

**BREEAM Multi-
Residential 2018**

Pre-assessment

**199-203 Henley Road,
Caversham, Reading**

Report prepared by:

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1 BREEAM Pre-assessment

Kent Sustainability have been commissioned by Red 3 Projects to undertake a BREEAM Pre-assessment for the proposed Multi-Residential Building.

BREEAM (Building Research Establishment Environmental Assessment Method) seeks to minimize the adverse effects of buildings (new build and refurbishment) on the environment. It also aims to enable developments to be recognized according to their environmental benefits; provide a credible, environmental label for buildings; and to stimulate demand for environmentally sustainable buildings.

This BREEAM Pre-assessment has been conducted based upon information obtained from the Planning portal and information provided by Red 3 Projects. This includes issues that have the potential to be achieved if changes to the current designs are implemented.

The requirement for BREEAM 'Excellent' has been applied to the project. The project had been designed from inception to meet the restraints of the site and to meet specific care needs. As such we find it hard to find enough credits to achieve the Excellent accreditation. Issues such as daylighting being affected by the site's physical constraints, additional required sound attenuation that would affect the layout of the building in an already tight site, and water usage requirements that cannot be achieved within a care home environment. This is discussed further below:

Daylighting – This will require the input of a suitably qualified building services / energy consultant to carry out the required daylighting calculations to ensure compliance with the stated levels within Hea 01 table 10.

View out – This element cannot be achieved as the lounges and dining rooms are outside the constraints laid out in Hea 01. Namely that all positions within the relevant rooms must be within 5 metres of a wall which has a window or permanent opening.

To achieve the required standards set out within Hea 05 the internal separating walls and floors would all need upgrading to provide between 3 and 8dB higher than the building regulations standard for airborne sound and 3 to 8dB lower than the building regulations for impact sound. As you are aware care homes are exempt from complying with approved document E (Resistance to the passage of sound); this would therefore be a major undertaking with a substantial cost and a loss in usable floor area.

The credits available under Mat 06 would have required input from the very inception of the scheme at brief stage, concept design and developed design, we are now at technical design stage and we do not feel that this will be achievable at this stage.

Nine credits have been lost on the materials section as a Building Life Cycle Assessment of the Superstructure would have had to been completed during concept design.

To meet BREEAM 'Excellent' there is a minimum requirement to achieve 4 credits. A preliminary SBEM using natural gas boilers and CHP is showing a 14.86% improvement over Building Regulations but is only achieving 3 credits, 4 needed as a minimum for BREEAM 'Excellent'.

Only one credit can realistically be awarded on the Water section, bearing in mind the users' needs. The flushing control for each WC or urinal must be suitable for operation by patients with frail or infirm hands or activated by electronic sensors.

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 weightings for each section is as follows:

1 BREEAM Pre-assessment: continued.

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 Issue	BREEAM Rating/ Minimum number of credits				
	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

2 BREEAM Pre-assessment

The Pre-assessment for 199-203 Henley Road is based on the current design intent and relates to those credits which have potential to be achieved - if changes to the current design were implemented. The following scores were achieved, resulting in a suggested score of **52.10 % 'Good'** (the full Pre-assessment can be found in Appendix 2).

Section	Credit Title	Credit No	Credits awarded	Maximum credits available
Management	Project brief and design	Man 1	1	2
	Life cycle cost and service planning	Man 2	1	1
	Responsible Construction practices	Man 3	4 Excellent level	4
	Commissioning and Handover	Man 4	2 Outstanding level	2
	Aftercare	Man 5	3 Outstanding level	3
Health & Wellbeing	Visual comfort	Hea 1	2	5
	Indoor air quality	Hea 2	0	3
	Safe Containment in Laboratory's	Hea 3	N/A	N/A
	Thermal Comfort	Hea 4	2	3
	Acoustic performance	Hea 5	1	4
	Safety and security	Hea 6	1	1
	Safe & Healthy Surroundings	Hea 7	1	1
Energy	Reduction of CO2 emissions	Ene 1	3	9
	Energy monitoring	Ene 2	0	2
	External Lighting	Ene 3	0	1
	Low and zero carbon technologies	Ene 4	1	3
	Energy efficient cold storage	Ene 5	N/A	N/A
	Energy efficient transportation systems	Ene 6	2	2
	Energy efficient laboratory systems	Ene 7	N/A	N/A
	Energy efficient equipment	Ene 8	N/A	N/A
	Drying space	Ene 9	N/A	N/A

Section	Credit Title	Credit No	Credits awarded	Max credits
Transport	Transport assessment and travel plan	Tra 1	2	2
	Sustainable Transport Measures	Tra 2	6	10
Water	Water consumption	Wat 1	1 Outstanding level	5
	Water monitoring	Wat 2	1 Outstanding level	1
	Water leak detection and prevention	Wat 3	2	2
	Water efficient equipment	Wat 4	N/A	n/a
Materials	Life cycle impacts	Mat 1	0	7
	Environmental impacts from construction products	Mat 2	0	1
	Responsible sourcing of materials	Mat 3	2 Outstanding level	4
	Designing for durability and resilience	Mat 5	1	1
	Material efficiency	Mat 6	0	1
Waste	Construction and waste management	Wst 1	4 Outstanding level	5
	Recycled aggregates	Wst 2	0	1
	Operational waste	Wst 3	1	1
	Speculative floor and ceiling finishes	Wst 4	N/A	N/A
	Adaption to climate change	Wst 5	0	1
	Functional Adaptability	Wst 6	1	1
Land use and Ecology	Site selection	LE 1	0	2
	Ecological value of site and protection of ecological features	LE 2	2	2
	Minimising impact on existing site ecology	LE 3	1 Outstanding level	3
	Enhancing site ecology	LE 4	2	4
	Long term impact on biodiversity	LE 5	2	2
Pollution	Impact of refrigerants	Pol 1	N/A	N/A
	Local air quality	Pol 2	0	2
	Surface water run off	Pol 3	3	5
	Reduction of night time light pollution	Pol 4	1	1
	Noise attenuation	Pol 5	N/A	N/A
Total			52.10 Good	

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

As a result of the measures and solutions detailed in this report, the development's BREEAM NC 2018 Pre-assessment indicates there is the potential for the project to achieve the 'Good' rating with a preliminary score of 52.10%. It must be noted that the proposed BREEAM strategy is expected to change and adapt as the design progresses and becomes more detailed, other credits may be targeted and some credits may be lost.

APPENDIX 1

BREEAM DETAILED CREDIT DESCRIPTION

BREEAM Multi-Residential 2018 Pre-Assessment

For this proposed project to achieve a 'Good' 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, cost implications or reports that are needed at Concept Design.

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 extra credits. (Third party) stakeholder consultation would need to take place i.e representative of the local community. The project team will demonstrate how the project delivery stakeholder contributions and the outcomes of the consultation process have influenced or changed the initial project brief. The project must demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design. Credit awarded 2/2	Kent Sustainability are BREEAM AP's.
2. Man 02 Life cycle cost and service life planning Reporting the capital cost of the projects in pounds per square metre Credit awarded 1 /1	

3. Man 03 Responsible Construction practices The Contractor will register the development with Considerate Constructors Scheme and look to achieve 1 credit and above. The Contractor will monitor and record data on energy and water consumption from the use of construction 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 would need to 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. Confirmation that the site timber used on the project is sourced in accordance with the UK Governments timber procurement policy. Credits awarded 3/4	Kent Sustainability are AP's
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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. Credits awarded 2/2	
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 need to provide adequate glare control and view out for building users. (Rooms that use computers and desks) The relevant rooms will need to meet good practice daylight factors of 2% for the staff and public areas and consulting rooms. Daylighting calculations to be carried out. 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 2/4	Very difficult to achieve in bedrooms.

7. Hea 02 Indoor air quality Prerequisite – (Indoor air quality) Plan. Credits awarded 0/3	
8. Hea 04 Thermal Comfort Thermal modelling of the design will be carried out. The building system would need to be adapted to a projected climate change scenario. The modelling will inform the development of a thermal zoning and control strategy. Credit awarded 2/3	
9. Hea 05 Acoustic Performance Sound testing would need to be carried out for internal ambient noise levels and room acoustics. 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. Airborne sound insulation values are at least 5 dB higher and impact sound insulation values are at least 5 dB lower than the performance standards in the relevant building regulations or standards. Credits assumed 1/4	

10. Hea 06 Safety and Security A security consultant (local police ALO) would need to be appointed and security considerations accounted for in the new building design. Credits awarded 1/1	
11. Hea 07 Safe and Healthy Surroundings There is an outside space providing building users with an external amenity area. Credits awarded 1/1	
12. Ene 01 Reduction of CO2 Emissions 1. To meet BREEAM 'Excellent' there is a minimum requirement to achieve 4 credits. 2. A preliminary SBEM using natural gas boilers and CHP is showing a 14.86% improvement over Building Regulations but is only achieving 3 credits, 4 needed as a minimum for BREEAM 'Excellent' Credits awarded 3/9	
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 0/2	The Building hasn't been designed to allow for a BMS or sub meters

14. Ene 03 External Lighting Energy efficient external lighting will be specified, and all external light fittings will be controlled for the presence of daylight. The average initial luminous efficacy of the external light fittings is 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 0/1	The external lighting specified doesn't have presence detection.
15. Ene 4 Low and Zero carbon technologies A passive design analysis would need to be carried out including an analysis of free cooling and identifying opportunities for the implementation of free cooling solutions. A feasibility study has been carried out to establish the most appropriate recognised local low or zero carbon energy sources. Credits awarded 1/3	
16. Ene 6 Energy Efficient transportation systems A lift transportation analysis will need to be carried out to determine and specify the optimum number, size, and type of lifts that are most energy efficient. Credits awarded 2/2	

17. Tra 01 Transport Assessment and travel plan A transport plan based on site specific travel survey will need to be developed. Credits awarded 2/2	
21. Tra 02 Sustainable transport measures To achieve any credits the Tra 1 assessment must be completed including travel plan credits. Assess the public transport accessibility index for the site. Provide electric recharging stations of a minimum of 3kw for at least 10% of the total car parking capacity for the development. 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. 2 credits. Provide a public transport information system in a publicly accessible area, to allow building users access to up-to-date information on the available public transport and transport infrastructure. This may include signposting to public transport, cycling, walking infrastructure or local amenities. 1 credit. Assess the local amenities which are likely to be frequently required and used by building occupants.	

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. Agree and implement one proposition chosen with the local authority. The proposition supported by the development is additional to existing local plans and has a significant impact on the local cycling network or on pedestrian routes open to the public. Cycle storage to be provided 1 per 10 staff and 1 per 10 beds. Credits awarded 6/10	
22. Wat 01 Water Consumption The flushing control for each WC or urinal must be suitable for operation by patients with frail or infirm hands or activated by electronic sensors. To minimise the consumption of potable water in sanitary applications, low water consuming fittings will need to be installed. For this assessment 12.5% over the notional baseline seems more appropriate bearing in mind the users care requirements. The following flow rates would need to be used. Wc's effective flush of 4.5, wash hand basin taps 8 litres/min and showers 10 litres/min Credits awarded 1/5	

23. Wat 02 Water Monitoring There will need to 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 communal sanitary areas to regulate the supply of water to each wc area. Credits awarded 1/1	
25. Mat 01 Life cycle Impacts No credits available as a life cycle assessment of the superstructure would need to have been submitted to the BRE when this project went in for Planning. 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 A sustainable procurement plan must be used by the design team to guide specification towards sustainable construction products. All timber used on the project will need to be sourced in accordance with the UK Government's Timber procurement Policy. 60% of the applicable materials comprising the following building elements will need to be responsibly sourced: frame, roof, external floors, upper slab, windows and floor finishes. This needs to be demonstrated through auditable third-party certification. Credits awarded 2/4	Credits awarded at this stage are an estimate and a realistic expectation. This cannot be confirmed until more detailed proposals are received.
28. Mat 05 Designing for durability and resilience Any exposed areas of the building (e.g. corridors, lifts, stairs, entrances, external walls, etc.) will be specified and adequately protected to minimise the frequency of replacement, maximising materials durability. Relevant building elements (e.g. external doors, walls windows, railings, etc.) will incorporate appropriate design and specification measures to limit potential degradation (e.g. corrosion, leaching, melting, abrasion, discolouration, etc.) due to environmental factors (e.g. sun, water/moisture, air and ground contaminants, vegetation, etc.) Credits awarded 1/1	

29. Mat 06 Material Efficiency At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. Credits awarded 0/1	
30. Waste 01 Construction waste management There will need to be a compliant site waste management plan, and diversion of resources from landfill. Amount of waste generated per 100m² <6.5 tonnes. 80% of non-demolition waste needs to be diverted from landfill. 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 need to be a dedicated space to cater for the segregation and storage of operational recyclable waste volumes. Credits awarded 1/1	
33. LE 01 Site Selection At least 75% of the proposed development's footprint is on an area of land which has previously been occupied. Credits awarded 0/2	

34. LE 02 Ecological value of site and protection of ecological features A preliminary ecological survey has been carried out and this survey identified the potential for bats, badger, otters, birds, reptiles and hedgehog on or adjacent to the site, and recommended further targeted surveys for bats, badgers, otters and reptiles; Any Ecological features would need to be protected. Credits awarded 2/2	
35. LE03 Minimising impact on site ecology This issue is split into three parts: Identification and understanding the risks and opportunities for the site. Planning, liaison and implementation. Credits awarded 1/3	
36. LE04 Enhancing site ecology The Ecologist would need to recommend in a report recommendations to increase the ecological value of the site. These would need to be implemented in the final design and build. Credits awarded 2/4	

37. LE05 Long term impact on biodiversity A landscape and habitat management plan would need to be produced covering at least the first five years after project completion. This will need to be handed over to the building owner/occupants for use by the ground's maintenance staff. Credits awarded 2/2	
38. Local air quality To contribute to a reduction in local air pollution using low emission combustion appliances in the building. To enable any credits to be awarded the Nox level has to be less than 27. Credits awarded 0	
39. 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 has confirmed the site is in a medium flood risk area. 3 awarded at present	
40. Pol 4 Reduction of night time light pollution All external lighting (except for safety and security) will be automatically switched off between 2300 hrs and 0700 hrs. Credits awarded 1/1	

APPENDIX 2
PRE-ASSESSMENT ESTIMATOR