BREEAM 2018 V.6 Pre-Assessment

Birthwaite Park Industrial Buildings

Barnsley

Fully Fitted

31st May 2023

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1.0 BREEAM 2018 V.6

1.1 BREEAM Overview

BREEAM is the Building Research Establishment's Environmental Assessment Method.

Initially created in the 1980's, the Schemes are periodically updated to ensure the methodology goes above and beyond current building regulations. The aim of this is to encourage environmental design and push forward sustainable construction practices both in the UK and Internationally. BREEAM is now widely used across the world and with 250,000 buildings fully certified and over a million registered for assessment, BREEAM is the world's leading environmental assessment method for sustainable buildings.

BREEAM projects are awarded 'Credits' for compliance with assessment criteria. The criteria are split over ten categories, Management, Health and Wellbeing, Energy, Water, Materials, Transport, Waste, Land Use and Ecology, Pollution and Innovation. The total number of credits achieved is totalled to produce a single overall percentage score. The score translates to a rating ranging over the following scale, Pass (≥30%), Good (≥ 45%), Very Good (≥55%), Excellent (≥70%) and Outstanding (≥ 85%).

The assessments are then reviewed and checked by BRE Global before a certificate is issued.

1.2 BREEAM Around the world

The map below provides an overview of the uptake of BREEAM assessments across the world. Countries shaded light green have certified BREEAM projects, those indicated in a dark green have a country specific BREEAM Scheme operated by a National Scheme Operator.

1.3 BREEAM New Construction 2018

The BREEAM New Construction 2018 Scheme can be used to assess a wide variety of buildings in the UK. These include public and commercial sector buildings such as Education, Healthcare and Office projects, as well as Prisons, Courts and Multi-residential buildings.

BREEAM New Construction 2018 also has a number of mandatory minimum requirements which are more onerous the higher the target rating is. These must be met for a project to achieve a certain rating.

2.0 THE PROCESS

Early awareness and implementation of the BREEAM requirements will help the Project Team to arrive at a consolidated approach to the environmental and sustainable aspects of a development. Our experience shows that the most successful BREEAM projects are those where the BREEAM Assessor is engaged in the early stages in order to agree a brief that will:

- suit the users of the building
- satisfy all regulatory and BREEAM criteria
- engage all projects stakeholders and design team members
- work on an agreed and realistic budget and keep costs under control

The BREEAM assessor will give advice at key points throughout the project from initial meetings through to project completion and handover. The BREEAM Assessors role is to collate the evidence and submit the report to BRE Global for review and certification.

The three key stages are:

- **Pre-Assessment** – following the initial design team meetings, the Pre-Assessment report will be created. This report outlines the credits targeted, an overview of the project, the credit requirements and the expected score.

- **Design Stage** – this is a 'live' report that the Assessor will update periodically throughout the project and issue to the design team on request. The report provides a 'snapshot' of the projects progress. As the evidence is received from the project team the credits are awarded and this is reflected in the report. This report provides a comprehensive guide to the progress of the project.

- **Post Construction Stage** – following practical completion of the project the Assessor will collate the final evidence and conduct a site visit. From this the final report is submitted to BRE Global and a certificate issued for the project.

3.0 STATUS OF REPORT

3.1 Pre-assessment

DISCLAIMER

The FES Group and its staff shall not to be held liable for any damage or loss sustained as a result of using of the information provided in this report.
Th Pre-assessment is based on drawings and answers to questions provided by Design Team at the time of the Pre-assessment. The answers and the drawings determine the wieghtings of the credits. If anything changes during the course of the ongoing design or construction, the weightings and hence the target score will change. The FES Group will not be held responsible for the implications of such change. As such this report should be viewed as providing a reasonable assessment of the predicted performance of the building based on current knowledge.

This BREEAM Pre-assessment has been prepared on behalf of Lawrence Hannah, for the proposed Birthwaite Industrial Units, Barnsley. The BREEAM assessment will involve collation of associated evidence from Fully fitted contract works relevant design team members. This evidence will be assessed against the BREEAM credit requirements to establish the overall sustainability value of the project. It is expected that all members of the design team, contractor and end-user will cooperate and share responsibility for providing evidence to the assessor and carrying out practices that meet the requirements of targeted credits.

It is our understanding that the project is required to achieve a BREEAM rating of 'Very Good'. This can be achieved by a score of between 55% and 70%.

The pre-assessment indicates that for this project a score of **64.8%** suggesting a BREEAM rating of "Excellent" could be achieved. There are also **7.8%** of potential credits.

3.2 Minimum requirements

To meet the different ratings of the BREEAM assessment there are a number of minimum requirements that must be met to achieve the overall rating. These are detailed below:

BREEAM issue	PASS	GOOD	VERY GOOD	EXCELLENT	OUTSTANDING
Man 03: Responsible construction practices	None	None	None	1 credit (Considerate construction)	2 credits (Considerate construction)
Man 04: Commissioning and handover	None	None	1 credit (commissioning test schedule and responsibilities)	1 credit (commissioning test schedule and responsibilities)	1 credit (commissioning test schedule and responsibilities)
Man 04: Commissioning and handover	None	None	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
Man 05: Aftercare	None	None	None	1 credit (commissioning-	1 credit (commissioning-

				implementation)	implementation)
Ene 01: Reduction of energy and CO2 emissions	None	None	None	4 credits (Energy performance)	6 credits (Energy performance) & 4 crdits (Energy modelling and reporting)
Ene 02: Energy monitoring	None	None	1 credit (first sub-metering credit)	1 credit (first sub-metering credit)	1 credit (first sub-metering credit)
Wat 01: Water consumption	None	1 credit	1 credit	1 credit	2 credits
Wat 02: Water monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Mat 03: Responsible sourcing of materials	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Wst 01: Construction waste management	None	None	None	None	1 credit
Wst 03: Operational waste	None	None	None	1 credit	1 credit

4.0 SECTIONS

4.1 Management

Credit	Title	Credits			RIBA stage
		Max	Target	Potential	
Man 01a	Project delivery planning	1	1		2
Man 01b	Stakeholder consultation (interested parties)	1	1		2
	BREEAM AP pre-requisite - team formally agree strategic performance targets				
Man 01c	Advisory Professional (Concept Design)	1		1	2
Man 01d	Advisory Professional (Developped Design)	1		1	-
Man 02a	Elemental life cycle cost (LCC)	2			2
Man 02b	Component level LCC plan	1			4
Man 02c	Capital cost reporting	1	1		-
Man 03a	Environmental management	1	1		-
Man 03b	BREEAM AP - Site	1		1	-
Man 03c	Responsible construction management	2	2		-
Man 03d	Monitoring of commissioning-site impacts				-
	i) Utility consumption (1 credit)	1	1		-
	ii) Transport of construction materials and waste (1 credit)	1	1		-
Man 04a	Commissioning and testing schedule and responsibilities	1	1		-
Man 04b	Commissioning building services - design and preparation	1	1		-
Man 04c	Testing and inspecting building fabric	1	1		-
Man 04d	Handover	1	1		-
Man 05a	Aftercare support	1	1		6
Man 05b	Seasonal commissioning	1	1		7
Man 05c	Post occupancy evaluation	1	1		7
Sub-total		21	15	3	

Architect
BREEAM AP

Man 01a Project Delivery Planning

Prior to completion of the Concept Design, project delivery stakeholders should have met to identify and define roles, responsibilities and contributions for each key phase of project delivery, taking into consideration the points in the manual. Project team should also demonstrate how the project delivery stakeholder contribution has influenced various stages of the project, as stated in the manual.

Man 01b Stakeholder Consultation (interested parties)

Prior to completion of the Concept Design stage, all relevant third party stakeholders need to be consulted by design team. Contributions and outcomes of consultation and the influence on the project must be demonstrated.

Feedback to relevant parties should be given prior to completion of detailed design.

Man 01c Advisory Professional (Concept Design) RIBA Stage 2 – potential credit

Design stage AP must be appointed to facilitate the setting and achievement of BREEAM's performance target for the project during feasibility stage. The BREEAM performance target must be formally agreed between client and design team and where necessary must be demonstrably achieved by the project design.

Man 01d Advisory Professional (Developed Design) – potential credit

Above criteria must be met. AP appointed must monitor progress and formally report to client and design team.

Man 02a Elemental Life Cycle Cost (LCC)

Architect
Client
Cost consultant

An elemental life cycle cost analysis has been carried out, at process stage 2 as defined in manual.

Man 02b Component Level LCC Plan

A component level LCC plan has been developed by the end of Process Stage 4 as defined in the manual.

Man 02c Capital Cost Reporting

Report the capital cost for the building in pounds per square metre (£k/m^2), via the BREEAM Assessment Scoring and Reporting tool, Assessment Issue Scoring tab, Management section.

Man 03a Environmental Management

Contractor
BREEAM AP

All site timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy.

The principal contractor for the project:

- Operates an Environmental Management System covering their main operations
- Implements best practice pollution prevention policies and procedures on site.

Man 03b BREEAM AP (Site) – potential credit

A sustainability champion must be appointed to monitor the project to ensure on-going compliance with the relevant sustainability performance/process criteria, and BREEAM targets during Construction, Handover and Close Out stages.

Man 03c Responsible Construction Management

The principal contractor evaluates the risks (on site and off site), plans and implements actions to minimise the identified risks, covering the following, where appropriate:
Vehicle movement, Pollution management, Tidiness, Health and wellbeing, Security processes.

Man 03d Monitoring of Construction-site Impacts

Responsibility has been assigned to an individual(s) for monitoring, recording and reporting:
Energy and water consumption and transport resulting from all construction processes.

Man 04a Commissioning - Testing Schedule and Responsibilities

Mechanical engineer
Contractor

Commissioning of all building services will be carried out in line with current Building Regulations, BSIRA and CIBSE standards. Commissioning manager & specialist commissioning manager will be appointed.

Man 04b Commissioning - design and preparation

A specialist commissioning manager appointed in design stage to manage commissioning of building services and offer expertise.

Man 04c Testing and Inspecting Building Fabric

Credit Man 04a achieved.
Integrity of building fabric should be quality assured through post-construction testing and inspection.
Defects in the thermographic survey and the air tightness testing reports are rectified before building handover and close out.

Post-Occupancy Evaluation (POE) will be carried out and shared one year after building occupation, to gain building performances feedback.

The POE will be carried out by an independent third party and will cover:-

- Review of the design and construction process
- Feedback from a wide range of building users on:-
    - Internal environmental conditions.
    - Control, operation and maintenance
    - Facilities and amenities
    - Access and layout
    - Other relevant issues
- Sustainable performance

Man 04d Handover

Building User Guides should be developed prior to hand over. A training schedule should also be prepared containing a minimum set of information detailed in the manual.

Building User Guides are provided and are appropriate to all users of the building (general users including staff and if applicable residents, as well as the non-technical facilities management team/building manager).

The Guides cover all functions and uses of the building, ensuring building users are able to use the building effectively. Where relevant, the documents must

describe the facilities to be shared and how access to them will be arranged for potential users.

Building and site related information is made readily available to all future building users, enabling them to access and use the building, site and local transport infrastructure/amenities effectively.

Man 05a Aftercare Support

Contractor
Client

There will be operational infrastructure and resources in place to provide aftercare support to the building occupier, which should include the minimum outlined in the manual. Operational infrastructure and resources should also be in place that allows collection and monitoring of energy and water consumption data for a minimum of 12 months, once occupied.

Man 05b Seasonal Commissioning - implementation

The seasonal commissioning activities outlined in the manual should be completed over a minimum of 12 months, once building becomes substantially occupied.

Man 05c Post Occupancy Evaluation

A post-occupancy evaluation (POE) exercise one year after initial building occupation should be completed. This should be completed by an independent party and contain that stated in the manual.

4.2 Health and Wellbeing

Credit	Title	Credits			RIBA stage
		Max	Target	Potential	
Hea 01a	Control of glare from sunlight	1	1		4
Hea 01b	Daylighting (building type dependent)	1	1		4
Hea 01c	View out	1	1		-
Hea 01d	External lighting levels	1	1		-
Hea 02a	Indoor air quality (IAQ) plan - pre requisite				-
Hea 02b	Ventilation	1		1	-
Hea 02c	Emissions from construction products	2	1		-
Hea 02d	Post construction indoor air quality measurement	1			-
Hea 04a	Thermal modelling	1	1		-
Hea 04b	Designing for future thermal comfort	1	1		-
Hea 04c	Thermal zoning and controls	1	1		-
Hea 05	Acoustic performance	3	3		-
Hea 06	Security of site and building	1	1		-
Hea 07	Safe and healthy surroundings	2	2		-
Sub-total		17	14	1	

Hea 01a — **Control of glare from sunshine**

Architect
Electrical engineer

Potential for disabling glare has been designed out of all relevant building areas using a glare control strategy which should also avoid increasing lighting energy consumption.

Hea 01b — **Daylighting (Building Type Dependent)**

Good practice daylighting levels have been met.

Hea 01c — **View Out**

Floor space in relevant building areas has an adequate view out to reduce eyestrain and provide a link to the outside.

Hea 01d — **External Lighting Levels**

New external lighting will need to comply with relevant CIBSE standards.
Systems should be designed to avoid flicker and provide appropriate illuminance levels.

Hea 02a — **Indoor Air Quality (IAQ) Plan - Pre-requisite**

Mechanical engineer
Architect

An indoor air quality plan should be produced and will consider:

a) Removal of contaminant sources
b) Dilution and control of contaminant sources
c) Procedures for pre-occupancy flush out
d) 3rd party testing and analysis
e) Maintaining indoor air quality in-use

	Hea 02b	**Ventilation – potential credit** Fresh air provision and internal pollutant minimisation is in compliance with the appropriate standards. CO_2 or air quality sensors specified where necessary. Air-conditioned/mixed-mode buildings: air intakes and exhausts are over 10m apart and intakes are over 20m from sources of external pollution.
	Hea 02c	**Emissions from construction products** All finishing elements and materials will need to be specified in line with appropriate European Standards in respect of VOC's.
	Hea 02d	**Post-Construction indoor air quality measurements** 'No credits targeted under this issue' VOC and formaldehyde levels tested in accordance with EU standards should be below given levels provided by the WHO and building regulations.
	Hea 04a	**Thermal Modelling**
Energy/thermal modelling consultants		Thermal modelling carried out using software in accordance with CIBSE guidelines.
	Hea 04b	**Design for future thermal comfort - Climate Change Scenario** Thermal modelling is completed. The above criteria are achieved and demonstrate adaptability to a projected climate change environment.
	Hea 04c	**Thermal Zoning and Controls** Thermal modelling is completed. Thermal modelling analysis informs temperature control strategy for the building and its users. Strategy for proposed heating/cooling systems demonstrates that it has addressed the criteria in the manual.
Contractor Acoustician	Hea 05	**Acoustic Performance** An acoustician is appointed to provide early advice on influencing outline design solutions. The building should be designed, constructed and fitted out to meet the acoustic performance standards and testing requirements as required for that type of building.
Contractor	Hea 06	**Security of Site and Building** A suitably qualified security specialist (SQSS) will be consulted (at RIBA Stage 2) and their recommendations will be implemented into the project.
Architect	Hea 07	**Safe and healthy surroundings** The appropriate safe access provisions should be made where there are external site areas. In addition, the same should be completed for vehicle delivery access and drop-off areas are included in the development.

4.3 Energy

Credit	Title	Credits			RIBA stage
		Max	Target	Potential	
Ene 01 a	Energy performance	9	5		-
Ene 01b	Prediction of operational energy consumption	4			
Ene 02a	Sub-metering of end-use categories	1	1		-
Ene 02b	Sub-metering of high energy load and tenancy areas	1	1		-
Ene 03	External lighting	1	1		-
Ene 04a	Passive design analysis	1		1	2
Ene 04b	Free cooling	1			-
Ene 04c	Low zero carbon feasibility study	1		1	2
Ene 05a	Refrigeration energy consumption	1			-
Ene 05b	Indirect greenhouse gas emissions	1			-
Ene 06a	Energy efficient transportation systems -consumption				-
Ene 06b	Energy efficient features				-
Ene 07	Pre-requisite: Hea 03 Safe containment in laboratories	-			-
Ene 07a	Labs - Design specification				1
Ene 07b	Labs - Best practice energy efficient measures				-
Ene 08	Energy efficient equipment	2	2		-
Sub-total		21	10		

M&E engineer

Ene 01a Energy Performance

Identify the number of credits available from Energy Performance Ratio (EPR_{NC}) calculated.

Ene 01b Prediction of operational energy consumption

'No credits targeted under this issue'

Undertake additional energy modelling during design and post construction stage to generate predicted operational energy consumption.

M&E engineer

Ene 02b Sub-metering of end-use categories

Sub-meters are provided for high energy end-use categories.

Ene 02b Sub-metering of high energy load and tenancy areas

Sub-meters are provided on the energy supply to each separate tenanted unit or floor plate within the assessed development.

Ene 03 External Lighting

The building has been designed to operate without the need for external lighting. OR

All external lighting will achieve the relevant luminous efficacy and will be controlled to prevent operation during daylight hours.

Ene 04a	**Passive Design Analysis - potential credit** Analysis of the proposed building design/development is undertaken to identify opportunities for and encourage the adoption of passive design solutions
Ene 04b	**Free cooling** *'No credits targeted under this issue'* Free cooing analysis in the passive design was carried out to identify oopportunities for implementation.
Ene 04c	**Low Zero Carbon Feasibility Study - potential credit** Feasibility study carried out by energy specialist before completed Concept Design stage to establish most appropriate recognised local low or zero carbon energy sources. These recommendations adopted and a meaningful reduction in regulated CO_2 emissions noted.
Ene 05a	**Refrigeration Energy Consumption - scope dependent** The refrigeration system, controls and components designed, installed and commissioned in accordance with associated standards. Should also comply with Man 04.
Ene 05b	**Indirect Greenhouse Gas Emissions - scope dependent** As above and installed system demonstrates a saving in indirect greenhouse gas emissions over operational life.
Ene 06a	**Energy Consumption - Lifts** Where transportation systems are used, the energy consumption should be calculated in accordance with associated standards and energy reduction measures should be taken.
Ene 06b	**Energy Efficient Features - Lifts** Above achieved in addition to specific energy efficient measures for lifts and escalators and/or moving walks.
Ene 08	**Energy Efficient Equipment** Identify buildings unregulated energy consuming loads and estimate their contribution to total annual unregulated energy consumption of the building. Identify systems or processes that use significant proportion of total annual unregulated energy demand of development and its operation. Demonstrate meaningful reduction in total annual unregulated energy demand

4.4 Transport

Credit	Title	Credits			RIBA stage
		Max	Target	Potential	
Tra 01	Travel plan	2	2		-
Tra 02	Sustainable transport measures – transport options implementation	10	5		-
Sub-total		12	7		

Transport consultant

Tra 01 Travel Plan

To promote sustainable reductions in transport burdens by undertaking a site specific travel assessment/statement and developing a travel plan based on the needs of the particular site.

Recognition for developments in proximity to good public transport networks, thereby helping to reduce transport-related pollution and congestion.

Tra 02 Sustainable transport measure - Transport options implementation

To encourage improvement of public transport provision, reduce building users' carbon footprint and asscociated negative environmental impacts, improving local air quality and reucing local congestion. Encourage reliance on active travel and engagement with local authorities, promote provision of electric car recharging tations and reduced reliance on cars, increase provision of local amenities.

4.5 Water

Credit	Title	Credits			RIBA stage
		Max	Target	Potential	
Wat 01	Water consumption	5	3		-
Wat 02	Water monitoring	1	1		-
Wat 03a	Leak detection system	1	1		-
Wat 03b	Flow control devices	1	1		-
Wat 04	Water efficient equipment				
Sub-total		8	6		

Wat 01 — Architect, Mechanical engineer

Water Consumption

Reducing the demand for potable water through the provision of efficient sanitary fitting, rainwater collection and water recycling systems.

Wat 02 — Mechanical engineer

Water Monitoring

A water meter will be fitted to the mains water supply to encourage water consumption management and monitoring to reduce the impacts of inefficiencies and leakage.

Each meter has a pulsed output as well as the capability of being connected to the buildings Building Management System (BMS).

Wat 03a — Mechanical engineer

Leak Detection System

Recognition of a leak detection system capable of detecting a major water leak on the mains water supply.

Wat 03b

Flow Control Devices

A flow control device will be installed that regulates the supply of water to each WC area/facility to reduce water wastage.

4.6 Materials

Credit	Title	Credits			RIBA stage
		Max	Target	Potential	
Mat 01a	Building materials life cycle assessment (LCA) – Superstructure – Concept Design/ Technical Design	6		2	1/4
Mat 01b	Substructure and hard landscaping options appraisal during Concept Design	1			1/4
Mat 02	Specification of products with a recognised EPD	1	1		
Mat 03	Pre-requisite: All timber and timber based products should be 'legally harvested and traded timber'	-			-
Mat 03a	Enabling sustainable procurement	1	1		2
Mat 03b	Measuring responsible sourcing	3	2		-
Mat 05	Designing for durability and resilience	1	1		-
Mat 06	Material efficiency	1	1		1,2,3, 4&5
Sub-total		14	5		

Mat 01

Environmental impacts from construction products - potential

A full LCA study mudt be undertaken prior to plaaning permission is issued to achieve this credit.

Architect

Ensure that all life cycle greenhouse gas emissions are taken into account in the design, not just operational emissions.

Reduce impact of the construction industry and construction products industries. Assess the environmental impacts at the building level to provide flexibility when specifying construction products, to take into account project specific conditions and priorities.

Mat 02

Environmental impacts from construction products – Environmental Product Declarations (EPD)

Improve the accuracy of building LCA. Specify construction products with EPD that achieve a total EPD points score of at least 20.

Mat 03a

Enabling sustainable procurement

Architect
Contractor

PRE-REQUISITE:

All timber and timber based products used on the project should be 'legally harvested and traded timber'.

Materials sourced in accordance with a sustainable procurement plan.

Mat 03b

Measuring responsible sourcing

Key building materials are responsibly sourced to reduce environmental and socio-economic impacts.

Mat 05

Designing for Durability and Resilience

Architect

The project will include durability and protection measures to prevent damage to the vulnerable parts of the building. Minimum protection measures specified will be for high pedestrian traffic, internal vehicular/ trolley movement and external vehicular collision. Exposed parts of the building should also be protected from material degradation due to environmental

		factors.
Architect	Mat 06	**Material Efficiency – potential credit** Opportunities and measures have been identified and taken to optimise the use of efficient materials to minimise environmental impacts of material use and waste. This should be carried out at each RIBA stage, starting from Brief.

4.7 Waste

Credit	Title	Credits			RIBA stage
		Max	Target	Potential	
Wst 01a	Pre-demolition audit – scope dependent			1	
Wst 01b	Construction resource efficiency	3	2		-
Wst 01c	Diversion of resources from landfill	1	1		-
Wst 02	Project sustainable aggregate points	1			-
Wst 03	Operational waste	1	1		-
Wst 04	Speculative floor and ceiling finishes				-
Wst 05	Adaptation to climate change - Resilience of structure, fabric, building services and renewables installation	1	1		2
Wst 06a	Design for disassembly and functional adaptability - recommendations	1	1		2 & 4
Wst 06b	Disassembly and functional adaptability - implementation	1	1		
Sub-total		9	7	1	

Wst 01b Construction Resource Efficiency

A Resource Management Plan (RMP) should be developed in line with the BREEAM requirement. The total allowable amount of waste generated per 100 m^2 of gross internal floor area will be ≤ 7.5 m^3 or ≤ 6.5 tonnes.
In addition, a pre-demolition audit will be required where demolition of existing buildings will occur.

Wst 01c Diversion of Resources from Landfill

Non-hazardous construction, demolition and excavation waste generated should be diverted from landfill.
Will be required to divert at least 70% by volume and 80% by tonnage of non-demolition waste AND 80% by volume and 90% by tonnage of demolition waste.

Wst 02 Use of recycled and sustainably sourced aggregates

'No credits targeted under this issue'

Contractor
Civil engineer

Encourage the specification of more sustainable aggregate sourcing options, considers a broad range of factors influencing aggregates' selection, i.e. regional aggregate availability, environmental and social impacts of transportation and the overall carbon footprint.

Wst 03 Operational Waste

Client
Architect

Provision of suitable space and facilities to allow for segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupants and activities.

Wst 05 Adaptation to Climate Change - Structural and Fabric Resilience

Architect

Encourage consideration and implementation of measures to mitigate the impact of more extreme weather conditions arising from climate change over the lifespan of the building.

Architect	Wst 06	**Design for disassembly and adaptability- recommendations and implementation.** Encourage consideration and implementation of measures to accommodate future changes to the use of the building and its systems over its lifespan.

4.8 Land Use and Ecology

Credit	Title	Credits			RIBA stage
		Max	Target	Achieved	
LE 01a	Site selection - Previously occupied land	1	1		-
LE 01b	Contaminated land	1			-
LE 02	Determining the ecological outcomes for the site	1/2	2		-
LE 03a	Planning, liaison, implementation and data	1	1		-
LE 03b	Managing negative impacts of the project	1/2	1		
LE 04a	Enhancement of ecology - Route 1, 1 credit only OR	1			1 & 2
LE 04b	Liaison, implementation and data collection - Route 2 OR	1	1		-
LE 04c	Enhancement of ecology - Route 2	3	2		
LE 05a	Planning, liaison, data, monitoring and review m anegement and maintenance	1	1		-
LE 05b	Landscape and ecology management plan (or similar) development	1	1		
Sub-total		13	10		

Client
Architect

LE 01a Previously Occupied Land

At least 75% of the proposed development's footprint is on an area of land which has previously been occupied by industrial, commercial or domestic buildings or fixed surface infrastructure.

LE 01b Contaminated Land

'No credits available under this issue'
Contaminated land specialists' site investigation, risk assessment and appraisal to determine level of contamination. The remediation strategy also needs to be confirmed.

Contractor
Ecologist

LE 02a Survey and evaluation,

Land within construction zone is defined as 'land of low ecological value', as identified by BREEAM checklist or a Suitably Qualified Ecologist.

LE 02b Determining the ecological outcomes for the site

This must involve the identification, appraisal and selection of specific solutions and measures sufficiently early to influence key project planning decisions. This must be done in accordance with the following hierarchy of action: avoidance, protection, reduction or limitation of negative impacts, on site comensation and enhancement.

Contractor
Ecologist

LE 03a Planning, liaison, implementation and data.

Identification and understanding the risks and opportunities for the site - as a pre-requisite.
Site preparation and construction works are planned at early stages to optimize benefits and outputs. Project team liaising with stakeholders during site

		preparation and construction works.
Contractor Ecologist	LE 03b	**Managing negative impacts of the project** Negative impacts from site activities have been managed and no net impact has resulted or the loss of ecological value has been limited as far as possible.
Ecologist	LE 04a	**Change and enhancement of ecological value** Improving the ecological value of a site post-development through introduction of appropriate flora and fauna the creation and enhancement of biodiversity and wildlife corridors, can have a major benefits on biodiversity. To reward enhancement of local biodiversity on the site under development or within its zone of influence.
Ecologist Contractor	LE 05	**Long term ecology management and maintenance.** A pre-requisite is to clearly define roles and responsibilities, implementation and statutory obligations. Planning , liaison, data, monitoring and review, manage,ent and maintenance. But also: Lanscape and management plan.

4.9 Pollution

Credit	Title	Credits			RIBA stage
		Max	Target	Achieved	
Pol 01	Impact of refrigerants				-
	i) No refrigerant use (3 credits) OR	3			-
	ii) Pre-requisite				-
	Impact of refrigerant - up to 2 credits	2	1		-
	Leak detection	1	1		
Pol 02	Local air quality	2	2		-
Pol 03a	Flood resilience	2	2		-
Pol 03b	Surface water run-off (with a pre-requisite)	2	2		-
Pol 03c	Minimising watercourse pollution	1			-
Pol 04	Reduction of night time light pollution	1	1		-
Pol 05	Reduction of noise pollution	1	1		-
Sub-total		12	10		

Pol 01
Mechanical engineer

Impact of Refrigerants

Avoidance or reduction of the impact of refrigerants through specification and leak prevention/detection.
No refrigerant required for building
OR
PRE-REQUISITE
All systems must comply with requirements of associated standards.
Where systems used have Direct Effect Life Cycle CO2 equivalent emissions of ≤ 100 $kgCO_{2e}/kW$ cooling/heating capacity. OR where refrigerants in air-conditioning or refrigeration systems have a Global Warming Potential of ≤10.
OR
Any systems using refrigerants that have Direct Effect Life Cycle CO_2 equivalent emissions of ≤ 1000 $kgCO_{2e}/kW$ cooling/heating capacity.
A leak detection system installed.

Pol 02
Mechanical engineer

Local air quality

The plant installed to meet the buildings' heating and hot water demand should have, under normal operation conditions, a dry NO_x emission level (measured at 0% excess O_2) meets the required levels.

Pol 03a
Contractor
Drainage/Flood Risk Consultant

Flood Resilience

A Flood Risk Assessment should be undertaken.
To achieve 2 credits, the development should be situated in a flood zone that is defined as having a low annual probability of flooding.
To achieve 1 credit, development has a medium to high annual probability of flooding and is not in a functional floodplain. Development should be raised above flood zone OR should be designed in accordance with the relevant standards.

Pol 03b Surface Water Run-off

PRE-REQUISITE

An appropriate consultant is appointed to carry out, demonstrate and/or confirm the development's compliance with the following criteria:

Surface water run-off - rate

Attenuation measures should be employed on-site confirming that run-off levels are not greater at post-construction compared to levels pre-construction, including an allowance for climate change. Relevant maintenance agreements for ownership, long term operation and maintenance of all specified SuDS are in place.

Surface water run-off - value

Where flooding will not occur in the event of local drainage system failure AND any additional predicted volume of run-off for the 100 year 6 hour event must be prevented from leaving the site SuDS techniques.

Pol 03c Minimising Water Course Pollution

'No credit targeted under this issue'

An Appropriate Consultant (Civil Engineer) should confirm that there will be no discharge from the developed site for rain-fall up to 5mm.

AND

- In areas with a low risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques.
- Pollution prevention measures (SUDS & PPG3) are incorporated into the project
- Oil/Petrol separators are specified where high contamination risk
- Drainage plans of the site will be made available for the building/site occupiers.
- Chemical/liquid gas storage areas have shut-off valves fitted to the site drainage system (in the event of a spillage or bunding failure).
- All external storage and delivery areas designed and detailed in accordance with the recommendations of the Environment Agency's publication Pollution Prevention Pays Guidance
- And a comprehensive, up-to-date drainage plan of site will be made available to occupiers.

Pol 04 Reduction of Night Time Pollution

Electrical engineer

External lighting pollution has been eliminated through effective design that removes requirement for external lighting without affecting the safety and security of the site and users.

OR where external lighting is used:

The external lighting strategy should be been designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011

All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 hr and 07:00 hr.

If safety or security lighting is provided and will be used between 23:00 hr and 07:00 hr, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance note.

Illuminated advertisements, where specified, must be designed in compliance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements.

Acoustician

Pol 05 Reduction of Noise Pollution

Where there are or will be **no** noise-sensitive areas or buildings within 800m radius of the assessed development.

OR

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 74451 has been carried out and the following noise levels measured/determined:

- Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development.
- The rating noise level resulting from the new noise-source.

A suitably qualified acoustic consultant (SQA) should undertake the assessment.

The noise level from the proposed site/building results in a difference no greater than +5dB during the day and +3dB at night compared to the background noise level.

Where the noise source from the proposed development is greater than the levels described attenuation measures need to be installed at the source to a level where compliance with criteria will be met.

4.10 Innovation

Credit	Title	Credits			RIBA stage
		Max	Target	Achieved	
Man 01i	Project brief and design (simple buildings only)	1	0	0	-
Man 03i	Responsible construction practices	1	1	0	-
Hea 01i	Visual comfort	1	0	0	-
Hea 02i	Indoor air quality	1	0	0	-
Ene 01i	Reduction of energy use and carbon emissions	1	0	0	-
Wat 01i	Water consumption	1	0	0	-
Mat 01i	Life cycle impacts	1	0	0	-
Mat 03i	Responsible sourcing of materials	1	0	0	-
Wst 01i	Construction-site waste management	1	0	0	-
Wst 02i	Recycled aggregates	1	0	0	-
Wst 05i	Adaptation to climate change	1	0	0	-
Pol 03i	Surface water run-off (simple buildings only)	1	0	0	-
Sub-total		10	1	0	

Man 01i **Project Brief and Design (Simple Buildings Only)**

Achieve criteria 8 - 10 of Man 01c and criteria 11 – 12 0f Man 01d.

Man 03i **Responsible Construction Practices – potential credit**

To achieve this credit the main contractor is required to achieve exemplary compliance of an organisational, local or national considerate construction scheme.

Hea 01i **Visual Comfort**

To achieve this credit, the project needs to exceed the Hea 1 requirement.

Hea 02i **Indoor Air Quality**

Focuses on minimising sources of air pollution – VOC emission levels (products). All product categories targeted and formaldehyde emission levels reduced.

Ene 01i **Reduction of Energy Use and Carbon Emissions**

Zero carbon or carbon negative.

Wat 01i **Water Consumption**

To achieve this credit, the project needs to exceed the Wat 01 requirement by achieving 65% improvement in baseline water consumption.

Mat 01i **Life Cycle Impacts**

To achieve this credit, the project needs to exceed the Mat 01 requirement by using the Green Guide to Specification (elemental approach) or using compliant life cycle assessment software tools (whole building approach).

Mat 03i	**Responsible Sourcing of Materials** At least 70% of the available RSM points are achieved.
Wst 01i	**Construction Site Waste Management** To achieve this credit, the project needs to exceed the Wst 01i requirement. In addition, further credits for simple buildings.
Wst 02i	**Recycled Aggregates** To achieve this credit, the project needs to exceed the Wst 02i requirement by the total amount of recycled or secondary aggregate is greater than 35% of the total high grade aggregate specified for the project.
Wst 05i	**Adaptation to Climate Change** Achievement of the credit in addition to Hea 04b criterion 6, at least 8 credits in Ene 01, Ene 04a, 3 credits in Wat 01, Mat 05 criterion 2 and Pol 03a and b should be achieved.
Pol 03i	**Surface Water Run-off (Simple Buildings Only)** Achieve criteria 4 – 14 in Pol 03b.

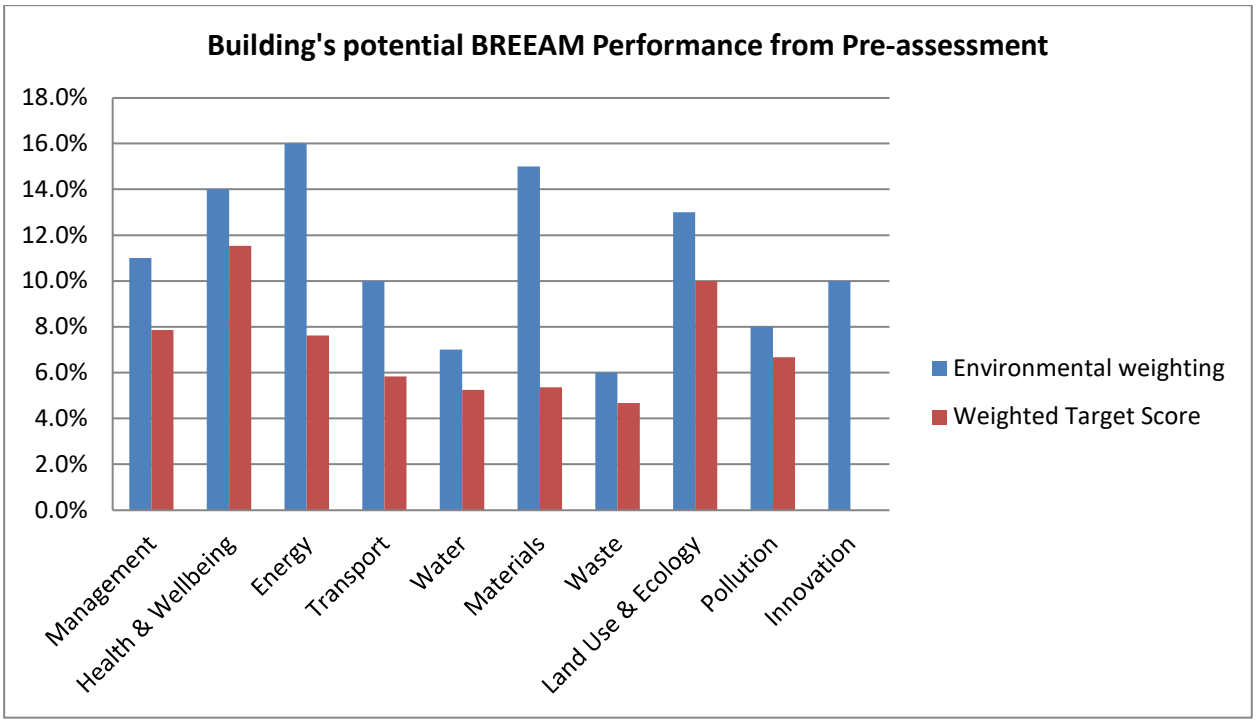
Full requirement details can be found within the BREEAM New Construction 2018 V6 assessor manual Version 1.0 - which is freely available from: www.breeam.org
The manual provides detailed information on the credit criteria and compliance requirements for the assessment.

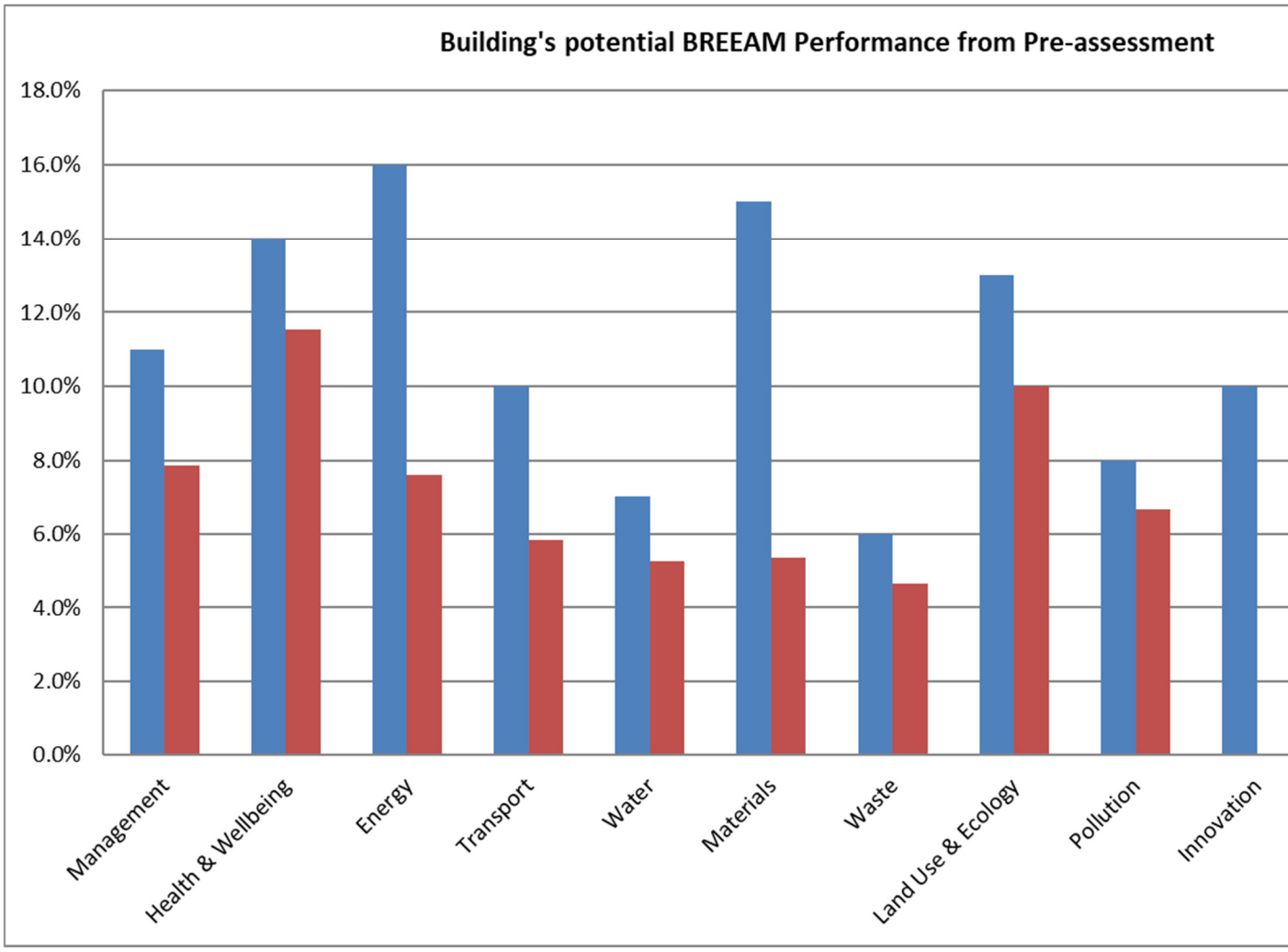
APPENDIX 1

BREEAM Pre-Assessment Tracker and Results

BREEAM Rating	% score
Unclassified	<30
Pass	≥30
Good	≥45
Very Good	≥55
Excellent	≥70
Outstanding	≥ 85

	Environmental weighting	Credits available	Credits targeted	Potential Credit	% Targeted	% Achieved	Weighted Target Score	Weighted Potential Score
Management	11.0%	21	15	3	71.4%	14.3%	7.9%	1.6%
Health & Wellbeing	14.0%	17	14	1	82.4%	5.9%	11.5%	0.8%
Energy	16.0%	21	10	2	47.6%	9.5%	7.6%	1.5%
Transport	10.0%	12	7	0	58.3%	0.0%	5.8%	0.0%
Water	7.0%	8	6	0	75.0%	0.0%	5.3%	0.0%
Materials	15.0%	14	5	3	35.7%	21.4%	5.4%	3.2%
Waste	6.0%	9	7	1	77.8%	11.1%	4.7%	0.7%
Land Use & Ecology	13.0%	13	10	0	76.9%	0.0%	10.0%	0.0%
Pollution	8.0%	12	10	1	83.3%	8.3%	6.7%	0.7%
Innovation	10.0%	10	0	0	0.0%	0.0%	0.0%	0.0%
						Total Score	64.8%	8.5%
						Innovation credits achieved	0.0%	0.0%
						Total Score	64.8%	8.5%
							VERY GOOD	




Building's potential BREEAM Performance from Pre-assessment
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
Management
Health & Wellbeing
Energy
Transport
Water
Materials
Waste
Land Use & Ecology
Pollution
Innovation