



47 Spear Street

BREEAM

November 2023

Document Revision Control

Revisions	Date	Reason for Issue	By	Approved
00	Nov 2023	BREEAM Issue	IC	IC

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Executive Summary

Harley Haddow has been appointed to provide BREEAM consultancy and advice in anticipation of the design and construction of the proposed Spear Street development in Manchester city centre.

A pre-assessment was undertaken which has led to the production of this pre-assessment strategy which identifies a set of credits which are being targeted to achieve a score of 74.94%, which would be sufficient to achieve an 'Excellent' rating as well as identifying additional credits which could be potentially achieved to further boost the score.

1.0 Introduction

BREEAM (Building Research Establishment Environmental Assessment Method) is a tool that allows designers to review and improve the environmental performance of a building. It is a widely accepted and respected scheme that sets a benchmark for environmental performance and provides a wide range of benefits. It is independent and authoritative, being based on many years of construction and environmental research carried out at BRE together with the input and experience of the construction and property industries, Government and building regulators.

This report provides a summary of the BREEAM pre-assessment review for the following project:

Building Name	Spear Street, Manchester
BREEAM Version	BREEAM 2018 New Construction, Commercial, Shell & Core
Assessment Stage	Pre-Assessment Stage
Assessor	Harley Haddow
Target Rating	Excellent (<70%)

The proposed development is a new build office.

A BREEAM pre-assessment using the BREEAM New Construction (NC) shell & core 2018, assessment methodology was undertaken for the new building. This report is based on a review of the design information available at the time of the assessment and gives an indication of the likely performance of the scheme at the formal assessment stage. Potential credits have also been reviewed for the feasibility of their inclusion in the scheme and copy of a draft BREEAM tracker for the project was circulated to the design team. This allowed the design team to fully investigate all of the credits identified as 'potential' items and confirm if they could be reasonably included as targeted credits. The project is aiming to achieve a minimum BREEAM rating of 'Excellent'.

Based on this assessment, an indicative score of 74.94% can be targeted at the pre-assessment stage. This equates to a BREEAM 'Excellent' rating and compliance with all the minimum standards for a 'Excellent' rating are also targeted. Recommendations for enhancing the BREEAM scores and further improving the environmental performance of the building have been detailed in Section 3 of this report.

It is recommended that a minimum buffer of 3-5% is included in the 'targeted' score to ensure that the target rating is unaffected by variations during the design and construction phases.

It should be noted that this is not a formal assessment and will not be submitted to BRE for certification. A formal Design Stage (Interim) assessment will need to be undertaken. Additionally, the credits and rating currently targeted are a prediction and are not guaranteed at this stage, as they are dependent on the provision of documentary evidence.

2.0 Scoring Scenarios

The pre-assessment scores have been based on the following scoring scenarios.

- **Targeted** - The number currently targeted/likely to be achieved – These items have been targeted and are likely to be achievable under the current scheme design without any further specification.
- **Potential** – Targeted, plus credits which can be potentially gained with additional cost and commitment - The items identified within the 'Potential' column are those that will require additional investment and commitment from the design team and appointed contractor. These credits could be achieved but may require major alterations to the design. These items can be reviewed if the client aspires to seek the optimum BREEAM score.

On this basis, the following scores are considered achievable under each scenario for each building.

Scenario	Score	BREEAM Rating
Targeted	74.94%	Excellent
Potential	92.11%	Excellent

2.1 Minimum Standards

BREEAM requires minimum standards to be met. The minimum standards for Very Good rating are outlined in the table below.

BREEAM issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03 Responsible construction practices	None	None	None	One credit (responsible construction management)	Two credits (responsible construction management)
Man 04 Commissioning and handover	None	None	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)
Man 04 Commissioning and handover	None	None	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
Man 05 Aftercare	None	None	None	One credit (commissioning-implementation)	One credit (commissioning-implementation)
Ene 01 Reduction of energy use and carbon emissions	None	None	None	Four credits (Energy performance)	Six credits (Energy performance) and Four credits (Energy modelling and reporting)
Ene 02 Energy monitoring	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Wat 01 Water consumption	None	One credit	One credit	One credit	Two credits
Wat 02 Water monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Mat 03 Responsible sourcing of construction products	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Wst 01 Construction waste management	None	None	None	None	One credit
Wst 03 Operational waste	None	None	None	One credit	One credit

3.0 Conclusion

The new Spear Street is currently targeting a score of 74.94%, which is sufficient to achieve a 'Excellent' rating, subject to the provision of compliant evidence for the targeted credit requirements. This score is also within the 3-5% contingency margin, over the 70% required for 'Excellent' to provide mitigation should any credits from the assessment, fail to be achieved at either the design or post construction stages and allow flexibility in the latter stages of the assessment.

There are a number of credits currently highlighted as potential credits, which could further boost the score to 92.11%. The project team should fully investigate each of these credits to determine if they could also be included as targeted credits to further boost the score.

If all of the credits highlighted as 'potential' were included, then the overall score which could be achieved would be 92.11%. However, the inclusion of these credits would require a significant capital investment and require changes to the current design proposals. Therefore, this is considered to be the maximum score possible for the development and it is likely this would be achieved only if there was an unlimited budget. The current predicted score of 74.94% would satisfy the requirement for a 'Excellent' rating and provides a comfortable score at which to form the base of the assessment.

Appendix A - Pre-Assessment Comments and Credit Summary for the Development

BREEAM NC Issue List				No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements	
Design Stage										
MANAGEMENT	Issue	Criterion	Evidence Required							
Man	01	Project brief and design	1 Prior to completion of the Concept Design, the project delivery stakeholders meet to identify and define for each key phase of project delivery: 1.a Roles 1.b Responsibilities 1.c Contributions. 2 Consider each one of the following items when defining roles, responsibilities and contributions for each key phase of the project: 2.a End user requirements 2.b Aims of the design and design strategy 2.c Particular installation and construction requirements or limitations 2.d Occupiers' budget and technical expertise in maintaining any proposed systems 2.e Maintainability and adaptability of the proposals 2.f Operational energy 2.g Requirements for the production of project and end user documentation 2.h Requirements for commissioning, training and aftercare support. Where the building occupants are not known, the list of considerations above still applies. The appropriate project delivery stakeholder considers each item, based on likely scenarios of building occupancy. 3 The project team demonstrates how the project delivery stakeholders' contributions and the consultation process outcomes influence the following: 3.a Initial Project Brief 3.b Project Execution Plan 3.c Communication Strategy 3.d Concept Design.	Design team meeting minutes	1	1	0	Concept Design	Project Manager	
			4 Prior to completion of the Concept Design, the design team consult with all interested parties on matters that cover the minimum consultation content. 5 Demonstrate how the stakeholder contributions and consultation exercise outcomes influence the Initial Project Brief and Concept Design. 6 Prior to completion of the detailed design (RIBA Stage 4, Technical Design or equivalent), all interested parties give and receive consultation feedback.	A list of stakeholders consulted	1	1	0	Concept Design	Project Manager	
			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).	Formal agreement statement	P	P		Concept Design	Project Manager	
			9 Involve a BREEAM AP in the project at an appropriate time and level to: 9.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. 9.b Monitor progress against the performance targets agreed under criterion 8 above throughout all stages after their appointment where decisions critically impact BREEAM performance. 9.c Proactively identify risks and opportunities related to the achievement of the targets agreed under criterion 8 above. 9.d Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. 9.e Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team.	BREEAM AP Appointment letter	1	1	-	Concept Design	BREEAM AP	
			10 Criteria 8 and 9 above are achieved. 11 Involve the BREEAM AP in the project at an appropriate time and level to: 11.a Work with the project team, including the client, to consider the links between BREEAM issues and to assist them in maximising the project's overall performance against BREEAM throughout Developed Design. 11.b Monitor progress against the performance targets agreed under criterion 8 above throughout all stages where decisions critically impact the specification and tendering process and the BREEAM performance. 11.c Proactively identify risks and opportunities related to the achievement of the targets agreed under criterion 8 above. 11.d Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. 11.e Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team.	Project programme indication the dates by which the key work stages (preparation and design) are to be completed.	1	1	-		BREEAM AP	
Man	02	Lifecycle cost and service life planning	1 A competent person (see Definitions on the facing page) 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(6). 2 The elemental LCC plan: 2.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); 2.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). 3 Demonstrate, using appropriate examples provided by the design team, how the elemental LCC plan has been used to influence building and systems design and specification to minimise life cycle costs and maximise critical value.	Elemental life cycle cost plan	2	0	2	Concept Design	Quantity Surveyor (QS)	
			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): 4.a Envelope, e.g. cladding, windows, or roofing 4.b Services, e.g. heat source, cooling source, or controls 4.c Finishes, e.g. walls, floors or ceilings 4.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 appraisal. 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 and specification to minimise life cycle costs and maximise critical value.	Component level life cycle cost plan	1	0	1	Developed & Technical design	Quantity Surveyor (QS)	
			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.	Letter or report confirming the predicted capital cost for the building in pounds per square metre (£k/m2).	1	1	0		Quantity Surveyor (QS)	
			Prerequisite - Legally harvested and traded timber	Timber certificates / receipts etc. (FSC / PEFC) and chain of custody evidence	P	P	-		Principal Contractor	
			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: 3.a Be third party certified, to ISO 14001: 2015, EMAS (EU Eco-Management and Audit Scheme) or equivalent standard; OR 3.b In compliance with BS 8555: 2016 have: 3.b.i Appropriate structure 3.b.ii Reached implementation stage phase four 'implementation and operation of the environmental management system' 3.b.iii Completed defined phase audits one to four. 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.	A copy of the principal contractors EMS/EMAS certificate (ISO 14001 / BS8555)	1	1	0		Principal Contractor	

BREEAM NC Issue List				No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements																																																																																				
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MANAGEMENT	Issue	Criterion	Evidence Required																																																																																										
Man	03	Responsible construction practices	BREEAM AP (Construction) Prerequisite for the BREEAM AP credit 5 The client and the contractor formally agree performance targets. One credit – BREEAM AP (site) 6 Involve a BREEAM AP in the project at an appropriate time and level to: 6.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. 6.b Monitor construction progress against the performance targets agreed under criterion 5 above throughout all stages where decisions critically impact BREEAM performance. 6.c Proactively identify risks and opportunities related to the procurement and construction process and the achievement of the targets agreed under criterion 5 above. 6.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. 6.e Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team and the provision to the assessor.	The AP Appointment letter Relevant section / clauses of the building specification or contract	1	1	-	Main Contractor	Usually included as part of the Main contractor credit responsibilities because most main contractors do have in house BREEAM AP consultants.																																																																																				
			Responsible construction management One Credit 7 Achieve items listed as required for one credit in the table below Two credits 8 Achieve criterion 7 on the previous page . 9 Achieve six additional items in the above table Table 4.1 Responsible construction management items <table><tr><th>Ref</th><th>Criteria</th><th>Required for one credit</th></tr><tr><td colspan="3">Risk evaluation and implementation The principal contractor evaluates the risks (on site and off site), plans and implements actions to minimise the identified risks, covering the following, where appropriate:</td></tr><tr><td colspan="3">Vehicle movement</td></tr><tr><td>a</td><td>Manage the construction site entrance to minimise the impacts (e.g. safety, disruption) arising from vehicles approaching and leaving the development footprint.</td><td>✓</td></tr><tr><td>b</td><td>Ensure the development footprint is accessible for delivery vehicles fitted with safety features (e.g. side under run protection) to remove or limit the need for on-street loading or unloading. Where on-street loading is unavoidable, this should be appropriately managed.</td><td></td></tr><tr><td>c</td><td>Identify access routes to the development footprint, including for heavy vehicles to minimise traffic disruption and safety risks to others.</td><td></td></tr><tr><td colspan="3">Pollution management</td></tr><tr><td>d</td><td>Minimise the risks of air, land and water pollution.</td><td>✓</td></tr><tr><td>e</td><td>Minimise the risks of nuisance from vibration, light and noise pollution.</td><td></td></tr><tr><td colspan="3">Tidiness</td></tr><tr><td>f</td><td>Practices ensure the development footprint is safe, clean and organised at all times. This includes, but is not limited to, facilities, materials and waste storage.</td><td>✓</td></tr><tr><td>g</td><td>Ensure clear and safe access in and around the buildings at the point of handover.</td><td>✓</td></tr><tr><td colspan="3">Health and wellbeing</td></tr><tr><td>h</td><td>Provide processes and equipment required to respond to medical emergencies.</td><td>✓</td></tr><tr><td>i</td><td>The principal contractor identifies and implements initiatives to promote and maintain the health and wellbeing of all site operatives within the development footprint. This can be via site facilities, site management arrangements, staff policies etc.</td><td></td></tr><tr><td>j</td><td>Establish management practices and facilities encouraging equality, fair treatment and respect of all site operatives.</td><td>✓</td></tr><tr><td>k</td><td>Provide secure, clean and organised facilities (e.g. changing and storage facilities) for site operatives within the development footprint.</td><td></td></tr><tr><td colspan="3">Security processes</td></tr><tr><td>l</td><td>Minimise risks of the site becoming a focus for antisocial behaviour in the local community (e.g. robust perimeter fencing, CCTV, avoid creating dark corners etc.).</td><td></td></tr><tr><td colspan="3">Training, awareness and feedback See Definitions on page 56. The principal contractor is responsible for ensuring:</td></tr><tr><td>m</td><td>Aspects of the construction process that might impact the community are communicated regularly, ensuring that nuisance and intrusion are minimised.</td><td></td></tr><tr><td>n</td><td>Ensure ongoing training is provided, and up to date, for personnel and visitors (covering items a to l as appropriate).</td><td>✓</td></tr><tr><td>o</td><td>The principal contractor ensures that site operatives are trained for the tasks they are undertaking (including any site-specific considerations).</td><td>✓</td></tr><tr><td>p</td><td>The fleet operators (see Definitions on page 56), undertake driver training and awareness to promote safety within the development footprint and off site.</td><td></td></tr><tr><td colspan="3">Monitoring and reporting The principal contractor ensures:</td></tr><tr><td>q</td><td>The fleet operators, captures and investigates any road accidents, incidents and near misses and reports them back to the principal contractor. The principal contractor analyses these items.</td><td></td></tr><tr><td>r</td><td>All visitor, workforce and community accidents, incidents and near misses are recorded and action is taken to reduce the likelihood of them reoccurring.</td><td>✓</td></tr><tr><td>s</td><td>Processes are in place to facilitate collecting and recording feedback from the community and to address any concerns related to the development footprint.</td><td></td></tr></table>	Ref	Criteria	Required for one credit	Risk evaluation and implementation The principal contractor evaluates the risks (on site and off site), plans and implements actions to minimise the identified risks, covering the following, where appropriate:			Vehicle movement			a	Manage the construction site entrance to minimise the impacts (e.g. safety, disruption) arising from vehicles approaching and leaving the development footprint.	✓	b	Ensure the development footprint is accessible for delivery vehicles fitted with safety features (e.g. side under run protection) to remove or limit the need for on-street loading or unloading. Where on-street loading is unavoidable, this should be appropriately managed.		c	Identify access routes to the development footprint, including for heavy vehicles to minimise traffic disruption and safety risks to others.		Pollution management			d	Minimise the risks of air, land and water pollution.	✓	e	Minimise the risks of nuisance from vibration, light and noise pollution.		Tidiness			f	Practices ensure the development footprint is safe, clean and organised at all times. This includes, but is not limited to, facilities, materials and waste storage.	✓	g	Ensure clear and safe access in and around the buildings at the point of handover.	✓	Health and wellbeing			h	Provide processes and equipment required to respond to medical emergencies.	✓	i	The principal contractor identifies and implements initiatives to promote and maintain the health and wellbeing of all site operatives within the development footprint. This can be via site facilities, site management arrangements, staff policies etc.		j	Establish management practices and facilities encouraging equality, fair treatment and respect of all site operatives.	✓	k	Provide secure, clean and organised facilities (e.g. changing and storage facilities) for site operatives within the development footprint.		Security processes			l	Minimise risks of the site becoming a focus for antisocial behaviour in the local community (e.g. robust perimeter fencing, CCTV, avoid creating dark corners etc.).		Training, awareness and feedback See Definitions on page 56. 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		Monitoring of construction site impacts 10. Assign responsibility to an individual for monitoring, recording and reporting energy use, water consumption and transportation 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 must have the appropriate authority and responsibility to request and access the data required. Where appointed, the BREEAM AP could perform this role.	Commitment letter	P	P	-																																																																																							
Man	03	Responsible construction practices	Up to two credits - Monitoring of construction site impacts 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 data for the energy consumption described in criterion 12. 14 Report the total carbon dioxide emissions (total kgCO ₂ /project value) from the construction process via 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 16. 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).	Monitoring and Reporting spreadsheet	1	1	0	Principal Contractor																																																																																					
			Second monitoring credit - transportation 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 transportation of materials from the point of supply to the building site, including any transport, intermediate storage and point of supply (see Definitions on page 56). Monitor as a minimum: 20.a.i Materials used in major building elements (i.e. those defined in BREEAM issue Mat 01 Environmental impacts from construction products - Building life cycle assessment (LCA) on page 223). 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 movements as described in criterion 20 above. 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).	Monitoring and Reporting spreadsheet	1	1	0	Principal Contractor																																																																																					
		Commissioning - testing schedule and responsibilities 1 Prepare a schedule of commissioning and testing. The schedule identifies and includes 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: 2.a Current Building Regulations 2.b BSRIA guidelines(16) 2.c CIBSE guidelines(17) 2.d Other appropriate standards (see Methodology on the next page). 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: 3.a Carry out commissioning of air and water systems when all control devices are installed, wired and functional 3.b Include physical measurements of room temperatures, off-coil temperatures and other key parameters, as appropriate, in commissioning results 3.c The BMS or controls installation should be running in auto with satisfactory internal conditions prior to handover 3.d All BMS schematics and graphics (if BMS is present) are fully installed and functional to user interface prior to handover 3.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.	Commissioning commitment schedule Commissioning Letter Name of appropriate project team member Appointment letter Commissioning responsibilities schedule	1	1	0	Principal Contractor/ MEP Sub-Contractor																																																																																						

BREEAM NC Issue List										
Design Stage					No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements
MANAGEMENT		Issue	Criterion	Evidence Required						
Man	04	Commissioning and handover	Commissioning - design and preparation	6 Achieve criteria 1 to 5. 7 During the design stage, the client or the principal contractor appoints an appropriate project team member (see criterion 4), provided they are not involved in the general installation works for the building services systems, with responsibility for: 7.a Undertaking design reviews and giving advice on suitability for ease of commissioning. 7.b Providing commissioning management input to construction programming and during installation stages. 7.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	Specialist commissioning commitment schedule Specialist commissioning Letter Appointment letter Specialist commissioning responsibilities schedule	1	1	0		Client Or Principal Contractor
			Testing and inspecting building fabric	8 Achieve criteria 1 to 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.	Thermographic survey and level 2 thermography certificate Specification clause required for the Principal Contractor to carry out a thermographic survey & rectify any defects. Letter of commitment	1	1	0		Principal Contractor
			One credit - Handover	11 Prior to handover, develop two building user guides for the following users: 11.a A non-technical user guide for distribution to the building occupiers. 11.b A technical user guide for the premises facilities managers. 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: 12.a A non-technical training schedule for the building occupiers. 12.b A technical training schedule for the premises facilities managers.	Building User Guide Training Schedule	1	1	0		Principal Contractor
Man	05	Aftercare	One credit - Aftercare support	1 Provide aftercare support to the building occupiers through having in place operational infrastructure and resources. This includes as a minimum: 1.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: 1.a.i Introduce the aftercare support available, including the content of the building user guide (where it exists) and training schedule. 1.a.ii Present key information about features of the building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible. 1.b On-site facilities management training including: 1.b.i a walkabout of the building AND 1.b.ii introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands. 1.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). 1.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 and 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 facilitates analysis of discrepancies between actual and predicted performance, with a view to adjusting systems and user behaviours accordingly.	Contract to provide compliant aftercare support and training Evidence of either existing procedures or a commitment / contract to put in place a mechanism to: 1) Collect, compare and analyse relevant data 2) Undertake suitable adjustments if necessary	1	1	-		Principal Contractor
			One credit - Commissioning - implementation	3 Complete the following commissioning activities over a minimum 12-month period, once the building becomes substantially occupied: 3.a Complex systems: The specialist commissioning manager will: 3.a.i Identify changes made by the owner or operator that might have caused impaired or improved performance. 3.a.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). 3.a.iii Where applicable, carry out testing during periods of extreme (high or low) occupancy. 3.a.iv Interview building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. 3.a.v Produce monthly reports comparing sub-metered energy performance to the predicted one (see Ene 01 Reduction of energy use and carbon emissions on page 128). 3.a.vi Identify inefficiencies and areas in need of improvement. 3.a.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. 3.b Simple systems (naturally ventilated): The external consultant, aftercare team or facilities manager will: 3.b.i Review thermal comfort, ventilation, and lighting, at three, six and nine month intervals after initial occupation, either by measurement or occupant feedback. 3.b.ii Identify deficiencies and areas in need of improvement. 3.b.iii Re-commission systems and incorporate any relevant revisions in operating procedures into the O&M manuals.	Seasonal commissioning records/reports and letter of appointment	1	1	-		Mechanical - Electrical Engineer / Principal Contractor
			One credit - Post-occupancy evaluation (POE)	4. The client or building occupier commits to carry out a POE exercise one year after the 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 to inform operational processes. 5. An independent party (see Definitions on the facing page) carries out the POE covering: 5.a A review of the design intent and construction process (review of design, procurement, construction and handover processes). 5.b Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering: 5.b.i Internal environmental conditions (light, noise, temperature, air quality) 5.b.ii Control, operation and maintenance 5.b.iii Facilities and amenities 5.b.iv Access and layout 5.b.v Energy and water consumption 5.b.vi Other relevant issues, where appropriate 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 as described in criterion 5. Evidence of the appointment of the independent party and schedule of responsibilities which fulfils the BREEAM criteria are acceptable to demonstrate compliance.	Signed and dated commitment by the client / developer or future building occupier	1	0	1		Client / Developer
					Individual Credit % value	Available	Target	Potential		
					0.52%	21	17	4		
							8.90%	2.10%		

Health and Wellbeing

					BREEAM 2018 Issue List									
Design Stage						No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements			
HEALTH & WELLBEING			Issue	Criterion	Evidence Required									
Hea	01	Visual Comfort	Control of glare from sunlight	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.	Design drawings	1	1	-		Architect				
				2 Where risk has been identified within a relevant building area (Definitions on page 85), a glare control strategy is used to design out the potential for glare.	Letter confirming that the shading does not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the façade and does not conflict with the operation of lighting control systems.									
			Daylighting	3 The glare control strategy does not increase energy consumption used for lighting. This is achieved by: 3.a Maximising daylight levels in all weather, cloudy or sunny AND 3.b Ensuring the use or location of shading does not conflict with the operation of lighting control systems.										
				4 Daylighting criteria have been met using either of the following options: 4.a The relevant building areas meet good practice daylight factors and other criteria as outlined in Table 5.1 below and Table 5.2 on the next page OR 4.b The relevant building areas meet good practice average and minimum point daylight illuminance criteria as outlined in Table 5.3 on page 77. Additional alternative route for healthcare building types only: 4.c The relevant building areas meet the median daylight factors and minimum daylight factors in Table 5.4 on page 78 .	Daylight calculations and design drawings	2	0	1		Architect	Possible credit - architect to complete daylight calculations			
			View Out	5. 95% of the floor area in 95% of spaces for each relevant building area provides an adequate view out 6. In addition, the building type criteria in Table 5.6 below are applicable to view out criteria.	Design Drawings Design Calculations	1	1	-		Architect	Where relevant building areas are within 8m of an external wall which has a window or permanent opening, and the window or opening is ≥20% of the surrounding wall area. Where the room depth is greater than 8m, the percentage of window or opening must instead be the same as, or greater than, the values in Table 1.0 BS8206: Part 2. The view out must be a view of a landscape or buildings (rather than just the sky) at seated eye level (1.2–1.3m) within the relevant building areas and should ideally be through an external window. A view into an internal courtyard or atrium will comply provided the distance from the opening to the back wall of the courtyard or atrium is at least 10m (therefore allowing enough distance for the eyes to refocus). The view cannot be an internal view across the room, as this is likely to become obstructed by partitions, filing cabinets etc. In addition to this, an external view out can offer positive effects on health and wellbeing that cannot be offered by an internal view.			
		Indoor Air Quality	Internal Lighting	7. 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. 8. For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 sections 2.4, 2.13 to 2.15, 2.20, and 6.10 to 6.20. This gives recommendations highlighting: 8.a Limits to the luminance of the luminaires to avoid screen reflections. (Manufacturers’ data for the luminaires should be sought to confirm this.) 8.b Any area where a 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. 8.c Recommendations for direct lighting, ceiling illuminance, and average wall illuminance. Zoning and occupant control 11. Internal lighting is zoned to allow for occupant control. Zoning is in accordance with the criteria below for relevant areas present within the building: 11.a In office areas, zones of no more than four workplaces 11.b Workstations adjacent to windows or atria and other building areas separately zoned and controlled 11.c Seminar and lecture rooms: zoned for presentation and audience areas 11.d Library spaces: separate zoning of stacks, reading and counter areas 11.e Teaching space or demonstration area 11.f Whiteboard or display screen 11.g Auditoria: zoning of seating areas, circulation space and lectern area 11.h Dining, restaurant, café areas: separate zoning of servery and seating or dining areas 11.i Retail: separate zoning of display and counter areas 11.j Bar areas: separate zoning of bar and seating areas 11.k Wards or bedded areas: zoned lighting control for individual bed spaces and control for staff over groups of bed spaces 11.l Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff. 12 Areas used for teaching, seminar or lecture purposes have lighting controls provided in accordance with CIBSE Lighting Guide 5.	Design Drawings Specification Manufacturers’ data	1	1	-		Electrical Engineer				
			External Lighting	9 All external lighting located within the construction zone is specified in accordance with BS 5489-1:2013 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 work places. External lighting should provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. 10. Where no external light fittings are specified (either separate from or mounted on the external building façade or roof), the criteria relating to external lighting do not apply and the credit can be awarded on the basis of compliance with criteria 7–8.c above .	Design Drawings Specification					Electrical Engineer	Lighting of cycle spaces must be considered if located externally.			
Hea	02	Indoor Air Quality	Indoor Air Quality (IAQ) Plan	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: 1.a Removal of contaminant sources 1.b Dilution and control of contaminant sources: 1.b.i Where present, consideration is given to the air quality requirements of specialist areas such as laboratories 1.c Procedures for pre-occupancy flush out 1.d Third party testing and analysis 1.e Maintaining good indoor air quality in-use.		P	P	-		Mechanical - Electrical Engineer				
			Ventilation	2.a Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation If ventilation systems are not within the remit of the shell and core developer, compliance can be demonstrated through the building servicing strategy where this is predetermined by the built form or core services provision.	Design Drawings Specification	1	1	0		Mechanical - Electrical Engineer				
			Emissions from construction products	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 below. Where wood-based products are not one of 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. Two Credits 4. All of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 below .	Manufacturers literature confirming VOC content of products Hea 02 VOC spreadsheet	2	1	1		Architect				
			Post-construction indoor air quality measurement	5. The formaldehyde concentration in indoor air is measured post construction (but pre-occupancy) and does not exceed 100µg/m³ averaged over 30 minutes (World Health Organization guidelines for indoor air quality: Selected pollutants, 2010). 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/m³ 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 the TVOC and formaldehyde levels to within the above limits. 10. The measured concentration levels of formaldehyde (µg/m³) and TVOC (µg/m³) are reported, via the BREEAM Scoring and Reporting Tool.	Commitment to carry out necessary testing post construction	1	1	-		Principal Contractor				

BREEAM 2018 Issue List				No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements	
Design Stage										
HEALTH & WELLBEING	Issue	Criterion	Evidence Required							
Hea	04	Thermal Comfort	Thermal Modelling 1 Thermal modelling has been carried out using software in accordance with CIBSE AM11(79) 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: 3.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 or level for the building type). 3.b For naturally ventilated buildings: 3.b.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 or level for the building type). 3.b.ii The building is designed to limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in either of the following standards as appropriate; 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.	Thermal modelling results	1	1	0		Energy Consultant	
		Design for future thermal comfort 5 Criteria 1 to 4 are achieved. 6 The thermal modelling demonstrates that the relevant requirements set out in criterion 3 on the previous page are achieved for a projected climate change environment. 7 Where criterion 6 above is not met, the project team demonstrates 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 above. 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.	Formal correspondence from the design team Thermal Model results	1	1	0		Architect / Mechanical - Electrical Engineer		
		Thermal zoning and controls 9 Criteria 1 to 4 on the previous page are achieved. 10 The thermal modelling analysis (criteria1 on the previous page to 4 on the previous page) has informed the temperature control strategy for the building and its users. 11 The strategy for proposed heating or cooling systems demonstrates that it has addressed the following: 11.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. 11.b The degree of occupant control required for these zones. This is based on discussions with the end user (or alternatively building type or use specific design guidance, case studies, feedback) and considers: 11.b.i User knowledge of building services. 11.b.ii Occupancy type, patterns and room functions (and therefore appropriate level of control required). 11.b.iii How the user is likely to operate or interact with the systems, e.g. are they likely to open windows, access thermostatic radiator valves (TRV) on radiators, change air-conditioning settings etc. 11.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). 11.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. 11.d The need or otherwise for an accessible building user actuated manual override for any automatic systems.	Thermal comfort study heating and cooling drawings Heating and Cooling control drawings	1	1	-		Mechanical - Electrical Engineer		
Hea	05	Acoustic Performance	Sound Insulation Achieve the performance standards set out in Section 1 of Building Bulletin 93: Acoustic design of schools: performance standards, February 2015 (BB93) relating to airborne sound insulation between spaces and impact sound insulation of floors. The sound insulation between rooms and other occupied areas complies with the performance criteria given in Section 7 of BS 8233:2014. This should be based on the layout and function of the different spaces within the building.	Suitably qualified acoustician (SQA) Professional report / study and calculations from the acoustician Letter of appointment or other confirmation demonstration when the acoustician was appointed	1	1	-		Acoustician	
		Indoor Ambient Noise Level Achieve the indoor ambient noise level standards set out within Section 1 of BB93 for all room types. Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233:2014.	Suitably qualified acoustician (SQA) Professional report / study and calculations from the acoustician Letter of appointment or other confirmation demonstration when the acoustician was appointed	1	1	-		Acoustician		
		Room acoustics. Room acoustics (Control of reverberation, sound absorption and speech transmission index (STI)): Teaching and study spaces achieve the requirements relating to reverberation time for teaching and study spaces set out within Section 1 of BB93. Open plan teaching spaces achieve the performance requirements relating to reverberation time and STI set out within Section 1 of BB93. Corridor and stairwells, for those that give direct access to teaching and study spaces, achieve the performance requirements relating to sound absorption. Acoustic environment (control of reverberation and sound absorption): Achieve the requirements relating to sound absorption and reverberation times, where applicable, set out in Section 7 of BS 8233:2014.	Suitably qualified acoustician (SQA) Professional report / study and calculations from the acoustician Letter of appointment or other confirmation demonstration when the acoustician was appointed	1	1	-		Acoustician		
Hea	06	Security	Security of site and building 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 . 2 The SQSS develops a set of security controls and recommendations for incorporation into the proposals. Those 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.	Security Needs Assessment (SNA)	1	1	0	Concept Design	Project Manager / Architect	
Hea	07	Safe and healthy surroundings	Safe Access 1 Dedicated and safe cycle paths are provided from the site entrance to any cycle storage, and connect to offsite cycle paths where applicable. 2 Dedicated and safe footpaths are provided on and around the site providing suitable links for the following: 2.a The site entrance to the building entrance 2.b Car parks (where present) to the building entrance 2.c The building to outdoor space 2.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: 4 Delivery areas are not accessed through general parking areas and do not cross or share the following: 4.a pedestrian and cyclist paths 4.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.	Design drawings (including a scaled site plan) AND/OR Relevant sections of the specification highlighting all necessary compliant features and dimensions	1	0	1		Architect	
		Outside space There is an outside space providing building users with an external amenity area.	Design Drawings	1	1	-		Architect		
				Individual Credit % value	Available	Target	Potential Credits			
				0.44%	18	14	3			
						6.22%	1.33%			

BREEAM 2018 Issue List					No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements	
Design Stage											
ENERGY		Issue	Criterion	Evidence Required							
Ene	01	Reduction of Energy Use and Carbon Emissions	Energy Performance	The Energy Performance Ratio for New Constructions (EPRNC) will be greater than 0.075. This is a figure calculated from the Part L calculations using a BREEAM calculator and indicates improvements over the Target Emission Rate	A copy of the Building Regulations Output Document from the approved software.	9	5	2		Mechanical - Electrical Engineer	Excellent Requires 4 credits to be achieved (equivalent to an EPR of at least 0.4). Tapping into the existing district heating network will impact the number of credits awarded.
			Prediction of operational energy consumption	2 Involve relevant members of the design team in an energy design workshop focusing on operational energy performance. 3 Undertake additional energy modelling during the design and post-construction stage to generate predicted operational energy consumption figures. 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.	energy design workshop results additional energy modelling results risk assessment	4	4	-		Mechanical - Electrical Engineer/ Sustainability Consultants	An energy design workshop must be completed
Ene	02	Energy Monitoring	Sub-metering of end-use categories	1 Install energy metering systems so that at least 90% of the estimated annual energy consumption of each fuel is assigned to the end-use categories (see Methodology on the next page). 2 Meter the energy consumption in buildings according to the total useful floor area: 2.a If the area is greater than 1,000m², by end-use category with an appropriate energy monitoring and management system. 2.b If the area is less than 1,000m², use either: 2.b.i an energy monitoring and management system or 2.b.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 uses, for example through labelling or data outputs.	Design Drawings Specification Metering calculation	1	1	-		Mechanical - Electrical Engineer	Systems that consume energy to perform the following functions within a building: a. Space heating b. Domestic hot water heating c. Humidification d. Cooling e. Ventilation, i.e. fans (major) f. Pumps g. Lighting h. Small power i. Renewable or low carbon systems (separately) j. Controls k. Other major energy-consuming systems/plant
			Sub-metering of high energy load and tenancy areas	4 Monitor a significant majority of the energy supply with: 4.a An accessible energy monitoring and management system for: 4.a.i tenanted areas or 4.a.ii relevant function areas or departments in single occupancy buildings. OR 4.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: 4.b.i tenanted areas or 4.b.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 homogeneous function, for example hotel bedrooms, offices.	Design Drawings Specification	1	1	-		Mechanical - Electrical Engineer	
Ene	03	External Lighting	Energy Efficient Light Fittings	1 No external lighting (which includes lighting on the building, at entrances and signs). OR 2 External light fittings within the construction zone with: 2.a Average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt 2.b Automatic control to prevent operation during daylight hours 2.c Presence detection in areas of intermittent pedestrian traffic.	Design Drawings Manufacturer Literature Specification Lighting calculation	1	1	-		Mechanical - Electrical Engineer	
Ene	04	Low carbon design	Passive Design Analysis	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 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 ₂ -eq) emissions resulting from the passive design measures.	Passive design analysis Design drawings Manufacturer Literature	1	1	-		Energy Consultant	Specialist energy appointment required.
			Free Cooling	5 Achieve the passive design analysis credit. 6 Include a 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 on the next page.	Results from a dynamic simulation model demonstrating the feasibility of the free cooling strategy and meeting the first credit for Hea 04. Correspondence from the building services engineer summarising the 'purpose designed' free cooling strategy.	1	0	1		Mechanical Engineer / Architect	Not time critical - remain as a potential credit.
			Low and zero carbon technologies	9 An energy specialist completes a feasibility study (see Low and zero carbon feasibility study on the next page) by the end of Concept Design. 10 Establish the most appropriate recognised local (on-site or near-site) low and 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 ₂ -eq) emissions resulting from the feasibility study.	Low Zero Carbon Feasibility Study Confirmation letter that LZC technology has been specified Design drawings	1	1	0		Mechanical - Electrical Engineer	
Ene	06	Energy Efficient Transportation Systems	Energy Consumption	1 For specified lifts, escalators or 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 or moving walks 1.b Calculate the energy consumption in accordance with BS EN ISO 25745 Part 2 or Part 3 for one of the following: 1.b.i At least two options for each transportation type (e.g. for lifts, hydraulic, traction or machine room less (MRL)) OR 1.b.ii At least two options considering different system arrangements and control strategies. 1.c Consider the use of regenerative drives, subject to the requirements in Regenerative drives on the facing page 1.d Specify the transportation system with the lowest energy consumption.	Professional report/study of transportation analysis Calculations	1	1	-		Mechanical - Electrical Engineer/ Principle Contractor	
			Lifts	3 Specify the following three energy efficient features for each lift: 3.a A standby condition for off-peak periods 3.b The lift car lighting and display lighting provides an average luminous efficacy across all fittings in the car of > 70 luminaire lumens per circuit Watt 3.c Use of 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.	Relevant section/clauses of the building specification or contract AND EITHER Manufacturers products details OR Formal letter of commitment from the system(s)	1	1	-		Mechanical - Electrical Engineer/ Principle Contractor	
Ene	08	Energy Efficient Equipment	Energy Efficient Equipment	1 Identify the building's unregulated energy consuming loads. Estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical or standard specification. 2 Identify the systems 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 consumption of the building. Table 6.5 below lists some 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.	Relevant section/clauses of the building specification or contract. Manufacturers product details. Documentation confirming compliance with the relevant scheme or standard outlined in the criteria e.g. details of compliance with the ECA scheme. Design drawings and/or calculations. Life Cycle Analysis	2	2	0		Mechanical - Electrical Engineer / Client	
					Individual Credit % value	Available	Target	Potential			
					0.61%	23	18	3			
							10.96%	1.83%			

BREEAM 2018 Issue List										No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements																																																																										
Design Stage																																																																																									
TRANSPORT	Issue	Criterion		Evidence Required																																																																																					
Tra	01	Transport assessment and travel plan	Transport assessment and Travel plan	1 No later than Concept Design stage , undertake a site-specific transport assessment (or develop a travel statement) and draft travel plan, which can demonstrably be used to influence the site layout and built form; 2 The site-specific travel assessment (or statement) shall cover as a minimum: 2.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. 2.b Predicted travel patterns and transport impact of future building or site users. 2.c Current local environment for pedestrians and cyclists, accounting for any age-related requirements of occupants and visitors. 2.d Reporting of the number and type of existing accessible amenities, see Table 7.1 below, within 500m of the site. 2.e Disabled access accounting for varying levels and types of disability, including visual impairment. 2.f Calculation of the existing public transport Accessibility Index (AI), see Methodology on the facing page. 2.g Current facilities for cyclists. 3 Following a transport assessment (in accordance with the requirements set out in criteria 2), 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 on the facing page. 4 If the occupier is known, involve them in the development of the travel plan. 5 Demonstrate that the travel plan will be implemented and supported by the building's management in operation.		Compliant transport assessment and travel plan		2	2	0	Concept Design	Transport consultant	Transport consultant should be appointed to complete site specific transport assessment, travel plan plus proximity to amenities and accessibility index calcs.																																																																												
Tra	02	Sustainable transport measures	Prerequisite	1 Achieve criteria 3-5 in the Tra 01 Transport assessment and travel plan		Criteria 3-5 in Tra 01		P	P	-																																																																															
			Transport options implementation	2 Identify the sustainable transport measures, see Table 7.4 Sustainable public, private and active transport measures (listed below) 3 Award credits according to the existing Accessible Index (AI) of the project, and the total number of points achieved for the options implemented.		Marked-up site plan or map highlighting: 1. location of assessed building 2. Location and type of amenities 3. The route to the amenities 4. Plan / map scale						Architect																																																																													
												Architect																																																																													
			Public transport measures	1. The existing AI calculated in Tra 01 achieves the following: ≥ 4 for prison or MOD sites, rural location sensitive buildings, and other building group 3 ≥ 8 for all other building types		Tra 01 transport index results						Architect																																																																													
			Public transport measures	2. Demonstrate an increase over the existing Accessibility Index through negotiation with local bus, train or tram companies to increase the frequency of the local service provision for the development; OR 3. Demonstrate an increase over the existing Accessibility Index. This could be through provision of a diverted bus route, a new or enhanced bus stop, or other similar solutions. OR 4. Provide a dedicated service, such as a bus route or service.		Details of uplifted public transport measure Tra 01 transport index						Architect																																																																													
												Architect																																																																													
			Public transport measures	5. Provide a 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.		Provide a public transport information system (signage)						Architect																																																																													
			Private transport measures	6. Provide electric recharging stations of a minimum of 3kW for at least 10% of the total car parking capacity for the development.		Electric recharging stations drawing Calculations						Architect																																																																													
			Private transport measures	7. Set up a car sharing group or facility to facilitate and encourage building users to car share. 8. Raise awareness of the sharing scheme with marketing and communication materials. 9. Provide priority spaces for car sharers for at least 5% of the total car parking capacity for the development. 10. Locate priority parking spaces nearest the development entrance used by the sharing scheme participants.		Car share review Share scheme marketing and communication materials Car share drawings						Architect																																																																													
												Architect																																																																													
			Active travel measures	11. During preparation of the brief, the design team consults with the local authority (LA) on the state of the local cycling network and public accessible pedestrian routes, to focus on whichever the LA deems most relevant to the project, and how to improve it. 12. Agree and implement one proposition chosen with the local authority. The proposition supported by the development is additional to existing local plans and has a significant impact on the local cycling network or on pedestrian routes open to the public.		Consultation summary Drawings		10	7	2		Architect																																																																													
												Architect																																																																													
			Active travel measures	13. Install compliant cycle storage spaces to meet the minimum levels set out in Table 7.5 on the facing page.		Cycle storage drawings Cycle storage calcs						Architect																																																																													
			Active travel measures	14. Option 7 has been achieved. 15. Provide at least two compliant cyclists' facilities for the building users, (including pupils where appropriate to the building type) – see Definitions on page 194 for the scope of each compliant facility: –Showers –Changing facilities –Lockers –Drying spaces.		Cycle facilities drawings Cycle facilities calcs						Architect																																																																													
												Architect																																																																													
			Active travel measures	Existing amenities: 16. At least three existing accessible amenities are present, see Table 7.6, where relevant for a Building Group. <table><tr><th>Criteria</th><th>BG 1</th><th>BG 2</th><th>BG 3</th><th>BG 4</th><th>BG 5</th><th>BG 6</th></tr><tr><td>Proximity (metres)</td><td>500</td><td>500</td><td>500</td><td>500</td><td>500</td><td>500</td></tr><tr><td>Appropriate food outlet</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Access to cash</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Access to an outdoor open space (public or private, provided suitably sized and accessible to building users)</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Access to a recreation or leisure facility for fitness or sports</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Publicly available postal facility</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Community facility</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Over the counter services associated with a pharmacy</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Public sector GP surgery or general medical centre</td><td></td><td></td><td>✓</td><td></td><td>✓</td><td>✓</td></tr><tr><td>Child care facility or school</td><td>✓</td><td></td><td>✓</td><td></td><td>✓</td><td>✓</td></tr></table>		Criteria	BG 1			BG 2	BG 3	BG 4	BG 5	BG 6	Proximity (metres)	500	500	500	500	500	500	Appropriate food outlet	✓	✓	✓	✓	✓	✓	Access to cash	✓	✓	✓	✓	✓	✓	Access to an outdoor open space (public or private, provided suitably sized and accessible to building users)	✓	✓	✓	✓	✓	✓	Access to a recreation or leisure facility for fitness or sports	✓	✓	✓	✓	✓	✓	Publicly available postal facility	✓	✓	✓	✓	✓	✓	Community facility	✓	✓	✓	✓	✓	✓	Over the counter services associated with a pharmacy	✓	✓	✓	✓	✓	✓	Public sector GP surgery or general medical centre			✓		✓	✓	Child care facility or school	✓		✓		✓	✓	Amenities assessment and drawings				
Criteria	BG 1	BG 2	BG 3	BG 4	BG 5	BG 6																																																																																			
Proximity (metres)	500	500	500	500	500	500																																																																																			
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Access to cash	✓	✓	✓	✓	✓	✓																																																																																			
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Over the counter services associated with a pharmacy	✓	✓	✓	✓	✓	✓																																																																																			
Public sector GP surgery or general medical centre			✓		✓	✓																																																																																			
Child care facility or school	✓		✓		✓	✓																																																																																			
Active travel measures	Enhanced amenities: 17. Ensure a minimum of one new accessible amenity, in accordance with Table 7.6 , for the relevant Building Group, is provided. OR 18. Ensure more than one new accessible amenity, in accordance with Table 7.6 for the relevant Building Group, is provided.		Amenities assessment and drawings		Architect																																																																																				
	Assessment option	19. Implement one site-specific improvement measure, not covered by the options already listed in this issue, in line with the recommendations of the travel plan.		Travel Plan Travel plan site-specific improvement measure		Architect																																																																																			
						Individual Credit % value	Available	Target	Potential Credits																																																																																
						0.96%	12	9 8.63%	2 1.92%																																																																																

BREEAM 2018 Issue List																							
Design Stage					No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements													
WATER		Issue	Criterion	Evidence Required																			
Wat	01	Water Consumption	Water Consumption (Litres / person / day)	1 Use the BREEAM Wat 01 calculator to assess the efficiency of the domestic water-consuming components. 2 Use the standard Wat 01 method to compare the water consumption (litres/person/day) for the assessed building against a baseline performance. BREEAM credits based upon the following <table border="1"><thead><tr><th>Wat 01 Water Consumption Water % Improvement</th><th>No. of BREEAM Credits</th></tr></thead><tbody><tr><td>25%</td><td>2</td></tr><tr><td>40%</td><td>3</td></tr><tr><td>50%</td><td>4</td></tr><tr><td>55%</td><td>5</td></tr><tr><td>65%</td><td>Exemplary performance</td></tr></tbody></table> 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: 4.a Greywater systems in compliance with BS 8525-1:2010 Greywater systems - Part 1 Code of Practice. 4.b Rainwater systems in compliance with BS EN 16941-1:2018.	Wat 01 Water Consumption Water % Improvement	No. of BREEAM Credits	25%	2	40%	3	50%	4	55%	5	65%	Exemplary performance	Completed copy of the BREEAM Wat 01 calculator Relevant section / clauses of the building specification Design drawings confirming technical details of; 1. Sanitary components	5	3	1		Architect	
				Wat 01 Water Consumption Water % Improvement	No. of BREEAM Credits																		
25%	2																						
40%	3																						
50%	4																						
55%	5																						
65%	Exemplary performance																						
Wat	02	Water Monitoring	Water Meter	1 Specify 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 For water-consuming plant or building areas consuming 10% or more of the building's total water demand: 2.a Fit easily accessible sub-meters OR 2.b Install water monitoring equipment integral to the plant or area. 3 For each meter (main and sub): 3.a Install a pulsed or other open protocol communication output AND 3.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 or cooling loop for 'plumbed-in' laboratory process equipment, irrespective of their water consumption levels. Additionally for those pursuing a post occupancy stage certification: 6 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.	Relevant section / clauses of the building specification Design drawings showing location of Water meters Technical details of meter (manufacturers literature)	1	1	0		Mechanical - Electrical Engineer													
				Wat	03	Water Leak Detection	Leak Detection System	1 Install a leak detection system capable of detecting a major water leak: 1.a On the utilities water supply within the buildings, to detect any major leaks within the buildings AND 1.b Between the buildings and the utilities water supply, to detect any major leaks between the utilities supply and the buildings under assessment. 2 The leak detection system is: 2.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 2.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 2.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 owner's or occupier's usage patterns. 2.d Programmable to suit the owner's or occupier's water consumption criteria 2.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.	Relevant section / clauses of the building specification Design drawings showing location of meters and leaks detection equipment BMS systems breakdown	1	1	0		Mechanical - Electrical Engineer									
Wat	04	Water Efficient Equipment	Unregulated Water Consumption					1 Identify all water demands from uses other than those listed under - Calculation of water efficiency performance on page 204 that could be realistically mitigated or reduced. Where there is no water demand from uses other than domestic-scale, sanitary use components in the building, this issue is not applicable. 2 Identify systems or processes to reduce the relevant water demand (criterion 1 above), and establish, through either good practice design or specification, a demonstrable reduction in the total water demand of the building.	Relevant section / clauses of the building specification Design drawings showing location of irrigation systems Letter of confirmation that no irrigation systems are present	1	1	0		Mechanical - Electrical Engineer / Architect									
								Individual Credit % value	Available	Target	Potential Credits												
				0.78%	9	7	1																
						5.44%	0.78%																

BREEAM 2018 Issue List				No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements		
Design Stage											
MATERIALS		Issue	Criterion	Evidence Required							
Mat	01	Environmental impacts from construction products - Building life cycle assessment (LCA)	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 and where Notes 1.1 and 1.2 above apply)) 1 During the Concept Design , demonstrate the environmental performance of the building as follows: 1.a Carry out a building LCA on of the superstructure design using either the BREEAM Simplified Building LCA tool or an IMPACT Compliant LCA tool according to the methodology (see Methodology on page 226). 1.b 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).		6	0	3	Concept Design	Architect	Credits need to undertaken prior to planning submission.
			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: 2.a As criterion 1.a 2.b Submit the Mat 01/02 Results Submission Tool to BRE at the end of Technical Design. Where a project has not achieved criterion 1, criterion 2 may still be achieved.						Architect	
			Option appraisal during Concept Design (all building types)	3. For office, industrial and retail building types, achieve criterion 1 (except where Notes 1.0, 1.1 and 1.2 on the previous page apply). 4 During Concept Design , identify opportunities for reducing environmental impacts as follows: 4.a Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options (applicable to the Concept Design stage, see Methodology on the next page). 4.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Concept Design) according to the methodology (see Methodology on the next page). 4.c For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency). 4.d Integrate the LCA options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document. 4.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. 4.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 the BREEAM Simplified Building LCA tool (or an IMPACT Compliant LCA tool) shall be used for criteria 1 to 2 .						Architect	
			Options appraisal during Technical Design (all building types)	5. During Technical Design identify opportunities for reducing environmental impacts as follows: 5.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, see Methodology on the next page). 5.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Technical Design) according to the methodology (see Methodology on the next page). 5.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. 5.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	
			One credit – Substructure and hard landscaping options appraisal during Concept Design (all building types)	6. Criteria 3 and 4 are achieved. 7. During Concept Design identify opportunities for reducing environmental impacts as follows: 7.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). 7.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 (see Methodology below). 7.c As criteria 4.c to 4.f on the previous page.						Architect / Landscape Architect	
Mat	02	Environmental impacts from construction products - Environmental Product Declarations (EPD)	Specification of products with a recognised environmental product declaration (EPD)	1 Specify construction products with EPD that achieve a total EPD points score of at least 20, according to the Methodology 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. EPD certificates for each material Simplified Mat 02 tool		1	1	-		Architect	
Mat	03	Responsible Sourcing of Materials	Prerequisite - Legally harvested and traded timber	1 All timber and timber-based products used on the project are legally harvested and traded timber as per the UK Government's Timber Procurement Policy (TPP). Compliance with criterion 1 is a minimum requirement for achieving any BREEAM rating. There are no prerequisite requirements for other materials.		p	p	-		Principal Contractor	
			Enabling sustainable procurement	2 A sustainable procurement plan must be used by the design team to guide specification towards sustainable construction products. The plan must: 2.a Be in place before Concept Design . 2.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. 2.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. 2.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: 2.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.		1	1	-	Concept Design	Principal Contractor	
			Measuring responsible sourcing	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, as set out in Table 9.10 BREEAM credits available for each scope level and percentage of points achieved		3	2	-		Architect	
Mat	05	Designing for Durability and Resilience	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: 1.a Negative impacts of high user numbers in relevant areas of the building (e.g. corridors, lifts, stairs, doors etc.). 1.b Damage from any vehicle or trolley movements within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. 1.c External building fabric damage by a vehicle. Protection where parking or manoeuvring areas are within 1 metre of the building façade and where delivery areas or routes are within 2 metres of the façade, i.e. specifying bollards or protection rails. 1.d Potential malicious damage to building materials and finishes, in public and common areas where appropriate.		1	1	-		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: 2.a The element or product achieving an appropriate quality or durability standard or design guide, see Table 9.14 on the next page. If none are available, use BS 7543:2015(173) as the default appropriate standard OR 2.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. Table 9.14 on the next page is a list of relevant industry durability and quality standards than can be used to achieve compliance.						Architect	
Mat	06	Material Efficiency	To avoid unnecessary materials use arising from over specification without compromising structural stability, durability or the service life of the building.	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. See Table 9.15 below: 1.a Preparation and Brief 1.b Concept Design 1.c Developed Design 1.d Technical Design 1.e Construction. 2 Develop and record the implementation of material efficiency, see Table 9.15 below, during: 2.a Developed Design 2.b Technical Design 2.c Construction. 3 Report the targets and actual material efficiencies achieved.		1	1	-	Concept Design	Architect	
Individual Credit % value						Available	Target	Potential Credits			
1.25%						14	6	4			
							7.50%	5.00%			

BREEAM 2018 Issue List																																	
Design Stage					No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements																							
WASTE	Issue	Criterion	Evidence Required																														
Wst	01	Construction Waste Management	Construction Resource Efficiency 4 Prepare a compliant Resource Management Plan (RMP) covering: 4.a Non-hazardous waste materials (from on-site construction and dedicated off-site manufacture or fabrication, see Definitions on page 262), including demolition and excavation waste 4.b Accurate data records on waste arising and waste management routes. 5 Meet or improve upon the benchmarks in Table 10.1 for non-hazardous construction waste, excluding demolition and excavation waste. <table><tr><th>BREEAM credits</th><th colspan="2">Amount of waste generated per 100m² (gross internal floor area)</th></tr><tr><td></td><th>m³</th><th>tonnes</th></tr><tr><td>One credit</td><td>≤ 13.3</td><td>≤ 11.1</td></tr><tr><td>Two credits</td><td>≤ 7.5</td><td>≤ 6.5</td></tr><tr><td>Three credits</td><td>≤ 3.4</td><td>≤ 3.2</td></tr><tr><td>Exemplary Level</td><td>≤ 1.6</td><td>≤ 1.9</td></tr></table>	BREEAM credits	Amount of waste generated per 100m ² (gross internal floor area)			m ³	tonnes	One credit	≤ 13.3	≤ 11.1	Two credits	≤ 7.5	≤ 6.5	Three credits	≤ 3.4	≤ 3.2	Exemplary Level	≤ 1.6	≤ 1.9	A copy of the Resource Management plan Where relevant, pre-demolition audit.	3	3	0		Principal Contractor						
			BREEAM credits	Amount of waste generated per 100m ² (gross internal floor area)																													
	m ³	tonnes																															
One credit	≤ 13.3	≤ 11.1																															
Two credits	≤ 7.5	≤ 6.5																															
Three credits	≤ 3.4	≤ 3.2																															
Exemplary Level	≤ 1.6	≤ 1.9																															
		Diversion of Resources from Landfill 6 Meet, where applicable, the diversion from landfill benchmarks in Table 10.2 for non-hazardous construction waste and demolition and excavation waste generated. 7 Sort waste materials into separate key waste groups as per Table 10.3 on page 265, either on-site or through a licensed contractor for recovery. Table 10.2 Diversion from landfill benchmarks <table><tr><th>BREEAM Credits</th><th>Type of Waste</th><th>Volume</th><th>Tonnage</th></tr><tr><td rowspan="3">One Credit</td><td>Non demolition</td><td>70%</td><td>80%</td></tr><tr><td>Demolition</td><td>80%</td><td>90%</td></tr><tr><td>Excavation</td><td>N/A</td><td>N/A</td></tr><tr><td rowspan="3">Exemplary Level</td><td>Non demolition</td><td>85%</td><td>90%</td></tr><tr><td>Demolition</td><td>85%</td><td>95%</td></tr><tr><td>Excavation</td><td>95%</td><td>95%</td></tr></table>	BREEAM Credits	Type of Waste	Volume	Tonnage	One Credit	Non demolition	70%	80%	Demolition	80%	90%	Excavation	N/A	N/A	Exemplary Level	Non demolition	85%	90%	Demolition	85%	95%	Excavation	95%	95%	A copy of the Resource Management plan	1	1	0		Principal Contractor	
BREEAM Credits	Type of Waste	Volume	Tonnage																														
One Credit	Non demolition	70%	80%																														
	Demolition	80%	90%																														
	Excavation	N/A	N/A																														
Exemplary Level	Non demolition	85%	90%																														
	Demolition	85%	95%																														
	Excavation	95%	95%																														
Wst	02	Use of recycled and sustainably sourced aggregates	Project Sustainable Aggregate Points Prerequisite 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 - Criterion 1 on page 260 and - Criterion 2 on page 260. 2 Identify all aggregate uses and types on the project 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 as shown in Table 10.4	Relevant section / clauses of the building specification or contract Project team calculations Documentation confirming the source of recycled / secondary aggregates and that the required amount can be produced	1	0	1		Principal Contractor	Recycled aggregate can be obtained from off site sources - remain as potential credit.																							
Wst	03	Operational Waste	Operational Waste 1 Provide a dedicated space for the segregation and storage of operational recyclable waste generated. The space is: 1.a Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams 1.b Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management contractors 1.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 or weekly operational activities and occupancy rates. 2 For consistent and large amounts of operational waste generated, provide: 2.a Static waste compactors or balers; situated in a service area or dedicated waste management space 2.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 2.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.	Design drawings and / or relevant section / clauses of the building specification or contract confirming provision and scope of dedicated facilities. Project team meeting minutes / letter confirming likely building waste streams and indicative volumes	1	1	0		Architect	Credit Targeted																							
Wst	05	Adaptation to Climate Change	Resilience of structure, fabric, building services and renewables installation 1 Conduct a climate change adaptation strategy appraisal using: 1.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: 1.a.i Hazard identification 1.a.ii Hazard assessment 1.a.iii Risk estimation 1.a.iv Risk evaluation 1.a.v Risk management. 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.	Hazard & Risk Assessment Mitigation Strategy Design/specification of incorporated measures identified by the risk assessment in the final design	1	0	1	Concept Design	Architect / Mechanical - Electrical Engineer	Credit shown as a potential item - design team to investigate.																							
Wst	06	Design for disassembly and adaptability	Design for disassembly and functional adaptability - recommendations 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. 2 Develop recommendations or solutions based on the study (criterion 1 above), during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation.	Functional Adaptation Study	1	1	-	Concept Design	Architect / Mechanical - Electrical Engineer	Credit Targeted																							
			Disassembly and functional adaptability – implementation 3 Achieve criteria 1 and 2 4 Provide an update, during Technical Design, on: 4.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. 4.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.	Functional adaptation strategy Implementation plan report	1	1	-	Technical Design	Architect / Mechanical - Electrical Engineer	Credit Targeted																							
					Individual Credit % value	Available	Target	Potential Credits																									
					0.78%	9	7	2																									
							5.44%	1.56%																									

BREEAM 2018 Issue List										No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements
Design Stage															
LAND USE & ECOLOGY	Issue	Criterion	Evidence Required												
LE	01	Site Selection	Previously Occupied Land	At least 75% of the proposed development's footprint is on an area of land which has previously been occupied	Design drawings (including existing site plan), report or site photographs confirming: 1. Type and duration of previous land use; 2. Area (m2) of previous land use. Proposed site plan showing; 3. Location and footprint (m2) of proposed development and temporary works.	1	1	0	Architect						
		Contaminated Land	2 A contaminated land professional's site investigation, risk assessment and appraisal has deemed land within the site to be affected by contamination. The site investigation, risk assessment and appraisal have identified: 2.a The degree of contamination 2.b The contaminant sources or types 2.c The options for remediated sources of contamination which present an unacceptable risk. 3 The client or principal contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan as recommended by the contaminated land professional	A copy of the specialist's land contamination report. Design drawings (including existing site plan) showing contaminated areas and areas to be remediate in relation to any proposed development. A letter from the principal contractor or remediation contractor confirming: 1.The remediation strategy for the site; 2. Summary details of the implementation plan. If a contractor has not yet been appointed, a letter from the client, or their representative confirming that the appointed contractor will undertake necessary remediation works to mitigate the risks identified into the specialist report	1	1	0	Project Manager							
LE	02	Identifying and understanding the risks and opportunities for the project	Prerequisite - Assessment route selection	1 An assessment route for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist. 2 The client or contractor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site. Table 11.1 Credits awarded by ecological assessment route	BREEAM Ecological Risk Evaluation Checklist Compliance letter from Client	P	P	-	Client						
			Survey and evaluation	Route 1 3 Assessment route 1 can be used only when indicated by the results of the BREEAM Ecological Risk Evaluation Checklist (see Methodology on the facing page). Route 2 4 A Suitably Qualified Ecologist (SQE) is appointed at a project stage that ensures early involvement in site configuration and, where necessary, can influence strategic planning decisions. 5 Prior to the completion of the Preparation and Brief project stage, an appropriate level of survey and evaluation (see Assessment route 2: For sites where complex ecological systems are likely to be present on the facing page) has been carried out to determine the ecological baseline of the site, taking account of the zone of influence to establish: 5.a Current and potential ecological value and condition of the site, and related areas within the zone of influence. 5.b Direct and indirect risks to current ecological value 5.c Capacity and feasibility for enhancement of the ecological value of the site and, where relevant, areas within the zone of influence. 6 Data are collated and shared with project team to inform the site preparation, design and construction works.	Ecologist's report	1	1	0	Ecologist						
			Determining the ecological outcomes for the site (Routes 1 and 2)	7 Survey and evaluation criteria relevant to the chosen route (criterion 3 or Criteria 4–6 on the previous page) have been achieved. 8 During Concept Design, the project team liaise and collaborate with representative stakeholders to identify the optimal ecological outcome for the site. (For Route 1 assessments, see GN35. For Route 2 assessments, see Methodology below). 9 The ecological outcome for the site is determined by identifying, appraising and selecting specific solutions and measures. The solutions and measures must be identified sufficiently early in the project to influence key project planning decisions and must be done in accordance with the following hierarchy of action, which is dependant on the route being used : <table><tr><th>Route 1</th><th>Route 2</th></tr><tr><td>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, off-site.</td><td>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, off-site.</td></tr></table> 10 The optimal ecological outcome for the site is selected after liaising with representative stakeholders and the project team.	Route 1	Route 2	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, off-site.	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, off-site.	Stakeholder Consultation Report Ecologist's report	1	1	0	Principal Contractor		
Route 1	Route 2														
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, off-site.	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, off-site.														
LE	03	Managing negative impacts on ecology	Prerequisite – Identification and understanding the risks and opportunities for the site	1 LE 02 has been achieved. Table 11.2 Credits awarded according to assessment route	Achieve LE 02	P	P	-	Ecologist						
			Planning, liaison, implementation and data	2 Roles and responsibilities for managing negative impacts on the ecology are clearly defined and allocated to support successful delivery of project outcomes at an early enough stage to influence the Preparation and Brief or Concept Design. 3 The potential impact of site preparation and construction works on ecology are identified at an early project stage to optimise benefits and outputs. 4 The project team, liaising and collaborating with representative stakeholders and, taking into consideration data collated and shared, have proposed solutions and selected measures to be implemented during site preparation and construction works.	Design drawings including proposed and existing (pre-development) site plan / survey Ecologist's report	1	1	0	Project Manager						
			Managing negative impacts of the project	Route 1 (one credit) 5 Criteria 2 and 3 have been achieved. 6 Negative impacts from site preparation and construction works have been managed according to the hierarchy (see Methodology on the facing page) and no overall loss of ecological value has occurred. Route 2 (up to two credits) 7 Criteria 2-4 have been achieved. 8 Negative impacts from site preparation and construction works have been managed according to the hierarchy (see Assessment route 2: For sites where complex ecological systems are likely to be present on the facing page) and, either: 8.a No overall loss of ecological value has occurred (2 credits) OR 8.b The loss of ecological value has been minimised (Minimising Loss) (1 credit)	Design drawings including proposed and existing (pre-development) site plan / survey Ecologist's report	2	2	0	Ecologist						
LE	04	Change and enhancement of ecological value	Prerequisite - Managing negative impacts on ecology	1 Criteria 2-3 in LE 03 have been achieved. 2 The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.	Compliance letter from Client	P	P	-	Client						
			Change and enhancement of ecology	Route 1 3 The project team, liaising and collaborating with representative stakeholders and taking into consideration data collated and shared, have implemented locally relevant ecological solutions and measures which enhance the site. The solutions and measures adopted are based on recommendations from recognised 'local' ecological expertise and specialist input and guidance.	Implementation plan / drawings / report	0	0	0	Architect / Landscape Architect						
			One credit - Liaison, implementation and data collation	Route 2 4 The project team, liaising and collaborating with representative stakeholders, and taking into consideration data collated and shared, have implemented the solutions and measures selected in a way that enhances ecological value in the following order: 4.a On site, and where this is not feasible, 4.b Off site within the zone of influence. 5 Data collated are provided to the local environmental records centres nearest to, or relevant for, the site.	Implementation plan / drawings / report	1	1	0	Ecologist						
LE	05	Long term ecology management and maintenance	Up to three credit - Change and enhancement of ecology	Route 2 6 Up to three credits are awarded based on the calculation of 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 as follows: 6.a Minimising loss of ecological value (one credit - percentage score of 75-94) 6.b No net loss of ecological value (two credits - percentage score of 95-104) 6.c Net gain of ecological value (three credits - percentage score of 105-109)	Completed version of BREEAM Change in Ecological Value Calculator.	3	2	1	Ecologist / Landscape Architect						
			Prerequisite - Roles and responsibilities, implementation, statutory obligations	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 The following must be achieved, according to the route being assessed: 2.a Route 1 - Criteria 2-3 in LE 03 have been achieved. 2.b Route 2 - Criteria 2-3 in LE 03 have been achieved, and at least one credit under LE 04 for 'Change and Enhancement of Ecology' has been awarded. Table 11.4 Credits awarded by ecological assessment route	Compliance letter from Client	P	P	-							
			One credit - Planning, liaison, data, monitoring and review management and maintenance	3 The project team liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented to: 3.a Monitor and review the effectiveness with which the plans for LE 03 & LE 04 are implemented 3.b develop and review management and maintenance solutions, actions or measures. 4 In support of the above and to help ensure their continued relevance over the period of the project the following should be considered: 4.a Monitoring and reporting of the ecological outcomes for site implemented at the design and construction stage 4.b Monitoring and reporting of outcomes and successes from the project 4.c Arrangements for the ongoing management of landscape and habitat connected to the project (on and, where relevant, off site) 4.d Maintaining the ecological value of the site and its relationship or connection to its zone of influence 4.e Maintaining the site in line with the any sustainability linked activities, e.g. ecosystems benefits (LE 03). 4.f Remedial or other management actions are carried out which relate to those identified in LE 02, LE 03 and LE 04. 5 As part of the tenant or building owner information supplied, include a section on Ecology and Biodiversity to inform the owner or occupant of local ecological features, value and biodiversity on or near the site.	develop and review management and maintenance solutions, actions or measures. O&M section: Ecology and Biodiversity	1	1	0							
LE	06	Long term ecology management and maintenance	One credit - Landscape and ecology management plan (or similar) development	6 Landscape and ecology management plan, or equivalent, is developed in accordance with BS 42020:2013 Section 11.1 covering as a minimum the first five years after project completion and includes: 6.a Actions and responsibilities, prior to handover, to give to relevant individuals 6.b The ecological value and condition of the site over the development life. 6.c Identification of opportunities for ongoing alignment with activities external to the development project and which supports the aims of BREEAM's Strategic Ecology Framework 6.d Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts 6.e Clearly defined and allocated roles and responsibilities. 7 The landscape and management plan or similar is updated as appropriate to support maintenance of the ecological value of the site.	Landscape and ecology management plan	1	1	0	Ecologist / Principal Contractor						
			Individual Credit % value												
			1.15%												
						13	12	1	13.85%	1.15%					

BREEAM 2018 Issue List						No. Credits Available	Credit Targeted	Potential Credits	Timeframe / Urgency	Evidence Responsibility	BREEAM Assessor Comments / Requirements
Design Stage		Issue	Criterion	Evidence Required							
Pol	01	Impact of Refrigerants	Buildings that Use No Refrigerants (3 Credits)	1. Where the building does not require the use of refrigerants within its installed plant/systems.	Documentary evidence confirming the absence of refrigerant in the development	0	0	0	Developed & Technical Design	Mechanical - Electrical Engineer	Not Targeted
			Buildings that Use Refrigerants: Pre-requisite Impact of refrigerant (1 to 2 credits)	Pre-requisite 2 All systems with electric compressors comply with the requirements of BS EN 378:2016(212) (parts 2 and 3). Refrigeration systems containing ammonia comply with the Institute of Refrigeration Ammonia Refrigeration Systems code of practice Impact of refrigerant Two credits 3 The direct effect life cycle CO ₂ equivalent emissions (DELCC) of ≤100 CO ₂ -eq/kW. 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. To calculate the DELCC, refer to the relevant definitions in Methodology on the facing page and Additional information on page 326. OR 4 All refrigerants used have a global warming potential (GWP) ≤10. OR One credit 5 Systems using refrigerants have a DELCC of ≤1000kgCO ₂ -eq/kW cooling and heating capacity.	A copy of the specification clause Letter from the M&E engineer/system manufacturer confirming relevant refrigeration type and system information. Completed copy of the Pol 01 Calculator tool	2	1	0		Mechanical - Electrical Engineer	
			Leak detection (1 credit)	6 All systems are hermetically sealed or only use environmentally benign refrigerants. OR 7 Where the systems are not hermetically sealed: 7.a i A permanent automated refrigerant leak detection system, that is robust and tested, and capable of continuously monitoring for leaks. OR 7.a.ii An inbuilt automated diagnostic procedure for detecting leakage is enabled. 7.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.	Letter from the M&E engineer/system manufacturer confirming relevant refrigeration type and system information. Manufacturer's product details.	1	0	1		Mechanical - Electrical Engineer	
			Local air quality	1 All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity. OR alternatively: 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 below. Table 12.4 Maximum NO _x emission levels by appliance type, fuel and location	Relevant section/clauses of the building specification or contract. Manufacturer's product details. Calculations from the project team.	2	1	1		Mechanical - Electrical Engineer	One credit targeted, one credit to remain as potential.
Pol	03	Flood and surface water management	Flood Resilience	Two credits - Low flood risk 2 A site-specific flood risk assessment (FRA) confirms the development is in a flood zone that is defined as having a low annual probability of flooding. The FRA takes all current and future sources of flooding into consideration. One credit - Medium or 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 on page 337, which overrides criterion 2 above. 4 To increase the resilience and resistance of the development to flooding, one of the following must be achieved: 4.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 600 mm above the design flood level of the site's flood zone. 4.b The final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2017	Flood risk assessment Design drawings Where appropriate, correspondence from the appropriate statutory body confirming reduced annual probability of flooding due to existing flood defences.	2	2	0	Developed & Technical Design	Drainage Engineer	
			Surface Water Run-Off - Rate	Prerequisite for surface water run-off credits 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. 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. 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 current best practice planning guidance.	Statement from the appropriate consultant confirming that they are qualified in line with the BREEAM definition. Consultants report containing all information necessary to demonstrate compliance including: 1. Type and storage volume (l) of the drainage measures 2. Total area of hard surfaces (m2) 3. Peak/Volume flow rates (l/s) pre and post development for the return period events 4. Additional allowance for climate change designed in to the system 5. Impact on the building of flooding from local drainage system failure	1	1	0		Drainage Engineer	
			Surface Water Run-Off - Volume	10 Flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance); AND 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 of run-off for this event is prevented from leaving the site by using infiltration or other SuDS techniques. OR (only where criteria 11 and 12 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 the post-development peak rate of run-off is reduced to the limiting discharge. The limiting discharge is defined as the highest flow rate from the following options: 14.a The pre-development one-year peak flow rate 14.b The mean annual flow rate (Qbar) 14.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.	The consultants report detailing the design specifications, calculations and drawings to support the 5mm rainfall discharge criteria. Design drawings and/or relevant section/clauses of the building specification or contract indicating 1. High and low risk areas of the site 2. Specification of SuDS, source control systems, oil/petrol separators and shut-off valves as appropriate A letter or other formal correspondence from the project team: 1. Confirming water pollution prevention systems are designed in accordance with PPG3 and the SuDS manual (where appropriate) 2. Outlining indicative examples of compliance with PPG3 and the SuDS manual 3. Confirming a copy of the drainage plan will be produced and handed over to the building occupier. 4. Confirming design of all external storage and delivery areas is in compliance with relevant Pollution Prevention Guidance 5. Outlining indicative examples of compliance with the PPG.	1	1	0		Drainage Engineer	
			Minimising watercourse pollution	17 There is no discharge from the developed site for rainfall up to 5 mm (confirmed by the appropriate consultant). 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 or 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 a 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 (220) 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.	The consultants report detailing the design specifications, calculations and drawings to support the 5mm rainfall discharge criteria. Design drawings and/or relevant section/clauses of the building specification or contract indicating 1. High and low risk areas of the site 2. Specification of SuDS, source control systems, oil/petrol separators and shut-off valves as appropriate A letter or other formal correspondence from the project team: 1. Confirming water pollution prevention systems are designed in accordance with PPG3 and the SuDS manual (where appropriate) 2. Outlining indicative examples of compliance with PPG3 and the SuDS manual 3. Confirming a copy of the drainage plan will be produced and handed over to the building occupier. 4. Confirming design of all external storage and delivery areas is in compliance with relevant Pollution Prevention Guidance 5. Outlining indicative examples of compliance with the PPG.	1	0	0		Drainage Engineer	Not Targeted
Pol	04	Reduction of Night Time Light Pollution	Reduction of Night Time Light Pollution	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: 2 The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the Institution of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light, 2011(226). 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 ILP PLG05 The Brightness of Illuminated Advertisements	Design drawings Relevant section/clauses of the building specification or contract or external lighting design data/calculations In the case of the external lighting design, the M&E engineer or lighting designer must provide indicative examples of where and how the strategy complies with the assessment criteria.	1	1	0	Developed & Technical Design	Electrical Engineer	
Pol	05	Reduction of Noise Pollution	Reduction of Noise Pollution	1 There are no noise-sensitive areas within the assessed building or within 800 m radius of the assessed site. OR 2 Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800 m radius of the assessed site, a noise impact assessment compliant with BS 4142:2014(228) is commissioned. Noise levels must be measured or determined for: 2.a Existing background noise levels. 2.a.i at the nearest or most exposed noise-sensitive development to the proposed assessed site 2.a.ii including existing plant on a building, where the assessed development is an extension to the building 2.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. 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.	Design drawings highlighting: 1. All existing and proposed noise-sensitive buildings local to, and within, the site boundary 2. Proposed sources of noise from the new development 3. Distance (m) from these buildings to the assessed development. The acoustician's report, acoustician's qualifications and professional status. OR Relevant section/clauses of the building specification or contract requiring a noise assessment by a suitably qualified acoustician in compliance with BS 7445:1991. OR A letter from the client or design team confirming that they will appoint an acoustician to carry out a noise assessment in compliance with BS 7445:1991 Acoustician's report with recommendations for noise attenuation measures. AND EITHER A marked-up design plan highlighting the specification of the acoustician's attenuation measures OR A formal letter from the client or design team confirming where relevant, that attenuation measures recommended by an appointed suitably qualified acoustician will be installed.	1	1	0		Acoustician	
Individual Credit % value						Available	Target	Potential Credits			
0.75%						12	8	2			
							6.00%	1.50%			

Innovation

BREEAM 2018 Issue List						No. Credits Available	Credit Achieved	Evidence Responsibility	BREEAM Assessor Comments / Requirements				
Design Stage					Evidence Required								
INNOVATION	Issue	Criterion											
MAN	03	Responsible Construction Practices	Responsible Construction Practices		See Full Credit Issue	1	1	Principal Contractor	Contractor commits to achieving all items within responsible management matrix				
HEA	01	Visual comfort	Visual Comfort	To achieve an exemplary performance credit for daylighting: 14 Daylighting criteria have been met using either of the following options: 14.a Relevant building areas meet exemplary daylight factors and the relevant criteria in Table 5.8 below. 14.b Relevant building areas meet exemplary average and minimum point daylight illuminance criteria in Table 5.9 on the next page. Exemplary level criteria - Internal and external lighting levels, zoning and control To achieve an exemplary performance credit for Internal and external lighting levels, zoning and control: 15 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.	See Full Credit Issue	1	0	Architect	Not Targeted				
HEA	02	Indoor air quality	Minimising sources of air pollution - volatile organic compound (VOC) emission levels (products)		See Full Credit Issue	0	0	Architect	Not Targeted				
			Minimising sources of air pollution - volatile organic compound (VOC) emission levels (products)		See Full Credit Issue	0	0	Architect	Not Targeted				
HEA	06	Security											
ENE	01	Reduction of energy use and carbon emissions	Energy Consumption		See Full Credit Issue	5	0	Mechanical Engineer	Not Targeted				
WAT	01	Water consumption	Water Consumption (Litres / person / day)		See Full Credit Issue	1	0	Mechanical Engineer	Not Targeted				
MAT	01	Life cycle impacts	Life Cycle Impacts		IMPACT (Integrated Material Profile And Costing Tool) Life Cycle Assessment (LCA) and Life Cycle Costing (LCC).	2	0	Principal Contractor	Not Targeted				
MAT	03	Responsible sourcing of materials	Responsible sourcing of materials (RSM)		See Full Credit Issue	1	0	Architect	Not Targeted				

BREEAM 2018 Issue List										No. Credits Available	Credit Achieved	Evidence Responsibility	BREEAM Assessor Comments / Requirements				
Design Stage																	
INNOVATION	Issue		Criterion				Evidence Required										
WST	01	Construction-site waste management	Construction resource efficiency	<table><tr><td>Exemplary Level</td><td>≤ 1.6</td><td colspan="2">≤ 1.9</td></tr></table>				Exemplary Level	≤ 1.6	≤ 1.9		See Full Credit Issue	1	1	Principal Contractor	Credit highlighted as potential credits	
			Exemplary Level	≤ 1.6	≤ 1.9												
Diversion of resources from landfill	<table><tr><td rowspan="3">Exemplary Level</td><td>Non demolition</td><td>85%</td><td>90%</td></tr><tr><td>Demolition</td><td>85%</td><td>95%</td></tr><tr><td>Excavation</td><td>95%</td><td>95%</td></tr></table>				Exemplary Level	Non demolition	85%	90%	Demolition	85%	95%	Excavation	95%	95%	See Full Credit Issue		Principal Contractor
Exemplary Level	Non demolition	85%	90%														
	Demolition	85%	95%														
	Excavation	95%	95%														
WST	02	Recycled Aggregates	Recycled Aggregates					See Full Credit Issue	1	0	Principal Contractor	Not Targeted					
WST	05	Adaptation to Climate Change	Responding to adaptation to climate change					See Full Credit Issue	1	0	Architect	Not Targeted					
LE	02		Ecological risks and opportunities					See Full Credit Issue				Not Targeted					
LE	04		Ecological change and enhancement					See Full Credit Issue									
								Individual Credit % value	Available	Achieved							
								1.00%	14	2							
										2.00%							