

**BREEAM Multi-
Residential 2018**

**BREEAM Assessment
Report**

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

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1 BREEAM Assessment

Summary

On the 19 December 2019 planning permission was granted for the development of a care home at 199-203 Henley Road and land to the Rear of 205-207 Henley Road Caversham. This permission was subject to the following condition:

“No development shall commence on site until a copy of an Interim BREEAM Certificate in accordance with the BREEAM Sustainability Standard has been submitted and approved in writing by the Local Planning Authority, demonstrating compliance with a minimum BREEAM standard rating of Excellent, unless otherwise agreed in writing with the Local Planning Authority.”

Prior to the application going to committee the applicant informed the planning authority that due to the late introduction of the BREEAM “Excellent” requirement (it had not been raised in pre-application advice) meeting this standard would be difficult as early stage credits would not be available as these were only achievable if considered at the inception of a project. The Applicant, Signature Senior Lifestyle, is a responsible developer and always seeks to develop its new buildings to the highest environmental standards.

This assessment report is a submission in accordance with the above condition. It provides the current BREEAM pre-assessment at Appendix 1, but, importantly, at Appendix 2 it provides an alternative assessment on the basis that if the developer had known about the Excellent requirement at inception stage, then further technical BREEAM credits would have been available. This second assessment achieves the Excellent target.

On this basis we believe the BREEAM policy requirement has been achieved in practice as far as is technically achievable. In which case the assessment fulfills the requirements of the condition.

The Assessment

Kent Sustainability have been commissioned by Signature Senior Lifestyle to undertake a review of the project and the requirements of the planning permission in respect of the development of the site for a BREEAM 2018 Excellent accreditation 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.

The assessment is based on the ability to demonstrate that the development can achieve certain sustainability/environmental standards, for which it can claim credits. The total number of credits achieved will be aggregated into a score which will give the BREEAM category for the development. It is the case that the credits are to an extent reliant on the point in time at which the project is identified as having to meet a specified BREEAM target. These time dependent credits cannot technically be achieved if the project is identified as having to reach a BREEAM target at a late stage in its design development.

On 4 December 2018 the Applicant received pre-application advice from Reading Borough Council in respect of the development there was no mention of BREEAM in any context within the advice. On 19 September 2019 the Applicant was informed that the emerging local plan policy would be given great weight, introducing the BREEAM Excellent provision.

This BREEAM Pre-assessment has been based on the design and information available at this stage with the design having progressed to RIBA Stage 3/4. BREEAM Excellent is a particularly high attainment and does require early planning to be achievable. As several of the credits required over and above good/very good accreditation require planning from the early briefing and concept design stage (which was completed in February / March 2019) these credits now cannot now be retrospectively achieved. We have provided a BREEAM timeline guidance note in Appendix 3 that visually demonstrates those credits that must be met at concept design of which we have now passed.

At Appendix 1 we set out the current BREEAM situation. At Appendix 2 we set out what we consider to be a reasonable assessment of the situation had the developer known about the “Excellent” requirement at inception stage. The early stage credits which have been lost and are therefore reclaimed by this assessment are summarised below:

- 1. Man 2 Life cycle and service life planning – An Elemental Life Cycle study at Concept Design – 3 credits lost**
- 2. Hea 2 Indoor Air Quality – Indoor Air Quality plan to be produced at Concept Design – 4 credits lost**
- 3. Hea 5 Acoustic performance- Acoustician appointment concept design – 3 credits lost**
- 4. Mat 1 Environmental from construction products – Building life cycle Assessment submission at Concept Design- 5 credits lost**
- 5. Mat 2 Environmental impacts from construction products- Concept Design- 1 credit lost**
- 6. Mat 6 Material Efficiency- At Concept Design- 1 credit lost**

- 7. Wst 1 Construction waste management- Pre-demolition audit required at Concept Design- 4 credits lost**
- 8. Wst 5- Adaptation to climate change- Climate adaptation strategy appraisal required Concept Design- 1 credit lost**
- 9. Wst6 – Designing for disassembly and functional adaptability required at Concept Design – 2 credits lost**
- 10. Pol 5 – Reduction of noise pollution- Noise impact assessment required at Concept Design – 1 credit lost**

Based on the BREEAM pre-assessment included at Appendix 1 we can confirm that with the lost credits the scheme will achieve a BREEAM 2018 rating of 'Very Good' based on the current design. We would therefore request a relaxation of the associated planning condition, so the scheme is required to meet BREEAM 'Very Good' and not 'Excellent' otherwise the scheme will not be able to comply with the said condition.

Appendix 1 Current BREEAM Pre-assessment

This 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. The following scores were achieved, resulting in a suggested score of **57% Very Good**

Section	Credit Title	Credit No	Credits awarded	Maximum 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 Outstanding level	6
	Commissioning and Handover	Man 4	4 Outstanding level	4
	Aftercare	Man 5	3 Outstanding level	3
Health & Wellbeing	Visual comfort	Hea 1	2	5
	Indoor air quality	Hea 2	0	4
	Safe Containment in Laboratory's	Hea 3	N/A	N/A
	Thermal Comfort	Hea 4	3	3
	Acoustic performance	Hea 5	1	4
	Safety and security	Hea 6	0	1
	Safe & Healthy Surroundings	Hea 7	1	1
Energy	Reduction of CO2 emissions	Ene 1	3	13
	Energy monitoring	Ene 2	2	2
	External Lighting	Ene 3	0	1
	Low and zero carbon technologies	Ene 4	2	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

Section	Credit Title	Credit No	Credits awarded	Max credits
Transport	Transport assessment and travel plan	Tra 1	2	2
	Sustainable Transport Measures	Tra 2	7	10
Water	Water consumption	Wat 1	1 Excellent 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	4 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	0	5
	Recycled aggregates	Wst 2	0	1
	Operational waste	Wst 3	1	1
	Adaption to climate change	Wst 5	0	1
	Functional Adaptability	Wst 6	0	2
Land use and Ecology	Site selection	LE 1	1	2
	Ecological value of site and protection of ecological features	LE 2	2	2
	Minimising impact on existing site ecology	LE 3	2	3
	Enhancing site ecology	LE 4	2	4
	Long term impact on biodiversity	LE 5	1	2
Pollution	Impact of refrigerants	Pol 1	0	3
	Local air quality	Pol 2	0	2
	Surface water run off	Pol 3	4	5
	Reduction of night time light pollution	Pol 4	0	1
	Noise attenuation	Pol 5	0	1
Innovation Credits				4
Total			57% VERY 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.

The full Pre-assessment together with an assessment of the credits that can be achieved is below.

BREEAM Multi-Residential 2018 Pre-Assessment

For this proposed project to achieve a 'Very 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 or reports that were 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 4/4	Agreed all can be provided
2. Man 02 Life cycle cost and service life planning Reporting the capital cost of the projects in pounds per square metre and life cycle cost analysis. Credit awarded 1 /4	Whilst we can report on capital cost we cannot carry out the life cycle cost analysis as this should have been completed at Concept Design stage

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 6/6	Agreed all can be provided
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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 4/4	Agreed all can be provided
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	Agreed all can be provided
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 2/5	Credits are not possible as the building form cannot be changed at this stage. A control assessment could be produced but the assessment would recommend unfeasible changes to the exterior of the building.

7. Hea 02 Indoor air quality Prerequisite – (Indoor air quality) Plan. Credits awarded 0/4	As we are beyond the Concept Design stage we cannot comply with this credit
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 3/3	
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	Acoustic report completed at Concept stage and sound testing can be completed but the current design does not meet the enhanced acoustic performance requirements

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 0/1	As we are beyond the Concept Design stage we cannot comply with this credit
11. Hea 07 Safe and Healthy Surroundings There is an outside space providing building users with an external amenity area. Credits awarded 1/1	All credits awarded
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	Credits awarded based on the current sustainability strategy and M&E design and 1 further credit may be achievable if space for roof top PV can be found

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 2/2	All credits awarded
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 luminares 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 credit is not feasible with the fittings available on the market as none of the specified fittings can achieve anywhere near 70 lumens per circuit watt.
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	A low-zero carbon technologies report was provided at design concept stage.

recognised local low or zero carbon energy sources. Credits awarded 2/3	
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	All credits awarded
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	All credits awarded
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.	All requirements highlighted in red cannot be achieved and those in black can be met

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 7/10	
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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	One credit can be achieved based on the current design and because it's a care home development.
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	All credits can be awarded
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 2/2	All credits can be awarded

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	As we are beyond the Concept Design stage, we cannot comply with this credit
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	As we are beyond the Concept Design stage we cannot comply with this credit
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 4/4	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	All credits can be awarded
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	As we are beyond the Concept Design stage we cannot comply with this credit
30. Waste 01 Construction waste management No credits available as a pre-demolition audit would need to be have been carried on any existing buildings, structures or hard surfaces. Credits awarded 0/5	As we are beyond the Concept Design stage we cannot comply with this credit

31. Waste 02 Recycled Aggregates Credit not targeted. Encouraging the use of recycled and secondary aggregates. Credits awarded 0/1	There will be minimal material from the demolition works that will justify the use of a crusher and re-use of the material.
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	Agreed we can comply with this requirement.
33. Waste 05 Adaptation to climate change Conduct a climate change adaptation strategy appraisal at Concept Design. Credits awarded 0/1	As we are beyond the Concept Design stage we cannot comply with this credit
34. Design for Disassembly and Adaptability Disassembly and functional adaptation study at Concept Design. Credits awarded 0/2	As we are beyond the Concept Design stage we cannot comply with this credit
35. 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 1/2	Site only complies with 1 credit

36. 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	As confirmed by the project ecologist
37. 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 2/3	As confirmed by the project ecologist
38. 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	As confirmed by the project ecologist

39. 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 1/2	As confirmed by the project ecologist
40. Pol 1 Impact of Refrigerants No credits available	
41. Pol 2 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	We are yet to find a suitable boiler manufacturer that can meet this requirement therefore no credits are achievable.
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 has confirmed the site is in a medium flood risk area. 4 awarded at present	Flood risk assessment completed and drainage run-off can't be confirmed until, the further ground investigation is completed.

43. 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	Agreed we can comply with this
44. Pol 5 Noise Attenuation As there noise sensitive areas within 800 m radius of the assessed development i.e residential areas, wildlife areas, schools and hospitals. A noise impact statement would need to be carried out. Appointed at Concept Design. Credits awarded 0/1	As we are beyond the Concept Design stage we cannot comply with this credit

Appendix 2 BREEAM Pre-assessment assuming early stage credits awarded

Section	Credit Title	Credit No	Credits awarded	Maximum credits available
Management	Project brief and design	Man 1	4	4
	Life cycle cost and service planning	Man 2	4	4
	Responsible Construction practices	Man 3	6 Excellent level	6
	Commissioning and Handover	Man 4	3 Outstanding level	3
	Aftercare	Man 5	3 Outstanding level	3
Health & Wellbeing	Visual comfort	Hea 1	2	5
	Indoor air quality	Hea 2	4	4
	Safe Containment in Laboratory's	Hea 3	N/A	N/A
	Thermal Comfort	Hea 4	3	3
	Acoustic performance	Hea 5	4	4
	Safety and security	Hea 6	1	1
	Safe & Healthy Surroundings	Hea 7	1	1
Energy	Reduction of CO2 emissions	Ene 1	7	13
	Energy monitoring	Ene 2	2	2
	External Lighting	Ene 3	0	1
	Low and zero carbon technologies	Ene 4	2	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	7	10
Water	Water consumption	Wat 1	1 Excellent 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	5	7
	Environmental impacts from construction products	Mat 2	1	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	4 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 and Ecology	Site selection	LE 1	1	2
	Ecological value of site and protection of ecological features	LE 2	2	2
	Minimising impact on existing site ecology	LE 3	2 Outstanding level	3
	Enhancing site ecology	LE 4	2	4
	Long term impact on biodiversity	LE 5	1	2
Pollution	Impact of refrigerants	Pol 1	0	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 credits				4
Total			78.2% EXCELLENT	

APPENDIX 3

BREEAM Assessment Timeline

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.

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

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Man 04	Commissioning and handover	Commissioning - testing schedule and responsibilities							
		Handover						Building user guides and training schedules prepared	Building user guides and training schedules prepared
Man 05	Aftercare								
Health and Wellbeing									
Hea 01	Visual comfort								
Hea 02	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									
Ene 01	Reduction of energy use and carbon emissions								
Ene 02	Energy monitoring								
Ene 03	External lighting								
Ene 04	Low carbon design	Passive design			Passive design analysis				
		Low and zero carbon technologies			Feasibility study				
Ene 05	Energy efficient cold storage	Refrigeration energy consumption			Strategy for design and installation				
Ene 06	Energy efficient transportation systems								

	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

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Ene 07	Energy efficient laboratory systems	Design specification			Client engagement				
Ene 08	Energy efficient equipment								
Transport									
Tra 01	Transport assessment and travel plan			Travel plan					
Tra 02	Sustainable transport measures			Consultation with local authority (option 6 only)					
Water									
Wat 01	Water consumption								
Wat 02	Water monitoring								
Wat 03	Water leak detection								
Wat 04	Water efficient equipment								
Materials									
Mat 01	Environmental impacts from construction products - Building life cycle assessment				Building LCA submission		Building LCA submission		
Mat 02	Environmental impacts from construction products							Installation of certified products	
Mat 03	Responsible sourcing of materials	Sustainable procurement plan		Sustainable procurement plan	Review sustainable procurement plan	Review sustainable procurement plan			
Mat 05	Designing for durability and resilience								
Mat 06	Material efficiency			Stage actions	Stage actions	Stage actions	Stage actions	Stage actions	

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Waste									
Wst 01	Construction waste management				Pre-demolition audit				
Wst 02	Use of recycled and sustainably sourced aggregates								
Wst 03	Operational waste								
Wst 04	Speculative finishes								
Wst 05	Adaptation to climate change				Climate adaptation strategy appraisal		Update on climate adaptation strategy appraisal		
Wst 06	Design for disassembly and adaptability	Design for disassembly and functional adaptability			Disassembly and functional adaptation study				
		Disassembly and functional adaptability – implementation							
Land Use and Ecology									
LE 01	Site selection	Previously occupied land							
		Contaminated land							
LE 02	Identifying and understanding the risks and opportunities for the site	Survey and evaluation							
		Determining the site wide outcomes							
LE 03	Managing negative impacts on ecology								
LE 04	Enhancing site ecology								
LE 05	Long term ecology management and maintenance								
Pollution									
Pol 01	Impact of refrigerants								
Pol 02	Local air quality								
Pol 03	Flood and surface water management								
Pol 04	Reduction of night time light pollution								
Pol 05	Reduction of noise pollution								