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Sustainability Statement
19/21 Gray's Inn, High Holborn

Prepared for:
The Honourable Society of Gray's Inn
Treasury Office
8 South Square
Gray's Inn
London WC1R 5ET

Structural Engineering
Civil Engineering
CDM Consultants
Sustainability and BREEAM
Traffic and Transport
Flood Risk Assessments

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Date: 28.01.2016

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Date: 28.01.2016

Ref	Date	Comment	By	Approved
Final	28-01-16		RC	PB

Contents

1.0 Executive Summary

This Sustainability Statement, undertaken for the refurbishment and extension work to the building at 19 & 21 High Holborn, outlines the approach taken to incorporate and improve sustainability within the design scheme. The report and associated BREEAM Pre-Assessment have been prepared by Licensed and experienced BREEAM Assessors who also hold BRE's BREEAM Accredited Professional qualification. This project has been assessed using the BREEAM Bespoke methodology and the pre-assessment has predicted that a design stage BREEAM assessment would achieve a 'Very Good' Rating.

Following is the summary for each key topic from the Climate Change and Pollution Supplementary Planning Document:

- **Pollution and Air Quality:** Best practice measures will be put in place to reduce the impact on the environment throughout construction and operation phase.
- **Construction Materials:** Materials with low environmental impact will be used and timber/ timber products will be from legal sustainable sources.
- **Energy/ Carbon Emissions:** Energy saving measures through Lean, Clean and Green methodologies will be incorporated.
- **Waste:** The principal contractor will be required to have a RMP (Resource Management Plan) in place including the segregation and recyling of waste produced on site during construction. Materials will be chosen for their reduced environmental impact and durability; all timber will be legally and responsibly sourced. Facilities also to be provided on site within the completed layout for pupils and staff to encourage recycling.
- **Water and Flooding:** The proposed development will incorporate the latest water minimisation technologies wherever possible, which will substantially reduce the potable water consumption and subsequent embedded carbon. The flood risk map concludes that the site is in an area of low flood risk zone.
- **Adapting to climate change:** The development will be designed to adapt to and mitigate expected changes in climate. Adequate provision of cyclist facilities will be provided to encourage building users to cycle.
- **Sustainable Construction Codes:** The development is aiming to achieve a BREEAM 'Very Good' rating.

2.0 Introduction

2.1 Proposed Development

The proposal involves refurbishment and extension work to the building at 19 & 21 High Holborn. The upper floors of the building are utilised for office accommodation with the ground floor and basement areas formed from a retail unit. This development will consist of the following design features:

- Office space is maximised with the addition of one upper floor (7th)
- New building height remains below St Paul's view corridor datum
- A new façade to enhance the appearance of the building
- Bay windows to provide oblique views down High Holborn
- Recessed windows to address southern aspect
- Stepped massing to avoid overshowing
- Better access for wheelchair users

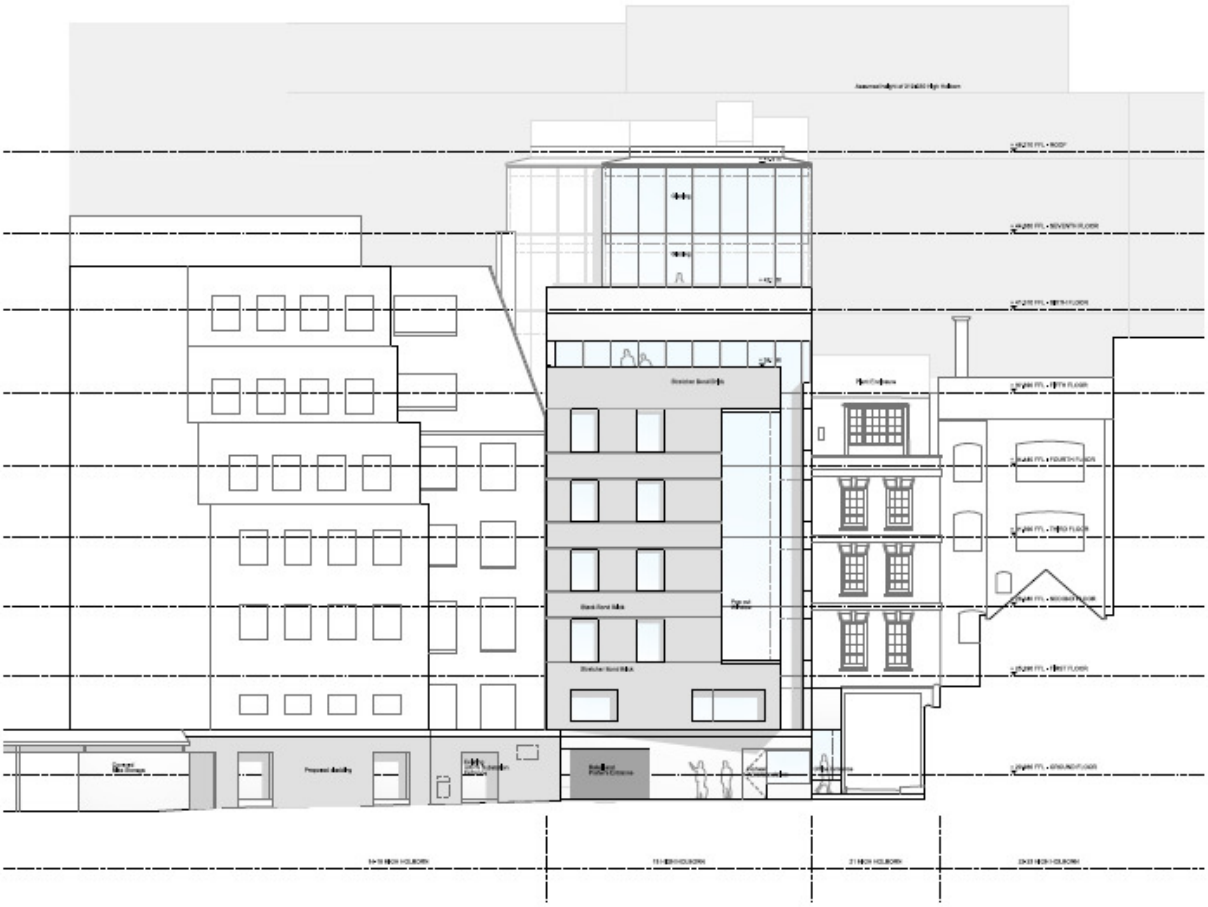

Figure 1 North Elevation

Figure 2 View along Holborn from the South West

2.2 Methodology

The Sustainability Statement is based on desktop studies as well as information and feedback provided by the design team. The sustainability policy context review, covering national, regional and Camden Council's policy, was established through an initial desktop study. These set a background against which the performance of the proposed development can be measured.

Sustainability considerations outlined in this statement, are developed to reflect all the relevant policies and client aspirations. All the opportunities to incorporate sustainable development features will be explored from an early design stage to provide flexibility to the design team, compensate for any design constraints, and improve the development's ongoing sustainability performance.

2.3 Assumptions and Limitations

This report has been prepared for and at the request of the client for the purpose of supporting the Planning Application process. It cannot be copied to in whole or in part, or relied upon by any other third party for any use without our written permission. Scott White and Hookins LLP has exercised due and customary care in producing this Sustainability Statement, but has no control over independently verified information provided by others. No other warranty, expressed or implied, is made in relation to the conduct of the contents of this report. Therefore Scott White and Hookins LLP assume no liability for any loss resulting from errors, omissions or misrepresentations made by others.

2.4 Planning Policy

Camden Planning Policy

The Camden Planning Guidance (CPG) Chapter 3 – Sustainability, demonstrates how the council is committed to reducing carbon dioxide (CO_2) emissions, by providing information on ways to achieve carbon emission reductions and to create more sustainable developments. The guidance supports Camden's Local Development Framework policies relating to climate change and sustainable design.

CPG3 provides details of the energy hierarchy and how this should be applied to design developments to reduce their carbon emissions. The 3 steps of the energy hierarchy are as follows:

In order to apply the above energy hierarchy, firstly the baseline energy demand and CO_2 emissions need to be calculated in line with Part L of the Building Regulations. The potential to reduce carbon emissions can then be evaluated by firstly proposing design measures that will maximise the overall energy efficiency of the development (be lean). Secondly, it should be considered how energy can be efficiently sourced to further reduce CO_2 emissions (be clean); and lastly to demonstrate how the potential to implement renewable energy technologies has also been explored to reduce CO_2 emissions further.

As referenced in the planning guidance and also outlined in the Camden Core Strategy Policy CS13, there is a requirement for all non-residential projects >500m2 to be assessed in line with BREEAM.

BREEAM is a tool to measure the sustainability of new non-domestic buildings, assessed against nine categories covering the following:

- Energy
- Health and well-being
- Land use and ecology
- Management
- Materials
- Pollution
- Transport
- Waste
- Water

Under the planning guidance, it is also an expectation that developments will achieve 60% of the un-weighted credits in the Energy category of the BREEAM assessment. A BREEAM pre-assessment has been undertaken for the project as attached in Appendix A which demonstrates that >60% of the credits in the Energy and Water categories as well as >40% in the Materials category would be achieved based on the agreed strategy for achieving a BREEAM Very Good rating overall.

The guidance notes that minimising water use will also be assessed against the water category in the BREEAM assessment. As illustrated in the attached pre-assessment, the need to minimise water consumption is addressed under assessment issue Wat 01 for which 2 credits are targeted, which would demonstrate a 25% improvement over baseline water consumption.

3.0 Sustainability Considerations

This section details site-specific initiatives which demonstrate how the Development helps to meet the sustainability requirements set out in CPG3 – Sustainability. Since the majority of the detailed design and layout is unknown at this stage, for the purposes of the appraisal some assumptions have been made where information is not currently available.

3.1 Pollution and Air Quality

Pollution is the increase in levels of contaminants in the environment, which leads to unbalanced health, climate and ecosystems. Climate change is undoubtedly the single most serious consequence of man-made pollution. Current conservative predictions state that the average surface air temperatures in the UK will rise between 2°C and 3.5°C by 2080 if the emissions of greenhouse gases are not drastically reduced. Such temperature rise would have devastating impacts on our ecosystems and our livelihood.

The following text includes sustainability considerations specific to the proposed development. The

developer is committed to achieving low pollution levels by employing best practice measures.

3.1.1 Air pollution

- Insulation for building elements and building services will be specified to have Global Warming Potential (GWP) of less than five and zero Ozone Depletion Potential (ODP).
- The building will be designed to minimise the concentration and recirculation of pollutants in the building as follows:
    - Provide fresh air into the building in accordance with relevant standard for ventilation such as the British Council for Offices Guide to Best Practice in the Specification of Offices
    - Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3.
- Best practice measures will be employed during the construction process, in line with the GLA Best Practice Guidance. These will include use of dustsheets, regular sweeping of construction dust, damping down of the site during dry weather, wheel washes and covers to skips.
- Alongside improvement to the Clapham road, existing footpaths, cycleways and related facilities will be enhanced to encourage the use of public transport, walking and cycling where possible, thus reducing pollution from private vehicle use.

3.1.2 Light Pollution

- Automatic light switches, that reduce lighting levels between 23:00 and 07:00 to levels recommended as best practice by ILE (Institute of Lighting Engineers), will be provided.
- For all other buildings, not in 24 hour use, all external lighting will be automatically switched off between 23:00 and 07:00.

3.2 Construction Materials and Techniques

The existing buildings on site will provide opportunities to recycle demolition waste on and/or off site. Sustainable waste behaviour will also be encouraged and facilitated through the following measures during construction:

- Construction waste will be segregated and recycled
- Materials specified with low environmental impact where possible including:
    - purchasing timber and timber products from legal sustainable sources, using external certification e.g. FSC as verification evidence
    - materials will be specified to achieve an 'A/A+ rating' as defined by the Green Guide to Specification
    - Durability measures being in place across the proposed development whenever possible; e.g. kick plates, bollards for areas exposed to traffic
    - The use of products with either no formaldehyde or low VOC (meeting the European standards) containing materials
    - The use of thermal insulation which has a low embodied environmental impact relative to its thermal properties.
    - The use of local materials (wherever possible)
    - Re-use of materials
    - Good energy efficiency e.g. best practice U-value shall be used for the building fabric

3.3 Energy/ Carbon Emissions

The sustainability principles from the London Plan with respect to energy use are;-

- Use less energy (Lean) – high levels of insulation, passive design features and efficiencies of equipment
- Supply energy efficiently (Clean) – choice of energy supply e.g. CHP, biomass boilers.
- Use renewable energy (Green)

	Carbon dioxide emissions (tonnes[CO_2]/annum)		
	Regulated	Unregulated	Total
Existing	181	81	262
TER 2013	79	80	159
Lean	76	80	156
Clean	76	80	156
Green	72	80	152

Figure 3 CO2 emissions (Source: Waterman Energy Statement Nov 2015)

	Carbon dioxide savings over PART L 2013 (tonnes[CO_2]/annum)		(%)	
	Regulated	Total	Regulated	Total
Lean savings	3.5	3.5	4.39%	2.18%
Clean savings	0.0	0.0	0.00%	0.00%
Green savings	4.0	4.0	5.30%	2.57%
Total savings	7.5	7.5	9.46%	4.70%

Figure 4: CO2 savings over Part L 2013 (Source: Waterman Energy Statement Nov 2015)

Lean & Clean

An energy assessment carried out by Waterman's shows that the proposed building will have high levels of insulation and other energy efficiency measures to achieve CO_2 savings over Part L 2013 by 4.39% from the baseline condition.

The use of CHP was reviewed but the results did not show an economic benefit. Although there is a district heating scheme in the locality, given the extent of high usage road network to be excavated to provide a connection, it was determined that connection to a district heating system would be unfeasible.

Green

The energy assessment also looks at the options to achieve the required CO_2 emissions reduction from on-site renewables. The renewable technologies as outlined in The London Renewables Toolkit methodology lists potential technologies including:

- Wind generators
- Photovoltaics
- Solar water heating
- Biomass heating
- Heat Pump

A Feasibility study was carried out by Waterman's on the potential to include renewable technologies, for which the findings are as follows:

- The use of Wind turbines was not viable due to the number required, and the visual, noise and planning problems related to turbines;
- Biomass will not be suitable given that the installations are not acceptable in the City of London as biomass fired boilers will generate high levels of particulate matter (PM10) and NOx emissions which are both detrimental to air quality;
- Ground source heat pumps (GSHPs) are not viable as there is an existing building and it will not be possible to install thermal piles without damaging the elements of the existing structure;
- The use of PV panels was found to be viable both technically and economically with a a solar PV array therefore proposed in the design;
- High efficiency air source heat pumps (ASHPs) providing renewable heat are proposed as the low carbon technology can effectively provide the majority of the heating requirements for the development.

The energy assessment has concluded that Air Source Heat Pumps and Photovoltaic Technology provides a carbon dioxide saving of 5.30%.

The results of the energy assessment (Figure 4) has predicted that the development will surpass the Part L2A target by approximately 9.46%.

3.4 Waste Minimisation

As part of the construction contract provision will be made for the careful re-use of materials where possible, and for the provision of a suitable Resource Management Plan (RMP).

The developer is committed to achieve at least **10%** of the total value of materials used, to be derived from recycled and reused sources by taking the following procedures in line with WRAP's recommendations:

- Identify the key parts of the project (and associated project team members and supply chain) which can influence re-use and the recycled content of materials.
- Undertake a design review workshop to identify opportunities to re-use materials and built elements, and increase recycled content.
- Undertake a demolition audit to identify which aspects of the existing structure can be re-used / or how any materials that need to be removed can be reprocessed.
- Undertake a pre-refurbishment survey to identify which components of the asset can be kept in-situ / re-used / recovered.
- Use structural components which are easily disassembled for re-use and/or recycling at end of life
- Based on the opportunities of taking action (or financial, planning, project specific risks of not taking action) set / respond to requirements for increasing re-use and recycled content, these should:

- Identify opportunities to incorporate reusable/recyclable components and materials.
- Analyse impacts / benefits of increased re-use and recycled content and agree the actions (including associated owners) which will be adopted.
- Capture actions within a specific document setting out responsibilities, metrics (e.g. t / % / m3 / £) and approach to verifying performance.
- Track performance against the actions and report at agreed intervals.

The following measures will also be included for the operation of the proposed development:

- Recycling areas: Adequate amount of clearly labelled bins will be provided for recyclable waste.
- General waste generated on site: Provision of dedicated waste recycling areas for segregation and storage.
- Compactor / Baler will be provided wherever possible.

3.5 Water and Flooding

3.5.1 Minimising Water Use

The proposed building will include, where appropriate, the following features for minimisation of water use:

- Water efficient Dual flush WCs
- Automatic shut off taps or electric sensor taps with efficient flow rate
- Showers with efficient flow rates;
- Urinals with low flush rate and fitted with individual presence detectors or provision of waterless urinals;
- Water meters and leak detection systems to ensure required water efficiency is monitored and maintained throughout the life of the building;
- Flow control devices that regulate the supply of water to each WC area/facility according to demand are installed and therefore minimise water leaks and wastage from sanitary fittings;
- Landscaping that will not require permanent irrigation systems or to be irrigated using treated rainwater.

3.5.2 Flood Risk

The site location has been checked against the Environment Agency website. The location is well clear of the noted potential flood zone of River Thames.

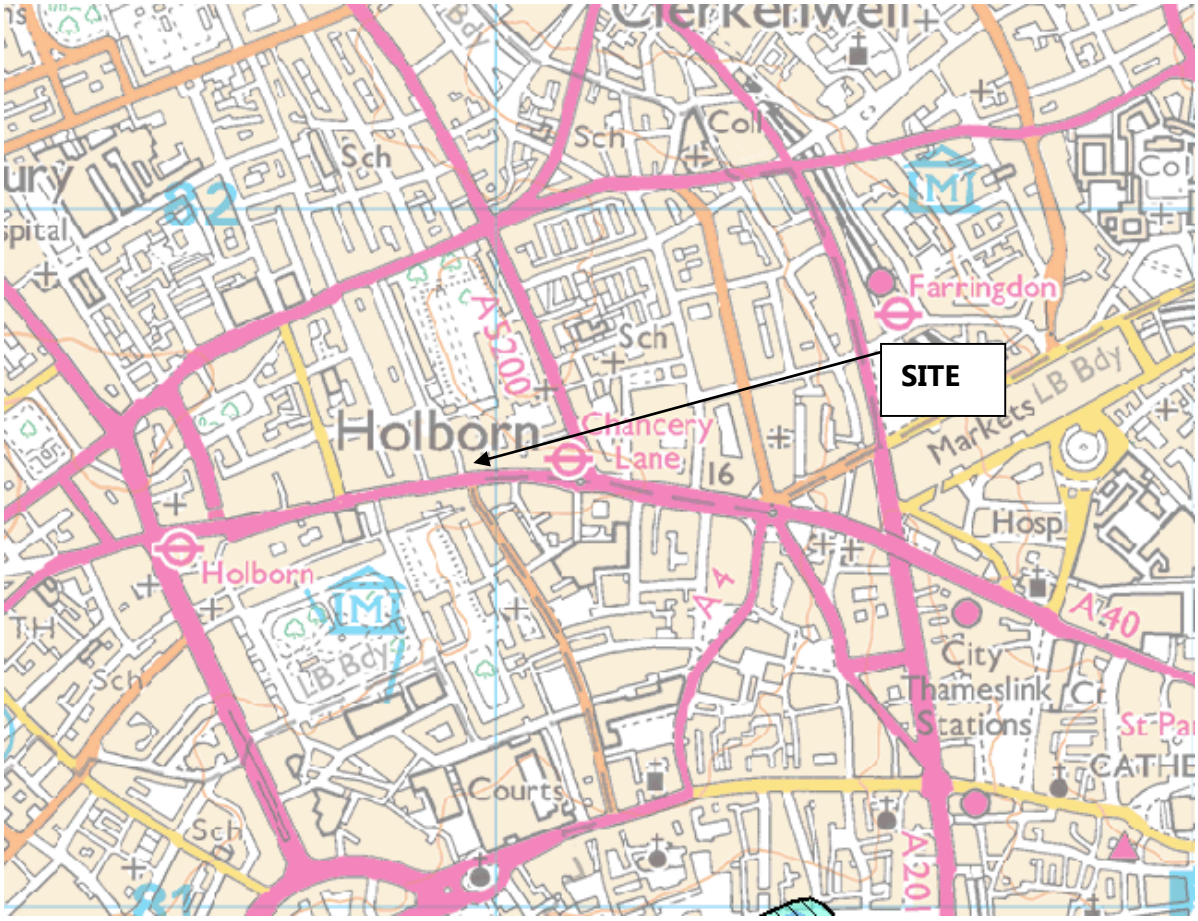

Figure 5 Flood Map obtained from Environment Agency

This reveals that the site is in a Zone 1 – low annual probability of flooding – i.e. 0.1% (1 in 1000) or less. This is based on the extent of the extreme flood from rivers or the sea that would occur without the presence of flood defences.

3.6 Adapting to Climate Change.

A sufficient amount of secured cycle storage spaces and cyclist facilities such as showers, changing facilities, lockers and drying for wet clothes will be provided wherever feasible to encourage building users to cycle, so promoting exercise and helping reduce congestion and emissions.

3.7 Sustainable Construction Codes

Following a pre-assessment estimation against the BREEAM Bespoke methodology, it has predicted that a pre-assessment BREEAM rating of 'Very Good' can be targeted. Please refer to Appendix A for a copy of the BREEAM pre-assessment.

4.0 Conclusion

This Sustainability Statement, undertaken for the refurbishment and extension work to the building at 19 & 21 High Holborn, outlines the approach taken to incorporate and improve sustainability within the design scheme. The report and associated BREEAM Pre-Assessment have been prepared by Licensed and experienced BREEAM Assessors who also hold BRE's BREEAM Accredited Professional qualification. This project has been assessed using the BREEAM Bespoke methodology and the pre-assessment has predicted that a design stage BREEAM assessment would achieve a 'Very Good' Rating.

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Appendices

A. BREEAM Pre-assessment

Appendix A
BREEAM Pre-assessment

Scott White and Hookins

Project: **High Holborn Refurb, Gray's Inn London**
Scheme: **BREEAM UK Bespoke (2014)**
Target Rating: **Very Good**
Stage: **Design Stage**
Date: **28/01/2016**
Revision: **8.0**

Pass	30%
Good	45%
Very Good	55%
Excellent	70%
Outstanding	85%

Current Targeted' Rating Total: **63.47%**
Equating to BREEAM: **Very Good** (Provided all "minimum standard" issues are met)

BREEAM 2014 Assumptions

Scope of the assessment	
Part 1 : Fabric and structure	**Yes**
Part 2 : Core services	**Yes**
Part 3 : Local services	**Yes**
Part 4 : Interior design	**Yes**
Is the project a change of use? (e.g. change from office to a hotel)	**No**
Are transportation systems specified or present within the refurbishment or fit-out zone? (lifts, escalators, moving walks)	**Yes - 2 new lifts**
Are there laboratories present and if so what % of total building area do they represent	**No**
Laboratory containment area	**No**
Is cold storage specified or present within the refurbishment or fit-out zone?	**No**
Are soft landscaped areas within the scope of refurbishment or fit-out zone?	**No**
If the asset undergoing refurbishment or fit-out is part of a larger building, is the cooling generation plant centralised or localised?	**N/A**
If the asset undergoing refurbishment or fit-out is part of a larger building, is the heating generation plant centralised or localised?	**N/A**
Is Wat01 within the scope of the assessment in accordance with Table 42?	**Yes**
What is the building type?	**Offices**
If Industrial, does the building have office areas?	**N/A**
Does the building have any unregulated water demands? e.g. irrigation, car washing, or other process related water use	**No**
Does the building have unregulated energy demands from significantly contributing systems?	**No**
Is the project a simple building?	**No**
Does the building have external lighting within the scope of works?	**Yes**
Does the building have any existing or newly specified externally mounted plant?	**Yes**
If undertaking a Part 4 assessment, is there any equipment specified that requires commissioning (see Man04 CN13)	**No**

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Man 01 Project brief and design						
Man 01a Stakeholder consultation (project delivery)	**One credit – Stakeholder consultation (project delivery)** 1.A clear sustainability brief is developed prior to Concept Design which sets out: a.Client requirements e.g. internal environmental conditions required b.Sustainability objectives and targets including target BREEAM rating, business objectives etc. c.Timescales and budget d.List of consultees and professional appointments that may be required e.g. Suitably Qualified Acoustician etc. e.Constraints for the project e.g. technical, legal, physical, environmental. 2.Prior to completion of the Concept Design (RIBA Stage 2 or equivalent), the project delivery stakeholders (see Relevant definitions) have met to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery. 3.In defining the roles and responsibilities for each key phase of the project, the following must be considered: a.End user requirements b.Aims of the design and design strategy c.Particular installation and construction requirements/limitations d.Design and construction risk assessments e.g. CDM, legionella risk assessment e.Legislative requirements e.g. building control notification, heritage requirements f.Procurement and supply chain g.Identifying and measuring project success in line with project brief objectives h.Occupiers' budget and technical expertise in maintaining any proposed systems i.Maintainability and adaptability of the proposals j.Requirements for the production of project and end user documentation k. Requirements for commissioning, training and aftercare support. 4.The project team demonstrate how the project delivery stakeholder contributions and the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design.	**1**	**1**	Project Team	Stage 1 Concept Design	
Man 01b Stakeholder consultation (third party)	**One credit - Stakeholder consultation (third party)** 5. Prior to completion of the Concept Design stage, all relevant third party stakeholders have been consulted by the design team and this covers the minimum consultation content (see compliance note CN3). 6. The project must demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design. 7. Prior to completion of the detailed design (RIBA Stage 4, Technical Design or equivalent), consultation feedback has been given to, and received by, all relevant parties.	**1**	**1**	Project Team	Concept Design Stage 4 (cr7)	
Man 1c Sustainability Champion (design)	**One credit - Sustainability Champion (design)** 9. A Sustainability Champion has been appointed to facilitate the setting and achievement of BREEAM performance target(s) for the project. The design stage Sustainability Champion is appointed to perform this role during the feasibility stage (Stage 1, Preparation and Brief stage, as defined by the RIBA Plan of Work 2013 or equivalent). 10. The defined BREEAM performance target(s) has been formally agreed (see Relevant definitions) between the client and design/project team no later than the Concept Design stage (RIBA Stage 2 or equivalent). 11. To achieve this credit at the interim design stage assessment, the agreed BREEAM performance target(s) must be demonstrably achieved by the project design. This must be demonstrated via the BREEAM Assessor's design stage assessment report.	**1**	**1**	BREEAM AP's appointment	Stage 1	
Man 01d Sustainability Champion (monitoring progress)	**One credit - Sustainability Champion (monitoring progress)** 12. The Sustainability Champion criteria 8, 9 and 10 have been achieved. 13. A Sustainability Champion is appointed to monitor progress against the agreed BREEAM performance target(s) throughout the design process and formally report progress to the client and design team. **To do this the Sustainability Champion must attend key project/design team meetings during the Concept Design, Developed Design and Technical Design stages, as defined by the RIBA Plan of Work 2013, reporting during, and prior to, completion of each stage, as a minimum.**	**1**	**1**	BREEAM AP's appointment		
Man 02 Life cycle cost and service life planning						
Man 02a Elemental life cycle cost (LCC)	**Two credits - Elemental life cycle cost (LCC)** 1. An elemental life cycle cost (LCC) analysis has been carried out, at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2) together with any design option appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008. 2. The LCC analysis shows: a. An outline LCC plan for the project based on the building's basic structure and envelope, appraising a range of options and based on multiple cash flow scenarios e.g. 20, 30, 50+ years; b. The servicing strategy for the project outlining services component over a 15-year period, in the form of an 'elemental LCC Plan'. c. A fit-out strategy is developed outlining fit-out options over a 10-year period.	**2**	**2**	Cost Consultant	Stage 2	
Man 02b Component level LCC Plan	**One credit - Component level LCC Plan** 3. A component level LCC plan has been developed by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008 and includes the following component types (where present): a. Envelope, e.g. cladding, windows, and/or roofing b. Newly specified local and/or core service equipment, e.g.boiler, air conditioning, air handling unit, and/or controls etc c. Finishes, e.g. walls, partitions, floors and/or ceilings etc d. External spaces, e.g. alternative hard landscaping, boundary protection. 4. Demonstrate, using appropriate examples provided by the design team, how the component level LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.	**1**	**1**	Cost Consultant	Stage 4	
Man 02c - Capital cost reporting	**One credit - Capital cost reporting** 5. Report the capital cost for the building in pounds per square metre (£k/m2), via the BREEAM Assessment Scoring and Reporting tool, Assessment Issue Scoring tab, Management section. At the design stage of assessment, where the final information is not available, the credit can be awarded where the client provides the predicted capital cost, including contingencies, and commits to providing this information for the final stage of assessment. At the final stage, if the final capital cost is not known, the client's/cost consultant's best estimate should be provided.	**1**	**1**	Cost Consultant		

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Man 03 Responsible construction practices: ***Min. Standard - Excellent One credit (Considerate construction). Outstanding Two credits (Considerate construction)***						
Man 03a Pre-requisite	**Pre-requisite** 1. All timber and timber based products used on the project is 'Legally harvested and traded timber' (see Relevant definitions). Note: For other materials there are no pre-requisite requirements at this stage.	-	-	Principal Contractor		
Man 03b - Environmental management	**One credit – Environmental management** 2. The principal Contractor operates an environmental management system (EMS) covering their main operations. The EMS must be either: a. third party certified, to ISO 14001/EMAS or equivalent standard; or b. have a structure that is in compliance with BS 8555:2003 and has reached phase four of the implementation stage, 'implementation and operation of the environmental management system', and has completed phase audits one to four, as defined in BS 8555.For Healthcare NHS buildings, see the pre-requisite for this issue in compliance note CN5 3. The principal Contractor implements best practice pollution prevention policies and procedures on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG6.	1	1	Principal Contractor		
Man 03c Sustainability Champion (construction)	**One credit – Sustainability Champion (construction)** 4. A Sustainability Champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target(s), during the Construction, Handover and Close Out stages (as defined by the RIBA Plan of Works 2013, stages 5 and 6).To do this the Sustainability Champion will ideally be site based or will visit the site regularly to carry out spot checks, with the relevant authority to do so and require action to be taken to address shortcomings in compliance. The Sustainability Champion will monitor site activities with sufficient frequency (see compliance note CN6) to ensure that risks of non-compliance are minimised. They will report on progress at relevant project team meetings including identifying potential areas of non-compliance and any action needed to mitigate. 5. The defined BREEAM performance target forms a requirement of the principal Contractor's contract (see compliance note Man 01 Project brief and design – CN5 and in Man 01 Project brief and design – Relevant definitions). 6 To achieve this credit at the final post construction stage of assessment, the BREEAM-related performance target for the project must be demonstrably achieved by the project. This is demonstrated via the BREEAM Assessor's final post construction stage assessment report.	1	1	Principal Contractor		
Man 03d Considerate construction	**Up to two credits - Considerate construction** 8.Where the refurbishment or fit-out project does not meet the definition of a small scale or low value project (see Relevant definitions) the principal contractor has used a 'compliant' organisational, local or national considerate construction scheme and their performance against the scheme has been confirmed by independent assessment and verification. The BREEAM credits can be awarded as follows: a.One credit where the contractor achieves 'compliance' with the criteria of a compliant scheme. b.Two credits where the contractor significantly exceeds 'compliance' with the criteria of the scheme. Refer to the Relevant definitions section for a list of compliant schemes and therefore how performance, as determined by a compliant scheme, translates into BREEAM credits. To achieve BREEAM credits using the Considerate Constructors Scheme (CCS) and its Code of Considerate Practice, the principal Contractor must achieve scheme certification and a CCS score as follows: 1. One credit: a CCS score between 25 and 34* 2. Two credits: a CCS score between 35 and 39** 3. Exemplary level performance: a CCS score of 40 or more**. * A score of at least 5 in each of the five sections must be achieved. ** A score of at least 7 in each of the five sections must be achieved.	2	2	Principal Contractor		
Man 03e Monitoring of construction-site impacts	**Monitoring of refurbishment or fit-out site impacts** 9. Responsibility has been assigned to an individual(s) for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from all on-site construction processes (and dedicated off-site monitoring) throughout the build programme. To ensure the robust collection of information, this individual(s) must have the appropriate authority and responsibility to request and access the data required. Where appointed, the Sustainability Champion could perform this role.	-	-	Principal Contractor		
Man 03f Utility consumption	**First monitoring credit - Utility consumption** **Energy consumption** 10. Criterion 9 is achieved. 11. Monitor and record data on principal constructor's and sub Contractors' 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. 12. Report the total carbon dioxide emissions (total kgCO2/project value) from the construction process via the BREEAM Assessment Scoring and Reporting tool. **Water consumption** 13. Criterion 9 is achieved. 14. Monitor and record data on principal constructor's and sub Contractors' potable water consumption (m3) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation. 15. Using the collated data report the total net water consumption (m3), i.e. consumption minus any recycled water use, from the construction process via the BREEAM Assessment Scoring and Reporting tool (for the purposes of potential future BREEAM performance benchmarking).	1	1	Principal Contractor		
Man 03g Transport of construction materials and waste	**Second monitoring credit - Transport of construction materials and waste** 16. Criterion 9 is achieved. 17. Monitor and record data on transport movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum this must cover: a. Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution. See Relevant definitions. b. Scope of this monitoring must cover the following as a minimum: i. Materials used in major building elements, services and interior fit-out ii. Ground works and landscaping materials. c. Transport of construction waste from the construction gate to waste disposal processing/recovery centre gate. Scope of this monitoring must cover the construction waste groups outlined in the project's waste management plan. 18. Using the collated data, report separately for materials and waste, the total fuel consumption (litres) and total carbon dioxide emissions (kgCO2 eq), plus total distance travelled (km) via the BREEAM Assessment Scoring and Reporting tool.	1	1	Principal Contractor		

<table>
<tr><th colspan="2">Criteria</th><th>Credits Available</th><th>Current Targeted</th><th>Resp.</th><th>RIBA Stage</th><th>Comments</th></tr>
<tr><td colspan="7">Man 04 Commissioning and handover: Min. Standard - Criterion 9 (Building User Guide) is required for Excellent and Outstanding</td></tr>
<tr><td>Man 04a Commissioning and testing schedule and responsibilities</td><td>One credit - Commissioning and testing schedule and responsibilities
1. There is a schedule of commissioning and testing that identifies appropriate commissioning required for the scope of works that includes a suitable timescale for commissioning and re-commissioning of all relevant works carried out. Commissioning should be carried out where changes are being made to the following:
a. Building services (including both complex and non-complex systems)
b. Building services control systems (including Building Management Systems)
c. Changes to the building fabric that will affect thermal performance
2. The schedule will identify the appropriate standards that all commissioing activities will be conducted in accordance with such as current Building Regulations, BSRIA and CIBSE guidelines and/or other appropriate standards, where applicable. Where a building management system (BMS) is specified, refer to compliance note CN8 on BMS commissioning procedures.
3. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of the client.
4. The principal Contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works, allowing for the required time to complete all commissioning and testing activities prior to handover.</td><td>1</td><td>1</td><td>Principal Contractor</td><td></td><td></td></tr>
<tr><td>Man 04b Commissioning building services</td><td>One credit - Commissioning building services
5.The commissioning and testing schedule and responsibilities credit is achieved.
6.For projects where work is being undertaken to upgrade, renovate or install new building services and systems.
a.For complex building services and systems, a specialist commissioning manager is appointed during the design stage (by either client or contractor) with responsibility for:
i.Undertaking design reviews and giving advice on suitability for ease of commissioning
ii.Providing commissioning management input to construction programming and during installation stages
iii.Management of commissioning, performance testing and handover/post handover stages.
b.For simple building services, this role can be carried out by an appropriate project team member (see criterion 3), provided they are not involved in the general installation works for the building services system(s).</td><td>1</td><td>1</td><td>Principal Contractor</td><td></td><td></td></tr>
<tr><td>Man 04c Testing and inspecting building fabric</td><td>One credit - Testing and inspecting building fabric
7. Projects where the fabric of the building is being upgraded, the integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of a thermographic survey as well as airtightness testing and visual inspection at appropriate times during the refurbishment. The survey/testing is undertaken by a Suitably Qualified Professional (see Relevant definitions) in accordance with the appropriate standard, with visual inspection conducted by a representative of the main contractor or by an independent inspector such as a clerk of works.
8. Any defects identified in the site inspection, thermographic survey and the airtightness testing reports are rectified prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building/element.</td><td>1</td><td>1</td><td>Principal Contractor</td><td></td><td></td></tr>
<tr><td>Man 04d Handover</td><td>One credit - Handover
9. A Building User Guide is developed or (where present) an existing Building User Guide is updated, prior to handover for distribution to the building occupiers and premises managers (seeRelevant definitions), with a draft copy developed and discussed with users first (where the building occupants are known) to ensure the guide is most appropriate and useful to potential users.
10. A training schedule is prepared for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum:
a. The design intent of refurbsihment/fit-out works
b. The available aftercare provision and aftercare team main contact(s), including any scheduled seasonal commissioning and post occupancy evaluation
c. Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces
d. Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations and maintenance (O&M) manual, commissioning records, log book etc.
e. Maintenance requirements, including any maintenance contracts and regimes in place.</td><td>1</td><td>1</td><td>Principal Contractor</td><td></td><td></td></tr>
<tr><td colspan="7">Hea 01 Visual comfort</td></tr>
<tr><td>Hea 01a Glare control</td><td>One credit - Glare control
1. The potential for disabling glare has been designed out of all relevant building areas using a glare control strategy, either through building form and layout and/or building design measures (see compliance note CN7).
2. The glare control strategy avoids increasing lighting energy consumption, by ensuring that:
a. The glare control system is designed to maximise daylight levels under all conditions while avoiding disabling glare in the workplace or other sensitive areas. The system should not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the facade.
AND
b. The use or location of shading does not conflict with the operation of lighting control systems.</td><td>1</td><td>1</td><td>Architect</td><td></td><td></td></tr>
<tr><td>Hea 01b - Daylighting</td><td>3. Daylighting criteria have been met using either of the following options (this is applicable to the refurbished area):
a. The relevant building areas meet good practice daylight factor(s) and other criterion as outlined in Table - 12 and Table - 13.
OR
b. The relevant building areas meet good practice average and minimum point daylight illuminance criteria as outlined in Table - 14.
4.Two credits where daylighting provision, averaged over all relevant spaces, has improved after refurbishment or fit-out by 30% or more and there is a minimum glazing to floor area ratio of either:
a. 5% glass to floor area ratio for side windows; OR
b. 2.5% glass to floor area ratio for roof lights;
5.One credit where daylighting provision, averaged over all relevant spaces, has improved after refurbishment or fit-out by 15% or more and there is a minimum glazing to floor area ratio of either:
a. 5% glass to floor area ratio for side windows; OR
b. 2.5% glass to floor area ratio for roof lights
Note: The improvement in daylighting provision is calculated using the BREEAM Hea 01 Calculator tool based upon either the increase in glazing area, transmittance, illuminance or percentage daylight factor. Please refer to the Methodology section for calculation procedures.

<table>
<tr><td>All occupied spaces, unless indicated in Relevant definitions</td><td>2%</td><td>40%</td><td>60%</td><td>80%</td><td>EITHER (a) OR {(b) and (c)} in Table - 13</td></tr>
</table>
Table - 13: Daylighting uniformity criteria
<table>
<tr><th>Ref</th><th>Criteria</th></tr>
<tr><td>(a)</td><td>A uniformity ratio of at least 0.3 or a minimum point daylight factor of at least 0.3 times the relevant average daylight factor value in Table - 12. Spaces with glazed roofs, such as atria, must achieve a uniformity ratio of at least 0.7 or a minimum point daylight factor of at least 0.7 times the relevant average daylight factor value in Table - 12.</td></tr>
<tr><td>(b)</td><td>At least 80% of the room has a view of sky from desk or table top height (0.85m in multi-residential buildings, 0.7m in other buildings).</td></tr>
<tr><td>(c)</td><td>The room depth criterion d/w +d/HW < 2/(1-RB) is satisfied.
Where:
d = room depth
w = room width
HW = window head height from floor level
RB = average reflectance of surfaces in the rear half of the room

Note:
Table - 19 gives maximum room depths in metres for different room widths and window head heights of side-lit rooms .</td></tr>
</table>
<table>
<tr><td>All occupied spaces, unless indicated in Relevant definitions</td><td>40%</td><td>60%</td><td>80%</td><td>At least 300 lux for 2000 hours per year or more</td><td>At least 90 lux for 2000 hours per year or more</td></tr>
</table></td><td>3</td><td>1</td><td>Architect</td><td></td><td></td></tr>
</table>

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
	In addition to the above, occupied spaces within the new build extension must comply with the following daylight criteria: Credits | Average daylight factor required | Minimum area to comply 1 | 2% | 60% 2 | 2% | 80%					
Hea 01c -View out	**Up to two credits - View out** 6. Two credits where 95% of the floor area in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out **(N.B The new build extension must also comply with criterion 6).** 7. One credit where 80% of the floor area space in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out and criterion 8 is met. 8. The window/opening must be ≥ 20% of the surrounding wall area (refer to Relevant definitions in the Additional information section). Where the room depth is greater than 7m, compliance is only possible where the percentage of window/opening is the same as, or greater than, the values in Table 1.0 of BS 8206. 9. In addition, the building type criteria in Table - 15 are applicable to view out criteria.	**2**	**2**	Architect		
Hea 01d -External lighting levels	**External lighting** 13. All external lighting located within the construction zone is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. To demonstrate this, external lighting provided is specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas3 and BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.	**1**	**1**	M&E		
Hea 02 Indoor air quality: ***Exemplary level criteria - Yes***						
Hea 02a Indoor air quality (IAQ) plan	**One credit - Indoor air quality (IAQ) plan** 1. An indoor air quality plan has been produced and implemented, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during the design, construction and occupation of the building. The indoor air quality plan must consider the following: a.Removal of contaminant sources b.Dilution and control of contaminant sources c.Procedures for pre-occupancy flush out d.Protection of Heating Ventilation and Air Conditioning (HVAC) systems from sources of pollution during refurbishment/fit-out works e.g. dust e.Procedures for protecting the indoor air quality of areas outside of the refurbishment or fit-out zone that may be affected by the refurbishment/fit-out works f.Procedures for identifying and implementing third party testing and analysis required to ascertain that the contaminant sources have been removed effectively before occupancy g.Commitments for maintaining indoor air quality in-use, e.g. maintenance and cleaning of the HVAC system, ductwork and filters.	**1**	**0**	Design Team		
Hea 02b Ventilation	**One credit- Ventilation** Refurbishment and fit-out works include measures to minimise the concentration and recirculation of pollutants in the building as follows: 2.Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation. 3.Design ventilation pathways to minimise the build-up of air pollutants in the building, as follows: a.In air conditioned and mixed mode buildings/spaces: i.The building's air intakes and exhausts are over 10m apart and intakes are over 20m from sources of external pollution; OR ii.The location of the building's air intakes and exhausts, in relation to each other and external sources of pollution, is designed in accordance with BS EN 13779:2007 Annex A2. b.In naturally ventilated buildings/spaces: openable windows/ventilators are over 10m from sources of external pollution. 4.Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3. 5.Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO2) or air quality sensors specified and: a.In mechanical ventilated buildings/spaces: sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space. b.In naturally ventilated buildings/spaces: sensors either have the ability to alert the building owner or manager when CO2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows/roof vents.	**1**	**0**	M&E		
Hea 02e Potential for natural ventilation	**One credit (credit not applicable to prison buildings)** 13. The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. This can be demonstrated as follows: a. Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy. The following are methods deemed to satisfy this criterion dependent upon the complexity of the proposed system: i. Room depths are designed in accordance with CIBSE AM10 (section 2.4) to ensure effectiveness of any natural ventilation system. The openable window area in each occupied space is equivalent to 5% of the gross internal floor area of that room/floor plate. OR ii. The design demonstrates that the natural ventilation strategy provides adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates. This is demonstrated using ventilation design tool types recommended by CIBSE AM10 (or for education buildings by using the ClassVent tool). b. For fit-out projects, local services are designed to provide fresh air via a natural ventilation strategy and are appropriately designed according to the room depth in accordance with CIBSE AM10. 14. The natural ventilation strategy is capable of providing at least two levels of user-control on the supply of fresh air to the occupied space (see compliance note CN9 for further details). Note: Any opening mechanisms must be easily accessible and provide adequate user-control over air flow rates to avoid draughts. Relevant industry standards for ventilation can be used to define 'adequate levels of fresh air' sufficient for occupancy and internal air pollution loads relevant to the building type. Note: Multi-residential buildings with self-contained flats and individual bedrooms must have a degree of openable window function. This does not need to provide two levels of user-control (as required above), but must be occupant controlled.	**1**	**0**	M&E		
Hea 04 Thermal comfort						
Hea 04a Thermal modelling	**One credit - Thermal modelling** 1. Thermal modelling has been carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling. 2. The software used to carry out the simulation at the detailed design stage provides full dynamic thermal analysis. For smaller and more basic building designs with less complex heating or cooling systems, an alternative less complex means of analysis may be appropriate (such methodologies must still be in accordance with CIBSE AM11). 3. The modelling demonstrates that: a. For air conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design2, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). b. For naturally ventilated/free running buildings: i. Winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). ii. The building is designed to limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings. 4.Where undertaking a Part 4 assessment a competent person (e.g. chartered building services engineer) must assess the suitability of existing building services and controls to identify any changes that may be required as a result of fit-out works (e.g. as a result of changes to internal layout, occupant density, additional equipment that may increase cooling loads etc.). 5. 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.	**1**	**1**	M&E		

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Hea 04b Adaptability - for a projected climate change scenario	**One credit - Adaptability - for a projected climate change scenario** 6. Criteria 1 to 4 are achieved. 7. The thermal modelling demonstrates that the relevant requirements set out in criteria 3 are achieved for a projected climate change environment (see Relevant definitions) -weather data under climate change 8 Where thermal comfort criteria are not met for the projected climate change environment, 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 7. 9. For air conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool. **Predicted mean vote PMV** - The PMV is an index that predicts the mean votes of a large group of persons on the seven-point thermal sensation scale based on the heat balance of the human body. Thermal balance is obtained when the internal heat production in the body is equal to the loss of heat to the environment. **Predicted percentage dissatisfied (PPD)** - The PPD is an index that establishes a quantitative prediction of the percentage of thermally dissatisfied people who feel too cool or too warm. For the purposes of ISO 7730, thermally dissatisfied people are those who will feel hot, warm, cool or cold.	**1**	**0**	M&E		
Hea 04c Thermal zoning and controls	**One credit - Thermal zoning and controls** 10. Criteria 1 to 4 are achieved. 11. The thermal modelling analysis (undertaken for compliance with criteria 1 to 4) has informed the temperature control strategy for the building and its users. 12. The strategy for proposed heating/cooling system(s) demonstrates that it has addressed the following: a. Zones within the building and how the building services could efficiently and appropriately heat or cool these areas. For example consider the different requirements for the central core of a building compared with the external perimeter adjacent to the windows. b. Where specified, any new local cooling or heating services (or changes to existing services) are designed to ensure they do not conflict with core services (e.g. conflicts between two separate cooling systems, conflicts between core heating and locally provided cooling systems). c. The degree of occupant control required for these zones, based on discussions with the end user (or alternatively building type or use specific design guidance, case studies, feedback) considers: i. User knowledge of building services ii. Occupancy type, patterns and room functions (and therefore appropriate level of control required) iii.How the user is likely to operate or interact with the system(s), e.g. are they likely to open windows, access thermostatic radiator valves (TRV) on radiators, change air-conditioning settings etc., 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 drafts). d. 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. e. The need or otherwise for an accessible building user actuated manual override for any automatic systems.	**1**	**1**	M&E		
Hea 05 Acoustic performance						
Hea 05a Sound insulation	**First credit - Sound insulation** **Criteria** The sound insulation between acoustically sensitive rooms and other occupied areas complies with the performance criteria given in Section 7 of BS 8233:2014 **Testing requirement** A programme of pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlined in the Additional information section of this BREEAM issue. If testing is to be carried out where the office is not yet furnished, then section 7.5 of BS 8233:2014 should be referred to when determining the performance criteria. Where the office is to be furnished at the time testing is carried out, then refer to section 7.7.6 of BS 8233:2014 for the relevant performance criteria.	**1**	**1**	Acoustic consultant		
Hea 05b Internal indoor ambient noise levels	**Second credit - Internal indoor ambient noise levels** **Criteria** Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233:2014. **Testing requirement** A programme of acoustic measurements is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlines in the Additional information section of this BREEAM issue. **Note:** For heavy weight roofs, or parts of the roof that are heavyweight, with a mass per unit area greater than 150kg/m2 (including those with sedum planting) that do not have any glazing or rooflights, calculations are not required, as such the credit can be awarded on a default basis of compliance.	**1**	**0**	Acoustic consultant		
Hea 05c Reverberation	**Third credit - Reverberation** **Criteria** Acoustic environment (control of reverberation, sound absorption and speech transmission index): Achieve the requirements relating to sound absorption and reverberation times, where applicable, set out in Section 7 of BS 8233:2014. **Testing requirement** A programme of acoustic measurements is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlined in the Additional information section of this BREEAM issue	**1**	**0**	Acoustic consultant		
Hea 06 Safety and security						
Hea 06b Security of site and building	**One credit - 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), see compliance note where the refurbishment or fit-out zone comprises part of a larger building. 2.The SQSS develops a set of recommendations or solutions during or prior to Concept Design (RIBA Stage 2 or equivalent). These recommendations or solutions aim to ensure that the design of buildings, public and private car parks and public or amenity space are planned, designed and specified to address the issues identified in the preceding SNA. 3.The recommendations or solutions proposed by the SQSS are implemented (see CN7. Any deviation from those recommendations or solutions will need to be justified, documented and agreed in advance with a suitably qualified security specialist.	**1**	**1**	Project Team		

<table>
<tr><th></th><th>Criteria</th><th>Credits Available</th><th>Current Targeted</th><th>Resp.</th><th>RIBA Stage</th><th>Comments</th></tr>
<tr><td colspan="7">Ene 01 Reduction of energy use and carbon emissions: Min. Standards - Five credits are required for Excellent and Eight credits are required for Outstanding</td></tr>
<tr><td>Ene 01a - Energy performance</td><td>Up to fifteen credits - Whole building energy model (option 1) OR Up to twelve credits - Elemental level energy model (option 2)
1. Calculate an Energy Performance Ratio for New Constructions (EPRNC). Compare the EPRNC achieved with the benchmark below and award the corresponding number of BREEAM credits.

<table>
<tr><th>BREEAM credits</th><th>EPRNC</th><th>Rating</th><th>Minimum requirements</th></tr>
<tr><td>1</td><td>≥ 0.06</td><td rowspan="5">Pass
Good
Very Good</td><td rowspan="5">None</td></tr>
<tr><td>2</td><td>≥ 0.12</td></tr>
<tr><td>3</td><td>≥ 0.18</td></tr>
<tr><td>4</td><td>≥ 0.24</td></tr>
<tr><td>5</td><td>≥ 0.30</td></tr>
<tr><td>6</td><td>≥ 0.36</td><td rowspan="4">Excellent</td><td rowspan="4">Requires a minimum of 6 credits to be achieved (equivalent to an EPRNDR of ≥ 0.36).</td></tr>
<tr><td>7</td><td>≥ 0.42</td></tr>
<tr><td>8</td><td>≥ 0.48</td></tr>
<tr><td>9</td><td>≥ 0.54</td></tr>
<tr><td>10</td><td>≥ 0.60</td><td rowspan="6">Outstanding</td><td rowspan="6">Requires a minimum of 10 credits to be achieved (equivalent to an EPRNDR of ≥ 0.60).</td></tr>
<tr><td>11</td><td>≥ 0.66</td></tr>
<tr><td>12</td><td>≥ 0.72</td></tr>
<tr><td>13</td><td>≥ 0.78</td></tr>
<tr><td>14</td><td>≥ 0.84</td></tr>
<tr><td>15</td><td>≥ 0.90</td></tr>
</table></td><td>15</td><td>9</td><td>M&E/Energy Assessor</td><td></td><td>Option 1 assumed.</td></tr>
<tr><td colspan="7">Ene 02 Energy monitoring Minimum standards: Min. Standard - One credit (First sub-metering credit) is required for Very Good, Excellent and Eight credits is required for Outstanding</td></tr>
<tr><td>Ene 02a Sub-metering of major energy consuming systems</td><td>One credit - Sub-metering of major energy consuming systems
1. Energy metering systems are installed that enable at least 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems (see Methodology).
2. The energy consuming systems in buildings with a total useful floor area greater than 1,000m2. are metered using an appropriate energy monitoring and management system.
3. The systems in smaller buildings are metered either with an energy monitoring and management system or with separate accessible energy sub-meters with pulsed or other open protocol communication outputs, to enable future connection to an energy monitoring and management system (see Relevant definitions).
4. The end energy consuming uses are identifiable to the building users, for example through labelling or data outputs.

Energy consuming systems:
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) - Major fans typically include fans in air handling units (AHUs). Where multiple fans are within an air handling unit, they can be metered as one unit. Small fans such as individual extract fans for single rooms, such as kitchen, bathroom and toilet areas, are not required to be included where they only account for a small proportion of the total annual energy use.
f. Pumps
g. Lighting
h. Small power
i. Renewable or low carbon systems (separately)
j. Controls
k. Other major energy-consuming systems/plant, where appropriate. Depending on the building type, this might include for example: plant used for swimming or hydrotherapy pools; other sports and leisure facilities; kitchen plant/catering equipment; cold storage plan;, laboratory plant; sterile services equipment; transportation systems (e.g. lifts and escalators); drama studios and theatres with large lighting rigs; telecommunications; dedicated computer room or suite; dealing rooms; covered car parks; ovens/furnaces; and floodlighting. See also CIBSE TM39: Building energy metering for further information.

Energy monitoring and management system
Examples include automatic meter reading systems (AMR) and building energy management systems (BEMS). Automatic monitoring and targeting (aM&T) is an example of a management tool that includes automatic meter reading and data management.

Refer to CN7 for guidance on extensions to existing buildings.</td><td>1</td><td>1</td><td>M&E</td><td></td><td></td></tr>
<tr><td>Ene 02b Sub-metering of high energy load and tenancy areas</td><td>One credit - Sub-metering of high energy load and tenancy areas
5. An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, covering a significant majority of the <u>energy supply</u> to tenanted areas or, in the case of single occupancy buildings, relevant function areas or departments within the building/unit.

Energy Supply: All types of energy supplied to a building area (function area/department/tenancy/unit) within the boundary of the assessed development; including electricity, gas, heat or other form of energy/fuel that are consumed as a result of the use of, and operations within, each relevant area.</td><td>1</td><td>1</td><td>M&E</td><td></td><td></td></tr>
<tr><td colspan="7">Ene 03 External lighting</td></tr>
<tr><td>Ene 03a External lighting</td><td>One credit
1. The building has been designed to operate without the need for external lighting (which includes on the building, signs and at entrances).

OR alternatively, where the building does have external lighting, one credit can be awarded as follows:
2. The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt.
3. All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.</td><td>1</td><td>1</td><td>M&E</td><td></td><td></td></tr>
</table>

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Ene 04 Low carbon design						
Ene 04a Passive design analysis	**One credit - Passive design analysis** 1. The first credit within issue Hea 04 Thermal comfort has been achieved to demonstrate the building design can deliver appropriate thermal comfort levels in occupied spaces. 2. The project team carries out an analysis of the existing and proposed building fabric, form, site location, outline scheme and design/development to influence decisions made during Concept Design stage (RIBA Stage 2 or equivalent) and identifies opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services (see compliance note CN7). 3. The building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis and the analysis demonstrates As a minimum, the passive design analysis should cover: 1. Site location 2. Site weather 3. Microclimate 4. Building layout 5. Building orientation 6. Building form 7. Building fabric 8. Thermal mass or other fabric thermal storage 9. Building occupancy type 10. Daylighting strategy 11. Ventilation strategy 12. Adaptation to climate change.	**1**	**0**	M&E		
Ene 4b Free cooling	**One credit - Free cooling** 4. The passive design analysis credit is achieved. 5. The passive design analysis carried out under criterion 2 includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions. 6. The building uses ANY of the free cooling strategies listed in compliance note CN5 to reduce the cooling energy demand, i.e. it does not use active cooling.	**1**	**0**	M&E		
Ene 4c Low zero carbon feasibility study	**One credit - Low zero carbon feasibility study** 7. A feasibility study has been carried out by the completion of the Concept Design stage (RIBA Stage 2 or equivalent) by an energy specialist (see Relevant definitions) to establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy source(s) for the building/development (see compliance note CN10). 8. A local LZC technology/technologies has/have been specified for the building/development in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated carbon dioxide (CO_2) emissions (see compliance note CN19). **The amount of energy or CO_2 emissions reduction is not specified in the criteria in this issue. However, it should not be a trivial amount. As a guide, the installation should contribute at least 5% of overall building energy demand and/or CO_2 emissions.** **The LZC study should cover as a minimum:** **1. Energy generated from LZC energy source per year** **2. Carbon dioxide savings from LZC energy source per year** **3. Life cycle cost of the potential specification, accounting for payback** **4. Local planning criteria, including land use and noise** **5. Feasibility of exporting heat/electricity from the system** **6. Any available grants** **7. All technologies appropriate to the site and energy demand of the development.** **8. Reasons for excluding other technologies** **9. Where appropriate to the building type, connecting the proposed building to an existing local community CHP system or source of waste heat or power OR specifying a building/site CHP system or source of waste heat or power with the potential to export excess heat or power via a local community energy scheme.**	**1**	**1**	Design Team		
Ene 06 Energy efficient transportation systems						
Ene 06a Energy consumption	**One credit - Energy consumption** 1. Where lifts, escalators and/or moving walks (transportation types) are specified: a. An analysis of the transportation demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators and/or moving walks. b.The energy consumption has been calculated in accordance with BS EN ISO 25745 Energy performance of lifts, escalators and moving walks, Part 2 : Energy calculation and classification for lifts (elevators) and/or Part 3 - Energy calculation and classification for escalators and moving walks, for one of the following: i. At least two types of system (for each transportation type required); OR ii. An arrangement of systems (e.g. for lifts, hydraulic, traction, machine room-less lift (MRL)); OR iii. A system strategy which is 'fit for purpose'. c. The use of regenerative drives should be considered, subject to the requirements in CN6. d. The transportation system with the lowest energy consumption is specified.	**1**	**1**	Design Team		
Ene 06b Energy efficient features	**Two credits - Energy efficient features** 2. Criterion 1 is achieved. **Lifts** 3. For each newly specified lift, the following three energy efficient features are specified and for existing lifts, at least two of the following energy efficient features are specified: a. The lifts operate in a standby condition during off-peak periods. For example the power side of the lift controller and other operating equipment such as lift car lighting, user displays and ventilation fans switch off when the lift has been idle for a prescribed length of time. b. The lift car lighting and display lighting provides an average lamp efficacy, (across all fittings in the car) of > 55 lamp lumens/circuit Watt. c. The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor. 4. Where the use of regenerative drives is demonstrated to save energy, they are specified. **Escalators and/or moving walks** Each escalator and/or moving walk complies with at least one of the following: 5. It is fitted with a load-sensing device that synchronises motor output to passenger demand through a variable speed drive; OR 6. It is fitted with a passenger-sensing device for automated operation (auto walk), so the escalator operates in standby mode when there is no passenger demand.	**2**	**2**	Design Team		
Tra 01 Public transport accessibility/solutions						
Tra 01a Public transport accessibility	**Up to three credits** 1. The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded in accordance with the table of building types, AI benchmarks and BREEAM credits (see requirements manual) 2. The Accessibility Index is determined by entering the following information in to the BREEAM Tra 01 calculator: a. The distance (m) from the main building entrance to each compliant public transport node b. The public transport type(s) serving the compliant node e.g. bus or rail c. The average number of services stopping per hour at each compliant node during the standard operating hours of the building for a typical day (see Compliance notes and Table-36 in the Additional Information section). **AND** **Up to two credits - Alternative transport measures** 3. Where alternative transport measures in Table - 35 are provided, credits can be awarded based upon the number of measures implemented as detailed in Table - 33	**5**	**3**	Project Team		Gray's Inn PTAL rating: 6b AI= 76.78

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Tra 02 Proximity to amenities						
Tra 02a Proximity to amenities	**One credit** Where a building is located within 500m of two of the following local amenities: • Appropriate food outlet • Access to a recreation/leisure facility for fitness/sports • Access to cash	**1**	**1**	Project Team		
Tra 03 Cyclist facilities						
Tra 03a Cycle Storage	**1No. compliant cycle spaces must be provided per 10 staff** **Compliant cycle storage spaces** Compliant cycle storage spaces are defined as those that meet the following: 1. Cycles can be secured within spaces in rack(s).They are covered overhead and the cycle racks are set in or fixed to a permanent structure (building or hard-standing). Alternatively the cycle storage may be located in a locked structure fixed to or part of a permanent structure with appropriate surveillance. 2. The distance between each cycle rack, and cycle racks and other obstructions, e.g. a wall, allows for appropriate access to the cycle storage space, to enable bikes to be easily stored and accessed. 3. The storage facility or entrance to the facility is in a prominent site location that is viewable/overlooked from either an occupied building or a main access to a building. 4. The cycle storage facility has adequate lighting, this could be demonstrated with the lighting criteria defined in BREEAM issue Hea 01 Visual comfort. The lighting must be controlled to avoid out-of-hours use and operation during daylight hours, where there is sufficient daylight in or around the facility. For sites where at least 50% of the available BREEAM credits for the Accessibility Index under the Sustainable transport solutions (Tra 01) criteria 1 and 2 have been awarded (rounded to the nearest whole credit), the number of compliant cycle spaces required in Table - 38 can be reduced by 50%. This reduction will also reduce the requirement for compliant showers or lockers by the same margin for most building types by default, since the calculation is based on the number of cycle storage spaces. Building types where the number of required showers/lockers is not based on cycle storage provision can reduce the actual requirement for compliant showers/lockers by 50%.	**1**	**1**	Project Team		
Tra 3b - Cycle Facilities	Criterion 1 must be achieved. At least two of the following compliant facilities must be provided for the building users: **a. Compliant showers** • Provision of one shower for every 10 cycle storage spaces, subject to a minimum provision of one shower. • Any development providing eight showers or more will comply regardless of the number of cycle storage spaces provided. • Both male and female users must be catered for i.e. either separate showers within shared gender-specific facilities (required provision split 50-50) or single shower cubicles and changing space for mixed use. • The showers do not need to be dedicated to cyclists and can be those shared with other users/uses. **b. Compliant changing facilities** • Appropriately sized for the likely/required number of users. The assessor should use their judgement to determine whether the changing area is appropriately sized given the number of cycle storage spaces or • Changing areas must include adequate space and facilities to hang or store clothing and equipment while changing or showering, e.g. bench seat and/or hooks. • Toilet/shower cubicles cannot be counted as changing facilities. **c. Compliant lockers** • The number of lockers is at least equal to the number of cycle spaces required. • Lockers are either in or adjacent to compliant changing rooms. • The lockers are sized appropriately for the storage of a cyclist's equipment. **d. Compliant drying spaces** • A compliant drying space is defined as a space that is specifically designed and designated with adequate heating/ventilation for the drying of wet clothes. A plant room for example is not a compliant drying space.	**1**	**1**	Project Team		
Tra 04 Maximum car parking capacity						
Tra 04 - Maximum Car Parking Capacity	Up to two credits - Car parking capacity 1. The building's car parking capacity is compared to the maximum car parking capacity benchmarks in Table -39 and the relevant number of BREEAM credits awarded. For most buildng types, except those where stated, the benchmarks vary according to the building's public transport Accessibility Index (AI determined in accordance with BREEAM issue Tra 01 Public Transport Accessibility/Solutions). Therefore, for these building types the AI must be determined prior to assessing this issue. This is required to ensure that the building's car parking capacity is relative to the building's accessibiltiy to the public transport network.	**2**	**0**			Details of parking and building user numbers across site to be confirmed

Table - 39: Credits available in Tra04 Maximum car parking capacity for different building types

Building's Accessibility Index	Criteria <4	Criteria ≥4 -<8	Criteria ≥8	Credits
Building Type	Max. parking capacity 1 space per x building users, where x is:			
Office, industrial, student residences and key worker accommodation	3	4	5	1
	4	5	6	2

Tra 05 Travel plan						
Tra 05a Travel Plan	**One credit** 1.A travel plan has been developed as part of the feasibility and design stages. 2. A site specific travel assessment/statement has been undertaken to ensure the travel plan is structured to meet the needs of the particular site and covers the following (as a minimum): a. Where relevant, existing travel patterns and opinions of existing building or site users towards cycling and walking so that constraints and opportunities can be identified. b. Travel patterns and transport impact of future building users. c. Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children) d. Disabled access (accounting for varying levels of disability and visual impairment) e. Public transport links serving the site f. Current facilities for cyclists. 3. The travel plan includes a package of measures to encourage the use of sustainable modes of transport and movement of people and goods during the buildings operation and use. 4. If the occupier is known, they must be involved in the development of the travel plan and they must confirm that the travel plan will be implemented post construction and be supported by the buildings management in operation.	**1**	**1**	Travel Consultant's appointment		

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Wat 01 Water consumption: ***Mini. Standards - One credit is required for Good, Very Good and Excellent. Two credits required for Outstanding.***						
Wat 01a - Water Consumption	Up to five credits: 1. An assessment of the efficiency of newly specified domestic water-consuming components and (where relevant) measures specified to retrofit existing devices is undertaken using the BREEAM Wat 01 calculator, including all fittings applicable to the project type as detailed in Table-42. 2. The water consumption (litres/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table-41. 3.The efficiency of the following 'domestic scale' water consuming components must be included in the calculation (where specified/relevant to the project type): a. WCs b. Urinals c. Taps (wash hand basins and where specified kitchen taps and waste disposal unit) d. Showers e. Baths f. Dishwashers (domestic and commercial sized) g. Washing machine (domestic and commercial/industrial sized) 4. Where a greywater and/or rainwater system is specified, its yield (l/person/day) can be used to off-set non potable water demand from components that would otherwise be supplied using potable water. 5. Any greywater systems must be specified and installed in compliance with BS8525-1:2010 Greywater Systems - Part 1 Code of Practice. Any rainwater systems must be specified and installed in compliance with BS8515:2009 Rainwater Harvesting Systems - Code of practice. Report the total net water consumption in m3/person/yr, via the BREEAM scoring and reporting tool (where total net water consumption can be modelled by the BREEAM Wat 01 calculator for the assessed building type). This figure is reported by the assessor via the BREEAM scoring and reporting tool. 6. Healthcare and prison buildings: refer to the relevant compliance note for additional criteria regarding the specification of particular water-consuming component controls. Table - 41 : BREEAM Credits available for percentage improvement over baseline building water consumption. % improvement / No. of BREEAM credits 12.5 / 1 25 / 2 40 / 3 50 / 4 55 / 5 65 / Exemplary performance	**5**	**2**	Project Team		
Wat 02 Water monitoring - ***Mini. Standards - For Good, Very Good, Excellent and Outstanding, meeting Wat 2a - Water Monitoring, criterion 1 only.***						
Wat 2a - Water Monitoring	1. The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source. 2. Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with sub meters or have water monitoring equipment integral to the plant or area. •The sub-meter requirement does not necessarily apply in the following cases, where the assessor confirms there will be no additional monitoring benefit resulting from their installation: a. Where a building has only one or two small sources of water demand (e.g. an office with sanitary fittings and a small kitchen) b. Where the building has two sources of water demand, one significantly larger than the other, and the water consumption for the larger demand is likely to mask the smaller demand. 3. Each meter (main and sub) has a pulsed output to enable connection to a Building Man-agement System (BMS) for the monitoring of water consumption. 4. If the refurbishment zone is within a site that has an existing BMS, managed by the same occupier/owner (as the space undergoing refurbishment building), the pulsed/digital water meter(s) for the refurbished building must be connected to the existing BMS. 5. If the refurbishment or fit-out zone is within a building that is leasehold, the pulsed/digital water meter(s) for the refurbishment or fit-out zone must be connected to the incoming water supply for water using equipment in tenanted areas (see compliance note)	**1**	**1**	M&E		
Wat 03 Water leak detection and prevention						
Wat 03a - Leak Detection System	1. A leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter. The leak detection system must be: 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 is installed. b. Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time c. Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods d. Programmable to suit the owner/occupiers' water consumption criteria e. Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.	**1**	**1**	M&E		
Wat 03b - Flow Control Device	2. Flow control devices that regulate the supply of water to each WC area/facility according to demand are installed (and therefore minimise water leaks and wastage from sanitary fittings). The following could be considered as types of flow control devices: - A time controller i.e. an automatic time switch device to switch off the water supply after a predetermined interval - A programmed time controller i.e. an automatic time switch device to switch water on and/or off at predetermined times. - A volume controller i.e. an automatic control device to turn off the water supply once the maximum preset volume is reached. - A presence detector and controller i.e. an automatic device detecting occupancy or movement in an area to switch water on and turn it off when the presence is removed. - A central control unit i.e. a dedicated computer-based control unit for an overall man-aged water control system, utilising some or all of the types of control elements listed above.	**1**	**1**	M&E		
Mat 01 Life cycle impacts						
Mat 1a - Green Guide Materials	**Up to six credits (option 1): Project lifecycle assessment study** The Green Guide to Specification can be used towards option 1 as a type of LCA tool for the assessment of new elements including external walls, external windows, internal floor finishes, upper floors, internal walls and partitions and roofs **Up to four credits (option 2): Elemental assessment of environmental performance information** Environmental performance information is collected for newly specified materials or where materials are retained in situ.	**6**	**3**	Project Team		

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Mat 03	**Responsible sourcing of materials:** ***Mini. Standards - For all BREEAM ratings, criterion 1 must be met.***					
Mat 03a Pre-requisite	**Pre-requisite** 1. All timber and timber based products used on the project is 'Legally harvested and traded timber ' Note: a. It is a minimum requirement for achieving a BREEAM rating (for any rating level) that compliance with criterion 1 is confirmed. b. For other materials there are no pre-requisite requirements at this stage.	-	-	Principal Contractor		
Mat 03b Sustainable procurement plan	**One credit - Sustainable procurement plan** 2. The principal contractor sources materials for the project in accordance with a documented sustainable procurement plan covering the following as minimum: a. Risks and opportunities are identified against a broad range of social, environmental and economic issues. BS 8902:2009 Responsible sourcing sector certification schemes for construction products- Specification can be used as a guide to identify these issues. b. Aims, objectives and targets to guide sustainable procurement activities. c. The strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible. d. Procedures are in place to check and verify that the sustainable procurement plan is being implemented/adhered to on individual projects. These could include setting out measurement criteria, methodology and performance indicators to assess progress and demonstrate success.	1	1	Principal Contractor		
Mat 03c Responsible sourcing of materials	**Up to 3 credits - Responsible sourcing of materials (RSM)** 3. One credit can be awarded where at least three of the material types listed in Table - 53 'Material categories' has been responsibly sourced from one of the responsible sourcing schemes recognised by BREEAM as detailed in Guidance Note 18 4. Up to three of the available RSM credits (refer to Table - 51) can be awarded where the applicable building materials (refer to Table - 53) are responsibly sourced in accordance with the BREEAM methodology, as defined in steps 1 to 2 in the Methodology RSM credits / % of available RSM points achieved 3 / ≥ 54% 2 / ≥ 36% 1 / ≥ 18%	3	1	Principal Contractor		
Mat 04	**Insulation**					
Mat 04a - Embodied Energy	One credit - Embodied impact 1. Any new insulation specified for use within the following building elements must be assessed: a. External walls b. Ground floor c. Roof d. Building services. 2. The Insulation Index for the building fabric and services insulation is the same as or greater than 2.5. S	1	1	Principal Contractor		
Mat 05	**Designing for durability and resilience**					
Mat 05a - Designing for Designing for durability and resilience	**Protecting vulnerable parts of the building from damage.** 1. The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This must include, but is not necessarily limited to: a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc). b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. c. Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas. **Protecting exposed parts of the building from material degradation** 2.Environmental factors have been identified that are relevant to the site location (see Table - 58) 3.Existing applicable building elements that are exposed to any relevant environmental factors have been identified (see Table - 58) 4.Existing applicable building elements (seeTable - 58) have been surveyed have been assessed to identify impacts of material degradation effects including an assessment to grade the severity of any degradation effects. Design and specification measures have been developed to repair and protect existing elements according to the severity of any degradation affects, to limit degradation. Where it is not feasible to implement measures to limit material degradation for existing elements, justification should be provided. 5. Newly specified materials or newly constructed elements (e.g. a new external wall) within the scope of refurbishment or fit-out works incorporate appropriate design and specification measures to limit material degradation due to environmental factors (See Methodology)	1	0	Project Team		
Mat 06	**Material efficiency**					
Mat 06 - Material Efficiency	**One credit** 1. Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life , 2. The above is carried out by the design/construction team in consultation with the relevant parties (see CN3) at each of the following RIBA stages: a. Preparation and Brief b. Concept Design c. Developed Design d. Technical Design e. Construction. All parties (as relevant to the project stage) involved in the design, specification and/or construction of the building should be consulted. e.g. reports (at Preparation and Brief stage) outlining the activity relating to material efficiency (ideas discussed, analysis and decisions taken); drawings or building integrated model (BIM), calculations showing reduction of material use through design (Concept Design/Developed Design stages); meeting notes, construction program, responsibilities schedule (indicating parties consulted).	1	0	Project Team		

<table>
<tr><th colspan="2">Criteria</th><th>Credits Available</th><th>Current Targeted</th><th>Resp.</th><th>RIBA Stage</th><th>Comments</th></tr>
<tr><td colspan="7">Wst 01 Construction waste management : Mini. Standards - One credit is required for Outstanding.</td></tr>
<tr><td>Wst 01a Pre-refurbishment audit</td><td>One credit - Pre-refurbishment audit
1.The client shall ensure that a pre-refurbishment audit of all existing buildings, structures or hard surfaces within the scope of the refurbishment or fit-out zone is completed.
The requirements for carrying out an appropriate pre-refurbishment audit are
a.The audit should be carried out at the Concept Design Stage (equivalent to RIBA stage 2) prior to strip-out or demolition works in order to use the audit results to guide the design, consideration of materials that can be reused, and to set targets for waste management and ensure all contractors are engaged in the process of maximising high grade reuse and recycling opportunities.
b.The audit should be carried out by a competent person (see Relevant Definitions) who is independent of the project, has appropriate knowledge of buildings, waste and options for the reuse and recycling of different waste streams
c.Actual waste arisings and waste management routes used should be compared with those forecast from the audit and barriers to achieving targets should be investigated.
The audit must be referenced in the resource management plan and cover:
d.Identification and quantification of the key materials where present on the project (seeTable - 66)
e.Potential applications and any related issues for the reuse and recycling of the key materials in accordance with the waste hierarchy.
f.Identification of local reprocessors or recyclers for recycling of materials
g.Identification of overall recycling rate for all key materials
h.Identification of reuse targets where appropriate.
i.Identification of overall landfill diversion rate for all key materials.</td><td>1</td><td>1</td><td>Principal Contractor</td><td>Stage 2</td><td></td></tr>
<tr><td>Wst 01b Reuse and direct recycling of materials</td><td>Up to two credits - Reuse and direct recycling of materials
2. Where waste material types detailed in Table - 64 are either directly re-used on-site or off-site or are sent back to the manufacturer for closed loop recycling
3.One credit is achieved where 50% of the total available points for the waste material types detailed in Table - 64
, that are present on the project have been achieved (using the Was 01 calculator tool, see Table - 65 in the Methodology section).
4. Two credits are achieved where 75% of the total available points for the waste material types detailed in
Table - 64 , that are present on the project have been achieved (using the Was 01 calculator tool, see
Table - 65 in the Methodology section)

Please note that in most instances any materials specified in
Table - 64 that are sent to a Material Recovery Facility (MRF) for recovery does not qualify for this credit. See compliance note CN2, Resource management plan for further details.</td><td>2</td><td>1</td><td>Principal Contractor</td><td></td><td></td></tr>
<tr><td>Wst 01c Resource efficiency</td><td>Up to three credits - Resource efficiency
5. Develop and implement a compliant resource management plan covering the waste arisings from the refurbishment or fit-out project with the aim of minimising waste (see Relevant definitions), recording and reporting accurate data on waste arisings.
6. The non-hazardous waste relating to on-site refurbishment or fit-out, and dedicated off-site manufacture or fabrication processes generated by the building’s design and construction meets, or exceeds, the resource efficiency benchmarks set out in Table - 61 andTable - 62 as relevant to the project type. Note - Volume (m 3) is actual volume of waste (not bulk volume).

Table - 61: Refurbishment and fit-out waste resource efficiency benchmarks - Refurbishment (Combinations of Parts 1 - 4)
<table><tr><th rowspan="2">BREEAM credits</th><th colspan="2">Amount of construction waste generated per 100m² (gross internal floor area)</th></tr><tr><th>m³</th><th>tonnes</th></tr><tr><td>One</td><td>≤ 11.3</td><td>≤ 3.5</td></tr><tr><td>Two</td><td>≤ 4.5</td><td>≤ 1.2</td></tr></table>Table - 62: Refurbishment and fit-out waste resource efficiency benchmarks - Part 4 only
<table><tr><th rowspan="2">BREEAM credits</th><th colspan="2">Amount of construction waste generated per 100m² (gross internal floor area)</th></tr><tr><th>m³</th><th>tonnes</th></tr><tr><td>One</td><td>≤ 9.4</td><td>≤ 3.1</td></tr><tr><td>Two</td><td>≤4.3</td><td>≤ 1.6</td></tr><tr><td>Three</td><td>≤ 2.4</td><td>≤ 0.6</td></tr><tr><td>Exemplary level</td><td>≤ 1.4</td><td>≤ 0.4</td></tr></table></td><td>3</td><td>0</td><td>Principal Contractor</td><td></td><td></td></tr>
<tr><td>Wst 01d Diversion of resources from landfill</td><td>One credit - Diversion of resources from landfill
7. The following percentages of non-hazardous construction and demolition waste (where applicable) generated have been diverted from landfill:

Table - 63: Diversion of waste for refurbishment and fit-out
<table><tr><th>BREEAM credits</th><th>Source of waste</th><th>Volume</th><th>Tonnage</th></tr><tr><td>One credit</td><td>Refurbishment/fit-out</td><td>85%</td><td>90%</td></tr><tr><td></td><td>Demolition</td><td>90%</td><td>95%</td></tr><tr><td>Exemplary level</td><td>Refurbishment/fit-out</td><td>95%</td><td>97%</td></tr><tr><td></td><td>Demolition</td><td>95%</td><td>97%</td></tr></table></td><td>1</td><td>1</td><td>Principal Contractor</td><td></td><td></td></tr>
<tr><td colspan="7">Wst 02 Recycled aggregates</td></tr>
<tr><td>Wst 02a Recycled Aggregates</td><td>One credit - Recycled aggregates
1. The percentage of high grade aggregate that is recycled or secondary aggregate, specified in each application (present) must meet the following minimum % levels (by weight or volume) to contribute to the total amount of recycled or secondary aggregate, as specified in.
2. The total amount of recycled or secondary aggregate specified, and meeting criterion 1, is greater than 25% (by weight or volume) of the total high grade aggregate specified for the project. Where the minimum level in criterion 1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.
3. The recycled or secondary aggregates are EITHER:
a. Construction, demolition and excavation waste obtained on-site or off-site; OR
b.Secondary aggregates obtained from a non-construction post-consumer industrial by product source (see Relevant definitions section).

Table - 67: Minimum levels (by weight and volume) of high grade aggregate specified per application (where present) that is recycled or secondary aggregate
<table><tr><th>Application</th><th>Min. % One credit</th><th>Min. % Exemplary performance</th></tr><tr><td>Bound</td><td></td><td></td></tr><tr><td>Structural frame</td><td>15%</td><td>30%</td></tr><tr><td>Bitumen or hydraulically bound base, binder, and surface courses for paved areas and roads</td><td>30%</td><td>75%</td></tr><tr><td>Building foundations</td><td>20%</td><td>35%</td></tr><tr><td>Concrete road surfaces</td><td>15%</td><td>45%</td></tr><tr><td>Unbound</td><td></td><td></td></tr><tr><td>Pipe bedding</td><td>100%</td><td>N/A</td></tr><tr><td>Granular fill and capping (see Relevant definitions section)</td><td>100%</td><td>N/A</td></tr></table></td><td>1</td><td>1</td><td>Design Team</td><td></td><td></td></tr>
</table>

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Wst 03 Operational waste: ***Mini. Standards - One credit is required for Excellent and Outstanding.***						
Wst 3a - Operational Waste	**One credit - Operational waste** 1. Dedicated space(s) is provided for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. This space must be: a. Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams b. Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management Principal Contractors c. Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates. Where it is not possible to determine what provision should be made, the following guide for minimum storage space provision should be used: 1. At least 2m 2per 1000m2 of net floor area for buildings < 5000m2 2. A minimum of 10m2 ≥ 5000m2 3. An additional 2m2 per 1000m2 of net floor area where catering is provided (with an additional minimum of 10m2 for buildings ≥ 5000m2). The net floor area should be rounded up to the nearest 1000m2 2. Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities are provided: a. Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space. b. Vessel(s) for composting suitable organic waste resulting from the building's daily operation and use; OR adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility. c. Where organic waste is to be stored/composted on-site, a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.	**1**	**1**	Project Team		
Wst 04 Speculative floor and ceiling finishes						
Wst 04a Speculative floor and ceiling finishes	**One credit - Speculative floor and ceiling finishes** Office building types only 1. For tenanted areas (where the future occupant is not known), prior to full fit-out works, carpets, other floor finishes and ceiling finishes have been installed in a show area only. 2. In a building developed for a specific occupant, that occupant has selected (or agreed to) the specified floor and ceiling finishes.	**1**	**0**	N/A		
Wst 05 Adaptation to climate change						
Wst 05a Adaptation to climate change	**One credit - Adaptation to climate change – structural and fabric resilience** A number of BREEAM issues within the New Construction scheme contain assessment criteria which aim to support mitigation of the impacts of extreme weather events arising from climate change. The main credit in this issue focuses on structural and fabric resilience not covered in other issues. An Exemplary credit is awarded where a holistic approach on adaptation to climate change has been covered, demonstrated by achieving credits in other issues. The following is required to demonstrate compliance: One credit - Adaptation to climate change – structural and fabric resilience 1. Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of Concept Design (RIBA Stage 2 or equivalent), in accordance with the following approach: a. Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages: i. Hazard identification ii.Hazard assessment iii.Risk estimation iv. Risk evaluation v. Risk management.	**1**	**0**	Project Team		
Wst 06 Functional adaptability						
Wst 6a Functional adaptability	One credit - Functional adaptability 1. A building-specific functional adaptation strategy study has been undertaken by the client and design team by Concept Design (RIBA Stage 2 or equivalent), which includes recommendations for measures to be incorporated to facilitate future adaptation. This should consider: • The potential for major refurbishment, including replacing the façade. • Design aspects that facilitate the replacement of all major plant within the life of the building e.g. panels in floors/walls that can be removed without affecting the structure, providing lifting beams and hoists. • The degree of adaptability of the internal environment to accommodate changes in working practices. • The degree of adaptability of the internal physical space and external shell to accommodate change in-use. • The extent of accessibility to local services, such as local power, data infrastructure etc. 2. Functional adaptation measures have been implemented (RIBA Stage 4 or equivalent) in accordance with the functional adaptation strategy recommendations, where practical and cost effective. Omissions have been justified in writing to the assessor. The implementation will be specific to the building and scope of project, but information should be made available to the assessor covering: • The feasibility for multiple/alternative building uses and area functions e.g.related to structural design of the building • Options for multiple building uses and area functions based on design details e.g. modularity • Routes and methods for major plant replacement e.g.networks and connections have flexibility and capacity for expansion • Accessibility for local plant and service distribution routes e.g.detailed information on building conduits and connections infrastructure • The potential for the building to be extended, horizontally and/or vertically.	**1**	**0**	Project Team		
LE 02 Ecological value of site and protection of ecological features						
LE2a - Protection of ecological features	**One credit - Protection of ecological features** 2. All existing features of ecological value within and surrounding the construction zone and site boundary area are adequately protected from damage during clearance, site preparation and construction activities in line with BS42020: 2013. 3. In all cases, the principal Contractor is required to construct ecological protection recommended by the SQE, prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities).	**1**	**1**	Ecologist/ Principal Contractor		

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
LE 04 Enhancing site ecology						
LE4a Ecologist's report and recommendations	**One credit - Ecologist's report and recommendations** 1. A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the end of the Preparation and Brief stage (RIBA Stage 1 or equivalent) to advise on enhancing the ecology of the site at an early stage. 2. The SQE has provided an Ecology Report with appropriate recommendations for the enhancement of the site's ecology at Concept Design stage (RIBA Stage 2 or equivalent). The report is based on a site visit/survey by the SQE 3. The early stage advice and recommendations of the Ecology Report for the enhancement of site ecology have been, or will be, implemented in the final refurbishment.	**1**	**0**	Ecologist/ Landscape Architect		
LE 05 Long term impact on biodiversity						
LE5a - Long term impact on biodiversity	**1a. One credit can be awarded where there is a commitment to achieve the mandatory criteria and at least <u>two</u> of the additional criteria.** **1b. Two credits can be awarded where there is a commitment to achieve the mandatory criteria and at least <u>four</u> of the additional criteria** **Mandatory criteria** 2. Where a suitably qualified ecologist (SQE) is appointed prior to commencement of activities on site and they confirm that all relevant UK and EU legislation relating to protection and enhancement of ecology has been complied with during the refurbishment or fit-out process. 4. Where a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS 42020:2013 Section 11.1. This is to be handed over to the building owener/occupants for use by the grounds maintenance staff: **Additional criteria** 5. The principal contractor nominates a 'Biodiversity Champion' with the authority to influence site activities and ensure that detrimental impacts on site biodiversity are mini+E165mised in line with the recommendations of a suitably qualified ecologist. 6. The principal Contractor trains the site workforce on how to protect site ecology during the project. Specific training must be carried out for the entire site workforce to ensure they are aware of how to avoid damaging site ecology during operations on site. Training should be based on the findings and recommendations for protection of ecological features highlighted within a report prepared by a suitably qualified ecologist. 7. The principal Contractor records actions taken to protect biodiversity and monitor their effectiveness throughout key stages of the construction process. The requirement commits the principal Contractor to make such records available where publicly requested. 8. Where a new ecologically valuable habitat, appropriate to the local area, is created. This includes habitat that supports nationally, regionally or locally important biodiversity, and/or which is nationally, regionally or locally important itself; including any habitat listed in the UK Biodiversity Action Plan (UK BAP)2 , Local Biodiversity Action Plan (LBAP), those protected within statutory sites (e.g. SSSIs), or those within non-statutory sites identified in local plans. 9. Where flora and/or fauna habitats exist on site, the Principal Contractor programmes site works to minimise disturbance to wildlife. For example, site preparation, ground works, and land-scaping have been, or will be, scheduled at an appropriate time of year to minimise disturbance to wildlife. Timing of works may have a significant impact on, for example, breeding birds, flowering plants, seed germination, amphibians etc. Actions such as phased clearance of vegetation may help to mitigate ecological impacts. This additional requirement will be achieved where a clear plan has been produced detailing how activities will be timed to avoid any impact on site biodiversity in line with the recommendations of a suitably qualified ecologist.	**2**	**2**	Ecologist/ Principal Contractor		
Pol 01 Impact of refrigerants						
Pol 1a Impact of refrigerants	**Three credits - No refrigerant use** 1. Where the building does not require the use of refrigerants within its installed plant/systems. OR alternatively, where the building does require the use of refrigerants, the three credits can be awarded as follows: **Pre-requisite** 2. All systems (with electric compressors) must comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice. **Two credits - Impact of refrigerant** 3. Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤100 kgCO2e/kW cooling/heating capacity. To calculate the DELC CO2e please refer to the Relevant definitions in the Additional information section and the Methodology section. **OR** 4. Where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤10. **OR** **One credit - Impact of refrigerant** 5. Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤1000 kgCO2e /kW cooling/heating capacity. **One credit - Leak detection** 6. Where systems using refrigerants have a permanent automated refrigerant leak detection system installed; OR where an in-built automated diagnostic procedure for detecting leakage is installed. In all instances a robust and tested refrigerant leak detection system must be installed and must be capable of continuously monitoring for leaks. 7. The system must be capable of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident (see Other information section for additional information). **For installations of small multiple hermetic systems only where the refrigerant charge in each unit is less than 6kg, the credit for leak detection and containment can be awarded by default.**	**3**	**2**	M&E		
Pol 02a - NOx emissions						
Pol 02a - NOx emissions	**Up to three credits:** The plant installed to meet the building's delivered space heating and cooling demand has, under normal operating conditions, a dry NOx emission level (measured at 0% excess O2) as follows: NO_x Emission levels for heating and hot water (mg/kWh) / Credits ≤ 100 mg/kWh / 1 credit ≤ 70 mg/kWh / 2 credits ≤ 40 mg/kWh / 3 credits	**3**	**0**	M&E		

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Pol 03 Surface water run off						
Pol 03a Flood risk management	**Two credits - Flood risk management** **Low flood risk** 1. Where flood maps from the appropriate statutory body (see Relevant definitions)confirm the refurbishment or fit-out is situated in a flood zone that is defined as having a low annual probability of flooding; OR 2. The project meets the requirements for avoidance of flooding in accordance with Checklist 1, (see Checklists and tables), e.g. where the refurbishment or fit-out zone is of a floor level that is 0.3m higher than the obtained/estimated flood level and safe access/escape routes are available/present **Medium/high flood risk** 3. Where criterion 4 and either criterion 5 or 6 have been met 4. Where flood maps from the appropriate statutory body (see Relevant definitions) confirm the site has a medium or high flood risk and a site specific FRA has been undertaken (as relevant to size of project in accordance with CN7). The FRA must take all current and future sources of flooding into consideration in accordance with compliance note. 5.Where the refurbishment or fit-out zone achieves avoidance from flooding through either: a.the refurbishment and fit-out zone is located entirely on the first floor or above and a flood emergency plan has been developed in accordance with 'Would your business stay afloat? A Guide to preparing your business for flooding', Environment Agency, 2011 b.As a result of the building's floor level or measures to keep water away, the building is defined as achieving avoidance from flooding by following Checklist A-1, Checklists and tables. 6.Where avoidance is not possible, two credits are achieved where a full flood resilience/resistance strategy is implemented for the building's scope of works in accordance with recommendations made by a Suitably Qualified Building Professional (see Relevant definitions . The following aspects of the design should be addressed for the relevant parts, in accordance with best practice guidance (see compliance noteCN9): a. Part 1: Fabric – using flood resilient materials and flood protection measures for the building fabric, e.g. waterproof materials, impermeable membranes, flood barriers, safe access/exit points in the event of a flood etc. b.Part 2: Core services – core services and associated infrastructure (including equipment and vulnerable pipes/ducts/cables etc.) should be located/specified so as to protect services from flooding damage, e.g. location/routing/height, protection of building apertures (such as intakes/extracts/ventilation), non-return valves etc. c.Part 3: Local services – the location/height of local services such as sockets, vents etc. and the location of the wiring/pipework/ductwork in relation to the flood level and other measures to protect local services. d.Part 4: Interior – the proposed function of spaces that are below the flood level (e.g. sacrificial spaces) should be limited to those which are not susceptible to flood damage, and the resilience of materials used for partitions, walls, floors, ceiling finishes, furniture and fittings and the location of equipment in relation to the flood level, e.g. avoid storing flood sensitive materials and functions in spaces that are below the flood level.	**2**	**2**	Project Team		EA flood map shows the site is in a low risk zone.
Pol 03b - Surface Water Run Off	**One credit - neutral impact on surface water** 7. There is no increase in the impermeable surfaces as a result of the refurbishment works; OR 8. If there is an increase in the impermeable surface as a result of the refurbishment works then the following must be met: a.Hard standing areas - where there is an extension or increase in the hardstanding areas and hence an increase in the total impermeable area as a result of the refurbishment works, the hardstanding area must be permeable or be provided with on-site SuDS to allow full infiltration of the additional volume, to achieve the same end result. The permeable hardstanding must include all pavements and public rights of way, car parks, driveways and non-adoptable roads, but exclude footpaths that cross soft landscaped areas which will drain onto a naturally permeable surface. b.Building extension - where there is an increase in building footprint, extending onto any previously permeable surfaces, the additional run-off caused by the area of the new extension must be managed on-site using an appropriate SuDS technique for rainfall depths up to 5mm. **Two credits - reducing run-off** 9. An Appropriate Consultant (see Relevant definitions) has been used to design an appropriate drainage strategy for the site. 10.Either of the following criteria are met: a.There is a decrease in the impermeable area by 50% or more, from the pre-existing impermeable hard surfaces; OR b.Where run-off as a result of the refurbishment is managed on-site using source control achieving the following requirements: i.The peak rate of run-off as a result of the refurbishment for the 1 in 100 year event has been reduced by 50% from the existing site. ii.The total volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100 year event of 6 hour duration has been reduced by 50%. iii.An allowance for climate change must be included for all of the above calculations; this should be made in accordance with current best practice planning guidance.	**2**	**1**	Project Team		
Pol 03c - Minimising water course pollution	**One credit - Minimising water course pollution** 11. There is no discharge from the developed site (includes new and existing hard landscaping and buildings) for rainfall up to 5mm (confirmed by the Appropriate Consultant). 12. Where suitable pollution prevention measures are put in place (or already exist) for the different sources of pollution present on the assessed site, in accordance with compliance note CN20. 13. A comprehensive and up to date drainage plan of the site will be made available for the building/site occupiers. 14. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS must be in place.	**1**	**1**	Project Team		
Pol 04 Night Time Light Pollution						
pol 04 - Night Time Light Pollution	**One credit** 1. Where external lighting pollution has been eliminated through effective design that removes the need for external lighting without adversely affecting 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 1 (and its accompanying notes) of the ILE Guidance notes for the reduction of obtrusive light, 2011 , (see Additional Information below - Buildings located in Scotland must also refer to the Compliance notes below for additional criteria). 3. All external lighting (except for safety and security lighting) can be automatically switched off between 2300hrs and 0700hrs. This can be achieved by providing a timer for all external lighting set to the appropriate hours. 4. If safety or security lighting is provided and will be used between 2300hrs and 0700hrs, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 1 of the ILE's Guidance notes, for example by using an automatic switch to reduce the lighting levels at 2300 or earlier. 5. Illuminated advertisements, where specified, must be designed in compliance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements	**1**	**1**	M&E		
Pol 05 Noise attenuation						
Pol 5a - Noise Attenuation	**Applicability:** This issue is applicable to Parts 1, 2 and 3 assessments to assess the impact of existing or newly specified externally mounted plant and the impact of any fabric measures on reducing the impact of noise on any nearby noise-sensitive buildings. The following is required to demonstrate compliance: **One credit** 1. Where there are, or will be, no noise-sensitive areas or buildings within 800m radius of the assessed development. **OR** 2. Alternatively, where there are or will be noise-sensitive areas or buildings within 800m radius of the assessed development a noise impact assessment in compliance with BS 7445:1991 has been carried out and the following noise levels measured/determined: a. Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar. b. The rating noise level resulting from the new noise-source (see also Compliance note: Compliance at the design stage). 3. The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate pro-fessional body (see Relevant definitions in the Additional Information section). 4. The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (0700hrs to 2300hrs) and +3dB at night (2300hrs to 0700hrs) compared to the back-ground noise level. 5. Where the noise source(s) from the proposed site/building is 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 criterion 4.	**1**	**1**	Acoustic Consultant's appointment/ Contractor		

	Criteria	Credits Available	Current Targeted	Resp.	RIBA Stage	Comments
Innovation - Exemplary Level Criteria						
Man 03i	3. Exemplary level performance: a CCS score of 40 or more**. * A score of at least 5 in each of the five sections must be achieved. ** A score of at least 7 in each of the five sections must be achieved.	**1**	**0**	Principal Contractor		
Man 05i	6. There is (or will be) operational infrastructure and resources in place to coordinate the following activities at quarterly intervals for the first three years of building occupation: a. Collection of occupant satisfaction, energy consumption and water consumption data. b. Analysis of the data to check the building is performing as expected and make any necessary adjustments to systems controls or to inform building user behaviours. c. Setting targets for reducing water and energy consumption and monitor progress towards these. d. Feedback any 'lessons learned' to the design team and developer for use in future projects. e. Provision of the actual annual building energy, water consumption and occupant satisfaction data to BRE	**1**	**0**	Client		
Hea 01i	All building types (excluding retail – see below) Functions as identified in the standard criteria (multi storey buildings) — 1 — 3% — 80% — Where used, a minimum point daylight factor of 1.2% OR 2.1% for spaces with glazed roofs, such as atria Functions as identified in the standard criteria (single storey buildings) — 4% — 80% — Where used, a minimum point daylight factor of 1.6% OR 2.8% for spaces with glazed roofs, such as atria	**1**	**0**	Design Team		
Hea 02i	**One credit** 15. Criterion 6 has been achieved. 16. All seven remaining product categories listed in Table - 18 meet the testing requirements and emission levels criteria for Volatile Organic Compound (VOC) emissions (listed in the table). 17. For products B – F listed in Table - 18, the formaldehyde emission levels have been measured and found to be less than or equal to 0.06mg/m3 air in accordance with the approved testing standards in Table - 18. **Two credits** 18. Criterion 6 has been achieved. 19. All seven remaining products categories listed in Table - 18 meet the testing requirements and emission levels criteria for Volatile Organic Compound (VOC) emissions (listed in the table). 20. For products B to F listed in Table - 18, the formaldehyde emission levels have been measured and found to be less than or equal to 0.01mg/m3 air, in accordance with the approved testing standards in Table - 18.	**2**	**0**	Design Team		
Ene 01i	**Two credits - Zero regulated carbon** 8. The building achieves an EPRNDR ≥ 0.9 and zero net regulated CO2emissions (see Relevant definitions Up to four credits - Zero regulated carbon and carbon neutral unregulated energy 9. Criterion 8 has been achieved. 10. An equivalent percentage of the building's modelled regulated operational delivered energy consumption, as stipulated in Table - 29, is generated by carbon neutral on-site or near-site sources and used to meet energy demand from unregulated building systems or processes. Five credits - Carbon negative 11. The building is carbon negative in terms of its total modelled operational delivered energy consumption, including regulated and unregulated energy (see Relevant definitions Table - 29: Innovation credits for carbon neutral unregulated energy and carbon negative Innovation credits: 3 — % unregulated delivered energy consumption from carbon neutral sources: ≥ 20 4 — ≥ 50 5 — ≥ 100	**5**	**0**	Design Team		
Wat 01i	The domestic water consuming components perform 65% against a notional baseline performance.	**1**	**0**	Design Team		
Mat 01i	Where assessing four or more applicable building elements, the building achieves at least two points additional to the total points required to achieve maximum credits under the standard BREEAM criteria OR Where assessing fewer than four applicable building elements, the building achieves at least one point additional to the total points required to achieve maximum credits under the standard BREEAM criteria.	**3**	**0**	Design Team		
Mat 03i	TBC by BRE.	**1**	**0**	Design Team		
Wst 01i	See Wst 1 above.	**1**	**0**	Design Team		
Wst 02i	See Wst 02 above.	**1**	**0**	Design Team		
Wst 05i	See Wst 05 above.	**1**	**0**	Design Team		
Pol 03i	Exemplary level requirements The following outlines the exemplary level requirements to achieve an innovation credit for surface water run-off: 15. Where all run-off from the developed site is managed on-site using source control, the following must be achieved to confirm compliance: a. The peak rate of run-off as a result of the refurbishment for the 1 in 1 year event is reduced to zero. b.The peak rate of run-off as a result of the refurbishment for the 1 in 100 year event is reduced to zero. c.There is no volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100 year event of 6 hour duration. d.An allowance for climate change must be included for all of the above calculations, in accordance with current best practice national planning guidance. e.Where an appropriately qualified professional has been employed to provide the above calculations and design an appropriate drainage strategy for the site, ensuring all above criteria are achieved.	**1**	**0**	Design Team		
AI	Approved Innovation	**1**	**0**			