



BREEAM Pre-assessment report

10 Castle Street Reading

Prepared for: DLBP Ltd



DOCUMENT CONTROL

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1.0 EXECUTIVE SUMMARY

This report has been prepared as a provisional BREEAM 2014 Non-Domestic Refurbishment & Fit out (RFO) assessment for the refurbishment of the commercial retail space at 10 Castle Street in Reading. It should be noted that this report does not constitute a formal BREEAM assessment and will not yet be submitted to BRE for certification purposes.

This project is aspiring to achieve a BREEAM rating of 'Very Good' with a minimum score of 55%. Based on this pre-assessment for a Part 1, 2, 3 & 4 assessment it is anticipated that the overall score of the proposed development will be **58.54%** equivalent to an overall BREEAM rating of 'Very Good'.

A score of **58.54%** has been deemed achievable on review of the drawings available at RIBA Stage 2. This may be subject to change on receipt of further information from the design team and should be reviewed at the earliest suitable opportunity.

Early stage appointments that must be actioned immediately can be found in Section 6.2 of this report.

2.0 INTRODUCTION

Stroma Built Environment have been commissioned by DLBP Ltd to undertake an environmental assessment for the major refurbishment of the commercial retail space at 10 Castle Street in Reading. This development will be assessed in accordance with the Building Research Establishment Environmental Assessment Methodology (BREEAM) for Retail Simple Buildings, under RFO 2014.

BREEAM Non-domestic Refurbishment & Fit out 2014 is a comprehensive tool for analysing and improving the environmental performance of non-domestic commercial and public buildings. This method analyses the environmental performance against criteria set by BRE, awarding 'credits' based on the buildings individual performance.

3.0 BREEAM: Refurbishment & Fit out Assessment

BREEAM RFO (2014) is part of the BREEAM family of environmental assessment methods (BRE's Environmental Assessment Method) and is a voluntary scheme that aims to quantify and reduce the environmental burden of buildings by rewarding those designs that take positive steps to minimise their environmental impact. BREEAM RFO uses a standard set of criteria applicable to the following types of building:

- Commercial - (offices, industrial and retail)
- Public (non-housing) – (Education, Healthcare, Prisons, Law Courts)
- Multi-residential accommodation/Supported living facilities - (long term stays)
- Other – (residential short term stay, non-residential institutions, assembly and leisure, bespoke)

Projects are assessed using a system of credits. The credits are grouped within the categories outlined in Table 1.

Category	Issues and Aims
Management	Overall policy and procedural issues
Health and Wellbeing	Indoor and external issues affecting occupants
Energy	Operational energy and CO ₂ issues
Transport	Transport related CO ₂ and location issues
Water	Consumption and leakage related issues
Materials and Waste	Environmental implications of material selection
Land-use and Ecology	Greenfield/brownfield and ecological value of site issues
Pollution	Air and water pollution (excluding CO ₂)

Table 1. BREEAM 2014 Assessment Issues

Within each category there are a number of credit requirements that reflect the options available in relation to the design and management of buildings. Credits are awarded where evidence has been provided confirming that the specific requirements for that issue have been met. The total number of credits within each category does not reflect the relative importance of these issues; this is given by the weighting factors applied by the methodology.

The overall classification of the building's performance is given as a rating; 'Unclassified', 'Pass', 'Good', 'Very Good', 'Excellent' and 'Outstanding'.

The scheme provides a set of criteria which are applied depending on the scope of works for a particular project and include:

- Part 1: Fabric and structure
- Part 2: Core Services
- Part 3: Local services
- Part 4: Interior design

4.0 BREEAM Scoring

BREEAM RFO (2014) criteria consists of forty-nine individual assessment issues spanning nine environmental categories; Energy, Water, Materials, Transport, Waste Pollution, Health & Wellbeing, Management, Land Use & Ecology plus a tenth category called Innovation. Each issue addresses a specific building related environmental impact or issue and has a number of 'credits' assigned to it. 'BREEAM credits' are awarded where a building demonstrates that it meets the best practice performance levels defined for that issue.

The number of 'credits' available for an individual assessment issue will vary and generally the higher the number there are for a given issue, the more important that issue is in terms of mitigating its impact. In most cases, where there are multiple 'credits' available, the number awarded is based on a sliding scale or benchmark, where progressively higher standards of building performance are rewarded with a higher number of 'credits'.

Within each issue category, credits are awarded where evidence has been provided to confirm the specific requirements have been met. A score for each category is calculated based on the percentage of credits awarded within that category. An environmental weighting is applied to each category score to reflect the relative environmental importance of the category. These 'weighted' scores are then combined to give an overall single percentage score. The final BREEAM rating is awarded based on this overall score as follows:

Rating	Score (%)
Unclassified	<30%
Pass	≥30%
Good	≥45%
Very Good	≥55%
Excellent	≥70%
Outstanding	≥85%

Table 2. **BREEAM Final Score Boundaries**

The diagram and text below describes how BREEAM scores and rates an assessed building:

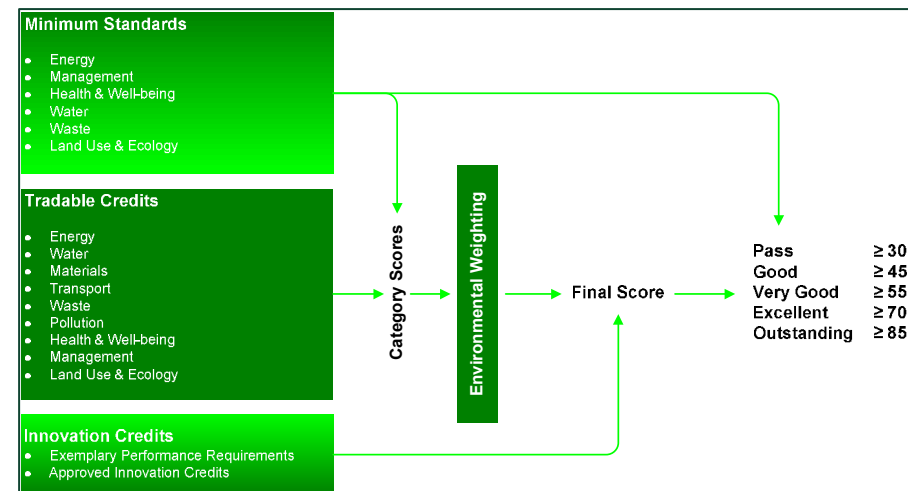


Figure 1. **Process of calculation of overall rating under BREEAM**

5.0 BREEAM Assessment

Section 6 of this report contains a Credit Commentary which shows a breakdown of the specific credit criteria and the actions required to achieve the respective credit(s). This breakdown should be referenced as guidance only and is not an exhaustive summary. For a comprehensive guide to the criteria the BREEAM 2014 technical manual and Appendix A to this report should be consulted.

5.1. Assessment Summary

The development is aspiring to achieve a 'Very Good' BREEAM rating. The current overall targeted score is **58.54%** which equates to a 'Very Good' rating.

Table 3 shows the weighting for each section and the actual score achieved.

	Weighting	Indicative % Score Achieved
Management	8.60%	6.68%
Health & Wellbeing	14.82%	11.40%
Energy	20.22%	7.70%
Transport	8.92%	4.46%
Water	8.92%	6.69%
Materials	20.91%	11.25%
Waste	7.32%	5.22%
Land Use & Ecology	0.0%	0.0%
Pollution	10.29%	5.14%
Total	100%	58.54%
Innovation	10.00%	0.00%

Table 3. **Environmental Weightings**

It should be noted that for good practice a safety margin should be sought above the required % score to avoid potential difficulties in meeting the required rating during the construction stage.

6.0 Credit Commentary

For credits which require action at a specific RIBA stage, a table in section 6.2 highlights the requirements that are to be addressed at each stage along with a description of the action needed.

The credit criteria table in Section 6.3 is intended to provide a brief introduction and overview of the credit criteria and evidence requirements. For a full breakdown of the criteria, the BREEAM 2014 Technical Manual should be consulted.

6.1. Mandatory Issues

The project is required to achieve an overall 'Very Good' rating and in order to achieve this rating a number of the credit issues are mandatory. Below is a list of those requirements and whether the project is targeted to achieve it.

Issue	Mandatory element
Ene02 – Energy Monitoring	One credit (First sub-metering credit)
Wat01 – Water Consumption	One Credit
Wat02 – Water Monitoring	Criterion 1 only
Mat03 – Responsible Sourcing of Materials	Criterion 1 only

Table 4. **Mandatory Issues**

6.2. Specific Actions Required At Certain RIBA Stages

Within the current BREEAM Pre Assessment there are various credits that require action by the client and design team at specific stages of the design; some of these actions require the appointment of a specialist consultant. The table below is intended to give assistance with identifying these particular actions at the various stages of the project.

RIBA STAGE 1		
Credit	Requirement/s	Action Required
Man01 Project brief and design	Credit 3	Appoint Sustainability Champion (BREEAM Accredited Professional)
Mat06 Material Efficiency	Credit 1	Set targets and report on opportunities and method to optimise the uses of materials/ (to be continued through RIBA stages 1-6)

RIBA STAGE 2		
Credit	Requirement/s	Action Required
Man01 Project brief and design	Credit 1	Carry out project team consultation
Man01 Project brief and design	Credit 2	Carry out stakeholder consultation – Potential credit
Hea06 Safety and security	Credit 2	Consult with the local Architectural Liaison Officer at the local Police force
Ene04 LZC Technologies	Credit 2	Carry out Low Zero Carbon (LZC) feasibility study
Wst01	Credit 1	Carry out a pre-refurbishment audit of any existing buildings, structures or hard surfaces to determine whether refurbishment or re-use is feasible, and to maximise the recovery of material from demolition. This must be carried out at Concept Design RIBA 2 by a competent person.
Wst06 Functional adaptability	Credit 1	Conduct a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios

RIBA STAGE 3		
Credit	Requirement/s	Action Required
Hea04 Thermal Comfort	All	The full dynamic insulation model for thermal comfort must be produced at this stage of the development
Ene01 Energy Consumption	All	The EPC is to achieve the targeted credits and must be conducted before RIBA stage 5, but ideally at this point of the design stage
Wat01 Water Consumption	All	The Water consumption (litres/person/day) efficiency is to be calculated and assessed against the baseline performance with the appropriate credits achieved as a result of this. This is to be conducted before RIBA stage 5, but ideally at this point of the design stage
RIBA STAGE 4		
Credit	Requirement/s	Action Required
Man03 Responsible Construction Practices	All	The contractor must register with a compliant organization such as the Considerate Constructors Scheme before the commencement of any site activities

RIBA STAGE 5		
Credit	Requirement/s	Action Required
Man04 Commissioning and Handover	Credit 1	A specialist commissioning manager is to be appointed at to undertake commissioning at this stage of the project

6.3. Credit Table

ID	BREEAM Issue	Criteria Summary	Available Credits	Credits targeted	Potential Score	Notes
Man 01	Project brief and design	Will stakeholder consultation (project delivery) take place at RIBA 2?	1	1		
		Will stakeholder consultation (third party) take place at RIBA 2?	1	0	1	
Man 02	Life cycle cost and service life planning	Will the predicted capital cost be reported?	1	1		
Man 03	Responsible Construction Practices	Pre-requisite- Is all timber used in the project 'legally harvested and traded timber?'	-	YES		
		Will any contractor in charge of the site operate a compliant Environmental Management System?	1	0	1	
		Will the contractor responsibly manage the site?	2	2		
		Will site utility be metered/monitored (electricity, diesel, water etc.)?	1	1		
Man 04	Commissioning and handover	Will a commissioning schedule and responsibilities be developed and accounted for?	1	1		
		Will training schedule for building occupiers/managers be produced AND building user guide be developed?	1	1		
		Management Totals	9	7	2	
Hea 01	Visual comfort	Will the design provide adequate glare control for the building users. If no relevant areas then credit can be award by default	1	1		
		Will relevant building areas be designed to achieve appropriate daylight factors?	3	0		
		Will the design provide adequate view out for building users? If no relevant areas then credit can be award by default	2	2		
		Will internal/external lighting levels, zoning and controls be specified in accordance with the relevant CIBSE Guides/British Standards?	1	1		
Hea 02	Indoor air quality	Will the building be designed to minimise the concentration and recirculation of pollutants in the building?	1	1		

		Will the relevant products be specified to meet the VOC testing and emission levels required?	1	1		
Hea 04	Thermal comfort	Will full dynamic thermal analysis be carried out in accordance with CIBSE AM11?	1	1		
		Will the building design be adapted for a projected climate change scenario?	1	1		
		Will the modelling inform the development of a thermal zoning and control strategy?	1	1		
Hea 06	Security	Will a suitably qualified security consultant be appointed at RIBA 2 and security considerations accounted for?	1	1		
		Health and Wellbeing Totals	13	10	0	
Ene 01	Reduction of energy use and carbon emissions	An improvement in the energy efficiency of the building's fabric and services and therefore achieves lower building operational related CO ₂ emissions.	15	4		
		Historic Buildings – Has a specialist study has been undertaken by a Suitably Qualified Heritage Conservation Specialist at the Concept Design stage (equivalent to RIBA Stage 2), to investigate the implications of improving building fabric and services performance while minimising the potential negative impacts of both the historic character of the building, the condition of the building fabric and indoor air quality.		0		
Ene 02	Energy Monitoring	Energy monitoring systems are installed to energy consuming systems accounting for ≥90% of the estimated total annual energy consumption for each fuel to be assigned to the various end-use categories of energy consuming systems. For buildings with a total useful floor area of greater than 1000 sq.m an appropriate energy monitoring and management system must be specified e.g. Building Management System (BMS).	1	1		
		Will high energy load and tenancy areas be separately sub metered?	1	1		
Ene 03	External Lighting	The average initial luminous efficacy of the external light fittings within the construction zone > 70 luminaire lumens per circuit Watt. AND All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.	1	1		
Ene 04	Low Carbon design	Will passive design measures be used in line with an analysis carried out during concept design stage (RIBA stage 2 or equivalent)?	1	0		
		Will free cooling measures be implemented in the whole building in line with the passive design analysis	1	0		

		Will an LZC technology be specified in line with a feasibility study carried out by the completion of Concept Design stage (RIBA Stage 2 or equivalent)?	1	1		
		Energy Totals	21	8	0	
Tra 01	Sustainable transport measures	Credits are awarded based on the building's public transport accessibility index and additional sustainable transport measures	5	2		Assumed accessibility index >4
Tra 02	Proximity to amenities	The building is within 500m safe walking distance of 2 amenities (food shop, cash point, outdoor space).	1	1		
Tra 03	Cyclist facilities	Compliant cycle storage spaces are provided. One for every 10 members of staff (with a minimum of four for any development)	1	1		
		At least two of the following compliant types of cyclist facilities are provided: • Showers • Lockers • Changing facilities • Drying room	1	0		
		Transport Totals	8	4	0	
Wat 01	Water consumption	Will efficient sanitary and kitchenware be specified?	5	3		
Wat 02	Water Monitoring	Will there be a water meter on the mains water supply to the building(s) Will metering/monitoring equipment be specified on any large water consuming items? (i.e. swimming pool, changing facilities) Will all specified water meters have a pulsed output? If the site/building has an existing BMS connection, will all pulsed meters be connected to the BMS?	1	1		
Wat 03	Water Leak Detection and Prevention	Will a mains water leak detection system be installed on the building's mains water supply?	1	1		
		Flow control devices that regulate the supply of water to each WC area/facility according to demand must be installed. Examples of flow control devices: - Time controllers, - Programmed time controllers,	1	1		

		- Volume controllers, - Presence detectors and solenoid valves - Central control unit.				
		Water Totals	8	6		
Mat 01	Life cycle impacts	Up to 6 credits for the use of Life Cycle Assessment on the new materials in the building at RIBA 3 or 4. OR Up to 4 credits for re-using materials in situ and for specifying new materials with Environmental Product Declarations (EPDs).	6	2		
Mat 03	Responsible Sourcing of Materials	MANDATORY REQUIREMENT Are all timber and timber-based products 'Legally harvested and traded timber'? Is there a documented sustainable procurement plan in place?	1	1		
		Each of the applicable specified materials comprising the main building elements are assigned a responsible sourcing tier level and points awarded accordingly	3	1		
Mat 04	Insulation	Will the Insulation Index for the building fabric and services insulation be ≥ 2.5 ? All new insulation specified for use within the following building elements must be assessed: external walls, ground floor, roof and building services. The Insulation Index is calculated using the thermal conductivity (W/m.K) and volume or area and thickness of each insulation type.	1	1		
Mat 05	Designing for durability and resilience	Will the building incorporate suitable durability and protection measures or have designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements? These measures must provide protection against: a. Negative impacts of high user numbers in relevant areas of the building (e.g. corridors, lifts, stairs, doors etc.). b. Damage from any vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.	1	1		
Mat 06	Materials efficiency	Have opportunities and measures to optimise the use of materials in building design, procurement, construction, maintenance and end of life been identified, investigated and implemented by the design/construction team as appropriate in consultation with the relevant parties at each of the following RIBA stages: a. Preparation and Brief RIBA 1 b. Concept Design c. Development Design d. Technical Design e. Construction	1	1		

		Materials Total	13	7	0	
Wst 01	Construction Site Waste Management	Has a pre-refurbishment audit been carried out of any existing buildings, structures or hard surfaces been carried out to determine whether refurbishment or re-use is feasible, and to maximise the recovery of material from demolition? This must be carried out at Concept Design RIBA 2 by a competent person.	1	1		
		Are materials re-used on or off site or sent back to the manufacturer for closed loop recycling.	2	1		
		Will the percentage of non-hazardous construction and demolition waste generated from landfill meet the required benchmarks: - Non-demolition: 85% by volume / 90% tonnage - Demolition: 90% by volume / 95% tonnage Waste materials must be sorted into separate key waste groups either onsite or offsite through a licensed contractor for recovery	1	1		
Wst 03	Operational Waste	Will appropriate facilities for the storage of operational recyclable waste volumes be provided? Where there is a commercial kitchen composting/food waste bins and a water tap for wash down must also be provided.	1	1		
Wst 05	Adaptation to climate change	Will a climate change adaptation strategy appraisal for structural and fabric resilience be conducted by the end of Concept Design (RIBA stage 2 or equivalent)?	1	0		
Wst 06	Functional adaptability	Will a study be conducted to explore the ease of future adaptation by the end of Concept Design RIBA 2 ? Functional adaptation measures should be adopted during RIBA 4.	1	1		
		Waste Totals	7	5		
Pol 02	NOx emissions from heating source	1 credit: Dry NOx emissions (measured at 0% excess O2) resulting from meeting heating and hot water demand are ≤100mg/kWh.	3	0		
		2 credits: Dry NOx emissions (measured at 0% excess O2) resulting from meeting heating and hot water demand are ≤70mg/kWh.				
		3 credits: Dry NOx emissions (measured at 0% excess O2) resulting from meeting heating and hot water demand are ≤40mg/kWh.				
Pol 03	Flood risk management and reducing surface water run-off	Do flood maps from the appropriate statutory body confirm the development is in a flood zone with a low annual probability of flooding?	2	2		
		There is no increase in the impermeable surfaces as a result of the refurbishment works	1	1		

		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).	1	0		
Pol 04	Reduction of night time light pollution	Does the lighting strategy comply with the BREEAM requirements for the reduction of night time pollution? 1. The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011 2. All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00. 3. If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes. 1. 4. Illuminated advertisements, where specified, must be designed in compliance with ILP PLG 05 The Brightness of Illuminated Advertisements	1	1		
		Pollution Totals	8	4	0	

ID	BREEAM Issue	Criteria Summary	Available Credits	Credits targeted	Potential Credits	Notes
Inn. Man 03	Responsible Construction Management	The principal contractor achieves a score of 40 or above in the Considerate Constructors Scheme	1	0		
Inn. Hea 01	Visual Comfort	At least 80% of the floor area (for the building spaces/room identified above in the standard requirements) has an average daylight factor of 3% in multi-storey buildings and 4% in single-storey buildings. Average daylight Illuminance must be at least 300lux for 2650 hours per year or more. Minimum daylight Illuminance at worst lit point must be at least 120lux for 3000 hours per year or more.	1	0		
Inn. Hea 02	Indoor air quality	Will exemplary level VOCs (products) criteria be met?	2	0		
Inn. Ene 01	Reduction of CO ₂ emissions	Up to two credits are available where the building achieves an EPRNC ≥ 0.9 and zero net regulated CO ₂ emissions. Up to three credits are available where the building is deemed carbon negative where > 100% of carbon emissions from unregulated (and regulated) energy use are offset by energy generated from onsite and near-site LZC sources	3	0		
Inn. Wat 01	Water Consumption	The water consumption for the assessed building demonstrates a 65% improvement compared to a national baseline performance	1	0		
Inn. Mat 01	Life Cycle Impacts	Has the innovation credits been achieved for using a robust tool to carry out Life Cycle Assessment?	1	0		
Inn. Mat 03	Responsible Sourcing of Materials	Where 50% of the available responsible sourcing points have been achieved.	1	0		
Inn. Wst 01	Construction Waste Management	This credit is awarded where: - $\leq 1.4\text{m}^3$ / ≤ 0.3 tonnes of waste is generated per 100m ² gross internal floor area. - at least 85% volume / 90% tonnage of non-demolition waste is diverted from landfill; at least 95% volume / 97% tonnage of demolition waste is diverted from landfill; and at least 95% volume / 97% tonnage of excavation waste is diverted from landfill. All key waste groups must be identified for diversion from landfill in the CRMP.	1	0		

		Innovation Totals	9	0		
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