BREEAM Predictive Assessment

Phoenix Yard, 65 King's Cross Road, London

Prepared for Shepheard Epstein Hunter

28th January 2020

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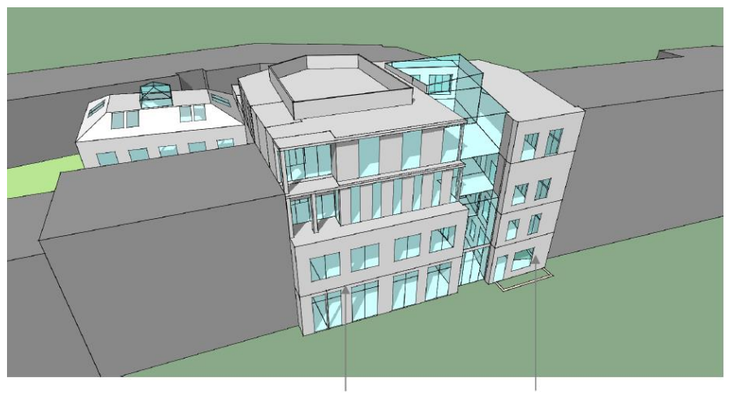
1 INTRODUCTION

The development is located at Phoenix Yard, 65 King's Cross Road, London in the Borough of Camden. The property is owned by Shepheard Epstein Hunter and an existing floor area of 1,420 sqm GIA. The proposal is to extend the commercial area by 310 sqm and provide four new residential dwellings.

A BREEAM Predictive Assessment has been undertaken for the proposed commercial development of Phoenix Yard totaling of 1,741 sqm GIA.

Figure 1 Phoenix Yard Site Plan



The relevant BREEAM methodology for this assessment would be BREEAM UK Non-Domestic Refurbishment and Fit-Out 2014. This covers both refurbishment and fit-out projects and is split into different parts depending on the type of assessment:

- Part 1 Fabric and Structure
- Part 2 Core Services
- Part 3 Local Services and
- Part 4 Interior Design.

We understand the refurbishment and extension of the Phoenix Yard will include new roof, new windows, M&E installation, new lighting installation, new kitchen and sanitary provision, new internal walls, floor and ceiling finishes and new furniture. We would therefore propose to undertake all Parts 1 to 4, which provides enough flexibility within the assessment to enable a BREEAM 'Excellent' rating to be achieved without extending the scope beyond control of the project team.

Part 1: Fabric and Structure

A Part 1 assessment may be appropriate where a refurbishment project includes one or more of the following alterations to the building fabric and where the area to be renovated is greater than 50 per cent of the surface of the individual element or 25 per cent of the total building envelope:

Building façade: where the external façade of the buildings is being upgraded/refurbished such as new cladding, rendering, façade system, internal dry lining etc.

Roof: where a new roof is being installed or where significant changes are being made to the roof structure or the replacement/refurbishment of roof coverings.

Windows: where changes are being made to the windows such as replacement, upgrade/refurbishment of existing windows with new glazing or the specification of secondary glazing.

Part 2: Core Services

A Part 2 assessment may be appropriate where at least two of the following are being installed or upgraded to a level that requires compliance with the Building Regulations Compliance Guide:

- Central air handling unit
- Heating boiler
- More than 50% of heat distribution
- Chiller plant
- More than 50% of chiller distribution
- Water services (sanitary fittings in core)
- Building management system
- Community heating system (e.g. CCHP)
- Low and zero carbon technologies.

Definition of core services

Core services are defined as services that supply multiple areas and/or tenants and will generally be centralised plant. The services will be deemed core where the services supply multiple tenancy areas and are not focused on the needs of the individual tenants. In such instances these services will normally be owned, operated and maintained by the landlord or their agent. In single tenancy occupancy buildings, the systems services will be considered as core where they supply the whole of the building. The services will normally be owned, operated and maintained by the building owner or their agent.

Part 3: Local Services

A Part 3 assessment may be appropriate where at least two of the following fixed local building services are being installed or upgraded e.g. a replacement or new installation of local heating/cooling units.

- Replacement of more than 50% of light fittings, system and controls
- Upgrade of zone controls
- Local ventilation
- Local heating units (including sources not connected to core services)
- Local cooling units (including sources not connected to core services)
- Point of use water heaters.

Definition of local services

Local services are defined as services that supply a specific area and may connect into the distribution systems from the core services within the tenanted area.

Part 4: Interior Design

A Part 4 assessment may be appropriate where the refurbishment or fit-out works involve changes to the layout and/or redecoration of the refurbishment or fit-out area, including:

Remodeling/changes to interior spaces including two or more of the following:

- Wall coverings (alterations to at least 50% by area)
- Floor coverings (alterations to at least 50% by area)
- Ceiling covering or systems (alterations to at least 50% by area)
- Partitions (alterations to at least 50% by area)
- Raised floor system (alterations to at least 50% by area)
- Furniture and fittings e.g. office furniture, retail display furniture and fittings etc. (alterations to at least 50% by area)

AND at least one of the following:

- Sanitary fittings e.g. tea/coffee points, kitchenette and washrooms (alterations to at least 50% of fittings)
- Equipment e.g. Office equipment, display lighting, display chillers/freezers (alterations to at least 50% of equipment)
- Local electrical installations e.g. sub-metering.

BREEAM ratings are awarded based on achievement of relevant minimum standards and % score (as demonstrated in Appendix A). The following table shows the required scores for each rating benchmark, with the targeted rating for this assessment highlighted in green.

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

Client's aspiration is to achieve a BREEAM 'Excellent' rating. This predictive assessment presents the commitments made to demonstrate how this would be achieved.

2 PREDICTED BREEAM RATING

The results of the BREEAM review are presented in Appendix A of this report, identifying the relevant design features and commitments that are possible for this development. This demonstrates that it is to feasible to achieve an Excellent rating.

This prediction is based on a detailed review of the design and is supported by robust assumptions, so that there is high level of certainty of what is achievable for this development.

The results, confirm that the development could achieve a score of 74.45%, providing a suitable buffer over the 70% required for a BREEAM Excellent rating, along with meeting the minimum requirements for this rating level.

APPENDIX A TARGETED CREDITS AND REQUIREMENTS

The following table sets out the details of the credit requirements and the current commitments/assumptions made at this early design stage to achieve the required BREEAM rating for the proposed for development, based on the BREEAM Refurbishment and Fit-Out 2014 methodology.

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PREDICTED BREEAM RATING

Phoenix Yard
BREEAM RFO 2014: Parts 1, 2, 3 & 4

Targeted BREEAM rating % **74.45** **Excellent**
Potential BREEAM rating % **77.49** **Excellent**

Credit Ref.	Credit Title	Credit Name	Available Credits	Targeted Credits	Potential Credits	BREEAM Requirements
MANAGEMENT						
Man 01	**Project Brief and Design**	Stakeholder Consultation (Project Delivery)	1	1		A clear sustainability brief developed prior to concept design. Identify and define roles, responsibilities and contribution of project team for key phases of the project delivery.
		Stakeholder Consultation (Third Party)	1	1		Design team to consult 3rd party stakeholders prior to completion of detailed design – feedback to all relevant parties given and received.
		Sustainability Champion (Design)	1	1		Appointment of sustainability champion to the project. BREEAM AP qualified.
		Sustainability Champion (Monitoring Process)	1	1		Sustainability Champion (BREEAM AP) to monitor and report progress against agreed BREEAM performance targets.
Man 02	**Life Cycle Cost and service Life Planning**	Elemental Life Cycle Cost (LCC)	2	0	2	An outline, entire asset elemental life cycle cost plan has to be carried out at RIBA stage 2 in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008.
		Component Level LCC Plan	1	0	1	A component level LCC plan has been developed by the end of Process Stage 4 in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008.
		Capital Cost Reporting	1	1		Report the capital cost for the fit-out works in pounds per meter square (£/m2) via the BREEAM Assessment Scoring and Reporting tool.
Man 03	**Responsible Construction Practices**	Timber used on site to be responsibly sourced.	Mandatory			All timber and timber-based products used on the project is 'Legally harvested and traded timber'.
		Environmental Management	1	1		Principal contractor operates ISO 14001 EMS or have a structure that is in compliance with BS 8555:2003 and has reached stage four of the impleentation stage.
		Sustainability Champion - Construction	1	1		A Sustainability Champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target, during the Construction, Handover and Close Out stages. BREEAM AP qualified.
		Considerate Construction (Minimum Standard 1 credit for Excellent, 2 for Outstanding)	2	2		Principal contractor achieves score >35 under the Considerate Contractors Scheme (CCS) and a score of at least 7 in each of the five sections.
		Monitoring of Construction Site Impacts - Utility Consumption	1	1		Principal contractor monitor energy and water consumption on site.
		Monitoring of Construction Site Impacts - Transport of Construction Materials & Waste	1	1		Principal contractor to monitor fuel consumption of transport of materials and waste to/from site.
Man 04	**Commissioning and Handover**	Commissioning & Testing Schedule & Responsibilities	1	1		Schedule of commissioning and testing that identifies the appropriate commissioning for the scope of the works that includes a suitable timescale for commissioning and re-commissioning of all relevant works. The schedule will identify the appropriate standards that all commissioning activities will be conducted in accordance with such as Building Regulations. An appropriate project team member to be appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities.
		Commissioning Building Services	1	1		Appoint an appropriate project team member provided they are not involved with the general installation works for the building services system.
		Testing & Inspecting Building Fabric	1	1		Thermographic survey to be undertaken by professional holding a valid Level certificate (UKTA and ATTMA).
		Build User Guide (Minimum Standard for Excellent and Outstanding)	Mandatory			A Building User Guide will be developed prior to handover for distribution to the building occupiers and a committed schedule of training for building occupiers.
		Handover	1	1		A training schedule is prepared for building occupiers at handover including proposed occupation plans (introduction to Building User Guide, to installed systems an key features, O&M manual, commissioning records, aftercare information).
Man 05	**Aftercare**	Aftercare Support	1	1		There will be operational infrastructure and resources in place to provide aftercare support to the building occupiers, including; a meeting between the aftercare team and the building occupier, onsite facilities management training to familiarise occupants with building systems, aftercare support provision for at least the first month of building occupation, longer term aftercare support provision for occupants for at least 12 months from occupation (i.e. helpline) Operational infrastructure and resources in place to collect energy and water consumption data for a minimum of 12 months from occupation.
		Seasonal Commissioning (Minimum Standard for Excellent and Outstanding)	1	1		Over a 12 month period (after occupation) the following seasonal commissioning activities will take place: I. Testing of all building services under full load conditions. II. Testing all building services during periods of extreme (high or low) occupancy. III. Interviews with building occupants to identify concerns regarding the systems. IV. Re-commissioning of systems incorporating revisions in operating procedures into the O&M manuals.
		Post Occupancy Evaluation	1	1		The client or building occupier makes a commitment to carry out a post occupancy evaluation (POE) exercise one year after initial building occupation to gain feedback from building users to inform operational processes. POE will be carried out by independent party and cover; a review of the design intent and construction process, feedback from a wide range of building users, sustainability performance (energy/water consumption and sustainable features or technology). The client or building occupier makes a commitment to carry out the appropriate dissemination of information on the building's post occupancy performance.
Man		**TOTAL:**	**21**	**18**	**3**	
		% of total score:	**14.29%**	**12.25%**	**2.0%**	

Credit Ref.	Credit Title	Credit Name	Available Credits	Targeted Credits	Potential Credits	BREEAM Requirements
HEALTH & WELLBEING						
Hea 01	**Visual Comfort**	Glare Control	1	1		Glare control strategy designs out potential glare in relevant building areas where risk identified. The glare control strategy must avoid increasing lighting energy consumption and be occupant controlled devices such as blinds or external shading.
		Daylighting	3	0		When relevant building areas meet good practice daylight factor OR the relevant building areas meet good practice average and minimum point daylight illuminance criteria.
		View Out	2	0		For relevant building areas, 95% of floor area within 8m of external wall with window, and window size >20% of surrounding wall area.
		Internal & External Lighting Levels, Zoning & Controls	1	1		All fluorescent and compact fluorescent lights fitted with high frequency ballasts. Internal lighting designed to provide lux levels in accordance with SLL Code for Lighting, CIBSE Lighting Guide 7 and other relevant industry standards; and zoned to allow occupant control. External lighting designed in accordance with BS5489 and BS EN 12464-2:2-14.
Hea 02	**Indoor Air Quality**	Indoor Air Quality Plan	1	1		Site specific (IAQ) plan produced and implemented. The objective is to minimise indoor air quality during the design, construction and occupation of the building.
		Minimising Sources of Air Pollution - Ventilation	1	1		Designed to minimise the indoor concentration and recirculation of pollutant in the building. The air intakes and exhaust are over 10m apart and intakes are over 20m from source of external pollution in accordance with the criteria of the relevant standard for ventilation.
		Minimise VOC Emissions by specification	1	1		All decorative paints and varnishes specified must meet performance standard EU Directive 2004/42/CE and testing standard BS EN ISO 1189-2:2013, Pat2. In addition, at least 5 of the 7 remaining product categories meet testing requirements and emissions levels criteria for Volatile Organic Compound (VOC) Emissions.
		VOC Emissions Measurement	1	1		The formaldehyde concentration level is measured post construction and is to be found less or equal to 100ug/m^3 averaged over 30 mins.
		Adaptability - Potential for natural ventilation	1	1		The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios.
Hea 04	**Thermal Comfort**	Thermal modelling	1	1		A full dynamic thermal analysis in accordance with CIBSE AM11 including summer & winter temp ranges in accordance with CIBSE Guide A, and building designed to limit risk of overheating. For air conditioned building Predicted Mean Vote and Predicted Ppercentage of Dissatisfied to be reported.
		Adaptability - for a projected climate change scenario	1	1		The thermal modeling demonstrates the building is designed for a projected climate change environment and for conditioned building Predicted Mean Vote and Predicted Ppercentage of Dissatisfied to be reported.
		Thermal zoning and controls	1	1		Above thermal comfort analysis informs temperature control strategy, and strategy provides compliant zoning and controls to its users.
Hea 05	**Acoustic Performance**	Acoustic performance standards	3	3		Meet relevant acoustic performance standards for sound insulation, indoor ambient noise levels and reverberation.
Hea 06	**Safety and Security**	Security of Site & Building	1	1		Security Needs Assessment (SNA) undertaken by Suitably Qualified Security Specialist (SQSS) during RIBA Stage 2 and design embodies recommendations. Any deviation from recommendations to be justified and agreed with SQSS.
Hea		**TOTAL:**	**19**	**14**	**0**	
		% of total score:	**15.43%**	**11.37%**	**0.0%**	

ENERGY						
Ene 01	**Reduction of Emissions**	Reduction of Emissions (Minimum Standard 1 credit for Very Good, 6 for Excellent and 10 for Outstanding)	15	6		A calculation of the energy score using the BREEAM Refurbishment and Fit-out energy model must be carried out. This must be assessed against a baseline BRUKL.
Ene 02	**Energy Monitoring**	Sub-Metering of Major Energy Consuming Systems (Minimum Standard for Very Good, Excellent, Outstanding)	1	1		Separate energy metering installed for each fuel type / use for 90% of estimated annual energy consumption, with pulsed output for future connection to energy management system
		Sub-Metering of High Energy Load & Tenancy Areas	1	1		This requires sub metering of different functional areas. Meter to be connected to BMS or equipped with pulsed output for future connection to energy management system.
Ene 04	**Low Carbon Design**	Passive Design Analysis	1	1		Hea 04 Thermal comfort has been achieved. Analysis of the existing building fabric, form, site location and outline scheme design is carried out at RIBA Stage 2 to identify potential passive design solutions and retrofit measures that reduce demands for energy consuming building services. The building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis.
		Free Cooling	1	1		Passive design is achieved and any of the free cooling strategies are implemented: night time cooling; ground coupled air cooling; displacement ventilation; ground water cooling; surface water cooling; evaporative cooling; disiccant dehumidification and evaporative cooling, using waste heat; absorption cooling, using waste heat; building does not require any significant form of active cooling or mech. ventilation i.e. naturally ventilated.
		Low Zero Carbon Feasibility Study	1	1		LZC Study carried out at RIBA Stage 2 by an energy specialist to establish most appropriate low or zero carbon energy source(s). Technology(ies) to be specified and resulted in a meaningful reduction in regulated CO_2 emissions.
Ene 06	**Energy Efficient Transportation Systems**	Energy Consumption	1	1		An analysi of the transportation demand and usage patterns is carried out and energy consumption has been estimated in accordance with BS EN ISO 25745 Part 2.
		Energy Efficient Features	2	2		Each newly specified lift 3 energy efficient features are specified: standby condition during off-peak periods; lift care lighting and display across is >55lamp lumens/circuit Watt; drive controller capble of variable speed, variable-voltage and variable-frequency. Where use of regenrative drive saves energy it needs to by specified.
Ene 08	**Energy Efficient Equipment**	Energy Efficient Equipment	2	2		Indentify the building's unregulated energy consumption (i.e. small power, plug-in equipment) and demonstrate a meaningful reduction in the total annual unregulated energy consumption of the building.
Ene		**TOTAL:**	**25**	**16**	**0**	
		% of total score:	**17.14%**	**10.97%**	**0.0%**	

Credit Ref.	Credit Title	Credit Name	Available Credits	Targeted Credits	Potential Credits	BREEAM Requirements
TRANSPORT						
Tra 01	**Public Transport Accessibility**	Accessibility Index / Dedicated Bus Service	3	3		The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded according to the building type.
Tra 02	**Proximity to Amenities**	Proximity to Local Amenities	1	1		Where the development is within 500 meters of at least 2 appropriate amenities e.g. food outlet, access to cash, access to a recreation/leisure facility for fitness/sport.
Tra 03	**Cyclist Facilities**	Cycle Storage & Facilities	2	2		Compliant cycle storage spaces provided on site (1 per every 10 staff) (spaces must be secure, fixed to permanent structure, covered overhead).
Tra 05	**Travel Plan**	Travel Plan	1	1		A Travel Plan has been developed as part of the feasibility and design stages. Plan must include measures to encourage the use of sustainable modes of transport and movements of people and goods during the building's operation.
Tra		**TOTAL:**	**7**	**7**	**0**	
		% of total score:	**5.56%**	**5.56%**	**0.0%**	
WATER						
Wat 01	**Water Consumption**	Water Consumption (Minimum Standard 1 credit for Good, Very Good, Excellent and 2 for Outstanding)	5	3		Specification of water efficient domestic water-consuming components to reduce the water consumption. Use the BREEAM Wat 01 calculator to assess the efficiency of sanitary wear.
Wat 02	**Water Monitoring**	Water Monitoring (Minimum Standard Good, Very Good, Excellent, Outstanding)	1	1		Specification of water meter with pulsed output on mains water supply to each building. Install water sub-meters for all water consuming systems over 10% of the building demand.
Wat 03	**Water Leak Detection**	Leak Detection System	1	1		Water leak detection system capable of detecting a major leak on the mains water supply within the building and between the building and the utilities water meter.
		Flow Control Devices	1	1		Flow control devices that regulate the supply of water to each WC area/facility must be provided. A presence detector and controller, i.e. an automatic device detecting occupancy or movement in the WC should be included in each WC core. This will require PIR lighting in bathrooms and solenoid shut off systems for each toilet core.
Wat		**TOTAL:**	**8**	**6**	**0**	
		% of total score:	**6.35%**	**4.76%**	**0.0%**	
MATERIALS						
Mat 01	**Life Cycle Impacts**	Life Cycle Impacts	6	2		Robust environmental performance information has been collected for newly specified materials or where materials are retained in situ.
Mat 03	**Responsible Sourcing of Materials**	Pre-requisite: Timber procurement details	Mandatory			Minimum requirement for all timber products to be legally sourced.
		Sustainable Procurement Plan	1	1		A Sustainable Procurement Plan should be put in place to guide procurement towards sustainable construction and indentify risk and opportunities against range of social, environmental and economic issues (i.e. BS 8902:2009).
		Responsible Sourcing of Materials	3	1		Achieve 18%; (36% 2 credits; 54% 3credits) of the points available in the Mat 03 calculation through sourcing of main building materials from responsible suppliers.
Mat 04	**Insulation**	Embodied Impact	1	1		All new insulation must be low impact having low GWP, ODP and be A to A+ rated in the 'Green Guide to Specification' and sourced from EMS Certified Suppliers.
Mat 05	**Designing for Durability & Resilience**	Designing for Durability & Resilience	1	1		The building incorporates suitable durability and protection measures and specification to limit materials degradation between environmental factors. Protection from the effects of high pedestrian traffic and any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.
Mat 06	**Material Efficiency**	Material Efficiency	1	1		Opportunities have been identified, and appropriate measures investigated and implemented within the scope of refurbishment works, to optimise the use of materials through building design, procurement, refurbishment, maintenance and end of life, setting waste forecasts and assessment of site opportunities and constraints.
Mat		**TOTAL:**	**13**	**7**	**0**	
		% of total score:	**14.89%**	**8.02%**	**0.0%**	

Credit Ref.	Credit Title	Credit Name	Available Credits	Targeted Credits	Potential Credits	BREEAM Requirements
WASTE						
Wst 01	**Construction Waste Management** (Minimum Standard 1 credit for Outstanding)	Pre-refurbishment audit	1	1		Pre-refurbishment audit carried out prior to strip out and demolition works to identify opportunities for the reuse and recycling of materials.
		Reuse and direct recycling of materials	2	0		Where specific waste material types are either directly re-used on-site or off-site or are sent back to the manufacturer for closed loop recycling.
		Construction Resource Efficiency	3	1		Prepare a compliant Resource Management Plan (RMP) and main contractor to achieve a construction waste resource efficiency benchmark of 11.3m^3 (or 3.5 tonnes) of construction waste generated per 100m^2 GIA.
		Diversion of Resources from Landfill	1	1		Prepare a compliant Resource Management Plan (RMP) and divert at least 85% by volume or 90% of waste from landfill.
Wst 03	**Operational Waste**	Operational Waste (Minimum Standard 1 credit for Excellent, Outstanding)	1	1		A dedicated central space for storage of recyclable waste, clearly labelled and accessible to building occupants/facilities operators.
Wst 04	**Speculative Floor and Ceiling Finishes**	Speculative Floor and Ceiling Finishes	1	1		For tenanted areas, interior finishes to be installed in show areas only or finishes are selected by the occupier
Wst 05	**Adaptation to Climate Change**	Adaptation to Climate Change - Structural & Fabric Resilience	1	1		Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of RIBA Stage 2. Carry out risk assessment to identify and evaluate the impact on the building from extreme weather conditions.
Wst 06	**Functional Adaptability**	Functional Adaptability	1	1		Carry out and implement a functional adaptation appraisal at RIBA Stage 2 and adopt the measures in RIBA Stage 4.
Wst		**TOTAL:**	**11**	**7**	**0**	
		% of total score:	**8.19%**	**5.21%**	**0.0%**	

LAND USE & ECOLOGY						
LE 04	**Enhancing Site Ecology**	Suitably Qualified Ecologist	Pre-requisite			A suitably qualified ecologist (SQE) has been appointed by the client by the end of the RIBA Stage 1 to advise on enhancing the ecology of the site
		Ecologist's Report & Recommendations	1	1		SQE must visit the site and provide an Ecology Report with appropriate recommendations for the enhancement of the site's ecology at RIBA Stage 2. Recommendations needs to be implemented.
LE 05	**Long Term Impact on Biodiversity**	Suitably Qualified Ecologist	Pre-requisite			SQE is appointed prior to commencement of activities on site and they confirm EU and UK legislation relating to the protection and enhancement of ecology has been complied with
		Long Term Impact on Biodiversity	2	2		Landscape and habitat management plan to be produced covering first 5 years after project completion in accordance with BS 42020:2013 Section 11.1 and handed over to the building owner/occupants. Plus additional measures for the improvement of long term biodiversity to be complied with.
LE		**TOTAL:**	**3**	**3**	**0**	
		% of total score:	**7.15%**	**7.15%**	**0.0%**	

POLLUTION						
Pol 01	**Impact of Refrigerants**	Pre-Requisite: systems with electric compressors				All systems (with electric compressors) must comply with the requirements of BS EN 378:20081 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.
		Impact of Refrigerants	2	2		3 credits if no refrigerants used OR 2 credits when systems using refrigerants have a DELC of < 100 kgCO_{2eq}/kW cooling/heating capacity or 1 credit where DELC is 1000 kgCO_{2eq}/kW cooling and heating capacity.
		Leak Detection	1	1		Where systems using refrigerants have a permanent automated refrigerant leak detection system installed; OR where an inbuilt automated diagnostic procedure for detecting leakage is installed. In all instances a robust and tested refrigerant leak detection system must be installed and must be capable of continuously monitoring for leaks.
Pol 02	**NOx Emissions**	NOx Emissions	3	3		All heating and hot water supplied by non-combustion systems OR emissions from combustion plant that provide heating and hot water do not exceed defined air emissions standards; 3 credits <40mg/kWh, 2 credits <70mg/kWh, 1 credit <100mg/kWh.
Pol 03	**Surface Water Run Off**	Flood Resilience	2	2		Project situated n a flood zone that is defined as having a low annual probability of flooding or meets requirements for avoidance of flooding in accordance with Pol 3 BREEAM Checklist 1.
		Surface Water Run Off	2	1		No increase in the impermeable suraces as a result of th refurbishment works or providing appropriate SuDS to allow full infiltration etc.
		Minimising Watercourse Pollution	1	0		Hydrologist must confirm that there is no ischarge from the developed site for rainfall up to 5mm and suitable pollution measure are put in place.
Pol 05	**Reduction of Noise Pollution**	Reduction of Noise Pollution	1	1		No noise-sensitive areas within 800m radius of the site or noise impact assessment is carried out in compliance with BS 7445. The noise level from the site is a difference no greater than +5dB/day and +3dB/ night compared to the background noise level.
Pol		**TOTAL:**	**12**	**10**	**0**	
		% of total score:	**10.99%**	**9.16%**	**0.0%**	

Credit Ref.	Credit Title	Credit Name	Available Credits	Targeted Credits	Potential Credits	BREEAM Requirements
INNOVATION						
Inn 01: Man 03	**Responsible Construction Practices**	Considerate Construction	1	0	1	Principal contractor achieves score >40 under the Considerate Contractors Scheme (CCS) and a score of at least 7 in each of the five sections.
Inn 02: Man 05	**Aftercare**	Aftercare	1	0		The client or building occupier makes a commitment to carry out a post occupancy evaluation (POE) exercise carried out by independent party; for the first 3 years of occupation.
Inn 03: Hea 01	**Visual Comfort**	Daylighting	1	0		When relevant building areas exceed good practice daylight factor OR the relevant building areas exceed good practice average and minimum point daylight illuminance criteria.
Inn 04: Hea 02	**Indoor Air Quality**	Indoor Air Quality	2	0		All decorative paints and varnishes specified must meet performance standard EU Directive 2004/42/CE and testing standard BS EN ISO 1189-2:2013, Pat2. In addition, all 7 remaining product categories meet testing requirements and emissions levels criteria for Volatile Organic Compound (VOC) Emissions.
Inn 05: Ene 01	**Reduction of Emissions**	Reduction of Energy Use and Carbon Emissions	5	0		Carbon neutral or carbon negative building is achieved. A calculation of the energy score using the BREEAM Refurbishment and Fit-out energy model must be carried out. This must be assessed against a baseline BRUKL.
Inn 06: Wat 01	**Water Consumption**	Water Consumption	1	0		Specification of water efficient domestic water-consuming components to reduce the water consumption 65% beyond the baseline. Use the BREEAM Wat 01 calculator to assess the efficiency of sanitary wear including rainwater and greywater harvesting.
Inn 07: Mat 01	**Life Cycle Impacts**	Life Cycle Impacts	1	0		Robust environmental performance information has been collected for newly specified materials or where materials are retained in situ.
Inn 08: Mat 03	**Responsible Sourcing of Materials**	Responsible Sourcing of Materials	1	0		Achieve 70% of the points available in the Mat 03 calculation through sourcing of main building materials from responsible suppliers.
Inn 09: Wst 01	**Construction Waste Management**	Resource Efficiency and Diversion of Resources from Landfill	1	0		To achieve a construction waste resource efficiency benchmark of 1.4m^3 (or 0.3 tonnes) of construction waste generated per 100m^2 GIA and divert at least 95% by volume or 97% tonnage of refurbishment waste from landfill and 95%y volume or 97% in tonnage of demolition waste from landfill.
Inn 10: Wst 02	**Recycled Aggregates**	Construction Waste Management	0	0		N/A
Inn 11: Wst 05	**Adaptation to Climate Change**	Adaptation to Climate Change	1	0		Achieved when credits Hea 04 Thermal comfort, 8 credits in Ene 01, Ene 04 Passive analysis, 3 credits in Wat 01, Mat 05 Material degradatin and Pol 03 Flood risk and 2 credits for Surface water run-off credits are achieved.
Inn		**TOTAL:**	**10**	**0**	**1**	
		% of total score:	**10.0%**	**0.0%**	**1.0%**	