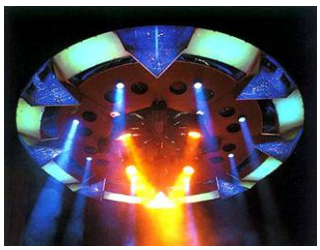

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BARNSLEY BUSINESS AND INNOVATION CENTRE

BENELL INVESTMENTS LTD

PRE ASSESSMENT REPORT Rev -

10717

MARCH 2013

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C O N T E N T S

1.0 INTRODUCTION

William Saunders was commissioned to produce a pre-assessment report on the likely BREEAM rating of the proposed Barnsley Business and Innovation Centre development. This report details the expected outcome of a BREEAM assessment based on design information and inclusion of a number of issues as detailed. This document serves as a pre-assessment rather than a full assessment, however, should the scheme go ahead, a full Design Stage BREEAM New Construction 2011 Assessment will be carried out; and based on the pre-assessment, a rating of **VERY GOOD** is currently being achieved (see Section 6.0 for areas where this score can be further increased). The current pre-assessment is based on the initial meeting with the design team to run through the scheme with a view to setting a baseline score to work from.

The assessment is based on the new build area of the development, with a total area of approx 1218m^2. The assessment is made using the BREEAM (Building Research Establishment Environmental Assessment Method) New Construction 2011, Design Stage Scheme.

2.0 BREEAM

BREEAM (Building Research Establishment Environmental Assessment Method) was developed in order to provide a credible and transparent assessment methodology and associated certification scheme for quantifying the environmental performance of both new and existing buildings.

The aim behind BREEAM is to promote development 'that meets the needs of the present without compromising the ability of future generations to meet their own needs'. The assessment methodology is genuinely systematic, rather than being merely selectively concerned with high-profile or easily measurable indicators of building performance: it has regard for the *entire* life of the building. Thus, BREEAM considers the choice of site and building design, including their ecological impact and, where appropriate, the degree to which they reflect consultation within the community. It looks at the nature and sourcing of building materials. It assesses the management of the construction process itself, including workforce, transportation and energy use issues. And it quantifies the ongoing impact of the functioning building – energy and water use, pollution and continuing conservation and ecological effects, as well as the way the building influences the health and well-being of its users. In each of these areas credits can be awarded under the scheme. A set of weightings is then applied, enabling the credits to be totalled, and this produces a single overall score and a final rating.

See diagram below:

Category	Number of credits available	Weighting factor
Management	22	12
Health and Wellbeing	14	15
Energy	27	19
Transport	9	8
Water Consumption	9	6
Materials	12	12.5
Waste	7	7.5
Land use Ecology	10	10
Pollution	13	10
Innovation	10	10

This document serves as a pre-assessment, should the scheme go ahead, a full Design Stage BREEAM Assessment will be carried out and a rating of **VERY GOOD** is currently being achieved.

A Design Stage Assessment is carried out during the design stages of a project to determine what rating the design will achieve; with this in mind it is possible to achieve certification prior to starting work on site.

At present there are 5 ratings that can be achieved by achieving certain credits as noted in the diagram above. The ratings which can be achieved currently are:

3.0 OVERVIEW OF CREDIT ATTAINMENT

The proposed Barnsley Business and Innovation Centre development currently achieves a score of **55.99%** against the New Construction BREEAM criteria. This translates into an overall BREEAM rating of **VERY GOOD**. This has been based on a rather cautious pre-assessment, declining credits where there was any doubt as to whether they would be achieved even though the intention is to meet the requirements. **Our recommendations on additional scoring are contained within Section 6.0 of this report and indicate that an even higher score could be achieved.**

The current score of **55.99%** is within the bracket for achieving **VERY GOOD**, however, the project team should still be mindful of additional credits as detailed within the **recommendations in Section 6.0.** To achieve the predicted rating the design team should liaise with the BREEAM Assessor to ensure that all the targeted requirements are met or alternatives achieved. At present any slippage in the credit attainment could jeopardise the final BREEAM rating achieved.

This report does make assumptions that a number of low or no cost elements will be included, however, we would urge that further expenditure (above normal practice) may be required to ensure a BREEAM rating of **VERY GOOD**, which is the preferred rating required for the project, is achieved.

4.0 DETAILS OF CREDIT AIM, CRITERIA AND VALIDATION

The following sub-sections provide a précis of each credit including the intention behind the credit, an abridged version of the credit criteria and details of whether or not a credit has been allocated and the reasons why.

It must be appreciated that achieving many of these credits will incur additional cost and may be time-consuming to prepare and submit the required documentation.

4.1 MANAGEMENT

Man 1 Sustainable Procurement

The aim of these credits are to ensure delivery of a functional and sustainable asset designed and built in accordance with performance expectations. The issue is split into 3 parts;

- Project Brief and design (4 credits)
- Construction and handover (2 credits)
- Aftercare (2 credits)

Credit Criteria

Project Brief and Design

1 credit – where appropriate roles of each team member are defined at RIBA Stage B (Design Brief) through the design, construction, commissioning and handover and occupation phases. That these roles include looking at end user requirements and ongoing operation of the development. That there is a training schedule compiled to enable end users to use the development.

1 credit – where a BREEAM AP is appointed prior to RIBA Stage C to facilitate the setting of BREEAM related performance targets for the project.

1 credit – the appointed BREEAM AP attends key project/design team meetings from RIBA Stages B to E and provides written reports to the client of such meetings.

1 credit – the appointed BREEAM AP attends key construction stage meetings (RIBA Stages F to L) and provides reports on progress to the client.

Construction and Handover

1 credit – where a thermographic survey is undertaken as part of the works to ensure no thermal bridging etc, and if any defects are identified then these are rectified.

1 credit – where evidence provided demonstrates that an appropriate project team member has been appointed to monitor commissioning on behalf of the client to ensure commissioning will be carried out in line with current Building Regulations and (where applicable), best practice.

Aftercare

1 credits – where the first credit is awarded and where evidence provided demonstrates that seasonal commissioning will be carried out during the first year of occupation, post construction (or post fitout).

1 credit – where energy/water consumption data is collected for at least 12 months after occupation and compared against what levels were expected and aftercare services are in place, i.e. a weekly presence during the first 4 weeks after PC, longer term helpline numbers/contacts etc.

Credit Validation

The design team have confirmed that the requirements for the first credit of Project Brief and Design will be met and the requirements for the second credit of construction and handover will be met. 2/8 credits achieved.

Man 2 Responsible Construction Practices

The aim of this credit is to recognize and encourage construction sites which are managed in an environmentally and socially considerate and accountable manner.

Credit Criteria

1 credit – where evidence provided demonstrates that there is a commitment to comply with best practice site management principles.
OR
2 credits – where evidence provided demonstrates that there is a commitment to go significantly beyond best practice site management principles.

Credit Validation

The design team have confirmed that the requirements for the both credits will be met. This will be achieved by registering the project under the CCS and obtaining a score of between 35 – 39 (no score lower than 7 in any of the 5 sections). 2/2 credits achieved.

Man 3 Construction Site Impacts

The aim of this credit is to recognize and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption, waste management and pollution.

Credit Criteria

Pre-requisite – a responsible person has to be assigned for each credit, with the required authority to implement any required changes required.

Energy Consumption

1 credit – monitor, report and set targets for CO_2 and energy arising from site activities.

Water Consumption

1 credit – monitor, report and set targets for water consumption from site activities.

Transport of Construction Materials and Waste

1 credit – monitor, report and set targets for the delivery of the majority of construction materials to site and construction waste from site. Using this data, report on fuel consumption and CO_2 emissions, plus distance travelled for both materials and waste.

Timber Procurement

1 credit – that all site timber is sourced in accordance with the UK Governments Timber Procurement Policy.

Construction Site Management

1 credit – that the main contractor operates an Environmental Management System (ISO14001 or equivalent) and implements best practice policies and procedures on site, demonstrated through compliance with the items in the Environmental Checklist section 2.2.5 Preventing Pollution in the England and Wales EA 'Building a Better environment, a guide for developers'.

Credit Validation

The design team have confirmed that the above requirements will be met apart from item 3 (transport of construction materials and waste). 4/5 credits achieved.

Man 4 Stakeholder Participation

The aim of this credit is to design, plan and deliver accessible functional and inclusive buildings in consultation with current and future building users and other stakeholders. The issue is split into 4 areas;

- Consultation (1 credit)
- Inclusive and accessible design (1 credit)
- Building User Information (1 credit)
- Post Occupancy evaluation and information dissemination (1 credit)

Credit Criteria

Consultation

1 credit – consultation has been undertaken with building occupants etc using a consultation plan. That this consultation process employs a method carried out by an independent third party at the brief/design stages and that consultation has been carried out during stage K (operations on site) using the Good Corporate Citizen model.

Inclusive and accessible design

1 credit – where all potential users can access and use the building, i.e. that an access statement is developed in line with CABE publication Design & Access Statements; plus access to areas is controlled, i.e. door locks etc.

Building user guide

1 credit – a building user guide is provided.

Post occupancy evaluation and information dissemination

1 credit – where a POE is carried out 1 year after completion covering the design, construction, building users, sustainable performance etc and that the feedback is disseminated to the relevant parties.

Credit Validation

The design team have confirmed that all the above requirements will be met apart from the post occupancy evaluation and information dissemination credit. 3/4 credits achieved.

Man 5 Life Cycle Cost and Service Life Planning

The aim of this credit is to recognise and encourage life cycle costing and service life planning in order to improve design, specification and through life maintenance and operation.

Credit Criteria

1st credit – where evidence provided demonstrates that a Life Cycle Cost (LCC) analysis based on the proposals developed during Stages C/D has been undertaken in accordance with PD156865:2008 over a period of 60 years for construction, operation and maintenance. Service life planning should also be covered in accordance with ISO15686 (Part 1).

2nd credit – credit 1 achieved and where evidence provided demonstrates that at least two of the following components have been analysed at a strategic and system level; envelope, services, finishes, external spaces, and the lowest LCC option is selected.

3rd credit – credits 1 and 2 achieved and where evidence provided demonstrates that the results of the feasibility study and consideration of LCC have been implemented.

Credit Validation

The design team have confirmed that the above requirements will not be met. 0/3 credits achieved.

4.2 HEALTH AND WELLBEING

Hea 1 Visual Comfort

The aim of this credit is to ensure daylighting, artificial lighting and occupant controls are considered at the design stage to ensure best practice visual performance and comfort for building occupants. The issue is split into four parts;

- Daylighting (2 credits)
- Glare control and view out (1 credit)
- Internal and external lighting (1 credit)
- Visual arts (1 credit)

Credit Criteria

Pre-requisite – all fluorescent and compact fluorescent lamps are fitted with high frequency ballasts.

Daylighting

1 credits – 80% of all staff and public areas achieve a 2% daylight factor and 80% of occupied patient areas (dayrooms, wards) and consulting rooms achieved a 3% daylight factor.

Glare Control and View Out

1 credit – glare control systems are implemented in all relevant building areas and an adequate view out is provided from all relevant building areas (within 7m of an external wall).

Internal and External lighting

1 credit – where internal/external lighting levels meet the relevant CIBSE/BS5489 guidelines and appropriately zoned with user controls.

Credit Validation

The design team have confirmed that all the above requirements will be met apart from the daylight credit. 2/3 credits achieved.

Hea 2 Indoor Air Quality

The aim of this credit is to recognize and encourage a healthy internal environment through the specification and installation of appropriate ventilation, equipment and finishes. The issue is split into two relevant parts;

- Minimising sources of air pollution (3 credits)
- Potential for natural ventilation (1 credit).

Credit Criteria

Minimising sources of air pollution

1 credit – an indoor air quality plan (IAQP) is produced, nat vent buildings are over 10m from external sources of pollution; mixed mode buildings 20m, areas of buildings with large variable occupancies have CO_2 or air quality sensors specified and linked to mec vent systems (if specified) or alert the building manager/trigger automatic opening of roof vents/windows.

1 credit – an IAQP is produced, all paints meet the required VOC levels, and the majority of other elements meet the require VOC levels.

1 credit – an IAQP is produced and pre occupancy testing is undertaken to confirm levels of formaldehyde and total VOC concentration are less than 100µg/m^3 and 300µg/m^3 respectively.

Potential for natural ventilation

1 credit – occupied spaces are designed to be capable of being completely nat vented with two levels of user control.

Credit Validation

The design team have confirmed that the above requirements will not be met apart from the last credit (potential for natural ventilation). 1/4 credits achieved.

Hea 3 Thermal Comfort

The aim of this credit is to ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants within the building.

Credit Criteria

1 credit – where dynamic thermal modelling has been undertaken in accordance with CIBSE AM11 and that the relevant standards/requirements are shown to be met by the modelling.

1 credit – where the first credit is achieved and it is clear the modelling has informed the temperature control strategy for the building, i.e. zones, user controls etc.

Credit Validation

The design team have confirmed that the above requirements will be met by complying with the credit criteria. 2/2 credits achieved.

Hea 4 Water Quality

The aim of this credit is to minimise the risk of water contamination in building services and ensure the provision of clean, fresh sources of water for building users.

Credit Criteria

1 credit – where all water systems are designed in accordance with the HSE's "Legionnaires disease – The control of Legionella bacteria in water systems". ACoP and Guidance 2000/HTM 04-01. If humidification present, then a failsafe system is provided. A chilled mains fed point of use water supply or point of use water cooler should also be provided in permanently staffed/office areas in each kitchenette/staff room.

Credit Validation

The design team have confirmed that the above requirements will not be met as a chilled mains fed point of use water supply/water cooler will not be provided (however the prerequisite with regards to Legionella will be met). 0/1 credits achieved.

Hea 5 Acoustic Performance

The aim of this credit is to ensure the buildings' acoustic performance including sound insulation meet the appropriate standards for its purpose.

Credit Criteria

Pre-requisite – a suitably qualified acoustician is appointed at pre-bid/briefing stage to advise on noise impacts of layouts, plants, acoustic treatment etc.

2 credits – the relevant standards for all room functions are met to BS8233:1999 Tables 5, 6 and 7.6.3.1 for acoustically sensitive rooms.

Credit Validation

The design team have confirmed that the above requirements will not be met. 0/2 credits achieved.

Hea 6 Safety and Security

The aim of this credit is to recognise and encourage design measures that promote low risk, safe and secure access to and use of the building.

Credit Criteria

1 credit – where cycle lanes are provided to NCN guidelines or Local Transport Note 2/08 and provide direct access to cycle storage facilities, plus footpaths lead directly to public transport nodes, plus crossing of access roads is minimised, plus where pedestrians cross roads, the roads are raised to kerb level, plus lighting in accordance with BS5489-1:2003+A2:2008 Lighting of Public Roads and Public

Amenity Areas. Delivery areas also need to be suitable, i.e. separate from public access, space for waiting vehicles, sufficient turning areas, sufficient numbers of skips etc.

1 credit – where a suitable security consultant has been consulted prior to Stage C and the final design embodies the consultants recommendations and is built to SBD or safer parking scheme standards.

Credit Validation

The design team have confirmed that the requirements for the first credit only will be met. 1/2 credits achieved.

4.3 ENERGY

Ene1 Reduction of CO_2 Emissions

The aim of this credit is to recognise and encourage buildings that are designed to minimise operational energy demand, consumption and CO_2 emissions.

Credit Criteria

15 credits – where evidence provided allows the calculation of an Energy Performance Ratio, this takes into account operational energy demand, energy consumption, CO_2 emissions, floor area, notional/actual building energy demand, notional/actual building consumption, TER/BER.

BREEAM credits	EPR	Minimum Requirements
1	0.05	Requires a performance improvement progressively better than the TER required for Building Regulations.
2	0.15	
3	0.25	
4	0.35	
5	0.45	
6	0.55	BREEAM Excellent level (6 credits) requires a CO_2 parameter for the EPR calculation of 0.22. This is equivalent to a 25% improvement on the TER.
7	0.59	
8	0.63	
9	0.67	
10	0.72	BREEAM Outstanding level (10 credits) requires a CO_2 parameter for the EPR calculation of 0.30. This is equivalent to a 40% improvement on the TER.
11	0.75	
12	0.79	
13	0.83	
14	0.87	
15	0.90	Requires a CO_2 parameter for the EPR calculation of 0.38. This is equivalent to a 100% improvement on the TER, i.e. zero net CO_2 emissions.

Credit Validation

The design team have indicated that an EPR in the region of 0.55 will be achieved, this equates to 6 credits. 6/15 credits achieved.

Ene2 Energy Monitoring

The aim of this credit is to recognize and encourage the installation of energy sub-metering that facilitates the monitoring of operational energy consumption.

Credit Criteria

1 credit – where major energy consuming systems are monitored using a BEMS or sub-meters have pulse outputs for future connection to a BEMS, items such as space heating, DHW, cooling, fans (major), lighting, small power etc. the systems are also labelled for clear identification by the end user.

1 credit – where an accessible BEMS or accessible sub-meters are provided covering the energy supply to all tenanted, or in the case of single occupancy buildings, relevant function areas or departments within the building/unit.

Credit Validation

The design team have confirmed that the above requirements will be met by complying with the credit criteria. 2/2 credits achieved.

Ene3 External Lighting

The aim of this credit is to recognise and encourage the specification of energy efficient light fittings for external areas of the development.

Credit Criteria

1 credit – where energy efficient luminaries are specified (with the relevant luminous efficacy) and all light fittings controlled for the presence of daylight.

Credit Validation

The design team have confirmed that the above requirements will be met by complying with the credit criteria. 1/1 credits achieved.

Ene4 Low or Zero Carbon Technologies

The aim is to reduce carbon emissions and atmospheric pollution by encouraging local energy generation from renewable sources to supply a significant proportion of the energy demand. The issue is split into three parts;

- Feasibility study OR renewable energy supply contract (1 credit)
- Low or zero carbon technology specification and installation (3 credits)
- Free cooling (1 credit)

Credit Criteria

Feasibility Study

1 credit – where a feasibility study is undertaken on LZC's for the development prior to stage C OR a contract is in place with a 100% renewable energy source.

LZC Report

Up to 3 credits – credit one is achieved, plus LZC gives a 10% reduction in CO_2 emissions (2 credits), if 20% reduction in CO_2 emissions (3 credits); or if LZC report includes Life Cycle Assessment, 2 credits for the report only, if the report shows a 10% reduction in life cycle CO_2 emissions 3 credits, if the report shows a 20% reduction in life cycle CO_2 emissions 4 credits. The LCA study must be completed in accordance with ISO14044:2006 Environmental Management Life Cycle Assessment – Requirements and guidelines and consider a 60 year period and any necessary replacements in this period etc.

output figures for the LZC technologies must come from the output of an approved energy modelling software package.

Free Cooling

1 credit – if the building utilises any form of free cooling such as night-time cooling, ground coupled air cooling, ground water cooling, displacement ventilation etc.

Credit Validation

The design team have confirmed that only the free cooling requirement will be met (as the building will be naturally ventilated). No LZC's are currently being installed on site. 1/5 credits achieved.

Ene 6 Energy Efficient Transportation Equipment

The aim of this credit is to recognise and encourage the specification of energy-efficient transportation systems.

Credit Criteria

1 credit – where lifts are required; i) an analysis of the transportation demand and usage patterns for the building has been carried out by the design team to determine the optimum number and size of lifts (inc counter-balancing ratio); ii) the energy consumption has been estimated for one of the following, 1, at least two types of system or, 2, an arrangement of systems or, 3, a system strategy which is 'fit for purpose'; iii) the lift with the lowest energy consumption is specified.

2 credits – the first credit is achieved AND for lifts, of the following energy efficient measures the three that offer the greatest potential for energy savings are specified; namely, the lift operates a standby mode; the lifts operate energy efficient lighting; the lift has a drive controller capable of variable speed (VVVT); the lift has a regenerative drive unit.

Credit Validation

The design team have confirmed that the above requirements will be met by specifying lifts that meet the credit requirements. 2/2 credits achieved.

Ene 8 Energy Efficient Equipment

The aim of this credit is to recognise and encourage procurement of energy efficient equipment to ensure optimum performance and energy savings in operation.

Credit Criteria

2 credits – where evidence provided demonstrates the provision of energy-efficient small power/plug in equipment (thought to be the main energy consuming function) that is on the ETPL list or has an Energy Star rating or has been procured in accordance with Government Buying Standards or are identified as products with at least a 'Green Tick' standard on the Buying Solutions website.

Credit Validation

The design team have confirmed that the above requirements will be met by specifying small power/plug in equipment that meets the credit criteria. 2/2 credits achieved.

4.4 TRANSPORT

Tra1 Public Transport Accessibility

The aim of this credit is to recognise and encourage development in proximity to good public transport networks, thereby helping to reduce transport related pollution and congestion.

Credit Criteria

3 credits – the credits are awarded on a sliding scale based on the assessed buildings accessibility to the public transport network.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved by utilising the local bus services as well as any other intermediary service connections. 2/3 credits achieved.

Tra2 Proximity to Amenities

The aim of this credit is to encourage and reward a building that is located in proximity to local amenities, thereby reducing the need for extended travel or multiple trips.

Credit Criteria

1 credit – where evidence provided demonstrates that the building is located within 500m of accessible local amenities appropriate to the building type and its users.

Credit Validation

The design team have confirmed that the above requirements will not be met. 0/1 credits achieved.

Tra3 Cyclist Facilities

The aim of this credit is to encourage building occupants to cycle by ensuring adequate cyclist facilities are or will be present on site.

Credit Criteria

1st credit – where evidence is provided to demonstrate that there is adequate provision of covered, secure and well lit cycle storage facilities are provided for all building users.

2nd credit – where in addition to the above adequate changing facilities, storage facilities and/or drying space (2 of 3) is provided for staff use.

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved by providing compliant cycle shelters together with adequate changing and storage facilities. 2/2 credits achieved.

Tra 4 Maximum Car Parking Capacity

The aim of this credit is to encourage the use of alternative means of transport to the building other than the private car, thereby helping to reduce transport related emissions and traffic congestion.

Credit Criteria

2 credit – where evidence provided demonstrates that the number of parking spaces provided for the building has been limited to 1 per 4 staff (1 credit) or 1 per 5 staff (2 credits).

Credit Validation

The design team have confirmed that the above requirements will be met in part (due to the number of car parking spaces being provided). 1/2 credits achieved.

Tra5 Travel Plan

The aim of this credit is to recognise the consideration given to accommodating a range of travel options for building users, thereby encouraging the reduction of user reliance on forms of travel that have the highest environmental impact.

Credit Criteria

1 credit – where evidence is provided to demonstrate that a travel plan has been developed and tailored to the specific needs of the users of the assessed development.

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved by providing a travel plan in line with the credit requirements. 1/1 credits achieved.

4.5 WATER

Wat1 Water Consumption

The aim of this credit is to reduce the consumption of potable water for sanitary use in new buildings from all sources through the use of water efficient components and water recycling systems.

Credit Criteria

Up to 5 credits available where the water consumption from the specified taps, urinals, W/Cs and showers are compared against a notional baseline performance as follows:

% Improvement	No of BREEAM credits
12.5	1
25	2
40	3
50	4
55	5
65	Exemplary Performance

The yield from greywater/rainwater systems can be used to offset non-potable water demand.

Credit Validation

The design team have confirmed that the above requirements will be met in part by achieving a 40% improvement over the notional baseline figure. This will be achieved by providing low water using appliances throughout the development (such as very low flow WCs, waterless/low water urinals, aerating taps, low flow showers). 3/5 credits achieved.

Wat2 Water Monitoring

The aim of this credit is to ensure water consumption can be monitored and managed and therefore encourage reductions in water consumption.

Credit Criteria

1 credit – where information provided demonstrates that a water meter with a pulsed output will be installed on the mains supply to each building/unit.

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved by providing a water meter with a pulsed output capable of connecting to a future BMS. 1/1 credits achieved.

Wat3 Water Leak Detection and Prevention

The aim of this credit is to reduce the impact of major water leaks that otherwise may go undetected.

Credit Criteria

1 credit – where evidence is provided to demonstrate that a leak detection system is specified or installed on the buildings main water supply.

1 credit – where one of the following is specified to each WC are/facility to ensure water is supplied only when needed;

a) A time controller (water switched off after set time)
b) A programmed time controller (switches water on/off at predetermined times)
c) A volume controller (turns water off once preset max is reached)
d) A presence detector and controller
e) A central control unit (overall managed water control system).

Credit Validation

The design team have confirmed that the above requirements will not be met. 0/2 credits achieved.

Wat4 Water Efficient Equipment

The aim of this credit is to reduce unregulated water consumption by encouraging specification of water efficient equipment.

Credit Criteria

1 credit – where evidence provided demonstrates that a low-water irrigation strategy/system has been installed, or where planting and landscaping is irrigated via rainwater or reclaimed water.

Credit Validation

The design team have confirmed that the above requirements will be met for this credit. This will be achieved by providing irrigation systems in line with BREEAM requirements (i.e. it has been assumed that no irrigation will be provided and that plants will rely solely on precipitation). 1/1 credits achieved.

4.6 MATERIALS

Mat1 Life Cycle Impacts

The aim of this credit is to recognize and encourage the use of construction materials with a low environmental impact over the full life cycle of the building.

Credit Criteria

Up to 5 credits where evidence provided demonstrates that the major building elements specified have an 'A+ or A rating' as defined in the Green Guide to Specification. The number of credits will be calculated using the BREEAM materials calculator.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved by using materials with A or A+ Green Guide ratings where feasible. 4/5 credits achieved.

Mat2 Hard Landscaping and Boundary Protection

The aim is to recognise and encourage the specification of materials for boundary protection and external hard surfaces that have a low environmental impact taking account of the full life cycle of materials used.

Credit Criteria

1 credit – where evidence provided demonstrates that at least 80% of the combined area of external hard landscaping and boundary protection specifications achieve an A or A+ rating, as defined by the *Green Guide to Specification.*

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved by using materials with A or A+ Green Guide ratings for 80% of the hard landscaping and boundary protection. 1/1 credits achieved.

Mat3 Responsible Sourcing

The aim of this credit is to recognize and encourage the specification of responsibly sourced materials for key building elements.

Credit Criteria

Up to 3 credits available – where materials used in key building elements are responsibly sourced. This includes the frame, floors, roof, external walls, foundations/substructure, doors and windows.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved by specifying as many elements as possible from responsible sources. 1/3 credits achieved.

Mat4 Insulation

The aim of this credit is to recognise and encourage the use of thermal insulation which has a low embodied environmental performance relative to its thermal properties and has been responsibly sourced. The issue is split into 3 parts;

- Pre-requisite
- Embodied impact (1 credit)
- Responsible sourcing (1 credit)

Credit Criteria

Pre-requisite – any new insulation in external walls, ground floor, roof and buildings services must be assessed.

Embodied Impact

1 credit – where evidence provided demonstrates that thermal insulation products used in the building have a low embodied impact relative to their thermal properties, determined by the *Green Guide to Specification* ratings.

Responsible Sourcing

1 credit – where evidence provided demonstrates that 80% of thermal insulation products used in the building have been responsibly sourced.

Credit Validation

The design team have confirmed that the above requirements will be met. 2/2 credits achieved.

Mat5 Designing for Robustness

The aim of this credit is to recognize and encourage adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation.

Credit Criteria

1 credit – where protection is given to vulnerable parts of the building such as areas exposed to high pedestrian traffic; vehicular and trolley movements.

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved by ensuring the development meets the required standards. 1/1 credits achieved.

4.7 WASTE

Wst1 Construction Site Waste Management

The aim of the credit is to promote resource efficiency via the effective management and reduction of construction waste.

Credit Criteria

Up to 4 credits are available as follows:

3 credits – up to three credits are available where evidence provided demonstrates that the amount of non-hazardous construction waste ($m^3/100m^2$ or tones $100m^2$) generated on site by the development is the same as or better than good or best practice levels.

1 credit – where evidence provided demonstrates that a significant majority of non-hazardous construction waste generated by the development will be diverted from landfill and reused or recycled.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved by ensuring that a site waste management plan is produced and the waste targets for 1 credit ($13.3m^3$ per $100m^2$) are met, as well as diverting a significant majority of non-hazardous waste from landfill (70% by volume). 2/4 credits achieved.

Wst2 Recycled Aggregates

The aim of the credit is to recognize and encourage the use of recycled and secondary aggregates, thereby reducing the demand for virgin material and optimising material efficiency in construction.

Credit Criteria

1 credit – where evidence provided demonstrates the significant use of recycled or secondary aggregates (25%) in 'high grade' aggregate uses (such as the building structure, ground slabs, roads, etc.).

Credit Validation

The design team have confirmed that the above requirements will not be met. 0/1 credits achieved.

Wst3 Operational Waste

The aim of this credit is to recognise the provision of dedicated storage facilities for buildings operational related recyclable waste streams, so that such waste is diverted from landfill or incineration.

Credit Criteria

1 credit – where a central dedicated storage space is provided for the storage of the buildings recyclable waste streams. This can be either within the building itself, or on site using skips, (provided there is good access for collections and it is within easy reach of the building).

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved by clearly marking an area on site for storage of recyclable waste (approx 4m^2). 1/1 credits achieved.

Wst4 Speculative Floor and Ceiling Finishes

The aim of this credit is to encourage the specification and fitting of floor and ceiling finishes selected by the building occupant and therefore avoid unnecessary waste of materials.

Credit Criteria

1 credit – where evidence is provided that the occupant has specifically chosen the floor/ceiling finishes or where a show area only is finished with regards to flooring/ceiling finishes.

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved as specified finishes will be provided which occupants cannot change (it will be part of their lease arrangements). 1/1 credits achieved.

4.8 LAND USE AND ECOLOGY

Le1 Site Selection

The aim of this credit is to encourage the use of previously developed and/or contaminated land and avoid land which has not been previously developed. This issue is split into two parts;

- Previously developed land (1 credit)
- Contaminated land (1 credit)

Credit Criteria

Previously developed land
1 credit – where evidence is provided to demonstrate that the footprint of the proposed development largely falls (at least 75%) within the boundary of land previously developed.

Contaminated land
1 credit – where evidence is provided to demonstrate that the land used for the new development has, prior to development, been defined as contaminated, and where adequate remedial steps have been taken to decontaminate the site prior to construction.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved as the development will take place on previously developed land. The site is not contaminated. 1/2 credits achieved.

Le2 Ecological Value of the site and Protection of Ecological Features

The aim of this credit is to encourage development on land that already has limited value to wildlife and to protect existing ecological features from substantial damage during site preparation and completion of construction works.

Credit Criteria

1 credit – where evidence is provided to demonstrate that the construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protect from damage during site preparation and construction works.

Credit Validation

The design team have confirmed that the above requirements will be met. 1/1 credits achieved.

Le3 Mitigating Ecological Impact

The aim of this credit is to minimise the impact of a building development on existing site ecology.

Credit Criteria

Up to 2 credits are awarded based upon the degree of negative impact the new development has on the site's existing ecology.

1 credit – where evidence is provided to demonstrate the change in ecological value of the site, as a result of development, is between less than zero and equal to, or less than, minus nine species, i.e. a small negative change.

2 credits – where evidence is provided to demonstrate there is no negative change to the ecological value of the site as a result of development, i.e. equal to, or greater than, zero species.

Credit Validation

The design team have confirmed that the above requirements will be met in part. The first credit should be achieved with the proposed development as currently shown. 1/2 credits achieved.

Le4 Enhancing Site Ecology

The aim of this credit is to recognise and encourage actions taken to maintain and enhance the ecological value of the site as a result of development.

Credit Criteria

3 credits are awarded as follows:

1 credit – where evidence is provided to demonstrate that the design team (or client) has

i) appointed a professional to advise and report on enhancing and protecting the ecological value of the site;

AND

ii) implemented the professional's recommendations for general enhancement and protection for site ecology.

2 credits – where evidence is provided to demonstrate a positive increase in the ecological value of the site of up to (but not including) 6 species.

3 credits – where evidence is provided to demonstrate a positive increase in the ecological value of the site of 6 species or greater.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved by appointing an ecologist and following their recommendations. 1/3 credits achieved.

Le5 Long Term Impact on Biodiversity

The aim of this credit is to minimise the long term impact of the development on the site's and surrounding area's biodiversity.

Credit Criteria

Up to 2 credits available – where evidence is provided to demonstrate that the client has committed to achieving the mandatory requirements listed below and:

At least two of the additional requirements = 1 credit
OR
At least four of the additional requirements = 2 credits

Mandatory Requirements

A suitably qualified ecologist must confirm in writing that: All relevant UK and EU legislation relating to protection and enhancement of ecology has been, or will be, complied with during the design and construction process. An appropriate management plan is produced covering at least the first 5 years after project completion. Where a management plan is produced, information detailing the scope of the management plan and the key responsibilities (and details of who has these responsibilities) must be provided.

Additional Requirements

1) A 'Biodiversity Champion' has been nominated with sufficient authority and time on site to influence activities and ensure that they have minimal detrimental impact on biodiversity.
2) The relevant site work force has been trained on how to protect site ecology during the project.
3) Record and monitor actions taken to protect biodiversity throughout key stages of construction.
4) The client requires that a new ecologically valuable habitat, appropriate to the local area, be created.
5) The client the contractor to programme site works to minimise disturbance to wildlife.

Where a site is deemed to have no ecological value a suitably qualified ecologist must still be employed.

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved by undertaking the required mandatory and additional requirements. 2/2 credits achieved.

4.9 POLLUTION

Pol1 Impact of Refrigerants

The aim of this credit is to reduce the level of greenhouse gas emissions arising from the leakage of refrigerants from the building systems.

Credit Criteria

3 credits – where the building does not require the use of refrigerants within its installed plant/systems.

2 credits – where the systems using refrigerants have Direct Effect Lift Cycle CO_2 equivalent emissions of 100kg/CO_2/kW cooling capacity OR where air conditioning or refrigeration systems are installed the refrigerants used have a GWP of 10 or less.

1 credit - where the systems using refrigerants have Direct Effect Lift Cycle CO_2 equivalent emissions of 1000kg/CO_2/kW cooling capacity OR a leak detection system is specified.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved by using a refrigerant system which complies with the 1 credit requirements. 1/3 credits achieved.

Pol2 NO_x Emissions

The aim of this credit is to encourage the use of heating/cooling that minimises NO_x emissions, and therefore reduces pollution of the local environment.

Credit Criteria

3 credits are awarded as follows:

1 credit – where evidence provided demonstrates that the maximum dry NO_x emissions from delivered space heating/cooling energy are:

$\leq$ 100mg/kwh (at 0% excess O_2)

2 credits - where evidence provided demonstrates that the maximum dry NO_x emissions from delivered space heating/cooling energy are:

$\leq$ 70mg/kwh (at 0% excess O_2)

3 credits - where evidence provided demonstrates that the maximum dry NO_x emissions from delivered space heating/cooling energy are:

$\leq$ 40mg/kwh (at 0% excess O_2) **AND** $\leq$ 100mg/kwh (at 0% excess O_2) for Water Heating.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved by specifying a boiler with emissions of 70mg/kWh or less (at 0% excess O_2). 2/3 credits achieved.

Pol3 Surface Water Run Off

The aim of this credit is to avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, therefore minimising the risk of localised flooding on and off site, watercourse pollution and other environmental damage. The issue is split into three parts;

- Flood risk (2 credits
- Surface water runoff (2 credits)

- Minimising water course pollution (1 credit)

Credit Criteria

Flood Risk
2 credits – site is in an area of low flood risk and a site specific FRA confirms this

1 credit – site is in an area of high/medium flood risk, that the site specific FRA notes the site as appropriately flood resilient and the ground levels of the building/access are at least 600mm above the designed flood level.

Surface Water Runoff
Pre-requisite – an appropriate consultant is appointed to confirm the following;

1 credit – peak rate of run-off no greater post the pre development. This should comply at the 1 and 100 year return period events and include for climate change.

1 credit – where flooding of property will not occur in the event of local drainage system failure and EITHER post development run-off volume, over the development lifetime, is not greater than it would have been prior to the assess sites development OR any additional predicted volume of run-off for the 100 year 6 hour event must be prevented from leaving the site by using infiltration or other SuDS techniques.

Minimising Water Course Pollution

1 credit – where evidence provided demonstrates that effective on site treatment such as SUDS or oil separators have been specified for areas that are or could be a source of watercourse pollution.

Credit Validation

The design team have confirmed that the above requirements will be met in part. This will be achieved by undertaking all the required elements under surface water runoff and minimising water course pollution. 3/5 credits achieved.

Pol4 Reduction of Night Time Light Pollution

The aim of this credit is to ensure that night time lighting is concentrated in the appropriate areas and that upward lighting is minimized, reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.

Credit Criteria

1 credit – where evidence provided demonstrates that the external lighting design is in compliance with the guidance in the Institution of Lighting Engineers (ILE) Guidance notes for the reduction of obtrusive light, 2005.

Credit Validation

The design team have confirmed that the above requirements will be met. This will be achieved by ensuring the external lighting is in compliance with ILE Guidance and is capable of being automatically switched off overnight. 1/1 credits achieved.

Pol5 Noise Attenuation

The aim of this credit is to reduce the likelihood of noise from the new development affecting nearby noise-sensitive building's

Credit Criteria

1 credit – where evidence provided demonstrates that new sources of noise from the development do not give rise to the likelihood of complaints from existing noise-sensitive premises and amenity or wildlife areas that are within the locality of the site.

Credit Validation

The design team have confirmed that the above requirements will not be met. 0/1 credits achieved.

5.0 SUMMARY OF CREDITS ACHIEVED

CREDIT SUMMARY BREEAM 2011 NEW CONSTRUCTION

Section	Credit	Credit Reference	Credit Available	Credits Achieved	Potential Credits
Management Credit Value 0.55%	Sustainable Procurement	Man1	8	2	7
	Responsible Construction Practices	Man2	2	2	2
	Construction Site Impacts	Man3	5	4	4
	Stakeholder Participation	Man4	4	3	3
	Life Cycle Cost and Service Life Planning	Man5	3	0	0
Section Credit Total			22	11	16
Weighted Section Total			12.00%	6.00%	8.73%
Health and Wellbeing Credit Value 1.07%	Visual Comfort	Hea1	3	2	2
	Indoor Air Quality	Hea2	4	1	1
	Thermal Comfort	Hea3	2	2	2
	Water Quality	Hea4	1	0	0
	Acoustic Performance	Hea5	2	0	0
	Safety and Security	Hea6	2	1	2
Section Credit Total			14	6	7
Weighted Section Total			15.00%	6.43%	7.50%
Energy Credit Value 0.70%	Reduction of CO2 Emissions	Ene1	15	6	6
	Energy Monitoring	Ene2	2	2	2
	External Lighting	Ene3	1	1	1
	Low and Zero Carbon Technology	Ene4	5	1	1
	Energy Efficient Transportation Systems	Ene6	2	2	2
	Energy Efficient Equipment	Ene8	2	2	2
Section Credit Total			27	14	14
Weighted Section Total			19.00%	9.85%	9.85%

CREDIT SUMMARY BREEAM 2011 NEW CONSTRUCTION

Section	Credit	Credit Reference	Credit Available	Credits Achieved	Potential Credits
Transport Credit Value 0.89%	Public Transport Accessibility Proximity to Amenities Cyclist Facilities Maximum Car Parking Capacity Travel Plan	Tra1 Tra2 Tra3 Tra4 Tra5	3 1 2 2 1	2 0 2 1 1	2 0 2 1 1
Section Credit Total			8	6	6
Weighted Section Total			8.00%	5.33%	5.33%
Water Credit Value 0.67%	Water Consumption Water Monitoring Water Leak Detection and Prevention Water Efficient Equipment	Wat1 Wat2 Wat3 Wat4	5 1 2 1	3 1 0 1	3 1 1 1
Section Credit Total			9	5	6
Weighted Section Total			6.00%	3.33%	4.00%
Materials Credit Value 1.04%	Life Cycle Impacts Hard Landscaping and Boundary Protection Responsible Sourcing Insulation Designing for Robustness	Mat1 Mat2 Mat3 Mat4 Mat5	5 1 3 2 1	4 1 1 2 1	4 1 1 2 1
Section Credit Total			12	9	9
Weighted Section Total			12.50%	9.38%	9.38%
Waste Credit Value 1.07%	Construction Waste Management Recycled Aggregates Operational Waste Speculative Floor and Ceiling Finishes	Wst1 Wst2 Wst3 Wst4	4 1 1 1	2 0 1 1	2 0 1 1
Section Credit Total			7	4	4
Weighted Section Total			7.50%	4.29%	4.29%

Section	Credit	Credit Reference	Credit Available	Credits Achieved	Potential Credits
Land Use and Ecology Credit Value 1.00%	Site Selection Ecological Value of Site and protection of Ecological Features Mitigating Ecological Impact Enhancing Site Ecology Long Term Impact on Biodiversity	LeI1 Le2 Le3 Le4 Le5	2 1 2 3 2	1 1 1 1 2	1 1 1 1 2
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Section Credit Total Weighted Section Total			10 10.00%	6 6.00%	6 6.00%
Pollution Credit Value 0.77%	Impact of Refrigerants NO_x Emissions Surface Water Run Off Reduction of Night Time Light Pollution Noise Attenuation	PoI1 PoI2 PoI3 PoI4 PoI5	3 3 5 1 1	1 2 3 1 0	1 2 3 1 1
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Section Credit Total Weighted Section Total			13 10.00%	7 5.38%	8 6.15%
Applicable Innovation Credits	N/A	N/A	N/A	N/A	N/A
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Section Credit Total Weighted Section Total			N/A 0%	N/A 0%	N/A 0%
Assessment Total				**55.99%**	
Potential Total					**61.23%**

6.0 RECOMMENDATIONS TO IMPROVE SCORING

This section outlines a number of credits that could be targeted on this development. Below is a schedule of 4No. credits titles (8No. credits) that could be achieved in addition to those already allocated. Adding these to the pre-assessment figures would take the score to **61.23%** and more safely into the **VERY GOOD** bracket. The options targeted below are the most cost effect credits that have not yet been taken within the pre-assessment. The intention is therefore to review this list for credits that can be targeted at low cost to comfortably achieve a rating of **VERY GOOD** as required by the funders. We would always recommend achieving approximately 2% above the required benchmark in case of any adjustments made by the BREEAM Auditors. Our current recommendations would therefore be to undertake as many of the items listed below as is feasible.

Ref:	Credit Title	Details of Additional Requirements	No. of Credits	Action By
Man 1	Sustainable Procurement	Three credits could be achieved if the client commits to appointing a BREEAM AP.	3	Design Team/ Client
Man 1	Sustainable Procurement	An additional credit could be achieved if the client commits the appointed contractor to undertake a Thermographic Survey of the finished building and to rectify any defects noted.	1	Design Team/ Client
Man 1	Sustainable Procurement	An additional credit could be achieved if the client commits the appointed contractor to undertake seasonal commissioning in line with the credit requirements for the first 12 months after occupation.	1	Design Team/ Client
Hea 6	Safety and Security	An additional credit could be achieved if the client commits to adhering to the Secured By Design principles and/or Safer Parking Scheme.	1	Design Team/ Client
Wat 3	Water Leak Detection and Prevention	An additional credit could be achieved where the design team commits to installing flow control devices to all toilet areas as noted in the credit criteria.	1	Design Team/ Client
Pol 5	Noise Attenuation	An additional credit could be achieved where the design team commits to undertaking a Noise Impact Assessment in line with BS7445:1991.	1	Design Team/ Client

7.0 SUMMARY OF DEVELOPMENT PERFORMANCE

This project scores credits in each section, but some of the sections perform much better than others.

The project performs best in the Transport, Materials and Land Use & Ecology sections with scores of 66.67%, 75.00% and 60.00% respectively.

The project performs relatively poorly in the Management, Health & Wellbeing and Energy sections with scores of only 50.00%, 42.86% and 51.85% respectively.

The pre-assessment shows the Management section performing relatively poorly primarily due to the absence of a BREEAM Accredited Professional to advise the project. The pre-assessment shows the Health & Wellbeing section performing relatively poorly due to the location of the site within a car park area which makes achieving 3No. of the credits impossible under the credit criteria. The pre-assessment shows the Energy section performing relatively poorly primarily due to the absence of any renewables on the scheme. However, if the actions noted in Section 6.0 are undertaken a number of additional credits may be awarded.

At this stage, credits have been allocated as ones which are achievable and will be incorporated in to the developing design and contract documentation. Further credits will be aspired to as part of the actual BREEAM assessment.

Overall, this BREEAM pre-assessment currently rates the development in the VERY GOOD category.