Greengage

Brighter strategies
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Client: Lazari Properties 2 Limited

Project: Brunswick Centre

Report: BREEAM pre-assessment

QUALITY ASSURANCE

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1.0 INTRODUCTION

Greengage Environmental Ltd were commissioned on behalf of Lazari Properties 2 Limited (the 'Applicant') to undertake this BREEAM Pre-Assessment for the Proposed Development at Brunswick Centre, Bernard Street, London, WC1N 1BS.

The Proposed Development is the introduction of a subterranean hotel at lower ground floor level at the Brunswick Centre, with an ancillary entrance lobby located at ground floor level. The proposed hotel will provide a total of 207 bedrooms, and an ancillary F&B restaurant.

The development is targeting an 'Outstanding' rating under the appropriate BREEAM scheme, exceeding the requirements of the planning policy. Since this a Part 2-4 assessment, only certain credits are relevant and therefore this restricts achieving higher number of credits in various categories. Furthermore, this is a Grade II Listed building and building works are expected to be undertaken without vacating the building. The whole building is not being renovated and this limits the overall improvements that can be achieved. The Outstanding rating is hence considered to be appropriate for the scope of the works.

This BREEAM Pre-Assessment report presents an indicative possible framework of credits to target a score in excess of 85% equating to a BREEAM 'Outstanding' rating and demonstrating that achieving a rating of 'Outstanding' on this project is achievable. The score and targeted credits will be subject to review and change as the project design is developed at later stages whilst maintaining the rating of 'Outstanding'.

The assessment strategy is summarised within Section 3.0 of this report.

2.0 BREEAM

The Building Research Establishment's Environmental Assessment Method (BREEAM) is a nationally recognised means of reviewing and improving the environmental performance of buildings.

The BREEAM Refurbishment and Fitout 2014 scheme can be used to assess the environmental life cycle impacts of existing non-domestic buildings at the design and construction stages. The Proposed Development can be classed as a change of use of an existing space.

Used as a design tool, BREEAM will assess the environmental performance of new build buildings and refurbishments, providing a framework for improvement and an auditable demonstration of good design practice.

2.1 BREEAM CATEGORIES

BREEAM considers key global and local environmental issues and the internal environment for building occupants under various categories, covering:

- Management – rewards good construction site practices, provision of information to building occupants and project management;
- Health & Wellbeing – promotes a healthy internal and external environment;
- Energy – rewards energy efficiency and renewable energy generation;
- Transport – encourages locations with good access to and improvement of sustainable transport options;
- Water – promotes water efficiency and water recycling;
- Materials – rewards the lifecycle consideration and responsible sourcing of materials;
- Waste – encourages good construction and operational waste management practices;
- Land Use & Ecology – encourages ecological enhancements; and
- Pollution – promotes measures to reduce air and water pollution.

2.2 BREEAM RATINGS

BREEAM rating benchmarks, as set out below, enable comparison of building performance against typical sustainability standards.

Table 2.1 BREEAM Ratings and Percentage Score

Rating	Percentage Score
UNCLASSIFIED	<30%
PASS	≥30%
GOOD	≥45%
VERY GOOD	≥55%

Rating	Percentage Score
EXCELLENT	≥70%
OUTSTANDING	≥85%

It is recommended that a score of around 3-4% above the minimum score is aimed for during the design stages and achieved at the final certification stage. This is to ensure that if a credit was lost or disputed and revoked during design progression or third party BRE certification, the target rating would still be robustly achieved.

2.3 MINIMUM RATING REQUIREMENT CREDITS

Under certain categories, there are minimum credit requirements that must be achieved before a particular BREEAM rating can be awarded. All other credits are flexible.

The following minimum standards are required to reach the targeted 'Outstanding' rating:

Table 2.2 BREEAM RFO 2014 'Outstanding' Minimum Standards

Credit	Minimum standard
Man 03: Responsible construction practices	Two credits (Considerate construction)
Man 04: Commissioning and handover	Criterion 9 (Building User Guide)
Man 05: Aftercare	One credit (Seasonal commissioning)
Ene 01: Reduction of energy use and carbon emissions	Ten credits
Ene 02: Energy monitoring	One credit (First sub-metering credit)
Wat 01: Water	Two credits
Wat 02: Water monitoring	Criterion 1 only
Mat 03: Responsible sourcing of materials	Criterion 1 only
Wst 01: Project waste management	One credit
Wst 03: Operational waste	One credit

3.0 DEVELOPMENT PERFORMANCE

The proposed development has been assessed against the BREEAM RFO 2014 'residential institution (short term stay)' use class methodology.

The pre-assessment BREEAM score that is targeted for the development is 85.45%, which is equivalent to a BREEAM rating of 'Outstanding' and includes all required minimum standards.

As shown in Table 2.1, the percentage score required for a BREEAM 'Outstanding' rating is 85%. The score of 85.45% is therefore above this threshold and incorporates a small buffer. It is anticipated that further credits will be reviewed and targeted where feasible at the detailed design stages.

A summary of the current pre-assessment BREEAM strategy is shown Table 3.1. A detailed breakdown of the targeted BREEAM credits is presented in Appendix A of this report.

Table 3.1 Summary of BREEAM Category Scores

BREEAM category	Credits available	Credits targeted	Weighting (%)	Category score (%)
Management	20	20	14.92%	14.92%
Health & Wellbeing	20	11	17.80%	9.79%
Energy	24	23	18.04%	17.29%
Transport	11	11	9.57%	9.57%
Water	8	7	6.96%	6.09%
Materials	13	12	16.32%	15.06%
Waste	9	7	7.34%	5.71%
Pollution	9	5	9.04%	5.02%
Innovation	10	2	10.00%	2.00%
TOTAL				85.45%
TARGETED RATING				OUTSTANDING

4.0 PROGRESS & NEXT STEPS

A BREEAM pre-assessment workshop was held on 23/04/2023 with key members of the design team including the architect, M&E engineer, structural engineer and BREEAM AP. During the workshops key design principles and associated credit achievement were discussed as well as risks and opportunities for credit achievement.

The most significant risk at this stage is late action on early-stage credits that would prohibit a particular feature being included within the design if not considered at this stage.

The early-stage credits/items targeted are detailed within Table 2.1, which demonstrates the progress that has been made against each credit.

Table 4.1 Progress against each credit

Credit	Completion stage	Progress
Man 01 – Project brief and design	Concept design	Stakeholder consultation undertaken throughout Concept Design. Greengage appointed as Sustainability Champion.
Man 02 - Life cycle cost and service life planning	Concept design	To be completed by design team
Hea 06 - Security	Concept design	Authorisation has been received to include the credit and work is ongoing to review feasibility of pursuing credit.
Ene 04 – Passive Design	Concept design	To be completed as part of energy strategy.
Ene 04 – Low carbon design	Concept design	To be completed as part of energy strategy.
Tra 05 – Travel plan	Feasibility and design	A transport summary has been produced by the transport consultant. Travel plan will be produced for planning application.
Mat 06 – Material efficiency	All RIBA stages	On going through design work and circular economy strategy
Wst 01 - Pre-refurbishment Audit	Concept design	Primarily a fit-out, but small amount of material to be removed is being reviewed by design team.
Wst 06 – Functional adaptability	Concept design	On going through design work and circular economy strategy

During the next phases of design progression, the BREEAM strategy should be continually reviewed to ensure all target credits can still be achieved with the design or if any additional credits can be picked up as greater detail on certain building elements is established.

5.0 CONCLUSION

This BREEAM Pre-Assessment report has set out a pathway to show how the Proposed Development could achieve the targeted 'Outstanding' rating. The proposed strategy currently achieves a score of 85.45%, which represents an 'Outstanding' rating.

Key actions required at the early project stages have been identified and appointments made where necessary to ensure the required credits can be achieved. The score and targeted credits will subject to review and change as the project design is developed at later stages whilst maintaining the rating of 'Outstanding'.

Following this Pre-Assessment report, a BREEAM Design Stage and eventually Post-Construction Stage Assessment would be required in order to gain full BREEAM certification.

Appendix A provides the detailed BREEAM credit assumptions for the Proposed Development.

APPENDIX A DETAILED CREDIT ASSUMPTIONS

BREEAM Non-Dom RFO (2014) Pre-assessment Summary Tracker

Project Name	Brunswick Centre hotel	
Project Number	552219	
Date	03/07/2023	
Targeted BREEAM Rating	OUTSTANDING	**85.45%**

Project Notes
BREEAM Non-Dom RFO 2014
Other building 'residential institution' & Parts 2-4

Category	Credit ID	Credit Name	Credit(s) Available	Credits targeted	Responsibility	Completion	Credit Issue
	Man 01	Project Brief and Design	1	1	PM	Time Critical RIBA Stage 2	**Project Delivery Consultation** A meeting(s) must be undertaken between the key project delivery stakeholders (as a minimum: the client, the building occupier, the design team and the Principal Contractor [or someone with construction experience]), identifying roles, responsibilities and contributions for key phases of project delivery.
			1	1	PM	Time Critical RIBA Stage 2 & 4	**Stakeholder Consultation (third parties)** - All relevant interested parties (building users, existing community, partnerships and networks) have been consulted by the design team. - Stakeholder contributions and consultation outcomes have influenced Initial Project Brief and Concept Design. - Consultation feedback has been given to, and received by, all relevant parties prior to completion of detailed design.
			1	1	BREEAM AP	Time Critical RIBA Stage 2	**BREEAM AP (Concept Design)** Pre-requisite: Project team, including client, formally agree strategic performance targets early in design process. AP is appointed to work with team to maximise project's performance against BREEAM throughout Concept Design, monitor progress against targets, identify risks & opportunities, provide feedback, monitor/coordinate evidence generation.
			1	1	BREEAM AP	Time Critical RIBA Stage 3	**BREEAM AP (Developed Design)** Pre-requisite: Project team, including client, formally agree strategic performance targets early in design process. BREEAM AP (Concept Design) credit must be achieved first. AP is appointed to work with team to maximise project's performance against BREEAM throughout Developed Design, monitor progress against targets, identify risks & opportunities, provide feedback, monitor/coordinate evidence generation.
	Man 02	Life cycle cost and service life planning	2	2	Cost Consultants/ Client	Time Critical RIBA Stage 2	**Elemental Life Cycle Cost (LCC)** Outline entire asset elemental life cycle cost plan carried out, in line with PD 156865:2008, covering the expected life span of the refurbished building e.g. 20, 30, 50+ years, the servicing strategy for the projects outlining services component over a 15-year period and a fit-out strategy outlinging fit-out options over a 10-year period.
			1	1		Time Critical RIBA Stage 4	**Component level life cycle costing (LCC)** In line with PD 156865:2008 & includes (where present): - Part 1: Envelope, e.g. cladding, windows, and/or roofing - Part 2&3: Services, e.g. heat source cooling source, and/or controls - Parts 1-4: Finishes, e.g. walls, floors and/or ceilings - Where applicable: External spaces, e.g. alternative hard landscaping, boundary protection. Examples of how the LCC has influenced the design must be given.
			1	1			**Capital Cost Reporting** in £/sqm At the design stage, where the final information is not available, credit can be awarded where the client provides predicted capital cost, including contingencies, and commits to providing this information for the final stage of assessment.
			✓	✓			**Mandatory- All site timber used in the project is sourced in accordance with the UK government's Timber Procurement Policy.**

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Category	Credit ID	Credit Name	Credit(s) Available	Credits targeted	Responsibility	Completion	Credit Issue
Management	Man 03	Responsible construction practices	1	1	Contractor	RIBA Stage 3 - 4	**Environmental Management** All parties who control the site site (principal contractor, demo-contractor) operate EMS (ISO14001 or equivalent) for all main operations and best practice pollution prevention in accordance with Pollution Prevention Guidelines PPG6.
			1	1			**BREEAM AP (site)** Pre-requisite: Client and contractor formally agree performance targets. BREEAM AP is appointed to asssist with maximise performance, going beyond design intent, monitor progress against targets, identify risks/opportunities, provide feedback, coordinate generation of evidence.
			2	2			**Responsible Construction Management** Contractor achieves score of at least 27 (one credit), at least 35 (two credits) or 39+ (two credits + exemplary credit) in a compliant scheme. A score of 9, 11 or 13 in each of the three sections must be achieved for 1, 2 or 3 credits respectively.
			2	2			**Monitoring of Construction Site Impacts** An individual is appointed to record the utility consumption (energy & water) and transport of construction materials & waste to/from site. Targets must be set and monitored.
	Man 04	Commissioning and handover	✓	✓	Contractor		**Mandatory Criterion 9- Provision of a Building User Guide (BUG)**
			1	1	Contractor		**Commissioning - Testing Schedule and Responsibilities** - A schedule of commissioning including suitable timescale for commissioning/ re-commissioning of all complex/ non-complex building services and control systems and testing and inspecting building fabric. - Commissioning activities carried out in accordance with current Building Regulations, BSRIA, CIBSE guidelines. - Appoint a team member to monitor and programme pre-commissioning, commissioning, testing activities on behalf of the client. - Contractor accounts for the commissioning within their budget and timeline.
			1	1	Contractor		**Commissioning Building Services** Appoint specialist commissioning manager (by either the client or the principal contractor) to undertake design reviews, give advice, provide commissioning management input during installation and performance testing during handover.
			1	1	Contractor		**Handover** Provide a Building User guide (BUG) covering all those issues that are part of the works. Training schedule prepared for building occupiers.
	Man 05	Aftercare	1	1	Contractor / Client		**Aftercare Support** **-** Operational infrastructure in place to provide aftercare support to the occupier including, meetings with the occupier, on-site facilities training and walkabout, weekly attendance on-site for first month, longer term availability for 12 months. - Monitor energy and water consumption for 12 months
			1	1			**Seasonal Commissioning** - Over a 12 month period - Full load and part load, summer and winter as appropriate - Interviews with building occupants where affected - Re-commissioning systems and incorporating any revisions into the O&M manuals

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Category	Credit ID	Credit Name	Credit(s) Available	Credits targeted	Responsibility	Completion	Credit Issue
			1	1			**Post Occupancy Evaluation** 3rd party POE including a review of the design intent and construction process as well as feedback from building users on the environmental conditions of the building. Information is appropriately shared to facilitate lessons learnt
	0.75%	Total Credit	20	20			
	Per Credit	Section Score	14.92%	14.92%			
Health and Wellbeing	Hea 01	Visual Comfort	1	1	Architect/ M&E		**Glare Control** Glare control strategy for all relevant areas that is not reliant on occupant controlled blinds. - Blinds - Building Integrated measures - Bioclimatic Control - External shading or brise soleil
			3	0			**Daylighting - up to 3 credits** 2% daylight factor across 80% NIFA. Calculations required to confirm feasibility.
			2	0			**View out - 2 credits** 95% of the relevant building floor area is within 7m of a wall with window and window/opening must be ≥ 20% of the surrounding wall area.
			1	1			**Internal, External Lighting Levels & Zoning and Control** -Fluorescent and CFL with high frequency ballasts -Internal & external lighting to required illuminance levels -Internal lighting zoned for occupant control
	Hea 02	Indoor Air Quality	1	1	M&E		**Indoor Air Quality Plan** 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
			1	1			**Ventilation** Ventilation pathways minimise build-up of air pollutants. Air intakes must be 10m horizontal distance from building exhausts and other external sources of pollution. HVAC systems incorporate suitable filtration. Variable occupancy areas have CO2 sensors linked to mechanical ventilation system.
			2	2	Contractor / Architect		**VOCs (products)** All decorative paints and varnishes meet the required testing criteria At least 5 additional VOC containing products meet the required testing levels **VOCs (post-construction)** Post Construction (pre-occupancy) both formaldehyde and VOC concentration is measured and is within the WHO and Building Regulation guidelines

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			1	0	M&E		**Adaptability- Potential for natural Ventilation** Occupied spaces of the building are capable of providing fresh air entirely via natural ventilation.
	Hea 04	Thermal comfort	1	1	M&E		**Thermal Modelling** Thermal modelling has been carried out using software in accordance with CIBSE AM11. Building designed for over heating in accordance with CIBSE TM52**.**
			1	1			**Adaptability- for a Projected Climate Change Scenario** Thermal modelling demonstrates that the building design and services strategy can deliver the same thermal comfort levels, PMV and PPD indices in occupied spaces achieved for the first credit under a projected climate change environment.
			1	1			**Thermal Zoning and Controls** Thermal modelling has informed the temperature control strategy The strategy addresses appropriate zones for heating and cooling, degree of occupant control required, interaction of these systems and potential for manual override of automatic systems**.**
	Hea 05	Acoustic Performance	4	1	Acoustician		**Acoustic Report** Airborne and impact sound insulation: **1 credit: 3dB improvement on Buidling Regs;** 3 credtis: 5dB improvement 4 credits: 8dB improvement
	Hea 06	Safety and Security	1	1	Architect / ALO	RIBA Stage 2	**Security of Site and Building** - Suitably qualified security specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) including visual audit and the recommendations implemented.
	0.89%	Total Credit	20	11			
	Per Credit	Section Score	17.80%	9.79%			
Energy	Ene 01	Reduction of Energy Use and Carbon	15	15	M&E		**6 credits mandatory for Excellent; 10 credits for Outstanding** **Energy Performance NDR** Based on energy performance improvement of new over existing
	Ene 02	Energy Monitoring	1	1	M&E		**Mandatory - Sub-metering Major Energy Consuming (pulsed output)** Labelling required for each output: Space heating, Domestic Hot Water, Cooling, Lighting, Small power, Other major energy-consuming items.
	Ene 04	Low Carbon Design	1	1	M&E/ Architect	Time Critical RIBA Stage 2	**Passive Design Analysis** Thermal modelling credit under Hea 04 has been achieved. Identify opportunities for passive design solutions by Concept Design stage (RIBA Stage 2 or equivalent)
			1	0			**Free Cooling** Analysis of free cooling and implementation opportunities within passive design analysis.
			1	1		Time Critical RIBA Stage 2	**Low Zero Carbon Feasibility Study** LZC study by energy specialist and a local LZC technology has been specified in line with the feasibility study and results in at least 5% reduction in regulated carbon dioxide (CO2) emissions.

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Category	Credit ID	Credit Name	Credit(s) Available	Credits targeted	Responsibility	Completion	Credit Issue
	Ene 06	Energy Efficient Transportation	1	1	Lift consultant		**Energy Consumption** The energy consumption has been calculated in accordance with BS EN ISO 25745 Energy performance of lifts systems with the lowest energy consumption is specified.
			2	2			**Energy Efficient Features - energy consumption credit is achieved** Lifts must be specified to operate in standby condition during off-peak periods, compliant lighting (> 55 lamp lumens/circuit Watt.), compliant drive controller AND use of regenerative drive demonstrates energy reduction.
	Ene 08	Energy Efficient Equipment	2	2	Client / PM		**Energy Efficient Equipment** - Identify the buildings unregulated energy loads and estimate their contribution to the total annual unregulated energy demand. - Identify the systems that use a significant proportion of the buildings unregulated energy consumption. - Demonstrate a meaningful reduction in this energy consumption through appropriate specification.
	0.75%	Total Credit	24	23			
	Per Credit	Section Score	18.04%	17.29%			
Transport	Tra 01	Public Transport Accessibility	5	5	Assessor		**Accessibility Index** Calculate the site's Accessibilty Index (AI) based upon its proximity to transport nodes and the frequencies of services operating.
	Tra 02	Proximity to Amenities	1	1	Assessor		**Proximity to Local Amenities** Calculate the site's proximity to local amenities.
	Tra 03	Cyclist facilities	1	1	Architect/ M&E		**Cycle Storage** Provide a compliant number of cycle storage spaces.
			1	1			**Cycle Storage** Provide at least 2 of the four plausible compliant cyclist facilities.
	Tra 04	Maximum Car Parking Capacity	2	2	Architect		**Maximum Car Parking** No parking provided - credits awarded by default.
	Tra 05	Travel Plan	1	1	Architect/Client	Time Critical feasibility and design stage	**Travel Plan** Developing a travel plan, based upon the findings set out within a travel assessment/statement, incorporating the sustainable measures into the design.
	0.87%	Total Credit	11	11			
	Per Credit	Section Score	9.57%	9.57%			
	Wat 01	Water Consumption	5	4	M&E/ Architect		**Mandatory 1 credit for 12.5% improvement** 1 credit - 12.5% improvement over baseline performance- litres/person/day 2 credits - 25% improvement over baseline performance- litres/person/day 3 credits - 40% improvement over baseline performance- litres/person/day **4 credits - 50% improvement over baseline performance- litres/person/day** 5 credits - 55% improvement over baseline performance- litres/person/day

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Category	Credit ID	Credit Name	Credit(s) Available	Credits targeted	Responsibility	Completion	Credit Issue
Water	Wat 02	Water Monitoring	1	1	M&E		**Mandatory Criterion 1** Criterion 1- specification of water meter on mains - Areas of 10% + of water consumption fitted with sub-meters - Sub-meters connected to BMS - Pulsed water meter.
	Wat 03	Water Leak Detection	1	1	M&E		**Leak Detection System** Leak detection system capable of detecting major leak on mains.
			1	1			**Flow Control Devices** Sanitary supply shut-off. Flow control devices to be fitted to each WC area/facility to ensure water is supplied only when needed.
	0.87%	Total Credit	8	7			
	Per Credit	Section Score	6.96%	6.09%			
Materials	Mat 01	Life Cycle Impacts	6	6	Architect		**Material Efficiency** All new materials specified must be specified with an Environmental Product Declaration (EPD) and as much material re-used as possible. Building LCA required for 6 credits
	Mat 03	Responsible Sourcing of Materials	✓	✓	Architect/ Contractor		**Mandatory Criterion - Pre-requisite - All timber used must be "legally harvested and traded"**
			1	1			**Sustainable Procurement Plan** Contractor sources materials in accordance with a Sustainable Procurement Plan (SPP).
			3	2			**Responsible Sourcing of Materials** Source materials from suppliers holding compliant Responsible Sourcing Certification Scheme (RSCS) Certificates. 1 credit ≥12% **2 credits ≥36%** 3 credits ≥54%
	Mat 04	Insulation	1	1	Architect/ Contractor/ M&E		Only covers the following areas: - External walls - Ground floor - Roof - Building Services The Insulation Index requirement has also gone up and must be greater than 2.5 and not 2.
	Mat 05	Designing for Durability and Resilience	1	1	Architect		**Protecting Vulnerable Parts of the Building from Damage.** Design and specification measures to limit material degradation due to environmental factors e.g. corrosion, rotting, discolouration.
	Mat 06	Material Efficiency	1	1	Architect/ Contractor	Time Critical RIBA Stage 1, 2, 3, 4, 5	**Opportunities, Measures to Optimise the use of Materials** Opportunities and measures to optimise the use of materials in building design, procurement, construction, maintenance and end of life have been identified.
	1.26%	Total Credit	13	12			
	Per Credit	Section Score	16.32%	15.06%			

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Waste	Wst 01	Project Waste Management	1	1	Contractor / Demo Contractor	Time Critical RIBA Stage 2	**Pre-Refurbishment Audit** An audit is carried out by a competant person, prior to the start of works on site, to analyse what materials can be re-used, recycled and predict waste. These should then be compared against actual waste arisings.
			2	0			**Reuse and Direct Recycling of Materials** Where waste materials are either directly re-used on-site or off-site or are sent back to the manufacturer for closed loop recycling.
			3	3			**Resource Efficiency** Credits are awarded based upon the waste targets set within the the technical manual. **A target benchmark of achieving a non-hazardous waste generation figure of ≤ 2.1m3 (or ≤ 0.4 tonnes) per 100m2 gross internal floor area.**
			1	1			**Diversion of Resources From Landfill** Non Demo - 70% Volume / 80% Tonnage Demolition - 80% Volume / 90% Tonnage
	Wst 03	Operational waste	1	1	Architect / M&E		**Mandatory Operational Waste - only criteria 1 and 2** Where there is a dedicated space to cater for the segregation and storage of operational recyclable waste volumes generated clearly labelled, accessible, of capacity appropriate. Additional conditions are also set for healthcare and multi-residential buildings.
	Wst 06	Functional Adaptability	1	1	Architect / M&E / Structural Engineer	Time Critical RIBA Stage 2 & 4	**Functional Adaptability** A building-specific functional adaptation strategy study has been undertaken by the client and design team by Concept Design, with measures implemented at the Technical Design, with any omissions justified in writing.
	0.82%	Total Credit	9	7			
	Per Credit	Section Score	7.34%	5.71%			
Pollution	Pol 01	Impact of Refrigerants	2	1	M&E		**Refrigerant System** Pre-requisite: 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. Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2) of ≤ 100 $kgCO_{2e}$/kW cooling/heating capacity.
			1	1			**Leak detection** - Specify permanent automated refrigerant leak detection system installed. - Automatic isolation and containment of the remaining refrigerants during leak incident (shutdown pump down CAN be specified)
	Pol 02	NOx Emissions	3	0	M&E		**NOx Emissions** NOx emissions generated for the heating and hot water meet the following levels: ≤ 100 mg/kWh = 1 credit ≤ 70 mg/kWh - 2 credits ≤ 40 mg/kWh = 3 credits
	Pol 03	Surface Water Run-Off	2	2	Flood Risk / Drainage Consultant		**Flood Resilience** 2 Credits Low flood risk 1 Credit for Medium / High Flood Risk

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	Pol 05	Reduction of Noise Pollution	1	1	Acoustician		**Acoustic Report** An SQA carried out noise assessment 800m radius, confirmation that the noise survey was in compliance with BS4142;1997.
	1.00%	Total Credit	9	5			
	Per Credit	Section Score	9.04%	5.02%			
Innovation	Man 03	Responsible construction practices	1	1			**CCS** Contractor achieves score of at least 27 (one credit), at least 35 (two credits) or 39+ (two credits + exemplary credit) in a compliant scheme. A score of 9, 11 or 13 in each of the three sections must be achieved for 1, 2 or 3 credits respectively.
	Hea 01	Visual comfort	1	0			
	Ene 01	Reduction of energy use and carbon emissions	1	0			
	Wat 01	Water consumption	2	0			
	Mat 01	Life Cycle Impacts	1	1			
	Mat 03	Responsible Sourcing of Materials	1	0			
	Wst 01	Construction Site Waste Management	1	0			
	1.00%	Total Credit	10	2			
	Per Credit	Section Score	10.00%	2.00%			
		Overall Credits	124.00	98.00			
		Final BREEAM Score	109.99%	85.45%			
		BREEAM Rating		OUTSTANDING			