regards to establishing a potential strategy for achieving net zero operational carbon. Sustainability is a key driver for the development and, as such, the client and design team will endeavour to implement the BREEAM and future NZC solutions as far as practically and feasibly possible.

Appendix A: BREEAM pre-assessment

Farington Cricket Ground Pavilion Building

BREEAM New Construction (2018) "Other Buildings": Pre-Assessment

22-Feb-22

Target: Very Good (minimum score of 55% required)

BREEAM Assessor: Kat Radford (BDP)

BDP.

Targeted

Not targeted

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
MANAGEMENT (1 credit = 0.52%)								
Man 01: Project brief and design								
Project Delivery Planning	Man 01-01	**1**	**1**		1. Prior to completion of the Concept Design, the project delivery stakeholders (see comments) meet to identify and define for each key phase of project delivery: a. Roles b. Responsibilities c. Contributions 2. Consider each one of the following items when defining roles, responsibilities and contributions for each key phase of the project: a. End user requirements b. Aims of the design and design strategy c. Particular installation and construction requirements/limitations d. Occupiers budget and technical expertise in maintaining any proposed systems e. Maintainability and adaptability of the proposals f. Operational energy (see Ene 01 for further details) g. Requirements for the production of project and end user documentation h. Requirements for commissioning, training and aftercare support. 3. The project team demonstrate how the project delivery stakeholder's contributions and the consultation process outcomes influence the following: a. Initial Project Brief b. Project Execution Plan c. Communication Strategy d. Concept Design	Project Manager / Design Team / Client / Contractor	2	

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Stakeholder Consultation (Interested Parties)	Man 01-02	**1**	**1**		4. Prior to completion of the Concept Design, the design team consult with all interested parties (see comments) on matters that cover the minimum consultation content: 1. Functionality, build quality and impact (including aesthetics). 2. Provision of appropriate internal and external facilities (for future building occupants and visitors or users). 3. Management and operational implications. 4. Maintenance resources implications. 5. Impacts on the local community, e.g. local traffic or transportation impact. 6. Opportunities for shared use of facilities and infrastructure with the community or appropriate stakeholders. 7. Compliance with statutory (national or local) consultation requirements. 8. Energy use and sustainability measures. 9. Implementing principles and processes that deliver an inclusive and accessible design. In the case of educational building types, minimum content also includes: 10. How the building or grounds could best be designed to facilitate learning and provide a range of social spaces appropriate to the needs of a diverse range of pupils, students and other users, including people of all abilities. In the case of building types containing technical areas or functions, e.g. laboratories, workshops etc., minimum content also includes: 11. The end users' broad requirements for such facilities, including appropriate sizing, optimisation and integration of equipment and systems.	Project Manager / Design Team / Client	2	
					5. Demonstrate how the stakeholder contributions and consultation exercise outcomes influence the Initial Project Brief and Concept Design.	Architect / MEP Team		
					6. Prior to completion of the detailed design (RIBA Stage 4, Technical Design or equivalent), all interested parties give and receive consultation feedback.	Project Manager / Design Team	4	
BREEAM AP (Concept Design)	Man 01 pre	**-**	**-**	-	8. The project team, including the client, formally agree strategic performance targets early in the design process with the support of the BREEAM AP where appointed).	Client / BREEAM Assessor	2	BDP fulfilled this role at Stage 2.
	Man 01-03	**1**	**1**		9. Involve a BREEAM AP in the project at an appropriate time and level to: a. Work with the project team, including the client, to consider the links between BREEAM issues and assist them in maximising the project's overall performance against BREEAM, from their appointment and throughout Concept Design. b. Monitor progress against the performance targets agreed under criterion 8 throughout all stages after their appointment where decisions critically impact BREEAM performance. c. Proactively identify risks and opportunities related to the achievement of the targets agreed under criterion 8. d. Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. e. Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team.			
BREEAM AP (Developed Design)	Man 01-04	**1**	**1**		10. Criteria 8 and 9 are achieved. 11. Involve the BREEAM AP in the project at an appropriate time and level to: a. Work with the project team, including the client, to consider links between BREEAM issues and to assist them in maximising the project's overall performance against BREEAM throughout developed design. b. Monitor progress against the performance targets agreed under criterion 8, throughout all stages where decisions critically impact the specification and tendering process and the BREEAM performance. c. Proactively identify risks and opportunities related to the achievement of the targets agreed under criterion 8. d. Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. e. Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team.	BREEAM Assessor	3	

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Man 02: Life Cycle Cost and Service Life Planning								
Elemental Life Cycle Cost (LCC)	Man 02-01	**2**	**0**	**2**	1. A competent person carries out an outline, entire asset LCC plan at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2) together with any design options appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008.	Cost Consultant	2	
					2. The elemental LCC plan: a. Provides an indication of future replacement costs over a period of analysis as required by the client (e.g. 20,30,50 or 60 years); b. Includes service life, maintenance and operation cost estimates. The study period should ideally be agreed by the client, in line with the design life expectancy of the building. However, where the life expectancy of the building is not yet formally agreed (due to being at very early design stages), the default design life of 60 years should be used for modelling purposes (in line with the UK default).	Cost Consultant		
					3. Demonstrate, using appropriate examples provided by the design team, how the elemental LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.	Design Team		
Component Level LCC Option Appraisal	Man 02-02	**1**	**1**		4. A competent person develops a component level LCC options appraisal by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008. The component level LCC includes (where present): a. Envelope, e.g. cladding, windows, and/or roofing b. Services, e.g. heat source cooling source, and/or controls c. Finishes, e.g. walls, floors and/or ceilings d. External spaces, e.g. alternative hard landscaping, boundary protection The component level LCC option appraisal should review all of the above component types (where present). However, you do not need to consider every single example cited under each component; only a selection of those most likely to draw valued comparisons. This is to ensure that a wide range of options are considered and help focus the analysis on components which would benefit the most from the appraisal.	Cost Consultant	4	
					5. Demonstrate, using appropriate examples provided by the design team, how the component level LCC options appraisal has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.	Design Team		
Capital Cost Reporting	Man 02-03	**1**	**1**		6. Report the capital cost for the building in pounds per square metre of gross internal floor area (£k/m2), as part of the submission to BRE. The capital cost for the building includes the expenses related to the initial construction of the building: – Construction, including preparatory works, materials, equipment and labour – Site management – Construction financing – Insurance and taxes during construction – Inspection and testing Costs related to land procurement, clearance, design, statutory approvals and post occupancy aftercare are not included.	Principal Contractor / Project Manager		
Man 03: Responsible Construction Practices								
Pre-requisite	Man 03-pre	**-**	**-**	**-**	1. All timber and timber based products used during the construction process of the project are 'Legally harvested and traded timber'.	Principal Contractor		
Environmental Management	Man 03-01	**1**	**1**		3. All parties who at any stage manage the construction site (e.g. the principal contractor, the demolition contractor) operate an EMS covering their main operations. The EMS must: a. Be third party certified, to ISO 14001:2015/EMAS or equivalent standard; or b. In compliance with BS 8555:2016 have: i. Appropriate structure ii. Reached implementation stage phase four 'implementation and operation of the environmental management system' iii. Completed defined phase audits one to four.	Principal Contractor		
					4. All parties who at any point manage the construction site (e.g. the principal contractor, the demolition contractor) implement best practice pollution prevention policies and procedures on site in accordance with Working at construction and demolition sites: PPG6, Pollution Prevention Guidelines.			

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
BREEAM AP (Site)	Man 03-02 pre	-	-	-	5. The client and the contractor formally agree performance targets.	Principal Contractor		
	Man 03-02	1	1		6. Involve a BREEAM AP in the project at an appropriate time and level to: a. Work with the project team, including the client, to consider the links between BREEAM issues and assist them in achieving and if possible going beyond the design intent, to maximise the project's performance against the agreed performance targets throughout the Construction, Handover and Close Out stages. b. Monitor construction progress against the performance targets agreed under criterion 5 above throughout all stages where decisions critically impact BREEAM performance. c. Proactively identify risks and opportunities related to the procurement and construction process and the achievement of the targets agreed under criterion 5. d. Provide feedback to the constructors and the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. e. Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team and the provision to the assessor.	Principal Contractor		
Responsible Construction Management	Man 03-03	2	2		**One credit:** 7. Achieve items listed as required for one credit in table 4.1 of the guidance manual. **Two credits:** 8. Achieve criterion 7 9. Achieve six additional items in table 4.1 of the guidance manual.	Principal Contractor		

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Monitoring of Construction-Site Impacts	Man 03-04	**2**	**2**		10. Responsibility has been assigned to an individual(s) for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from all on-site construction processes (and dedicated off-site manufacturing) throughout the build programme. To ensure the robust collection of information, this individual(s) must have the appropriate authority and responsibility to request and access the data required. Where appointed, the BREEAM AP could perform this role.	Principal Contractor		
					First Monitoring Credit - Utility consumption **Energy consumption** 11. Achieve criterion 10. 12. Set targets for the site energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation. 13. Monitor and record date for the energy consumption described in criterion 12. 14. Report the total carbon dioxide emissions (total kgCO2/project value) from the construction process via the BREEAM Projects (for the purposes of potential future BREEAM performance benchmarking). **Water consumption** 15. Achieve criterion 10. 16. Set targets for the potable water consumption (m^3) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation. 17. Monitor and record data for the potable water consumption described in criterion 18. Use the collated data to report the total net water consumption (m^3), i.e. consumption minus any recycled water use from the construction process via BREEAM Projects (for the purposes of potential future BREEAM performance benchmarking).	Principal Contractor		
					Second Credit - Transport of construction materials and waste 19. Achieve Criterion 10. 20. Set targets for transportation movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum cover: 20.a. Transport of materials from the point of supply to the building site, including any transport, intermediate storage and point of supply. Monitor as a minimum: 20.a.i. Materials used in major building elements (e.g. those defined in BREEAM issue Mat01 Environmental impacts from construction products - Building life cycle assessment (LCA). 20.a.ii. Ground works and landscaping materials. 20.b. Transportation of construction waste from the construction gate to waste disposal processing or recovery centre gate. This monitoring must cover the construction waste groups outlined in the project's resource management plan. 21. Monitor and record data for the transportation movement as described in criterion 20. 22. Using the collated data, report separately for materials and waste, the total transport-related carbon dioxide emissions ($kgCO_2$-eq) plus total distance travelled (km) via BREEAM Projects (for the purposes of potential future BREEAM performance benchmarking).	Principal Contractor		
Exemplary Level Criteria	Man 03-Ex	**1**	**0**	**1**	23. Achieve all items in Table 4.1 of the guidance manual.	Principal Contractor		

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Man 04: Commissioning and handover								
Commissioning and Testing Schedule and Responsibilities	Man 04-01	**1**	**1**		1. Prepare a schedule of commissioning and testing. The schedule identifies a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and for testing and inspecting building fabric. 2. The schedule identifies the appropriate standards for all commissioning activities to be conducted, where applicable, in accordance with: a. Current Building Regulations b. BSRIA guidelines c. CIBSE guidelines d. Other appropriate standards (see Methodology) Exclude from the assessment any process or manufacture-related equipment specified as part of the project. However, include such equipment in cases where they form an integral part of the building HVAC services, such as some heat recovery systems. 3. Where a building management system (BMS) is specified: a. Carry out the commissioning of air and water systems when all control devices are installed, wired and functional b. Include physical measurements of room temperatures, off-coil temperatures and other key parameters, as appropriate, in Commissioning results. c. The BMS or controls installation should be running in auto with satisfactory internal conditions prior to handover d. All BMS schematics and graphics (if BMS is present) are fully installed and functional to user interface prior to handover e. Fully train the occupier or facilities team in the operation of the system. 4. Appoint an appropriate project team member to monitor and programme pre-commissioning, commissioning and testing. Where necessary include, re-commissioning activities on behalf of the client. 5. The principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and the main programme of works. Allow the required time to complete all commissioning and testing activities prior to handover.	Principal Contractor		**Mandatory for BREEAM Very Good**
Commissioning - Design and Preparation	Man 04-02	**1**	**1**		6. Achieve criteria 1-5. 7. During the design stage, the client or the principal contractor appoints an appropriate project team member provided they are not involved in the general installation works for the building services systems: with responsibility for: a. Undertaking design reviews and giving advice on suitability for ease of commissioning. b. Providing commissioning management input to construction programming and during installation stages. c. Management of commissioning, performance testing and handover or post-handover stages. For buildings with complex building services and systems, this role needs to be carried out by a specialist commissioning manager.	Client / MEP Team / Principal Contractor		
Testing and Inspecting Building Fabric	Man 04-03	**1**	**0**	**1**	8. Achieve criteria 1-5. 9. Complete post-construction testing and inspection to quality-assure the integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths (this is through airtightness testing and a thermographic survey). A suitably qualified professional undertakes the survey and testing in accordance with the appropriate standard. 10. Rectify any defects identified during post-construction testing and inspection prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building or element as defined at the design stage.	Principal Contractor		
Handover	Man 04-04	**1**	**1**		11. Prior to handover, develop two building user guides for the following users: a. A non-technical user guide for distribution to the building occupiers b. A technical user guide for the premises facilities managers c. A draft copy is developed and discussed with users first (where the building occupants are known) to ensure the guide is most appropriate and useful to potential users. 12. Prepare two training schedules timed appropriately around handover and proposed occupation plans for the following users: a. A non-technical training schedule for the building occupiers b. A technical training schedule for the premises facilities managers.	Principal Contractor		**Mandatory for BREEAM Very Good**

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Man 05: Aftercare								
Aftercare Support	Man 05-01	**1**	**1**		1. Provide aftercare support to the building occupiers through having in place operational infrastructure and resources. This includes as a minimum: a. A meeting between the aftercare support team or individual, and the building occupier or management team (prior to initial occupation, or as soon as possible thereafter) to: i. Introduce the aftercare support available, including the content of the building user guide (where it exists) and training schedule. ii. Present key information on the building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible. b. On-site facilities management training including: i. a walkabout of the building AND ii. introduction and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands. c. Provide initial aftercare support for at least the first month of building occupation, e.g. weekly attendance on-site, to support building users and management (the level of frequency will depend on the complexity of the building and building operations). d. Provide longer term aftercare support for occupiers for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users/management. 2. Establish operational infrastructure and resources to coordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is substantially occupied. This facilities analysis of discrepancies between actual and predicted performance, with a view to adjusting systems and/or user behaviours accordingly.	Principal Contractor		
Commissioning - Implementation	Man 05-02	**1**	**1**		3. Complete the following commissioning activities over a minimum 12-month period, once the building becomes substantially occupied: a. Complex systems - Specialist Commissioning Manager will: i. Identify changes made by the owner or operator that might have caused impaired or improved performance. ii. Test all building services under full load conditions, i.e. heating equipment in mid-winter, cooling and ventilation equipment in mid-summer and under part load conditions (spring and autumn). iii. Where applicable, carry out testing during periods of extreme (high or low) occupancy. iv. Interview building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. v. Produce monthly reports comparing sub-metered energy performance to the predicted one (see Ene01 Reduction of energy use and carbon emissions). vi. Identify inefficiencies and areas in need of improvement. vii. Re-commission systems (following any work needed to serve revised loads), and incorporate any revisions in operating procedures into the operations and maintenance (O&M) manuals. b. Simple systems (naturally ventilated) - external consultant/aftercare team/facilities manager will: i. Review thermal comfort, ventilation, and lighting, at three, six and nine month intervals after initial occupation, either by measurement or occupant feedback. ii. Identify deficiencies and areas in need of improvement. iii. Re-commission systems and incorporate any relevant revisions in operating procedures into the O&M manuals.	Principal Contractor		

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Post Occupancy Evaluation	Man 05-03	1	0	1	4. The client or building occupier makes a commitment to carry out a post-occupancy evaluation (POE) exercise one year after building is substantially occupied. This gains comprehensive in-use performance feedback and identifies gaps between design intent and in-use performance. The aim is to highlight any improvements or interventions that need to be made and inform operational processes. 5. An independent party carries out the POE covering: a. A review of the design intent and construction process (review of design, procurement, construction and handover processes) b. Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering: i. Internal environmental conditions (light, noise, temperature, air quality) ii. Control, operation and maintenance iii. Facilities and amenities iv. Access and layout v. Energy and water consumption vi. Other relevant issues 6. The independent party provides a report with lessons learned to the client and building occupiers. 7. The client or building occupier commits funds to pay for the POE in advance. This requires an independent party to be appointed to carry out the POE. Evidence of the appointment of the independent party and schedule of responsibilities which fulfils the BREEAM criteria are acceptable to demonstrate compliance.	Client		
HEALTH AND WELLBEING (1 credit = 0.82%)								
Hea 01: Visual Comfort								
Control of Glare from Sunlight	Hea 01-01	1	1		1. Identify areas at risk of glare using a glare control assessment, The glare control assessment also justifies any areas deemed not at risk of glare. 2. A glare control strategy designs out potential glare in all relevant building areas where risk has been identified. This should be achieved through building form and layout or building design measures. 3. The glare control strategy does not increase energy and consumption used for lighting. This is achieved by: a. Maximising daylight levels in all weather, cloudy or sunny AND b. Ensuring the use or location of shading does not conflict with the operation of lighting control systems.	Architect		Compliant shading measures for meeting the glare control criteria can include: – building-integrated measures (e.g. overhangs or fins) – occupant-controlled devices such as opaque Venetian or close weave fabric blinds, (where the openness factor of blinds is 1% or less, and where the fabric light transmittance value is < 0.1 (10%)) – external shading or brise soleil.
Daylighting	Hea 01-02	1	0	1	All occupied spaces achieve an average daylight factor of at least 2% is achieved in at least 80% of the area (and either compliance with the uniformity ratio requirements OR view of sky and room depth criteria in Table 5.2.)	MEP Team / Architect		Daylight calculations will be undertaken at an early stage to inform the design. The percentage of the total floor area of all relevant rooms must comply where the criteria specify that a percentage of floor area must have adequate daylight illuminance. For example, six relevant rooms each have a floor area of 150m² making a total relevant floor area of 900m²; 80% of this floor area must meet the criterion, so 720m² must comply. This is the equivalent to 4.8 rooms. The number of rooms must always be rounded up so, in this example, five rooms must comply to achieve the credit.
View Out	Hea 01-03	1	0	1	5. 95% of the floor area in 95% of space in relevant building areas is within 8m of an external wall. The external wall has a window or permanent opening that provides an adequate view out. 6.The window/opening must be ≥ 20% of the surrounding wall area. Where the room depth is greater than 8m, compliance is only possible where the percentage of window/opening is the same as, or greater than, the values in Table 1.0 of BS 8206:part 2.	Architect		The existing design may comply. Design team to confirm.

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Internal and External Lighting Levels, Zoning and Control	Hea 01-04	**1**	**1**		**Internal Lighting** 8. Internal lighting in all relevant areas of the building is designed to provide illuminance (lux) levels and colouring rendering index in accordance with the SLL code for lighting 2012. and any other relevant industry standard. Internal lighting should be appropriate to the tasks undertaken, accounting for building user concentration and comfort levels. 9. For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 sections 2.4, 2.13, 2.15, 2.20, and 6.10 to 6.20. This gives recommendations highlighting: a. Limits to the luminance of the luminaires to avoid screen reflections. (Manufacturers' data for the luminaires should be sought to confirm this.) b. Any area where surface is used to reflect light in to a space such as up lighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this. c. Recommendations for direct lighting, ceiling illuminance, and average wall illuminance. **External Lighting** 10. All external lighting located within the construction zone is specified in accordance with BS5489-1:2013 Code for the practice for the design of road lighting. Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting - lighting of work places - Part 2: Outdoor workplaces. External lighting should provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. 11. Where no external light fittings are specified (either separate from or mounted on the external building façade of roof), the criteria relating to external lighting do not apply and the credit can be awarded on the basis of compliance with criteria 8-9. **Zoning and occupant control** 12. Internal lighting is zoned to allow for occupant control. Zoning is in accordance with the criteria below for relevant areas present within the building: a. In office areas, zones of no more than four workplaces b. Workstations adjacent to windows/atria and other building areas separately zoned and controlled c. Seminar and lecture rooms: zoned for presentation and audience areas d. Library spaces: separate zoning of stacks, reading and counter areas e. Teaching space or demonstration area f. Whiteboard or display screen g. Auditoria: zoning of seating areas, circulation space and lectern area h. Dining, restaurant, café areas: separate zoning of servery and seating/dining areas i. Retail: separate zoning of display and counter areas j. Bar areas: separate zoning of bar and seating areas k. Wards or bedded areas: zoned lighting control for individual bed spaces and control for staff over groups of bed spaces l. Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff.	MEP Team		
Exemplary Level Criteria	Hea 01-EX 1	**1**	**0**	**1**	15. To achieve an exemplary performance credit for daylighting: Daylighting criteria have been met using either of the following options: a. Relevant building areas meet exemplary daylight factors and the relevant criteria in Table 5.8 of the guidance manual. b. Relevant building areas meet exemplary average and minimum point daylight illuminance criteria in Table 5.9 of the guidance manual.	MEP Team / Architect		
	Hea 01-EX 2	**1**	**0**	**1**	16. To achieve an exemplary performance credit for Internal and external lighting levels, zoning and control: Lighting in each zone can be manually dimmed by occupants down to 20% of the maximum light output using dimmer switches positioned in accessible locations. Dimming and control gear should avoid flicker and noise.	MEP Team		

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Hea 02: Indoor Air Quality								
Pre-requisite	Hea 02-Pre	-	-	-	1. A site-specific indoor air quality plan has been produced and implemented in accordance with the guidance in Guidance Note GN06. The objective of the plan is to facilitate a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building. The indoor air quality plan must consider the following: a. Removal of contaminant sources b. Dilution and control of contaminant sources: i. Where present, consideration is given to the air quality requirements of specialist areas such as laboratories c. Procedures for pre-occupancy flush out d. Third party testing and analysis e. Maintaining good indoor air quality in-use.	Architect / MEP Team		
Ventilation	Hea 02-01	**1**	**0**	**1**	2. The building has been designed to minimise the indoor concentration and recirculation of pollutants in the building as follows: a. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation b. Ventilation pathways are designed to minimise the ingress and build-up of air pollutants inside the building (see methodology) c. Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3. The specified filters should achieve a minimum Indoor Air Quality of IDA2. d. Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO_2) or air quality sensors specified and: i. In mechanically ventilated buildings or spaces: sensors are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space. ii. In naturally ventilated buildings or spaces: sensors either have the ability to alert the building owner or manager when CO_2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows or roof vents. e. For naturally ventilated or mixed mode buildings, the design demonstrates that the ventilation strategy provides adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates in accordance with CIBSE AM10.	MEP Team		
Emissions from Construction Products	Hea 02-02	**2**	**2**		**One credit:** 3. Three out of the five product types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 of the guidance manual. Where wood-based products are not one of the three selected product types, all wood-based products used for internal fixtures fittings must be tested and classified as formaldehyde E1 class as a minimum.	Architect / Principle Contractor		
					Two credits: 4. All of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 of the guidance manual.			
Post Construction Indoor Air Quality Measurement	Hea 02-03	**1**	**0**	**1**	5. The formaldehyde concentration indoor air is measured post construction (but pre-occupancy) and does not exceed 100µg/ m^3 averaged over 30 minutes. (World Health Organisation guidelines for indoor air quality: Selected pollutants, 2010).	Principle Contractor		
					6. The formaldehyde sampling and analysis is performed in accordance with ISO 16000-2 and ISO 16000-3.			
					7. The total volatile organic compound (TVOC) concentration in indoor air is measured post construction (but pre-occupancy) and does not exceed 500µg/ m^3 over 8 hours.			
					8. The TVOC sampling and analysis is performed in accordance with ISO 16000-5 and ISO 16000-6 or ISO 16017-1.			
					9. Where levels are found to exceed these limits, the project team confirms the measures that have, or will be, undertaken in accordance with the IAQ plan, to reduce TVOC and formaldehyde levels to within the above limits.			
					10. The measured concentration levels of formaldehyde (µg/ m^3) are reported via the BREEAM Scoring and Reporting Tool.			
Exemplary Level Criteria	Hea 02-Ex	**1**	**0**	**1**	11. Three of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.12 of the guidance manual. Where wood-based products are not one of the three selected product types, all wood-based products used for internal fixtures and fittings must be tested and classified as formaldehyde E1 class as a minimum,	Architect		

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Hea 04: Thermal Comfort								
Thermal Modelling	Hea 04-01	**1**	**1**		1. Thermal modelling has been carried out using software in accordance with CIBSE AM11 Building Energy and Performance Modelling. 2. The software used to carry out the simulation at the detailed design stage provides full dynamic thermal analysis. For smaller and more basic building designs with less complex heating or cooling systems, an alternative less complex means of analysis may be appropriate (such methodologies must still be in accordance with CIBSE AM11). 3. The modelling demonstrates that: a. For air conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type) or the thermal environment in occupied spaces meet the Category B requirements for PPD, PMV and local discomfort set out in Table A.1 of Annex A of ISO 7730:2005. b. For naturally ventilated buildings: i. Winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). ii. The building is designed to limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in 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. 4. For air conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.	MEP Team		
Design for Future Thermal Comfort	Hea 04-02	**1**	**1**		5. Criteria 1 to 4 are achieved. 6. The thermal modelling demonstrates that the relevant requirements set out in criteria 3 are achieved for a projected climate change environment. 7. Where criterion 6 is not met, the project team demonstrated how the building has been adapted or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements under criterion 6. 8. For air conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.	MEP Team		
Thermal Zoning and Controls	Hea 04-03	**1**	**1**		9. Criteria 1 to 4 are achieved 10. The thermal modelling analysis (criteria 1 to 4) has informed the temperature control strategy for the building and its users. 11. The strategy for proposed heating/cooling system(s) demonstrates that it has addressed the following: a. Zones within the building and how the building services could efficiently and appropriately heat or cool these areas. For example consider the different requirements for the central core of a building compared with the external perimeter adjacent to the windows. b. The degree of occupant control required for these zones, based on discussions with the end user (or alternatively building type or use specific design guidance, case studies, feedback) considers: b.i. User knowledge of building services b.ii. Occupancy type, patterns and room functions (and therefore appropriate level of control required) b.iii. How the user is likely to operate or interact with the system(s), e.g. are they likely to open windows, access thermostatic radiator valves (TRV) on radiators, change air-conditioning settings etc. b.iv. The user expectations (this may differ in the summer and winter) and degree of individual control (i.e. obtaining the balance between occupant preferences, for example some occupants like fresh air and others dislike draughts). c. How the proposed systems will interact with each other (where there is more than one system) and how this may affect the thermal comfort of the building occupants. d. The need or otherwise for an accessible building user actuated manual override for any automatic systems.	MEP Team		

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Hea 05: Acoustic Performance								
Acoustic Performance	Hea 05-01	**3**	**2**	**1**	1. The building meets the appropriate acoustic performance standards and testing requirements defined in Table 5.14 of the guidance manual which defines criteria for the acoustic principles of: a. Sound insulation b. Indoor ambient noise level c. Room acoustics. OR	Acoustician / Principle Contractor		
					2. A suitably qualified acoustician (SQA) is appointed to define a bespoke set of performance requirements for all function areas in the building. The bespoke performance requirements use the three acoustic principles defined in criterion Hea 05 Acoustic Performance - Criterion 1, setting out the performance requirements for each and the testing regime required.			
Hea 06: Security								
Security of Site and Building	Hea 06-01	**1**	**0**	**1**	1. A suitably qualified security specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent). The purpose of the SNA will be to identify attributes of the proposal, site and surroundings which may influence the approach to security for the development.	Architect / Client	2	
					2. The SQSS develops a set of security controls and recommendations for incorporation into the proposals. These controls and recommendations shall directly relate to the threats and assets identified in the preceding SNA.			
					3. The controls and recommendations shall be incorporated into proposals and implemented in the as-built development. Any deviation from those controls and recommendations shall be justified and agreed with the SQSS.	Architect / MEP Team		
Exemplary Level Criteria	Hea 06-Ex	**1**	**0**	**1**	4. To achieve an exemplary level performance credit: A compliant risk based security rating scheme has been used. The performance against the scheme has been confirmed by independent assessment and verification.	Architect		
Hea 07: Safe and Healthy Surroundings								
Safe Access	Hea 07-01	**1**	**0**	**1**	1. Where external site areas form part of the assessed development the following apply: Dedicated and safe cycle paths are provided from the site entrance to any cycle storage, and connect to off-site cycle paths where applicable.	Landscape Architect / Architect		
					2. Dedicated and safe footpaths are provided on and around the site providing suitable links for the following: a. The site entrance to the building entrance b. Car parks (where present) to the building entrance c. The building to outdoor space d. Connecting to off-site paths where applicable.			
					3. Pedestrian drop-off areas are designed off, or adjoining to, the access road and should provide direct access to other footpaths.			
					Where vehicle delivery access and drop-off areas form part of the assessed development, the following apply (criteria 4, 5 and 6): 4. Delivery areas are not accessed through general parking areas and do not cross or share the following: a. pedestrian and cyclist paths b. outside amenity areas accessible to building users and general public.			
					5. There is a dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking.			
					6. Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.			
Outside Space	Hea 07-02	**1**	**1**		7. There is an outside space providing building users with an external amenity area.	Architect		

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
ENERGY (1 credit = 0.70%)								
Ene 01: Reduction of energy use and carbon emissions								
Energy Performance	Ene 01-01	**9**	**5**	**4**	1. Calculate an Energy Performance Ratio for New Constructions (EPRNC). Compare the EPRNC achieved with the benchmarks in Table 6.1 in the guidance manual and award the corresponding number of BREEAM credits.	MEP Team		The current energy strategy achieves 5 credits.
Prediction of Operational Energy Consumption	Ene 01-02	**4**	**0**	**4**	2. Involve relevant members of the design team in an energy design workshop, focusing on operational energy performance (in line with the BREEAM methodology). 3. Undertake additional energy modelling during the design and post-construction stage to generate predicted operational energy consumption figures. (see Prediction of operational energy consumption on page 125 of the guidance manual - assessor to provide.) 4. Report predicted energy consumption targets by end use, design assumptions and input data (with justifications). 5. Carry out a risk assessment to highlight any significant design, technical and process risks that should be monitored and managed throughout the construction and commissioning process.	MEP Team		To achieve these credits it must be demonstrated that the operational energy performance of the building has been substantially improved.
Exemplary Level Criteria	Ene 01-Ex	**2**	**0**	**2**	6. The building achieves an EPR NC ≥ 0.9 and zero net regulated CO -eq emissions. 7. Energy generation from on-site and near-site LZC sources is sufficient to offset carbon emissions from regulated energy use plus a percentage of emissions from unregulated energy use. 8. Award the exemplary credits based on the percentage of additional emissions from unregulated energy that are offset by LZC sources. (Table 6.2 guidance manual).	MEP Team		These credits require the development to be zero carbon for regulated operational energy and achieve a 50% reduction in unregulated energy from on site LZCs.
	Ene 01-Ex	**3**	**0**	**3**	9. The building is deemed carbon negative where >100% (see Table 6.2 guidance manual) of carbon emissions from unregulated (and regulated) energy use are offset by energy generated from on-site and near-site LZC sources.	MEP Team		
	Ene 01-Ex	**2**	**0**	**2**	10. Achieve maximum available credits in Ene 02 Energy monitoring. 11. The client or building occupier commits funds to pay for the post occupancy stage. This requires an assessor to be appointed and to report on the actual energy consumption compared with the targets set in criterion 4. 12. The energy model (criterion 3) is: a. Submitted to BRE and b. Retained by the building owner.	Client		The POS is an optional third stage of assessment under the UK New Construction scheme. This stage confirms the process of monitoring, reviewing and reporting on the performance of the building once occupied. It is carried out a minimum of 12 months after occupation and would normally be before a period of two years has lapsed from the date of 'full' occupation (defined as occupation of approximately 80% of the occupiable space in the building).

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Ene 02: Energy Monitoring								
Sub-Metering of End-Use Categories	Ene 02-01	**1**	**1**		1. Install energy metering systems so at least 90% of the estimated annual energy consumption of each fuel is assigned to the end-use categories. 2. Meter the energy consumption in buildings according to the total useful floor area: a. If the area is greater than 1,000m², by end-use category with an appropriate energy monitoring and management system. b. If the area is less than 1,000m², use either: i. an energy monitoring and management system or ii. separate accessible energy sub-meters with pulsed or other open protocol communication outputs, for future connection to an energy monitoring and management system 3. Building users can identify the energy consuming end users, for example through labelling or data outputs.	MEP Team		**Mandatory for BREEAM Very Good** End-use categories include: 1. Space heating 2. Domestic hot water heating 3. Humidification* 4. Cooling* 5. Ventilation, i.e. fans (major)* 6. Pumps 7. Lighting 8. Small power 9. Renewable or low carbon systems (separately) 10. Controls 11. Other major energy consuming systems or plant, where appropriate. Depending on the building type, this might include for example: plant used for swimming or hydrotherapy pools; other sports and leisure facilities; kitchen plant or catering equipment; office equipment; cold storage plant; laboratory plant; sterile services equipment; transportation systems (e.g. lifts and escalators); drama studios and theatres with large lighting rigs; telecommunications; dedicated computer room or suite; server rooms; dealing rooms; covered car parks; ovens or furnaces; and floodlighting. See also CIBSE TM39: Building energy metering for further information.
Sub-Metering of High Energy Load and Tenancy Areas	Ene 02-02	**1**	**1**		4. Monitor a significant majority of the energy supply with: a. An accessible energy monitoring and management system for: i. tenanted areas or ii. Relevant function areas or departments in single occupancy buildings OR b. Separate accessible energy sub-meters with pulsed or other open protocol communication outputs for future connection to an energy monitoring and management system for: i tenanted areas ii. relevant function areas or departments in single occupancy buildings. 5. Sub-meter per floor plate in large single occupancy or single-tenancy buildings with one homogenous function, for example hotel bedrooms, offices.	MEP Team		
Ene 03: External Lighting								
External Lighting	Ene 03-01	**1**	**1**		1. No external lighting (which includes lighting on the building, at entrances and signs). OR 2. External light fittings within the construction zone with: a. Average initial efficacy of not less than 70 luminaire lumens per circuit Watt. b. Automatic control to prevent operation during daylight hours. c. Presence detection in areas of intermittent pedestrian traffic.	MEP Team		
Ene 04: Low carbon design								
Passive Design Analysis	Ene 04-01	**1**	**1**		1. Achieve the first credit Hea 04 Thermal comfort: One credit - Thermal modelling to demonstrate that the building design delivers appropriate thermal comfort levels in occupied spaces. 2. The project design team analyses the proposed building design and development during concept design to identify opportunities for the implementation of passive design measures. 3. Implement passive design measures to reduce the total heating, cooling, mechanical ventilation, lighting loads and energy consumption in line with the passive design analysis findings. 4. Quantify the reduced total energy demand and carbon dioxide (CO) emissions resulting from the passive design measures.	MEP Team MEP Team	2	

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Free Cooling	Ene 04-02	1	0	1	5. Achieve the passive design analysis credit. 6. Include free cooling analysis in the passive design analysis carried out under criterion 2. 7. Identify opportunities for the implementation of free cooling solutions. 8. The building is naturally ventilated or uses any combination of the free cooling strategies listed in free cooling analysis.	MEP Team		The free cooling should apply to all occupied spaces in the building. Small IT rooms and lift motor rooms are excluded.
Low and Zero Carbon Feasibility Study	Ene 04-03	1	1		9. An energy specialist completes a feasibility study by the end of the concept design. 10. Establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy sources for the building or development based on the feasibility study. 11. Specify local LZC technologies for the building or development in line with the feasibility study recommendations. 12. Quantify the reduced regulated carbon dioxide (CO) emissions resulting from the feasibility study.	MEP Team MEP Team / Architect MEP Team	2	
Ene 06: Energy Efficient Transportation Systems								
Energy Consumption	Ene 06-01	1	1		1. For specified lifts, escalators and moving walks (transportation types) : 1.a. Analyse the transportation demand and usage patterns for the building to determine the optimum number and size of lifts, escalators and/or moving walks. b. Calculate the energy consumption in accordance with BS EN ISO 25745 Energy performance of lifts, escalators and moving walks, Part 2 : Energy calculation and classification for lifts (elevators) and/or Part 3 - Energy calculation and classification for escalators and moving walks, for one of the following: i. At least two types of system (for each transportation type required); OR ii. An arrangement of systems (e.g. for lifts, hydraulic, traction, machine room-less lift (MRL)); OR iii. A system strategy which is 'fit for purpose'. c. Consider the use of regenerative drives, subject to the requirements in the guidance manual. d. Specify the transportation system with the lowest energy consumption.	Architect / MEP Team		
Energy Efficient Features	Ene 06-02	1	1		2. Criterion 1 is achieved. 3. Specify the following three energy efficient features for each lift: a. A standby condition for off-peak periods. b. The lift car lighting and display lighting provides an average luminous efficacy, (across all fittings in the car) of > 70 luminaire lumens/circuit Watt. c. The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor. 4. Specify regenerative drives where their use is demonstrated to save energy.	Architect / MEP Team		
Ene 08: Energy Efficient Equipment								
Energy Efficient Equipment	Ene 08-01	2	0	2	1. Identify the building's unregulated energy consuming loads and estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical/standard specification. 2. Identify the systems and/or processes that use a significant proportion of the total annual unregulated energy consumption of the building. 3. Demonstrate a meaningful reduction in the total annual unregulated energy demand of the building. Table 6.5 in the guidance manual lists examples of significant contributors to unregulated energy consumption and the associated criteria. If additional significant contributors, not listed in the table, will be specified, the design team should justify how a meaningful reduction will be achieved for these contributors.	MEP Team / Client		

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TRANSPORT (1 credit = 0.83%)								
Tra 01: Transport Assessment and Travel Plan								
Travel Plan	Tra 01-01	**2**	**2**		1. No later than Concept Design stage, undertake a site-specific transport assessment (or statement) and draft travel plan, which can demonstrably be used to influence the site layout and built form (in line with the BREEAM methodology).	Transport Consultant	2	A transport assessment was completed prior to the end of Concept Design.
					2 The site-specific travel assessment (or statement) shall cover as a minimum: a. If relevant, travel patterns and attitudes of existing building or site users towards cycling, walking and public transport, to identify relevant constraints and opportunities. b. Predicted travel patterns and transport impact of future building or site users. c. Current local environment for pedestrians and cyclists, accounting for any age-related requirements of occupants and visitors. d. Reporting of the number and type of existing accessible amenities (as per Table 7.1 of the BREEAM guidance manual), within 500m of the site. e. Disabled access accounting for varying levels and types of disability, including visual impairment. f. Calculation of the existing public transport Accessibility Index (AI), in line with the BREEAM methodology. g. Current facilities for cyclists.			
					3. Following a transport assessment (in accordance with the requirements set out in criteria 2a-2g) develop a site-specific travel plan, that provides a long term management strategy which encourages more sustainable travel. The travel plan includes measures to increase or improve more sustainable modes of transport and movement of people and goods during the building's operation (see Methodology).			
					4. If the occupier is known, involve them in the development of the travel plan.	Client		
					5. Demonstrate that the travel plan will be implemented and supported by the building's management in operation.			
Tra 02: Sustainable Transport Measures								
Sustainable Transport Measures	Tra 02-Pre	**-**	**-**	**-**	1. Achieve criteria 3-5 in the Tra 01 Transport assessment and travel plan issue.	Client / M&E Consultant / Architect		It is currently assumed that the accessibility index for the site is <25. As such it is likely that 1 Tra 02 point equates to 1 credit. It is assumed points for implementing the following will be achieved: - Provide 1 new amenity (2 points)
	Tra 02-01	**10**	**2**	**8**	2. Identify the sustainable transport measures in table 7.4 of the guidance manual (see criterion 3 and comments section).			
					3. Award credits according to the Accessible Index of the project and the total number of points achieved for the options implemented. Current anticipated measures include: - Achieve an accessibility index (AI) of at least 8 (1 point) - Improve the AI through negotiation with local transport companies (2 points) - Demonstrate increase over existing AI. This could be through provision of a diverted bus route, new or enhanced bus stop or other similar solutions (3 points) - Provide a real-time public transport information system in a publicly accessible area, to allow building users access to up-to-date information on the available public transport and transport infrastructure. This may include signposting to public transport, cycling, walking, infrastructure or local amenities (1 point). - Provide EV charging stations of at least 3kW for at least 10% of parking spaces - Set up a compliant car sharing group (includes providing priority spaces for car sharers for at least 5% of total car parking capacity)(1 point). - Provide compliant cycle spaces (1 point) - Provide compliant cyclist facilities (1 point) - Access to at least 3 existing amenities (1 point) - Provide 1 new amenity (2 points) - Provide more than 1 new amenity (3 points)			

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
WATER (1 credit = 0.78%)								
Wat 01: Water Consumption								
Water Consumption	Wat 01-01	**5**	**2**	**3**	1. Use the BREEAM Wat 01 calculator to assess the efficiency of the domestic water-consuming components. 2. Use the standard Wat01 method to compare the water consumption (litres/person/day) for the assessed building against a baseline performance. Award BREEAM credits based upon the following: 1 credit: 12.5% 2 credits: 25% 3 credits: 40% 4 credits: 50% 5 credits: 55% Where it is not possible to use the standard method, and for some building types, complete the assessment using the alternative Wat 01 method. 3. If a greywater or rainwater system is specified, use its yield in L/person/day to offset potable water demand from components. 4. If a greywater or rainwater system is specified and installed: a. Greywater systems in compliance with BS 8525-1:2010 Greywater systems - Part 1 Code of Practice. b. Rainwater systems in compliance with BS 8515:2009+A1:2013 Rainwater harvesting systems - Code of practice Achieve Assessment scope - Criterion 6 on page 201, if you intend to pursue a post occupancy stage certification. 5. If applicable, the flushing control for each WC or urinal must be suitable for operation by patients with frail or infirm hands or activated by electric sensors.	Architect		**A minimum of one credit is mandatory for BREEAM Very Good**
Exemplary Level Criteria	Wat 01-Ex	**1**	**0**	**1**	To achieve an exemplary performance credit: 7. Achieve criteria 1 to 4. 8. The water consumption (litres/person/day) for the assessed building achieves the 65% improvement described as exemplary performance in Table 8.1 of the guidance manual.	Architect		

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Wat 02: Water Monitoring								
Water Monitoring	Wat 02-01	**1**	**1**		1. The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source. 2. Water-consuming plant or building areas, consuming 10% or more of the building's total water demand: a. Fit easily accessible sub-meters OR b. Install water monitoring equipment integral to the plant or area. 3.For each meter (main and sub): a. Install a pulsed or other open protocol communication output AND b. Connect it to an appropriate utility monitoring and management system e.g. a building management system (BMS), for the monitoring of water consumption. If there is no BMS system in operation at Post-Construction stage, award credits provided that the system used enables connection when the BMS becomes operational. 4. In buildings with swimming pools, or large water tanks and aquariums, fit separate sub-meters on the water supply of the above and any associated changing facilities (toilets, showers etc.) irrespective of their water consumption levels. 5. In buildings containing laboratories, fit a separate water meter on the water supply to any process cooling loop for 'plumbed in' laboratory process equipment, irrespective of their water consumption levels. 6. Additionally for those pursuing a post occupancy stage certification: The water monitoring strategy used enables the identification of all water consumption for sanitary uses as assessed under Wat 01 (litres/person/day), if a post occupancy stage certification is sought.	MEP Team		**Criterion 1 is mandatory BREEAM Very Good.**

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Wat 03: Water Leak Detection and Prevention								
Leak Detection System	Wat 03-01	**1**	**1**		1. Install a leak detection system capable of detecting a major water leak: a. On the utilities water supply within the buildings, to detect any major leaks within the buildings AND b. Between the buildings and the utilities water supply, to detect any major leak between the utilities supply and the buildings under assessment. 2. The leak detection system is: a. A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks. b. Activated when the flow of water passing through the water meter or data logger is at a flow rate above a pre-set maximum for a pre-set period of time. This usually involves installing a system which detects higher than normal flow rates at meters or sub-meters. It does not necessarily require a system that directly detects water leakage along part or the whole length of the water supply system. c. Able to identify different flow and therefore leakage rates e.g. continuous, high or low level, over set time periods. Although high and low level leakage rates are not specified, the leak detection equipment installed must have the flexibility to distinguish between different flow rates to enable it to be programmed to suit the building type and owners or occupiers usage patterns. d. Programmable to suit the owner's or occupiers water consumption criteria. e. Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers. Where there is physically no space for a leak detection system between the utilities water meter and the building, alternative solutions can be used, provided that a major leak can still be detected.	MEP Team		
Flow Control Devices	Wat 03-02	**1**	**1**		2. Install flow control devices that regulate the supply of water to each WC area/sanitary facility according to demand, in order to minimise undetected wastage and leaks from sanitary fittings and supply pipework.	MEP Team		
Wat 04: Water Efficient Equipment								
Water Efficient Equipment	Wat 04-01	**1**	**1**		1. Identify all water demands from users other than those considered under Wat 01 that could be realistically mitigated or reduced. Where there is no water demand from uses other than domestic -style, sanitary use components in the building, this issue is not applicable. 2. Identify systems or processes to reduce the relevant water demand (criterion 1) and establish, through either good practice design or specification, a demonstrable reduction in the total water demand of the building.	MEP Team / Client		For the purposes of this BREEAM Issue, non-domestic scale, non-sanitary water uses refer to any building integrated water uses not assessed under Wat 01. This includes, but is not limited to the following: – Equipment used for irrigation – Project-specific industrial processes – Water filtration and treatment processes – Building services (e.g. cooling towers and humidification systems)

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
MATERIALS (1 credit = 1.07%)								
Mat 01: Life Cycle Impacts								
Superstructure	Mat 01-01	**6**	**0**	**2**	**Comparison with the BREEAM LCA benchmark during Concept Design (office, industrial and retail buildings only)** Superstructure (office, industrial and retail buildings (except for Simple buildings where Notes 1.1 and 1.2 above apply)) 1. During the Concept Design, demonstrate the environmental performance of the building as follows: a. Carry out a building LCA on one of the superstructure designs using either the BREEAM Simplified Building LCA tool or an IMPACT compliant LCA tool according to the methodology. b. Submit the Mat 01/02 Results Submission Tool to the BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specifications).	Architect / LCA Consultant	2	
					Comparison with the BREEAM LCA benchmark during Technical Design (office, industrial and retail buildings only) 2. During Technical Design, demonstrate the environmental performance of the building as follows: a. as criterion 1.a b. Submit the Mat 01/02 Results Submission Tool to the BRE at the end of Technical Design. Where a project has not achieved criterion 1, criterion 2 may still be achieved.			
					Option appraisal during Concept Design (all building types). 4. During Concept Design, identify opportunities for reducing environmental impacts as follows: a. Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options (applicable to the Concept Design stage) b. Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Concept Design) according to the methodology. c. For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency). d. Integrate the LCA options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document.			
					e. Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options.			
					f. Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specifications). If the building LCA tool recognised by BREEAM and used for criteria 3 to 5 (and 6 to 9, if pursued) is not an IMPACT Compliant LCA tool and criteria 1 to 2 are applicable, then BREEAM Simplified Building LCA tool (or an IMPACT Compliant LCA tool) shall be used for criteria 1 to 2.			
					Options appraisal during Technical Design (all building types) 5. During Technical Design identify opportunities for reducing environmental impacts as follows: a. Carry out building LCA options appraisal of 2 to 3 significantly different superstructure design options (based on the selected Concept Design option and as applicable to the Technical Design stage). b. Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Technical Design) according to the methodology. c. As criteria 4.c. to 4.e. above. Where an options appraisal summary document was produced during Concept Design, update it to include the Technical Design options. d. Submit the Mat 01/02 Results Submission Tool to BRE at the end of Technical Design. Where a project has not achieved criteria 3 and 4, criterion 5 may still be achieved.	Architect / LCA Consultant	4	

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Substructure and Hard Landscaping options appraisal	Mat 01-02	**1**	**0**		6. Criteria 3 and 4 are achieved.	C&S Engineer / Landscape Architect	2	
					7. During Concept Design identify opportunities for reducing environmental impacts as follows: a. Carry out building LCA options appraisal of a combined total of at least six significantly different substructure or hard landscaping design options (at least two shall be substructure and at least two shall be hard landscaping). b. Using a building LCA tool that is recognised by BREEAM (as suitable for assessing substructure and hard landscaping during Concept Design) according to the methodology. c As criteria 4.c. to 4.f.			
					d. Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options.			
Exemplary Performance Criteria	Mat 01-Ex1	**1**	**0**		8. Criteria 3-4 are achieved.	MEP Team	2	
					9.During Concept Design, identify opportunities for reducing environmental impacts as follows: a. Carry out building LCA options appraisal of at least 3 significantly different core building services design options. b. Use a building LCA tool that is recognised by BREEAM (as suitable for assessing core building services during Concept Design) according to the methodology. c. As criteria 4.c.to 4.f.			
					d. Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options.			
	Mat 01-Ex2	**1**	**0**		10. Achieve criteria 3 to 5.	Design Team	2	
					11. Achieve the Elemental LCC plan and Component Level LCC options appraisal credits (Man 02 Life cycle cost and service life planning).			
					12. Include design options appraised for criteria 3 to 4 (and 6 to 7 and 8 to 9, if pursued) during Concept Design in the elemental LCC plan.			
					13. Include the design options appraised for criterion 5 during Technical Design in the 'Component Level LCC option appraisal' (in Man 02 Life cycle cost and service life planning)	Design Team	4	
					14. Integrate the aligned LCA and LCC options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document including the relevant cost information from the 'elemental LCC plan' and 'Component level LCC option appraisal'.	Design Team		
	Mat 01-Ex3	**1**	**0**		15.Criteria 1 to 7 (as applicable to the building type) are achieved.	Design Team		
					16. A suitably qualified third party either carries out the building LCA work or verifies the building LCA work (if by others), and produces a report describing how they have checked the building LCA work accurately represent the designs under consideration during Concept Design and Technical Design with reference to the requirements of criteria 1 to 7 (and 8 to 14 if pursued).			
					17. For each LCA option, itemise in the report the checks made by the suitably qualified third party including, as a minimum, the quality requirements shown in Table 9.4 on page 232. of the guidance manual.			
					18. Include details of the suitably qualified third party's relevant skills and experience and a declaration of their third party independence from the project client and design team in the report.			
Mat 02: Environmental Impacts from Construction Products - Environmental Product Declarations (EPD)								
Specification of Products with a Recognised EPD	Mat 02-01	**1**	**1**		1. Specify construction products with EPD that achieve a total EPD points score of at least 20, according to the BREEAM methodology (to be supplied by the assessor).	Architect / Principal Contractor		
					2. Enter the details of each EPD into the Mat 01/02 Results Submission Tool, including the material category classification. The mat 01/02 results submission tool will verify the EPD points score and credit award.	BREEAM assessor		

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Mat 03: Responsible Sourcing of Construction Products								
Ensuring Sustainable Procurement	Mat 03-Pre	-	-	-	1. All timber and timber based products used on the project is ' Legally harvested and traded timber' as per the UK government's Timber Procurement Policy (TPP)	Principal Contractor / Architect		**Criterion 1 is mandatory for BREEAM Very Good** Mat 03-01 is achieved where a compliant sustainable procurement plan is in place before Concept Design.
	Mat 03-01	**1**	**0**	**1**	2. A sustainable procurement plan must be developed by the design team to guide specification towards sustainable construction products. The plan must: a. Be in place before Concept Design b. Include sustainability aims, objectives and strategic targets to guide procurement activities. Note: targets do not need to be achieved for the credit to be awarded but justification must be provided for targets that are not achieved. c. Include a requirement for assessing the potential to procure construction products locally. There must be a policy to procure construction products locally where possible. d. Include details of procedures in place to check and verify the effective implementation of the sustainable procurement plan. In addition if the plan is applied to several sites or adopted at an organisational level it must: e. Identify the risks and opportunities of procurement against a broad range of social, environmental and economic issues following the process set out in BS ISO 20400:2017.	Client / Design Team	1	
Measuring Responsible Sourcing	Mat 03-02	**3**	**2**	**1**	3. Use the Mat 03 calculator tool and methodology to determine the number of credits achieved for the construction products specified or procured. Credits are awarded in proportion to the scope of the assessment and the number of points achieved. (Use table 9.10 in the guidance manual).	Principal Contractor		
Mat 05: Designing for Durability and Resilience								
Designing for Durability and Resilience	Mat 05-01	**1**	**1**		**Protecting vulnerable parts of the building from damage** 1. Protection measures are incorporated into the building's design and construction to reduce damage to the building's fabric or materials in case of accidental or malicious damage occurring. These measures must provide protection against: a. Negative impacts of high user numbers in relevant areas of the building (e.g. corridors, lifts, stairs, doors etc.) b. Damage from any vehicle or trolley movements within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. c. External building fabric damage by vehicle. Protection where parking or manoeuvring areas are within 1 metre of the building facade and where delivery areas or routes are within 2 metres of the facade i.e. specifying bollards or protection rails. d. Potential malicious damage to building materials and finishes in public and common areas where appropriate.	Architect		
					Protecting exposed parts of the building from material degradation 2. Key exposed building elements have been designed and specified to limit long and short term degradation due to environmental factors. This can be demonstrated through one of the following: a. The element or product achieving an appropriate quality or durability standard or design guide, see Table 9.14 of the guidance manual. If none are available use BS 7543:2015 as the default appropriate standard. OR b. A detailed assessment of the element's resilience when exposed to the applicable material degradation and environmental factors.			
					3. Include convenient access to the roof and façade for cost-effective cleaning, replacement and repair in the building's design.			
					4. Design the roof and façade to prevent water damage, ingress and detrimental ponding. See Table 9.14 in the guidance manual for an example list of relevant industry durability and quality standards.			

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Mat 06: Material efficiency								
Material Efficiencies	Mat 06-01	**1**	**0**	**1**	1. At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. These must be done for each of the following stages: a. Preparation and Brief b Concept Design c. Developed Design d Technical design e. Construction	Design Team / Architect	1 to 5	A dedicated report that sets out a clear framework to guide material efficiency activities throughout the design and construction of the project is required to be in place at RIBA Stage 1.
					2. Develop and record the implementation of material efficiency during: a. Developed Design b. Technical Design c. Construction			
					3. Report the targets and actual material efficiencies achieved.			
WASTE (1 credit = 0.67%)								
Wst 01: Construction Waste Management								
Construction Resource Efficiency	Wst 01-02	**3**	**2**	**1**	3. Prepare a compliant Resource Management Plan (RMP) covering: a. Non-hazardous waste materials (from on-site construction and dedicated off-site manufacturer or fabrication) including demolition and excavation waste. b. Accurate data records on waste arising's and waste management routes.			
					4. Meet or improve upon the benchmarks below for non-hazardous construction waste, excluding demolition and excavation waste: Amount of waste generated per 100m2 GIFA: 1 credit: ≤ 13.3m3 actual volume (not bulk) / ≤ 11.1 tonnes 2 credits: ≤ 7.5m3 actual volume (not bulk) / ≤ 6.5 tonnes 3 credits: ≤ 3.4m3 actual volume (not bulk) / ≤ 3.2 tonnes Exemplary level: ≤ 1.6m3 actual volume (not bulk) / ≤ 1.9 tonnes	Principal Contractor		
Diversion of Resources from Landfill	Wst 01-03	**1**	**1**		5. Meet, where applicable, the diversion from landfill benchmarks below for non-hazardous construction waste and demolition and excavation waste generated: Non-demolition: 70% volume / 80% tonnage Demolition: 80% volume / 90% tonnage Excavation: n/a	Principal Contractor		
					6. Sort waste materials into separate key waste groups as per Table 10.3 of the guidance manual, either on-site or through a licensed contractor for recovery.			
Exemplary Performance Criteria	Wst 01-Ex	**1**	**0**	**1**	7. Non-hazardous construction waste generated, excluding demolition and excavation waste is less than or equal to the exemplary level resource efficiency benchmarks: Exemplary level: ≤ 1.6m2 actual volume (not bulk) / ≤ 1.9 tonnes	Principal Contractor		
					8. The percentage of non-hazardous construction (on-site and dedicated off-site manufacture/fabrication), demolition and excavation waste (if relevant) diverted from landfill meets or exceeds the exemplary level percentage benchmarks outlined below: Non-demolition: 85% volume / 90% tonnage Demolition: 85% volume / 95% tonnage Excavation: 95% volume / 95% tonnage			
					9. All key waste groups in Table 10.3 of the guidance manual, for diversion from landfill are covered in the RMP.			
					10. Waste data obtained from licenced external waste contractors is reliable and verifiable, by using data from EA/SEPA/EA Wales/NIEA Waste Return Forms or from PAS 402:2013 compliant company.			

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Wst 02: Recycled Aggregates								
Pre-Requisite	Wst 02-Pre	-	-	-	1. If demolition occurs on site, to encourage the reuse of site-won material on site, complete a pre-demolition audit of any existing buildings, structures or hard surfaces in accordance with Assessment scope- Criterion 1 and Assessment Scope - Criterion 2	C&S Engineer		
Sustainable Aggregate Points	Wst 02-01	1	0	1	2. Identify all aggregate uses and types on the project Table 10.5, and Table 10.6 in the guidance manual. 3. Determine the quantity in tonnes for each identified use and aggregate type. 4. Identify the region in which the aggregate source is located. 5. Calculate the distance in kilometres travelled by all aggregates by transport type. 6. Enter the information into the BREEAM Wst 02 calculator to calculate the Project Sustainable Aggregate points. The corresponding number of BREEAM credits will be awarded (refer to Table 10.4 in the guidance manual).	C&S Engineer		
Exemplary Performance Criteria	Wst 02-Ex	1	0	1	To achieve an exemplary performance credit: 7. The Project Sustainable Aggregate Points score meets or exceeds the exemplary level performance benchmark in Table 10.4 of the guidance manual.	C&S Engineer		
Wst 03: Operational Waste								
Operational Waste	Wst 03-01	1	1		1. Provide a dedicated space for the segregation and storage of operational recyclable waste generated. The space is: a. Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams b. Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management contractors c. Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates.	Architect / Client		
					2. For consistent and large amounts of operational waste generated, provide: a. Static waste compactors or balers; situated in a service area or dedicated waste management space b. Vessels for composting suitable organic waste OR adequate spaces for storing segregated food waste and compostable organic material for collection and delivery to an alternative composting facility c. A water outlet provided adjacent to or within the facility for cleaning and hygiene purposes where organic waste is to be stored or composted on site.			
Wst 05: Adaptation to Climate Change								
Resilience of Structure, Fabric, Building Services and Renewables Installation	Wst 05-01	1	0	1	1. Conduct a climate change adaptation strategy appraisal using: a. A systematic risk assessment to identify the impact of expected extreme weather conditions arising from climate change on the building over its projected life cycle. The assessment covers the installation of building services and renewable systems, as well as structural and fabric resilience aspects and includes: i. Hazard identification ii. Hazard assessment iii. Risk estimation iv. Risk evaluation v. Risk management.	Architect / C&S Engineer/ MEP Team	2	
					2. Develop recommendations or solutions based on the climate change adaptation strategy appraisal, before or during concept design, that aim to mitigate the identified impact.			
					3. Provide an update during Technical Design demonstrating how the recommendations or solutions proposed at Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing by the assessor.	Architect / C&S Engineer/ MEP Team	4	

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
Exemplary Criteria	Wst 05-Ex	**1**	**0**	**1**	Achievement of the following criteria demonstrates a holistic approach to the design and construction of the building's life cycle to mitigate against the impacts of climate change. To achieve an exemplary level performance credit: 4. Meet criteria 1-3.	Design Team		
					5. Meet the criteria or achieve credits of the assessment issues given below: - Hea 04: Criterion 6 - Ene 01: Minimum 6 credits - Ene 04: Passive design credit - Wat 01: Minimum 3 credits - Mat 05: Criteria 2 - 4 - Pol 03: Minimum 1 credit for flood resilience and 2 credits under Surface Water Runoff			
Wst 06: Design for Disassembly and Adaptability								
Recommendations	Wst 06-01	**1**	**0**		1. Conduct a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of Concept Design.	Architect	2	
					2. Develop recommendations or solutions based on the study during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation.			
Implementation	Wst 06-02	**1**	**0**		3. Achieve criteria 1 and 2.	Architect	4	
					4. Provide an update, during Technical Design, on: a. How the recommendations or solutions proposed by Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing to the assessor. b. Changes to the recommendations and solutions during the development of the Technical Design,			
					5. Produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.			
LAND USE AND ECOLOGY (1 credit = 1.00%)								
LE 01: Site Selection								
Previously Occupied Land	LE 01-01	**1**	**0**	**1**	1. At least 75% of the proposed development is on previously occupied land	Architect		It is thought this could be achieved. Design team to confirm.
Contaminated Land	LE 01-02	**1**	**0**	**1**	2. A contaminated land professional undertakes a site investigation, risk assessment and appraisal, which deems that land within the development footprint to be affected by contamination. This report identifies: a. The degree of contamination b. The contaminant sources/types c. The options for remediating sources of contamination which present an unacceptable risk.	C&S Engineer		
					3. The client or principal contractor confirms that a remediation strategy will be implemented, in line with the report.			

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LE 02: Ecological Risks and Opportunities								
Pre-Requisite (Statutory Obligations)	LE 02-Pre	-	-	-	1. The client or contractor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.	Client / Principal Contractor		
Survey and Evaluation	LE 02-01	**1**	**1**		3. A Suitably Qualified Ecologist (SQE) carries out a survey and evaluation for the site early enough to influence site preparation works, layout and, where necessary, strategic planning decisions (typically Preparation and brief stage).	Ecologist	1	This credit is required in order to achieve any credits under LE 03.
					4. The SQE's survey and evaluation determines the site's ecological baseline, including: a. Current and potential ecological value and condition of the site and related areas within the Zone of Influence. b. Direct and indirect risks to current ecological value from the project. c. Capacity and feasibility for enhancement of the site's ecological value and, where relevant, areas within the Zone of Influence.	Ecologist / Design Team		
					5. Recommendations and data collected from the survey and evaluation are shared with appropriate project team members to influence decisions made for activities during site preparation, design and construction works, which can support ecological features.			
Determining Ecological Outcomes	LE 02-02	**1**	**1**		6. Achieve the LE 02-01 "Survey and Evaluation" credit.			This credit is required in order to achieve any further credits under issue LE 03.
					7. The project team liaise and collaborate with representative stakeholders early enough to influence key planning decisions (typically Concept Design stage), to: a. Identify the optimal ecological outcomes for the site. b. Identify, appraise and select measures to meet the optimal ecological outcomes for the site (criterion 7a), in line with the mitigation hierarchy of action: 1. Avoidance 2. Protection 3. Reduction or limitation of negative impacts 4. On site compensation and 5. Enhancement, considering the capacity and feasibility within the site, or where viable, offsite.	Ecologist / Design Team	2	
Exemplary Level Criteria	LE 02-Ex	**1**	**0**	**1**	To achieve one exemplary performance credit: **Wider site sustainability** 8. Achieve criteria 7 / LE02-02 above.	Ecologist / Design Team		
					9. Wider sustainability related activities and potential ecosystem service benefits are considered as part of determining the optimal ecological outcomes for the site (criterion 7), including the areas outlined in the Methodology below.			
					10 Achieve the credits of the assessment issues outlined below: a. Hea 07 Safe and healthy surroundings - Both credits b. Pol 03 Flood and surface water management - Achieve credits for 'Surface water run-off' and 'Minimising watercourse pollution' c. Pol 05 Reduction of noise pollution			

Title	Credit Ref	Credits available	Route to Very Good 56.77%	Potential credits 54.54%	Compliance Requirements	Responsibility	RIBA Stage	Comments
LE 03: Managing Impacts on Ecology								
Pre-Requisite	LE 03-Pre	-	-	-	1. LE 02's 'Survey and evaluation and Determining ecological outcomes' criteria have been achieved.	Design Team		This must be achieved in order to award LE 03-02. "Further planning" refers to defining and allocating roles and responsibilities towards promoting and protecting ecology, allocating resources (time, money), and putting in place procedures for monitoring effectiveness etc.
Planning and Measures On-Site	LE 03-01	**1**	**1**		2. Further planning to avoid and manage negative ecological impacts on-site is carried out (see Methodology in guidance manual) early enough to influence the concept design and design brief as well as site preparation planning (typically Concept Design stage).	Design Team	1 or 2	
					3. On-site measures for managing negative ecological impacts during site preparation and construction are implemented in-practice (e.g. mitigation measures to protect existing ecological features) (see Methodology in guidance manual).	Principal Contractor		
					4 Criteria 2-3 are based on input from the project team in collaboration with representative stakeholders and data collated as part of the 'Determining ecological outcomes' in LE 02 Ecological risks and opportunities (see Methodology).	Design Team		
Managing Negative Impacts of the Project	LE 03-02	**2**	**2**		7. Criteria 2-4 have been achieved. 8. Negative impacts from site preparation and construction works have been managed according to the mitigation hierarchy, in line with the SQE's recommendations and, either: a. No overall loss of ecological value has occurred (two credits). OR where criterion 8.a is not possible: b. The loss of ecological value has been minimised (Minimising Loss) (one credit)	Ecologist / Principal Contractor / Design Team		This credit is required to achieve credits under LE 04 and LE 05.
LE 04: Ecological Change and Enhancement								
Pre-Requisite	LE 04-Pre	-	-	-	1. Criterion 8 in LE 03 has been achieved.	Design Team		
					2. The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.	Principal Contractor / Client		
Change and Enhancement of Ecology	LE 04-01	**3**	**3**		4. Up to three credits are awarded based on the change in ecological value occurring as a result of the project. This must be calculated in accordance with the process set out in GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2. Credits are awarded in line with the Reward Scale table in GN36 where there are no residual impacts on protected sites or irreplaceable habitats.	Ecologist / Landscape Architect		A biodiversity net gain will be achieved.
Ecological Enhancement	LE 04-02	**1**	**1**		5 Measures have been implemented that enhance ecological value, which are based on input from the project team and SQE in collaboration with representative stakeholders and data collated as part of the 'Determining ecological outcomes' in LE 02. Measures are implemented in the following order: a. On site, and where this is not feasible, b. Off site within the Zone of Influence.	Ecologist / Architect		
					6. Data collated are analysed and where potentially valuable, provided to the local environmental records centres nearest to, or relevant for, the site.			
Exemplary Level Criteria	LE 04-EX	**1**	**0**	**1**	7. The change in ecological value calculated under criterion 6 above confirms significant net gain has been achieved as set out in GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2. The credit is awarded as follows: a. Significant net gain of ecological value (percentage score of 110 or above)	Ecologist / Architect		

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LE 05: Long Term Ecological Management and Maintenance								
Pre-Requisite	LE 05-Pre	-	-	-	1 The client or contractor has confirmed that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site. 2. Criterion 8 in LE 03 has been achieved, and at least one credit under LE 04 for 'Change and Enhancement of Ecology' has been awarded.			
Planning, Liaison, Data, Monitoring and Review Management and Maintenance	LE 05-01	**1**	**1**		3. Measures have been implemented to manage and maintain ecology throughout the project. These measures are based on input from the project team in collaboration with representative stakeholders and data collated as part of the 'Determining ecological outcomes' in LE 02. To ensure the optimal ecological outcomes agreed in LE 02 are met in-practice, these measures must monitor and review the effectiveness of the mitigation and enhancement measures in place for LE 03 & LE 04 to ensure they are implemented. 4. A section on Ecology and Biodiversity has been included as part of the tenant or building owner information supplied, to inform the owner or occupant of local ecological features, value and biodiversity on or near the site. This should include detailed management and maintenance plans as required by landscape and asset managers as well as relevant parts of the handover information for occupiers written in a format that encourages understanding and supportive behaviours.	Principal Contractor / Design Team Ecologist / Principal Contractor / Design Team		
Landscape and Ecology Management Plan (or similar) development	LE 05-02	**1**	**1**		5. A Landscape and Ecology Management Plan, or equivalent, has been developed in accordance with BS 42020:2013 Section 11.1(213) covering at least the first five years after project completion as a minimum and including: a. Actions and responsibilities of relevant individuals prior to handover b. The ecological value and condition of the site at handover and how this is expected to develop and change over time c. Identification of opportunities for ongoing alignment with activities beyond the development project, which support the aims of BREEAM's Strategic Ecology Framework d. Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts e. Clearly defined and allocated roles and responsibilities for delivering the plan 6. The landscape and management plan or similar will be updated to support maintenance of the ecological value of the site (see sections relating to Maintenance and Monitoring in CIEEM, CIRIA, IEMA, for helpful guidance).	Ecologist / Landscape Architect		
POLLUTION (1 credit = 0.67%)								
Pol 01: Impact of Refrigerants								
Impact of Refrigerant	Pol 01-01	**2**	**1**	**1**	**Three credits - No refrigerant use** 1. Where the building does not require the use of refrigerants within its installed plant/systems. OR alternatively, where the building does require the use of refrigerants, the three credits can be awarded as follows: **Pre-requisite** 2. All systems (with electric compressors) must comply with the requirements of BS EN 378:2016 (parts 2 and 3) and where refrigeration systems containing ammonia comply with the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice **Two credits - Impact of refrigerant** 3. Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤ 100 kgCO2e/kW cooling/heating capacity. For systems which provide cooling and heating, the worst performing output based on the lower of kW cooling output and kW heating output is used to complete the calculation. OR 4. Where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤10. OR **One credit - Impact of refrigerant** 5. Where the systems using refrigerants have Direct Effect Life Cycle CO2equivalent emissions (DELC CO2e) of ≤ 1000 kgCO 2e/kW cooling/heating capacity.	MEP Team		

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Leak Detection	Pol 01-02	1	0	1	6. All systems are hermetically sealed or only use environmentally benign refrigerants. OR	MEP Team		
					7. Where the systems are not hermetically sealed: a. Systems have: i. A permanent automated refrigerant leak detection system, that is robust and tested, and capable of continuously monitoring for leaks. OR ii. An inbuilt automated diagnostic procedure for detecting leakage is enabled. b. In the event of a leak, the system must be capable of automatically responding and managing the remaining refrigerant charge to limit loss of refrigerant (see automatic isolation and containment of refrigerant).			
Pol 02: Local Air Quality								
Local Air Quality	Pol 02-01	2	2		1. All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity OR alternatively;	MEP Team		
					2. Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the levels set in Table 12.4 and Table 12.5 in the guidance manual (assessor to provide). The measurements must be provided by manufacturers, following the labelling requirements of the European Directive 2009/125/EC. No credits can be awarded for Pol02 if any of the combustion appliances are not covered in Table 12.4 and Table 12.5 in the guidance manual.			
					3. Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the levels set in table 12.4 and 12.15 of the guidance manual.			
Pol 03: Flood and Surface Water Management								
Flood Resilience	Pol 03-01	2	2		1. An appropriate consultant is appointed to carry out and demonstrate the development's compliance with all criteria.	C&S Engineer / Architect		
					Two credits - Low flood risk 2. A site-specific flood risk assessment (FRA) confirms that the development is in a flood zone that is defined as having low annual probability of flooding. The FRA takes all current and future sources of flooding into consideration.			
					One credit - Medium/high flood risk 3. A site-specific FRA confirms the development is in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain. The FRA must take all current and future sources of flooding into consideration. For smaller sites, refer to Level of detail required in the FRA for smaller sites which overrides criterion 2.			
					4. To increase the resilience of the development to flooding, one of the following must be achieved: a. The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600mm above the design flood level of the site's flood zone. b. The final design of the building and wider site reflects the recommendations made by an appropriate consultant with the hierarchy approach outlined in section 5 of BS 8533:2017.			
Surface Water Run-off	Pol 03-Pre	-	-	-	5. Surface water run-off design solutions must be bespoke, i.e. they must take account of the specific site requirements and natural or man-made environment of and surrounding the site. The priority levels detailed in the Methodology must be followed, with justification given by the appropriate consultant where water is allowed to leave the site.	C&S Engineer		
	Pol 03-02	1	1		**One credit - Surface water run-off - Rate** 6. For brownfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the predeveloped site. This should comply at the 1-year and 100-year return period events.	C&S Engineer		
					7. For Greenfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events.			
					8. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified Sustainable Drainage Systems (SuDS) are in place.			
					9. Calculations include an allowance for climate change. This should be made in accordance with the current best practice planning guidance.			

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Surface Water Run-off	Pol 03-03	**1**	**1**		**One credit - Surface Run-off - Volume** 10. Flooding of property will not occur and in the event of local drainage system failure (caused by either extreme rainfall or a lack of maintenance); AND	C&S Engineer		
					EITHER 11. Drainage design measures are specified so that the post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. This must be for the 100-year-6-hour event, including an allowance for climate change.			
					12. Any additional predicted volume run-off for this event is prevented from leaving the site by using infiltration or other SUDS techniques.			
					OR (only where criteria 10 and 11 for this credit cannot be achieved): 13. Justification from the appropriate consultant indicating why the above criteria cannot be achieved, i.e. where infiltration or other Suds techniques are not technically viable options.			
					14. Drainage design measures are specified so that that post-development peak run-off is reduced to the limiting discharge. The limiting discharge is defined as the highest flow rate from the following options: a. the pre-development one-year peak flow rate b. The mean annual flow rate (Qbar) c. 2L/s/ha.			
					For the one-year peak flow rate, the one-year return period event criterion applies. 15. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified Suds are in place.			
					16. For either option, above calculations must include an allowance for climate change; this should be made in accordance with current best practice planning guidance.			
Minimising Water Course Pollution	Pol 03-04	**1**	**0**	**1**	17. There is no discharge from the developed site for rainfall up to 5mm (confirmed by the Appropriate Consultant).	C&S Engineer		Criterion 17 can be difficult to achieve and as such this is currently not targeted. It should be investigated, however.
					18. Areas with a low risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate Suds techniques.			
					19. Areas with a high risk of contamination of spillage of substances, such as petrol and oil have separators (or an equivalent system) are installed in surface water drainage systems.			
					20. Chemical or liquid gas storage areas have a means of containment fitted to the site drainage system (i.e. shut-off valves). This is to prevent the escape of chemicals to natural watercourses in the event of spillage or bunding failure.			
					21. All water pollution prevention systems have been designed and installed in accordance with the recommendations of documents such as the Suds manual and other relevant industry best practice. They must be bespoke solutions taking account of the specific site requirements and natural or man-made environment of and surrounding the site.			
					22. A comprehensive and up to date drainage plan of the site will be made available for the building or site occupiers.			
					23. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified Suds must be in place.			
					24. All external storage and delivery areas are designed and detailed in accordance with the current best practice planning guidance.			
Pol 04: Reduction of Night Time Light Pollution								
Reduction of Night Time Light Pollution	Pol 04-01	**1**	**0**	**1**	1. External lighting pollution has been eliminated through effective design that removes the need for external lighting. This does not adversely affect the safety and security of the site and its users. OR alternatively, where the building does have external lighting one credit can be awarded as follows:	MEP Team		Compliance with this issue may conflict with night time functions / events as appropriate lighting may be required after 11pm.
					2. The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the Institution of Lighting Professionals (LP) Guidance notes for the reduction of obtrusive light, 2011.			
					3. All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00			
					4. If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP guidance notes.			
					5. Illuminated advertisements are designed in compliance with IPL PLG05 The Brightness of Illuminated Advertisement.			

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Pol 05: Reduction of noise pollution								
Reduction of Noise Pollution	Pol 05-01	**1**	**1**		1. There are no noise-sensitive areas within the assessed building or within 800m radius of the assessed site. OR	Acoustician		
					2. Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800m radius of the assessed site, a noise impact assessment compliant with BS4142:2014 is commissioned. Noise levels must be measured or determined for: a. Existing background noise levels: i. at the nearest or most exposed noise-sensitive development to the proposed assessed site. ii. Including existing plant on a building, where the assessed development is an extension to the building. b. Noise rating level from the assessed building			
					3. The noise impact assessment must be carried out by a suitably qualified acoustic consultant.			
					4. The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5dB lower than the background noise throughout the day and night.	Principal Contractor		
					5. If the noise sources from the assessed building are greater than the levels described in criterion 4, measures have been installed to attenuate the noise at its source to a level where it will comply with the criterion.			