

BREEAM Multi-Residential 2018

Pre-assessment

Mansfield Bowling Club

Report prepared by:

Kent Sustainability 10 Walmer Gardens Cliffsend Ramsgate Kent CT12 5JX

tel: 07824 635559 e-mail: gaynor@kentsustainability.co.uk

Project Number	0001
lssue	02
Signature	
Author	Gaynor Smissen
Occupation	Registered BREEAM Assessor
Date	06/11/2023

This report has been prepared by Kent Sustainability with all reasonable skill, care and diligence, and taking into account of the manpower and resources devoted to it by agreement with client. This report has been prepared for the sole use of the client for the purpose described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk unless formally agreed by Kent Sustainability.

Kent Sustainability disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of works.

VERSION CONTROL RECORD

ISSUE	DESCRIPTION	DATE	AUTHORS	REVIEWERS
	OF STATUS		INITIALS	INITIALS
1	First	08/08/2023	GS	GS
2	Second	05/09/2023	GS	GS
3	Third	06/11/2023	GS	GS

Table of Contents

- 1 BREEAM Pre-Assessment: Introduction
- 2 BREEAM Pre-assessment
- 3 Summary

APPENDICES:

- 1 BREEAM Detailed Credit Description
- 2 Pre-Assessment Estimator

1 BREEAM Pre-assessment: Introduction

This BREEAM 2018 Pre-Assessment Report has been prepared to support the Planning Application for the proposed Mansfield Bowling Club including a new construction of a high-quality care home with single occupancy studios and ancillary areas arranged over 4 storeys.

Camden Council require BREEAM 'Very Good' with improvements over the baseline for water calculations.

The Pre-assessment is showing a BREEAM score of 75.6% Excellent.

The building has been assessed as Multi-Residential BREEAM 'Fully fitted out'.

On the Credit summary section where it states N/A this means the credits are not applicable to this type of BREEAM assessment, so the credits are filtered out.

This assessment is for proposed for Planning Stage only and is subject to detailed design review and will form a framework for the eventual BREEAM assessment.

Sustainable design and construction measures have been incorporated in the building confirming the BREEAM-based standard that has been achieved.

BREEAM (Building Research Establishment Environmental Assessment Method) seeks to minimize the adverse effects of buildings on the environment. Its aim is to stimulate the demand for environmental sustainability across the construction sector and enable developments to be recognized according to their environmental benefits by providing a credible and comparable environmental label for buildings.

BREEAM Multi-Residential 2018 Scheme

The proposed development will fall under the BREEAM Multi-Residential 2018 scheme.

The overall rating of the building's environmental performance is given using terms PASS, GOOD, VERY GOOD, EXCELLENT or OUTSTANDING.

The BREEAM rating bands are as follows:

RATING	SCORE
PASS	30
GOOD	45
VERY GOOD	55
EXCELLENT	70
OUTSTANDING	85

The rating is determined from the total number of BREEAM criteria met and their respective environmental weighting. The environmental weighting for each section is as follows:

2 BREEAM Pre-assessment

Issue Category	Weighting %
Management	11
Health and Wellbeing	14
Energy	16
Transport	10
Water	7
Materials	15
Waste	6
Land Use and Ecology	13
Pollution	8

To achieve a BREEAM rating, the minimum percentage score must be achieved and the minimum standards (i.e. number of credits achieved, see below) applicable to that rating level complied with.

Minimum Standards

	BREEAM Rating/ Minimum number of credits				
BREEAM Issue	Pass	Good	Very Good	Excellent	Outstanding
Man 3- Responsible Construction practices				1	2
Man 4- Commissioning and handover			1	1	1
Man 5- Aftercare				1	1
Ene 1- Reduction of co2 emissions				4	6
Ene 2- Energy Monitoring			1	1	1
Wat 1- Water consumption		1	1	1	2
Wat 2- Water monitoring		1	1	1	1
Mat 3- Responsible Sourcing	1	1	1	1	1
Wst 1- Construction site waste management					1
Wst 3- Operational waste				1	1

The Pre-assessment for this Multi-Residential building is based on the current design intent and relates to those credits which have potential to be achieved. The following scores were achieved, resulting in a suggested score of 74.5% Excellent (the full Pre-assessment can be found in Appendix 2).

Section	Credit Title	Credit No	Credits awarded	Max credits available
Management	Project brief and design	Man 1	4	4
	Life cycle cost and service planning	Man 2	1	4
	Responsible Construction practices	Man 3	6 Excellent level	6
	Commissioning and Handover	Man 4	4 Outstanding level	4
	Aftercare	Man 5	3 Outstanding level	3
Health &	Visual comfort	Hea 1	5	5
Wellbeing	Indoor air quality	Hea 2	3	4
	Thermal Comfort	Hea 4	3	3
	Acoustic performance	Hea 5	3	4
	Safety and security	Hea 6	1	1
	Safe & Healthy	Hea 7	2	2
	Surroundings			
Energy	Reduction of CO2 emissions	Ene 1	9	13
	Energy monitoring	Ene 2	1 Outstanding level	1
	External Lighting	Ene 3	1	1
	Low and zero carbon technologies	Ene 4	2	3
	Energy Efficient transportation systems	Ene 6	2	2
Transport	Transport assessment and travel plan	Tra 1	2	2
	Sustainable Transport measures	Tra 2	8	10
Water	Water consumption	Wat 1	3 Outstanding level	5
	Water monitoring	Wat 2	1 Outstanding level	1
	Water leak detection and prevention	Wat 3	2	2

Section	Credit Title	Credit No	Credits awarded	Max credits available
Materials	Life cycle impacts	Mat 1	0	7
	Environmental impacts from construction products	Mat 2	0	1
	Responsible sourcing of materials	Mat 3	4 Outstanding level	4
	Designing for durability and resilience	Mat 5	1	1
	Material efficiency	Mat 6	1	1
Waste	Construction and waste management	Wst 1	3 Outstanding level	5
	Recycled aggregates	Wst 2	0	1
	Operational waste	Wst 3	1	1
	Adaption to climate change	Wst 5	1	1
	Functional Adaptability	Wst 6	2	2
Land use	Site selection	LE 1	1	2
and Ecology	Identifying and understanding the risks and opportunities for the site	LE 2	2	2
	Minimising impact on existing site ecology	LE 3	2 Outstanding level	3
	Change and enhancement of ecological value	LE 4	3	4
	Long term impact on biodiversity	LE 5	2	2
Pollution	Impact of refrigerants	Pol 1	3	3
	Local air quality	Pol 2	0	2
	Surface water run off	Pol 3	4	5
	Reduction of night time light pollution	Pol 4	1	1
	Noise attenuation	Pol 5	1	1
Innovation	Innovation	Inn 1	1	
Total			75.6% Excellent	

Key

- **Green** indicates that the credit is likely to be achieved if sufficient evidence is provided.
- Amber indicates that there is the potential to score additional credits.
- **Red** indicates that it is very unlikely that the credit will be achieved given the design and the budget.

A description of the credits can be found in Appendix 1.

3 Summary

This BREEAM Pre-assessment has been based on the design and information available at this stage with the design having progressed to Planning and Preparation stage.

This is for Planning Stage only but must follow the same strategy for Construction.

We have provided a BREEAM timeline guidance note in Appendix 2 that visually demonstrates those credits that must be met at Preparation and Brief and Concept Design.

APPENDIX 1

BREEAM DETAILED CREDIT DESCRIPTION

BREEAM Multi-Residential 2018 Pre-Assessment

For this proposed project to achieve an 'Excellent' rating overall the following is assumed. The black text is achievable with the current design/consent. The areas highlighted in red show the credits that cannot be met due to design constraints or RIBA Stage.

Credit Description	Consultant/Contractor Commentary
1. Man 01 Sustainable procurement	
Documentation indicating when the collaboration/procurement began and the roles and responsibilities of the project team i.e Meeting Minutes, construction programme and responsibilities schedule.	
The addition of a BREEAM AP allows for two extra credits.	
Stakeholder Consultation	
Credit awarded 4/4	
2. Man 02 Life cycle cost and service life planning	
A life cycle cost plan will need to be developed at concept design to deliver whole life value by encouraging the use of life cycle costing to improve design, specification, through-life maintenance, and operation. A competent person develops a component level LCC options appraisal by the end of Process Stage 4.	
Reporting the capital cost of the projects in pounds per square metre.	
Credit awarded 1 /4	
3. Man 03 Responsible Construction practices	
The Contractor will register the development with Considerate Constructors Scheme and look to achieve two credits and above.	
The Contractor will monitor and record data on energy and water consumption from the use of construction	

Credit Description	Consultant/Contractor
	Commentary
plant, equipment, and site accommodation necessary for completion of all construction processes.	
The transport of construction materials and waste will be metered/monitored.	
To award any of the available credits for this issue, any party who at any stage manages the construction site (e.g. the principal contractor, the demolition contractor) operates an Environmental Management System (EMS).	
A Sustainability Champion will be employed on the project to provide BREEAM related advice to the design team to facilitate timely and successful target setting and monitoring of BREEAM compliance.	
All site timber used on the project will be sourced in accordance with the UK Governments timber procurement policy.	
Credits awarded 6/6	
4. Man 04 Commissioning and Handover	
A Building User guide will be developed prior to handover.	
A Commissioning, training and responsibilities schedule will be developed for the scheme. During the design stage, the client or the principal contractor appoints an appropriate project team member, provided they are not involved in the general installation works for the building services system.	
A Thermographic survey will be required at post- construction to quality-assure the integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths.	
Credits awarded 3/4	

Credit Description	Consultant/Contractor
	Commentary
5. Man 5 Aftercare	
Aftercare support will be provided to the building occupiers. Seasonal commissioning will be carried out twelve months after occupation. A post occupancy evaluation will be carried out one year after occupation.	
Credits awarded 3/3	
6. Hea 01 Visual Comfort	
The design will provide adequate glare control and view out for building users. (Rooms that have computers and desks)	
Any rooms that are occupied by 30 mins or more will need to meet good practice daylight factors of 2%.	
Internal and external lighting systems will be designed to avoid flicker and provide appropriate illuminance (lux) levels. Internal lighting is zoned to allow for occupant control.	
Credits awarded 5/5	
7. Hea 02 Indoor air quality	
Prerequisite – (Indoor air quality) plan. If not commissioned the VOC and ventilation credits are lost.	
A site-specific indoor air quality plan will need to be produced and implemented. The plan must be produced no later than the end of Concept Design. The objective of the plan is to facilitate a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building.	
Emissions from Construction products.	
Post-construction indoor air quality measurement.	
Credits awarded 3/4	

Credit Description	Consultant/Contractor
	Commentary
8 Hea 04 Thermal Comfort	
o. Hea 04 mermai comort	
Thermal modelling of the design will be carried out. The	
building system will be adapted to a projected climate	
change scenario. The modelling will inform the	
development of a thermal zoning and control strategy.	
Credit awarded 3/3	
9. Hea 05 Acoustic Performance	
Sound testing will be carried out for internal ambient	
noise levels and room acoustics	
Achieve the requirements relating to sound absorption	
and within the common spaces of the building described	
in the relevant building regulations or building standards	
national guidance.	
One credit Airborne sound insulation values are at least 3	
dB higher and impact sound insulation values are at least	
3 dB lower than the performance standards in the	
relevant building regulations or standards.	
Credits awarded 3/4	
10. Hea 06 Safety and Security	
A socurity concultant (local police ALO) will peed to be	
appointed during or prior to Concept Design	
The purpose of the ALO will be to identify attributes of	
the proposal site and surroundings which may influence	
the approach to security for the development	
Credits awarded 1/1	
11. Hea 7 Safe and Healthy Surroundings	
There is an outside space providing building users with	
an external amenity area and safe access.	
Credite everylard 2/2	

Credit Description	Consultant/Contractor Commentary
12. Ene 01 Reduction of CO2 Emissions	
This project will encourage the specification and design of energy efficient building solutions, systems and equipment that support the sustainable use of energy in the building and sustainable management in the building's operation. Issues in this section assess measures to improve the inherent energy efficiency of the building, encourage the reduction of carbon emissions and support efficient management throughout the operational phase of the building's life.	
A Passive design analysis needs to be carried out plus detailed energy modelling to predict operational energy consumption. Demonstrate the scenario analysis has informed improvements to the design, operational, maintenance and handover strategies.	
Credits awarded 9/13	
13. Ene 02 Energy Monitoring	
The following major energy consuming systems (where present) will need to be monitored using either a Building Energy Management System or separate accessible sub-meters with a pulsed output to enable future connection to a BMS. Space heating, domestic hot water, Humidification, cooling, fans, lighting, small power, and other major energy-consuming items where appropriate and building function areas.	
Credits awarded 1/1	

Credit Description	Consultant/Contractor
14 En e 02 Esternel Linkting	Commentary
14. Ene 03 External Lighting	
The average initial luminous efficacy of the external light fittings will need to be not less than 70 luminaires per circuit watt.	
All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.	
Credits awarded 1/1	
15. Ene 4 Low and Zero carbon technologies	
The project team analyses the proposed building design and development during Concept Design to identify opportunities for the implementation of passive design measures.	
A feasibility study has been carried out and is complying with the London Plan approach of "Be Lean" – "Be clean" "Be green" implementing the following:	
Passive measures (low U-values and air permeability) High efficiency services, i.e. low energy lights, high efficiency ventilation Renewable sources: Ground source heat pumps, Photovoltaic system with a peak output of 38.4 kWp,	
The proposed development will achieve: - 36% regulated CO2 reduction against 2021 Part L compliant baseline - 19% regulated CO2 reduction by efficiency measures (Be Lean) - 23% regulated CO2 reduction by renewable sources	
Include a free cooling analysis in the passive design analysis. Identify opportunities for the implementation of free cooling solutions.	
Credits awarded 2/3	

Credit Description	Consultant/Contractor
16. ENE 06 Energy Efficient Transportation Systems	
Ensure that transportation types and arrangement systems are best suited to usage patterns and demand. Promote the use of energy efficient features, in line with best industry practice guidelines. Maximise the benefit and satisfaction from using transportation systems	
Credits awarded 2/2	
17. Tra 01 Transport Assessment and travel plan	
A transport plan based on a site-specific travel survey will be carried out at Preparation and Brief stage.	
Credits awarded 2/2	
21. Tra 02 Sustainable transport measures	
This section promotes awareness of existing local transport and identify improvements to make it more sustainable.	
Assess the public transport accessibility index for the site.	
Demonstrate an increase over the existing Accessibility Index through negotiation with local bus, train or tram companies to increase the frequency of the local service provision for the development.	
Providing electric recharging stations of a minimum of 3kw for at least 10% of the total car parking capacity for the development.	
Providing priority spaces for car sharers for at least 5% of the total car parking capacity for the development.	
Assess the local amenities which are likely to be frequently required and used by building occupants.	
Provide cycle storage and cyclist amenities. 1 per 10 staff and 1 per 10 visitors or beds.	

Credit Description	Consultant/Contractor
During preparation of the brief, the design team consults with the local authority (LA) on the state of the local cycling network and public accessible pedestrian routes, to focus on whichever the LA deems most relevant to the project, and how to improve it. Provide a public transport information system in a	Commentary
publicly accessible area, to allow building users access to up-to-date information on the available public transport.	
Credits awarded 8/10	
22. Wat 01 Water Consumption	
the baseline. Wc's effective flush of 3.75, wash hand basin taps 5 litres/min kitchen taps 6 litres/min and showers 6 litres/min.	
Credits awarded 3/5	
23. Wat 02 Water Monitoring	
There will be a water meter on the mains water supply. Water consuming plant or building areas consuming 10% or more of the buildings total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area and have a pulsed output.	
Credits Awarded 1/1	
24. Wat 03 Water leak detection and Prevention	
Mains water leak detection will be installed on the building's mains water supply.	
Flow control devices will be fitted in each communal sanitary area to regulate the supply of water to each wc area.	
Credits awarded 2/2	

Credit Description	Consultant/Contractor
	Commentary
25. Mat 01 Life cycle Impacts	
During the Concept Design, demonstrate the environmental performance of the building through the Impact Compliant LCA tool.	
Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specifications).	
Options appraisal of materials at Technical Design through Impact complaint LCA tool.	
Credits awarded 0/7	
26. Mat 02 Environmental impacts from construction	
products	
To reduce the burden on the environment from construction products by recognising and encouraging measures to optimise construction product consumption efficiency and the selection of products with a low environmental impact (including embodied carbon), over the life cycle of the building.	
Credits awarded 0/1	
27. Mat 03 Responsible sourcing of materials	
Selecting products that involve lower levels of negative environmental, economic, and social impact across their supply chain including extraction, processing, and manufacture.	
All timber used on the project will be sourced in accordance with the UK Government's Timber procurement Policy. 50% of the applicable materials comprising the following building elements will be responsibly sourced: frame, roof, external floors, upper slab, windows, and floor finishes.	
Credits awarded 4/4	

Credit Description	Consultant/Contractor
	Commentary
28. Mat 05 Designing for durability and resilience	
Reducing the need to repair and replace materials resulting from damage to exposed elements of the building and landscape	
Avoiding unnecessary cost and material use resulting from the need to repair and replace damaged elements as a result of operational wear and tear.	
Minimise costs and disruption resulting from environmental degradation to building elements as a result of avoidable weathering and changes to climatic conditions over time.	
Credits awarded 1/1	
29. Mat 06 Material Efficiency	
Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance, and end of life.	
Credits awarded 1/1	
30. Waste 01 Construction waste management	
There will be a compliant site waste management plan to minimise cost and environmental damage resulting from waste going to landfill.	
Maximise the recovery and reuse of construction materials to avoid unnecessary extraction and processing of virgin materials, and associated vehicle movement.	
Pre-demolition audit This must be used to determine whether reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications.	
Reduce construction costs resulting from wastage on site. Amount of waste generated per 100m2 <6.5 tonnes. 80% of non-demolition waste needs to be diverted from landfill.	

Credit Description	Consultant/Contractor
	Commentary
Credits awarded 4/5	
31. Waste 02 Recycled Aggregates	
Credit not targeted.	
Encouraging the use of recycled and secondary	
aggregates.	
Credits awarded 0/1	
32. Waste 03 Operational Waste	
There will be a dedicated space to cater for the	
segregation and storage of operational recyclable waste	
volumes. At least 2m2 per 1000m2 of net floor area.	
Credits awarded 1/1	
33. Waste 5 Adaptation to climate change	
Maximise asset resilience and value through	
consideration of the likely impacts of future climate	
change on the project.	
Reduce future risks to end user safety arising from	
extreme weather events and climate change.	
Contribute to business continuity, planning in response	
to the risks of extreme weather events and climate	
change.	
Reduce the need for future adaptation, maintenance and	
disruption associated with responding to climate change	
and extreme weather events.	
Credits awarded 1/1	
34. Waste 6 Functional Adaptability	
To avoid uppercessant materials use cost and discussion	
arising from the need for future adaptation works as a	
result of changing functional demands and to maximise	
the ability to reclaim and reuse materials at final	

Credit Description	Consultant/Contractor Commentary
demolition in line with the principles of a circular	
economy.	
Credits awarded 2/2	
35. LE 01 Site Selection	
The site is located on developed land, and if found to be contaminated potential of awarding a credit for soil remediation.	
Credits awarded 1/2	
36. LE 02 Ecological value of site and protection of ecological features	
Demonstrate sound understanding and consideration of ecological value including ecosystem service provision, biodiversity, and associated benefits.	
Avoid risks associated with the wider environment.	
Provide the ability for construction works to be programmed successfully while minimising impacts on natural assets.	
Credits awarded 2/2	
37. LE03 Minimising impact on site ecology	
Credits have been awarded for recognition of steps taken to avoid impacts on existing site ecology.	
Minimise ecological damage on the site and where relevant in the zone of influence.	
Helping to conserve local natural ecosystems and maintain environmental assets for the community.	
Supports activities to ensure that legislation, policy, and guidance are followed for the good of the site.	
Credits awarded 2/3	

Credit Description	Consultant/Contractor
	Commentary
38. LE04 Enhancing site ecology	
 38. LE04 Enhancing site ecology Improve local biodiversity by increasing the quality, connectivity, density and coverage of natural green spaces: Provide corridors for wildlife to survive and flourish Introduce and reinforce local native flora or plant species Contribute to the protection and restoration of biodiversity Help to improve the health, wellbeing and potentially the productivity of occupants, users and neighbours through the provision of recreational space and an increased connection between people and the natural environment (biophilia). Increase property values by increasing the amenity and desirability of living and working in the local area. Raise awareness of the benefit of interacting with the natural environment. Support local, national and international efforts to halt the loss of habitats and biodiversity by promoting net gain where possible. 	
Credits awarded 3/4	
39. LE05 Long term impact on biodiversity	
The project team liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented to monitor and review implementation and the effectiveness. Develop and review management and maintenance solutions, actions, or measures.	
Credits awarded 2/2	
40. Pol 1 Impact of Refrigerants	
Increase system resilience and market value through the use of low impact refrigerants in buildings. Minimising future liabilities and adaptation costs associated with changes to statutory requirements relating to refrigerant use.	

Credit Description	Consultant/Contractor
Limit the potential release and impact of refrigerant gases into the atmosphere. Assist in meeting corporate social responsibility reporting	Commentary
targets relating to refrigerant use. Credits awarded 3/3	
41. Local air quality	
To contribute to a reduction in local air pollution using low emission combustion appliances in the building	
Credits awarded 0/2	
42. Pol 3 Surface water runoff	
An appropriate Consultant will need to confirm the peak rate of run-off from the site to any watercourses. Any additional runoff is prevented from leaving the site by using infiltration or other sustainable drainage systems.	
Flood risk assessment required	
4/5 Awarded at present	
43. Pol 4 Reduction of night-time light pollution	
All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.	
Credits awarded 1/1	
44. Pol 5 Reduction of noise pollution	
A noise impact assessment compliant with BS 4142:2014(222) will be commissioned. Noise levels will be measured or determined for existing background noise levels and at the nearest or most exposed noise-sensitive development to the proposed assessed site.	
Credits awarded 1/1	

APPENDIX 2

PRE-ASSESSMENT ESTIMATOR

BREEAM UK New Construction 2018 scheme assessment timeline

The assessment timeline tables included in the summary page of each category in the UK New Construction 2018 scheme manual have been reproduced in this Guidance Note. The timeline has been produced to assist with optimising project sustainability performance. It outlines at which stage credits should be addressed and ideally when these should be considered by the design team, planner, contractors, owners, occupiers and other members of the project team to achieve the highest possible BREEAM rating at the minimum cost. It demonstrates that where BREEAM advice is taken on too late within the design and construction phases a number of BREEAM credits may not be achieved or only at additional cost or disruption.

			Plan of Work						
		Sub credits	Strategic Definition	Preparation and Brief	Concept Design	Developed Design	Technical Design	Construction	Handover and Close Out
Manageme	ent								
		Project delivery planning							
Man 01	Project brief and design	Stakeholder consultation							
		BREEAM Advisory Professional			Maximise project performance	Maximise project performance			
Man 02 Life cycle cost and	Life cycle cost			Elemental LCC		Component level LCC options appraisal			
	service ine praciring	Capital cost reporting							
Responsible Man 03 construction practices		Environmental management							
	Responsible construction practices	BREEAM Advisory Professional							
		Responsible construction management							
	Monitoring of construction site impacts								

		Commissioning - testing schedule and responsibilities					
Man 04	Commissioning and handover	Handover				Building user guides and training schedules prepared	Building Utile guildes and training Schedules prepared
Man 05	Aftercare						
Health and	d Wellbeing						
Hea 01	Visual comfort						
Hea OZ	Indoor air quality			Indoor air quality plan			
Hea 04	Thermal comfort						
Hea 05	Acoustic performance			Acoustician appointment			
Hea 06	Security						
Hea 07	Safe and healthy surroundings						
Energy		ht i					
Ene O1	Reduction of energy use and carbon emissions						
Ene 02	Energy monitoring						
Ene 03	External lighting						
		Passive design		Passive design analysis			
the U4	Low carbon design	Low and zero carbon technologies		Feasibility study			
Ene 05	Energy efficient cold storage	Refrigeration energy consumption		Strategy for design and Installation			
Ene OG	Energy efficient transportation systems						

29

Design/management influence	
Design/client decision	
Design/management changes at a high cost.	
No further changes can be made	
RIBA stage stipulated within BREEAM criteria	

Part of the BRE Trust

