

MARCH 2021

COWBRIDGE PRIMARY SCHOOL
BREEAM RIBA STAGE 2 REVIEW

**MORGAN
SINDALL**



 SUSTAINABLE
DESIGN LTD

QUALITY MANAGEMENT

Description:	Approved:	Date:
Report – BREEAM RIBA Stage 2 Review v1	Mark Morant, Director	22.03.2021

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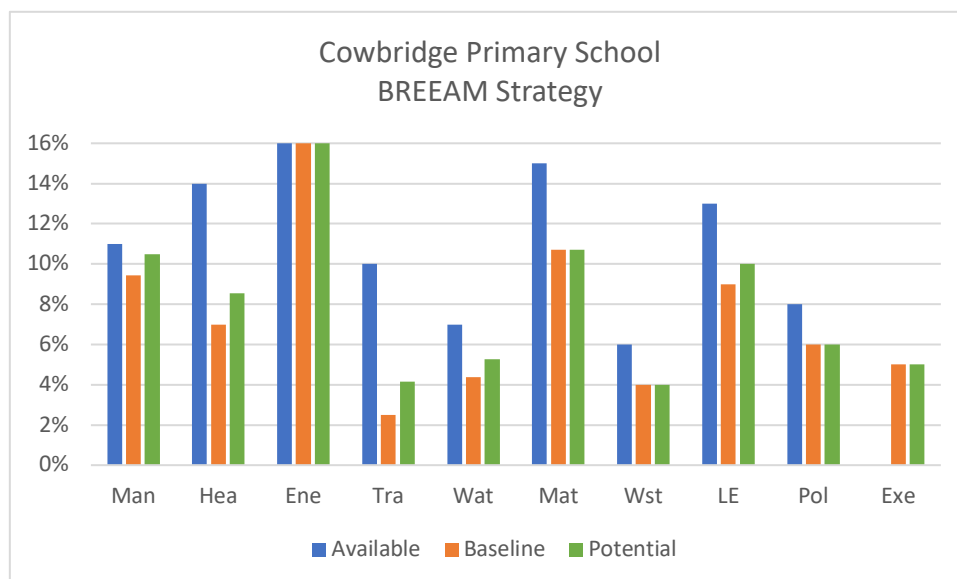
EXECUTIVE SUMMARY

The sustainability of Cowbridge Primary School is to be evaluated against the latest Building Research Establishment Environmental Assessment Method (BREEAM) 2018 New Construction methodology. The project which is Welsh Government funded and delivered under the 21st Century School's programme is required to achieve a minimum BREEAM rating of Excellent, representing the top 10% of new non-domestic buildings in the UK. In addition, the project brief requires the building to be designed and delivered to Net Zero Carbon (Operational Energy).

The project was developed by the client to RIBA Stage 2 as part of the standardised Vale of Glamorgan Schools programme.

MM Sustainable Design Ltd were appointed by Morgan Sindall at the end of RIBA Stage 2 to work proactively with the project team to advise on BREEAM 2018 requirements and establish a realistic strategy to achieve a BREEAM 2018 rating of Excellent. Risks and opportunities were identified throughout the Concept Design stage to ensure the greatest flexibility in achieving a rating of Excellent as the project progresses.

The project team's proactive approach to BREEAM has ensured that the project is on course to achieve a realistic targeted score of **74.02% (Excellent)**, with the potential to achieve a score of **80.16% (Excellent)** subject to design development. The figure below illustrates project performance against each of the nine BREEAM categories of sustainability. An overview of BREEAM Strategy is given in [Appendix A](#).



The project team's approach to BREEAM 2018 is to deliberately be realistic in terms of targeting credits that can be achieved both at the design stage (RIBA Stage 4), and crucially at practical completion (RIBA Stage 6). Credits have therefore only been targeted where the design team have confirmed that the requirements of the credit can be achieved at practical completion.

Moving forward, a dedicated BREEAM 'kick off' meeting will take place at the beginning of RIBA Stage 3 which will introduce the specific technical requirements of each credit and thus formally initiate the Interim Design Stage Assessment process which will conclude at the end of RIBA Stage 4 'Technical Design'.

INTRODUCTION

Cowbridge Primary School consists of the design and construction of a 1FE (1 Form Entry) Primary School located on the existing Cowbridge Comprehensive School site. This project will provide new primary and nursery places for the Cowbridge area, including corresponding landscaping and external playground/teaching space. The 1FE school is proposed to be implemented at Cowbridge, to create through-school for ages 3-19 on the current Cowbridge Comprehensive School site. The target Gross Internal Floor Area (GIFA) is 1,432m².

The sustainability of the Cowbridge Primary School is to be evaluated against the BREEAM 2018 New Construction methodology, of which the project is required to achieve a minimum BREEAM rating of Excellent. In addition, Cowbridge Primary School is to be designed and delivered to achieve Net Zero Carbon (Operational Energy), as such all regulated and unregulated energy consumption will be offset directly through onsite renewable energy technology.

MM Sustainable Design Limited were appointed by Morgan Sindall at the end RIBA Stage 2 to work proactively with the project team to advise on BREEAM 2018 requirements and establish a realistic strategy to achieve a BREEAM 2018 rating of Excellent. The project was developed by the client to RIBA Stage 2 as part of the standardised Vale of Glamorgan Schools programme, it was understood that HLM Green Build were appointed by the client as BREEAM Accredited Professionals during RIBA Stage 2.

This report provides an overview of project progress up to RIBA Stage 2. The report identifies risks and opportunities, and clarifies actions required to ensure that a rating of Excellent can be achieved.

A summary of individual credits targeted by the project team, including confirmation of credits that have been awarded, is given in **Appendix A**.

Meetings Attended

MM Sustainable Design Limited have attended the following meetings during RIBA Stage 1 & RIBA Stage 2:

- 11-03-2021 - Initial Design Team Meeting
- 22-03-2021 - BREEAM RIBA Stage 2 Review Meeting
- 25-03-2021 - Design Team Meeting

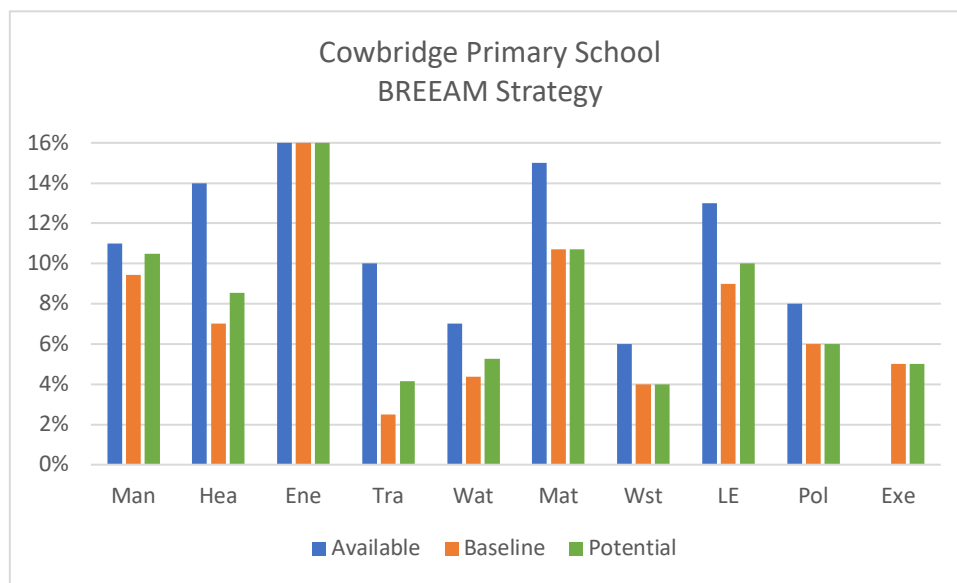
BREEAM REVIEW

Overview

MM Sustainable Design Ltd consulted the project team on design strategy throughout the RIBA Stages 2. This process enabled key risks and opportunities to be identified, and implications to overall BREEAM 2018 score realised and understood.

The project team’s approach to BREEAM 2018 is to deliberately be realistic in terms of targeting credits that can be achieved both at the design stage (RIBA Stage 4), and crucially at practical completion (RIBA Stage 6). Credits have therefore only been targeted where the design team have confirmed that the requirements of the credit are currently intended to be achieved.

The review confirmed that the project is currently on course to achieve a realistic targeted score of **74.02%** which equates to a rating of **Excellent**, with the potential to achieve a score of **80.16%** (Excellent). The figure below illustrates how the project is likely to perform against each of the nine BREEAM categories of sustainability.



It is understood that all of the targeted RIBA Stage 2 requirements have either been directly addressed by the original client team or the current Morgan Sindall project team:

- Man 01 – Project Brief & Design
- Ene 04 – Passive Design & Low & Zero Carbon Feasibility Study
- Tra 01 – Travel Plan
- Mat 01 – Life Cycle Assessment
- Mat 03 – Enabling Sustainable Procurement
- Wst 05 – Adaptation to Climate Change
- Wst 06 – Design for Disassembly & Adaptability

The remainder of this report provides an overview of the project teams approach to each BREEAM 2018 credit, including an analysis of key opportunities and constraints at Cowbridge Primary School.

Management

Credit	Available	Targeted
Man 01 Project Brief & Design	4	3
Man 02 Life Cycle Cost & Service Life Planning	4	4
Man 03 Responsible Construction Practices	6	5
Man 04 Commissioning & Handover	4	3
Man 05 Aftercare	3	3
Total	21	18

Man 01 Project Brief & Design

To enhance project team integration and efficiency, the Morgan Sindall project team evaluated and defined their roles, responsibilities and contributions to each key phase of project delivery.

It is understood that the original client project team, have held significant consultation with key stakeholders regarding design development at Cowbridge Primary School during RIBA Stage 2, which has assisted in the development of the design brief and strategy. The project team shall continue to consult key stakeholders on design development during RIBA Stage 3 and 4. However, the consultation process has not currently included an independent third party to facilitate discussions, as is required for an educational development. As such the credit for consultation has currently been withheld.

With regards to evaluating and setting strategic performance targets, the project brief confirmed that Cowbridge Primary School, as part of the 21st Century School programme, is required to achieve a BREEAM 2018 rating of Excellent. In addition, the client's brief requires the building to be designed and delivered to Net Zero Carbon (Operational Energy) standard. The project team held dedicated BREEAM discussions throughout RIBA Stage 2 to explore opportunities and constraints associated with achieving a rating of Excellent. Mandatory credits were identified to the project team.

The project was developed by the client to RIBA Stage 2 as part of the standardised Vale of Glamorgan Schools programme, it was understood that HLM Green Build were appointed by the client as BREEAM Accredited Professionals during RIBA Stage 2. MM Sustainable Design Ltd have been subsequently appointed as BREEAM Accredited Professionals to advise and support the project team throughout the design, procurement, construction and handover phases of the project.

Man 02 Life Cycle Cost & Service Life Planning

It is understood that the client's cost consultant will evaluate the life cycle cost of the project based on the RIBA Stage 2 design strategy. Subsequent component level option appraisals will be developed during RIBA Stage 4 to further assist in evaluating the life cycle cost of the project. The project team will report on the capital cost of the building.

Man 03 Responsible Construction Practices

Morgan Sindall as an ISO14001 Certified company operate an Environmental Management Plan that monitors energy and water consumption, and implements best practice pollution prevention measures. It is understood that whilst Morgan Sindall will record travel distances associated with deliveries to site and waste removed from site, the data will not automatically be collated into a single database.

Man 04 Commissioning & Handover / Man 05 Aftercare

The project team shall ensure that a 'soft landings' approach to commissioning and handover shall be in place, including aftercare support, seasonal commissioning, and post occupancy evaluation. As a Net Zero Carbon (Operational Energy) building, the project is likely to undertake a thermographic survey of building fabric.

Health & Wellbeing

Credit	Available	Targeted
Hea 01 Visual Comfort	4	1
Hea 02 Indoor Air Quality	4	0
Hea 04 Thermal Comfort	3	3
Hea 05 Acoustic Performance	3	3
Hea 06 Security	1	1
Hea 07 Safe & Healthy Surroundings	2	1
Total	18	9

Hea 01 Visual Comfort

The project team shall include blinds or suitable glare control to all occupied spaces to ensure that the impact of glare on occupants is controlled.

A review of GA Plans suggests that whilst the majority of occupied rooms are likely to be within 8m of an external wall with a window, the presence of internal class spaces, including ICT and Medium Group (ALNco) to ground floor corridor, and LRC and Small Group to first floor corridor will preclude view out and daylighting credit from being achieved in practice.

Internal and external lighting levels and controls shall be designed to relevant standards.

Hea 02 Indoor Air Quality

The project team shall develop an Indoor Air Quality Plan during RIBA Stage 3 which shall establish design principles to maximise indoor air quality during design and operation. This shall include the specification of fittings and furnishings with low Volatile Organic Compound and Formaldehyde levels. However, based on recent feedback from product manufacturers achieving compliance with the new BREEAM 2018 VOC testing standards is not guaranteed. As such the VOC specification credit has not been targeted at this stage. Irrespective of the specification of low VOC finishes.

It is anticipated that the building will be naturally ventilated via openable windows. The location of the school is within the wider Cowbridge School curtilage and thus away from access roads and car parking area. As such whilst there is the potential to achieve credit for ventilation, locating air intake and extracts such that they are greater than 10m distant from openable windows is likely to be a challenge. As such the credit for ventilation has not been targeted.

Hea 04 Thermal Comfort

The project team will undertake an initial overheating review during RIBA Stage 3, the objective being to establish anticipated summer and winter operative temperatures in accordance with BB101 design criteria. A review of thermal comfort conditions based on future (2050) weather files will also be undertaken to evaluate the extent to which the development is future proofed to resulting climate change scenarios.

It is not envisaged that comfort cooling will be required to meet the requirements of the thermal analysis, this shall be confirmed under the next stage of work.

Hea 05 Acoustic Performance

The project team have appointed Formant as acoustic consultants. The acoustic design strategy for the building shall be designed to comply with BB93. This shall include, sound insulation, indoor ambient noise levels, and reverberation times. A background noise survey was undertaken to advise on design development and compliance with BB93.

Hea 06 Security

It is understood that the project team will consult with South Wales Police’s Designing Out Crime officer to identify and address all security requirements of the building during RIBA Stage 3.

Hea 07 Safe & Healthy Surroundings

Cowbridge Primary School will be located within the wider curtilage of the existing Cowbridge Comprehensive School. An existing access road will run around the south eastern extent of proposed school location, and depending on usage of the street, which may prevent the segregation of vehicles from pedestrian and cyclists gaining access to the school. In addition, at RIBA Stage 2 it is unclear as to whether a separate car park will be required for the Primary School, or whether access will be provided from the existing car parking areas. Given the unknowns associated with access strategy the credit for Safe Access has not been targeted.

With regards to outdoor amenities, the site masterplan will include a dedicated landscaped areas of which it is anticipated that seating will be provided.

Energy

Credit	Available	Targeted
Ene 01 Reduction of Energy Use & Carbon Emissions	13	13
Ene 02 Energy Monitoring	2	2
Ene 03 External Lighting	1	1
Ene 04 Low Carbon Design	3	3
Ene 06 Energy Efficient Transportation Systems	2	2
Ene 08 Energy Efficient Equipment	2	2
Total	23	23

Ene 01 Reduction of Energy Use & Carbon Emissions

Cowbridge Primary School is to be designed and delivered to achieve Net Zero Carbon (Operational Energy), as such all regulated and unregulated energy consumption will be offset directly through onsite renewable energy technology. Indicative Part L2A modelling at RIBA Stage 2 suggested that approximately 520m² will be required to achieve NZC (Operational Energy) based on enhanced building fabric performance measures. The energy performance of the building evaluated during RIBA Stage 3 and 4.

With regards to Operational Energy Consumption, the project team shall model the operational energy performance of the building during RIBA Stage 4 and refine the modelling assumptions as the project progresses. The project team shall work with the client during the operation of the building to compare actual operational consumption to that predicted.

Ene 02 Energy Monitoring

It is anticipated that space heating and domestic hot water will be provided by an Air Source Heat Pump system. All kitchen / cooking facilities shall be derived from electrical fed equipment and no gas is required for catering. Consideration is also being given to utilising point of use electric water heaters rather than a centralised system.

Pulsed output sub meters will be provided to differentiate between. Pulsed output electrical sub meters will monitor space heating and hot water usage via the ASHP, lighting and small power, and other major energy consuming loads throughout both buildings.

Energy metering will be provided across the school in accordance with TM-39. All metering will be linked to the BEMS.

Ene 03 External Lighting

The project team confirmed that energy efficient external lighting shall be specified and controlled for both presence detection and prevent operation during daylight hours.

Ene 04 Low Carbon Design

Cowbridge Primary School forms part of the Vale of Glamorgan Standardises Schools programme, as such the Clients Design Team evaluated the Passive Design measures and suitable Low & Zero Carbon Technologies as part of a Standardised School during RIBA Stage 2 for both a single storey or two storey school.

Enhanced Building Fabric measures would result in carbon savings of circa 4% associated with a single storey design, and circa 15% with a two-storey design.

Other passive design measures as recommended by the study included:

1. increase openable areas of windows within the proposed building
2. include internal partitions and floors/ceiling constructions with higher thermal mass
3. ensure that all pipework is insulated to reduce distribution heat losses as much as possible.

Comfort cooling shall be provided to the ICT hub room located at first floor level; this shall be selected to meet the anticipated cooling load of the equipment. It is not envisaged that any further comfort cooling will be required to meet the requirements of the thermal analysis, this shall be confirmed under the next stage of work.

The Low & Zero Carbon Technology Feasibility Study established that PV panels were the most appropriate LZC technology for the Standardised School building, of which Carbon Savings in the order of 46% and 48% could be achieved on a single storey and two storey school building.

The project team shall refine the design and specification of suitable LZC during RIBA Stage 3.

Ene 06 Energy Efficient Transportation Systems

A new DDA compliant lift will be provided to facilitate access between ground and first floors within Cowbridge Primary School. The lift will be specified to include energy efficient features.

Ene 08 Energy Efficient Equipment

The project team shall evaluate the unregulated energy consumption of the building during RIBA Stage 3. However, the presence of a kitchen/catering facility within the building suggests that kitchen/catering equipment is likely to use the greatest proportion of total annual unregulated energy consumption of the building.

Morgan Sindall have confirmed that their preferred kitchen supplier shall incorporate energy efficient measures in accordance with CIBSE TM50.

Transport

Credit	Available	Targeted
Tra 01 Transport Assessment & Travel Plan	2	2
Tra 02 Sustainable Transport Measures	10	0
	12	3

Tra 01 Transport Assessment & Travel Plan

It is understood that a site-specific transport assessment of the site is currently been undertaken to identify opportunities and constraints associated with reducing the use of private vehicular use. A draft Travel Plan will be produced which established targets and recommendations to implement the findings of the Transport Assessment.

Tra 02 Sustainable Transport Measures

The access strategy to Cowbridge Primary School, including the provision of car parking spaces will be developed during RIBA Stage 3, of which the existing car parking provision may be adequate.

In accordance with Welsh Government's strategy for decarbonisation, the project may be required to install electric vehicle charging points to 10% of total car parking spaces allocated for the development. However, if the existing car parking arrangements are retained it was considered unlikely that EV charging points will be installed.

It is understood that dedicated cycle spaces have been provided as part of the wider Cowbridge Comprehensive School site, the existing use of such facilities is unknown. Whilst the Primary School site may be required to provide additional cycle spaces, it is understood that no additional cycle spaces are anticipated. Whilst lockers are likely to be provided to staff and pupil, other dedicated facilities for cyclists accessing the building including showers, dedicated changing, and/or drying space are not anticipated.

Cowbridge Comprehensive School includes existing sports/leisure facilities. The development itself will include catering provision, and dedicated outdoor amenity space.

Water

Credit	Available	Targeted
Wat 01 Water Consumption	5	2
Wat 02 Water Monitoring	1	1
Wat 03 Water Leak Detection	2	2
Total	8	5

Wat 01 Water Consumption

The project team shall specify low water consuming sanitary fittings, including WCs, taps, showers, and kitchen equipment. Rainwater harvesting and/or grey water harvesting are not currently being considered. However, it is recognised that rainwater harvesting may be required as part of the Sustainable Urban Drainage design strategy as required for SAB.

There is the potential to achieve an additional credit, should all WCs be specified as 4 litres, rather than 4.5 litres as assumed at RIBA Stage 2. The project team will review during RIBA Stage 4.

Wat 02 Water Monitoring

The project team will specify pulsed output water meters on the main incoming water supply plus any departments/function areas that consume 10% of buildings water consumption.

Wat 03 Water Leak Detection

The project team shall install a leak detection system on the main incoming water supply to the building. PIR controlled solenoid valves shall be specified on the cold-water supply to all WC areas.

Materials

Credit	Available	Targeted
Mat 01 Building Life Cycle Assessment	7	7
Mat 02 Environmental Product Declarations	1	0
Mat 03 Responsible Sourcing of Construction Products	4	2
Mat 05 Designing for Durability & Resilience	1	1
Mat 06 Material Efficiency	1	0
Total	14	10

Mat 01 Building Life Cycle Assessment

Cowbridge Primary School forms part of the Vale of Glamorgan Standardises Schools programme, as such the Clients Design Team evaluated the embodied carbon impact of various superstructure, substructure and external works design scenarios during RIBA Stage 2 for both a single storey or two storey school.

The project team will refine the life cycle assessment of building's superstructure design during RIBA 4.

Mat 02 Environmental Product Declarations

Morgan Sindall operate Sustainable Procurement Plan which ensures that procurement decisions are based on environmental and social considerations. In accordance with the Sustainable Procurement Plan where possible building components shall be procured that have been evaluated under the Environmental Product Declaration (EPD) scheme. However, at this stage in the design process, compliance with the credit requirements cannot be guaranteed. As such, whilst there is the potential to achieve this credit, it has not currently been targeted.

Mat 03 Responsible Sourcing of Construction Products

Morgan Sindall operate Sustainable Procurement Plan which ensures that procurement decisions are based on environmental and social considerations, thus the credit for enabling sustainable procurement has been achieved. In accordance with the Sustainable Procurement Plan where possible building components shall be procured from suppliers that operate compliant environmental management systems (EMS) such as BES6001, ISO14001, CARES, etc... It is therefore anticipated that at least 1no. credit under 'measuring responsible sourcing' will be achieved.

Mat 05 Designing for Durability & Resilience

To reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape, the project team shall evaluate and specify protection measures to vulnerable parts of the building. In addition, the project team shall evaluate and specify building components that limit long and short-term degradation due to environmental factors.

Mat 06 Material Efficiency

To avoid unnecessary materials use arising from over specification without compromising structural stability, durability or the service life of the building, the project team shall continuously evaluate building design and procurement options. However, as a material efficiency strategy was not established by the project team during the Preparation & Brief stage (RIBA Stage 1) the credit cannot be achieved.

Waste

Credit	Available	Targeted
Wst 01 Construction Waste Management	4	2
Wst 02 Use of Recycled & Sustainability Sourced Aggregates	1	0
Wst 03 Operational Waste	1	1
Wst 05 Adaptation to Climate Change	1	1
Wst 06 Designing for Disassembly & Adaptability	2	2
Total	9	6

Wst 01 Construction Waste Management

Morgan Sindall's Site Waste Management Plan sets out the framework for preventing waste in accordance with the waste hierarchy "Prevent, Reduce, Reuse, Recover, Dispose".

The project team are currently targeting the production of no greater than 13.3m³ of non-hazardous construction waste (excluding demolition and excavation waste) per 100m² of GIFA. The project team shall also divert at least 70% by volume of non-demolition waste (excluding hazardous waste).

Wst 02 Use of Recycled & Sustainability Sourced Aggregates

The project team shall evaluate opportunities to specify recycled and sustainability sourced aggregates during RIBA Stage 3. At this stage in the project, there is no guarantee that the BREEAM criteria can be complied with, as such the credit is not currently targeted.

Wst 03 Operational Waste

The project team have identified a dedicated service entrance providing access to the kitchen, plant and maintenance areas of the building. Provision will be made for general waste, recycling waste, and organic waste as derived from the school's kitchen facilities.

Wst 05 Adaptation to Climate Change

The project team evaluated the impact that climate change is likely to have on building fabric, structure and building services design during RIBA Stage 2. The project team shall develop the design to include appropriate mitigation measures to future proof the building against climate change scenarios.

Wst 06 Designing for Disassembly & Adaptability

The project team evaluated the design of the building for disassembly and adaptability of use during RIBA Stage 2. The project team shall develop the design to incorporate the principles of disassembly and adaptability.

Land Use & Ecology

Credit	Available	Targeted
LE 01 Site Selection	2	1
LE 02 Ecological Risks & Opportunities	2	2
LE 03 Managing Impacts on Ecology	3	3
LE 04 Ecological Change & Enhancement	4	1
LE 05 Long Term Ecology Management & Maintenance	2	2
Total	13	9

LE 01 Site Selection

The Site is located on an existing school playing field (rugby pitch), which is considered by the BRE as 'previously occupied land'. The Preliminary Ecological Appraisal confirmed that the proposed development will be restricted to an area of existing amenity grassland (rugby pitch). Amenity grassland is considered to be of low ecological value, the removal of which will have negligible ecological impact. As such the credit for developing on previously occupied land will be achieved.

The site is not considered to be contaminated, as such the credit for remediating and subsequently developing on previously contaminated land will not be achieved.

LE 02 Ecological Risks & Opportunities

AECOM undertook an 'Extended' Phase 1 Habitat Survey of the site on 27th May 2020, to determine the potential for the Site to support Protected or Priority Species in order to identify potential ecological constraints and to guide recommendations for further surveys.

The Preliminary Ecological Appraisal established that the proposed development will be restricted to an area of existing amenity grassland. There will be no clearance of any other habitats. Amenity grassland is of low ecological value, removal of amenity grassland will have negligible ecological impact. No further surveys are recommended.

Recommendations for enhancement have been provided which should be considered during the detailed design process.

LE 03 Managing Impacts on Ecology

The Preliminary Ecological Appraisal confirmed that the mitigation hierarchy has been considered and should be implemented when designing the Proposed Development. A summary is provided below.

1. Avoidance – Seek options that avoid harm to ecological features (for example, by locating on an alternative site or use of technology, or timing to eliminate impact);
2. Mitigation – Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation;
3. Compensation – Used as last resort to offset impacts; and,
4. Enhancement – Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

Pollution control measures must be implemented to avoid impacts on adjacent habitats including SINC's and NRW Priority Habitat. Pollution control measures as required Guidance for Pollution Prevention (GPPs) and where these have not been replaced the Environment Agencies Pollution Prevention Guidelines (PPGs) will be implemented in order to avoid and minimise adverse effects of pollution and runoff on designated sites and surrounding environment. This will be implemented via the Site Construction Management Plan (CMP).

Retained habitats should be protected during construction to prevent damage. Retained habitats adjacent to the proposed development should be fenced off to avoid and reduce the impacts of direct damage or trampling and root compaction during construction by vehicles and people. Tracking of vehicles over retained habitats should be avoided. Where possible, vehicles and storage areas should be kept on existing hardstanding.

If works are required within root protection zones, works will employ special measures to avoid damage, for example, through the use of bog mats to limit the impacts of soil compaction.

Lighting must be designed to avoid light spill onto retained and newly created habitat, features with the potential to support roosting bats and the vegetated boundaries of the Site. The lighting plan must be reviewed by an ecologist.

All excavations must be covered overnight or a ramp provided to allow animals to escape.

Any new and existing boundary fences should include small openings at ground level, to allow hedgehogs to pass through the Site and to maintain local connectivity.

LE 04 Ecological Change & Enhancement

The project team shall develop the landscape design during RIBA Stage 3 with input from the ecologist to include measures to enhance the ecological value of the site.

The project team will evaluate the change of ecological value using the 'Defra Biodiversity Metric'. However, at this stage of the design, and given the context of the site, i.e. low ecological value Amenity Grassland there is the potential to enhance the overall ecological value of the site.

Recommendations have been made within the Preliminary Ecological Appraisal including:

- All landscaping should include native species of benefit to wildlife.
- An area designated for seating could incorporate a range of native scented plants to stimulate and soothe the senses whilst also providing habitat for wildlife, most notably pollinating invertebrates such as butterflies, bees and hoverflies using plants such as lavender, honeysuckle, rosemary, mint, thyme and wild garlic. The emphasis should be on plant species native to the UK to be beneficial for pollinating insects.
- Create/install invertebrate habitats including bee boxes, bee banks, and log piles.
- Reinstate the existing pond along the western boundary by removing scrub vegetation and digging out silt. This should be allowed to colonise naturally and planted with a diverse native aquatic species mix around the margins.
- Re-instate the existing allotment which can be used by pupils for educational and recreational purposes.
- At least three bird boxes should be installed within the building design. Boxes suitable for swifts and house sparrows would be suitable for use on buildings as habitat suitable for these species is often lost in modern building design.
- Provision of at least two cavity wall bat boxes in the new building. Boxes should be included in the building design and not be subject to light spill.
- Design landscaping to create green corridors between bat box provisions and the existing green corridors along the Site boundaries. These should be planted with native species of benefit to wildlife.

LE 05 Long Term Ecology Management & Maintenance

The project team will implement measures to manage and maintain ecology throughout the project. To ensure the optimal ecological outcomes are met in-practice, the project team will monitor and review the effectiveness of the mitigation and enhancement measures

A section on Ecology and Biodiversity will be included as part of the building owner information supplied, to inform the owner of local ecological features, value and biodiversity on or near the site. This will include detailed management and maintenance plans as required by landscape and asset managers as well as relevant parts of the handover information for occupiers written in a format that encourages understanding and supportive behaviours.

The project team shall also develop a landscape and habitat management plan covering the first five years after project completion.

Pollution

Credit	Available	Targeted
Pol 01 Impact of Refrigerants	3	1
Pol 02 Local Air Quality	2	2
Pol 03 Flood & Surface Water Management	5	3
Pol 04 Reduction of Night Time Light Pollution	1	1
Pol 05 Reduction of Noise Pollution	1	1
Total	12	9

Pol 01 Impact of Refrigerants

It is envisaged that comfort cooling shall be provided to the server room located at first floor level. It is not envisaged that any further comfort cooling will be required to meet the requirements of the thermal analysis.

It is anticipated that the efficiency of the cooling systems shall be designed to achieve a direct effect life cycle CO₂e emission rate of less than 100 CO₂e/kW. Automated leak detection is not considered viable.

Pol 02 Local Air Quality

It is anticipated that space heating and domestic hot water will be provided by an Air Source Heat Pump system. All kitchen / cooking facilities shall be derived from electrical fed equipment and no gas is required for catering. Consideration is also being given to utilising point of use electric water heaters rather than a centralised system.

It has been assumed that the building will be entirely electrically powered, i.e. a non-combustion system. Both credits for local air quality have been targeted.

Pol 03 Flood & Surface Water Management

Flood Consequence Assessment confirmed that Natural Resources Wales (NRW) Flood Risk mapping shows the majority of the site to be at 'Very Low / Negligible' risk of flooding from rivers, however an area parallel with the north west border of the site is shown to be at 'Medium' risk and 'High' risk. As such, the location of the proposed building in the eastern half of the site is considered to be at 'low' risk of fluvial flooding, but the western portion of the site is at an increased ('high') risk.

It is anticipated that the Finished Floor Level of the building and corresponding access routes will be at least 600mm above the designed flood level of the site.

In accordance with SAB process, the project team shall develop the drainage strategy to achieve a peak rate of run off from the site that is no greater than the predevelopment run off rate, including an allowance for climate change. In addition, the project team shall look to include SUDS measures so that the post development run off volume, over the development lifetime, is no greater than it would have been prior to development.

The project team will look to specify pollution control systems to prevent potential contamination of watercourses, including retaining the first 5mm of rainfall on site prior to discharge.

Pol 04 Reduction of Night-Time Light Pollution

To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, thereby reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties, the project team shall specify external lighting in accordance with the Institution of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light, 2011.

Pol 05 Reduction of Noise Pollution

The project team have appointed Formant as acoustic consultants. Existing background noise across the site and at the closest noise sensitive receptor (NSR) have been established. The project team shall develop the design to ensure that the noise level from Cowbridge Primary School, as measured in the locality of the nearest or most exposed noise sensitive development, shall be at least 5dB lower than the background noise throughout the day and night.

MOVING FORWARD

Potential Opportunities

The RIBA Stage 2 review identified credits that could potentially be achieved subject to further design information becoming available. The credits have not been targeted, as at this stage in the design there is no guarantee that they could be achieved at Practical Completion.

The following credits were identified as potential:

- Man 01 Stakeholder Consultation
- Man 04 Testing & Inspecting Building Fabric
- Hea 01 Daylighting
- Hea 01 View Out
- Hea 02 Emissions from Construction Products
- Tra 02 Provision of School Bus Service
- Tra 02 Electric Vehicle Recharging
- Tra 02 Car Sharing Scheme
- Wat 01 Water Consumption
- LE 01 Contaminated Land
- LE 04 Enhancement of Ecology

The Next Steps

The project team shall hold a dedicated BREEAM 'kick off' workshop at the beginning of RIBA Stage 3 to review and formerly confirm compliance against the technical requirements of each targeted credit.

A tailored BREEAM Guidance Report shall be issued to the project team which clarifies the technical requirements of each credit and allocates to individual project team members.

BREEAM discussions/updates shall be included at each Design Team Meeting, and client Progress Meeting to monitor progress towards achieving compliance against targeted BREEAM credits.

The following specific BREEAM 2018 deliverables are recommended to take place during RIBA Stage 3:

- Overheating Study (Current and Future Weather Files)
- Updated Part L2A Modelling
- Development of access strategy
- Evaluation of the building's durability and resilience
- Clarification as to extent of contaminated land
- Development of landscape design and ecological mitigation/enhancement measures
- Development of drainage strategy

APPENDIX A – BREEAM TRACKER V3

Cowbridge Primary School - BREEAM Desig Stage Tracker v3

Assessment: BREEAM 2018 Education

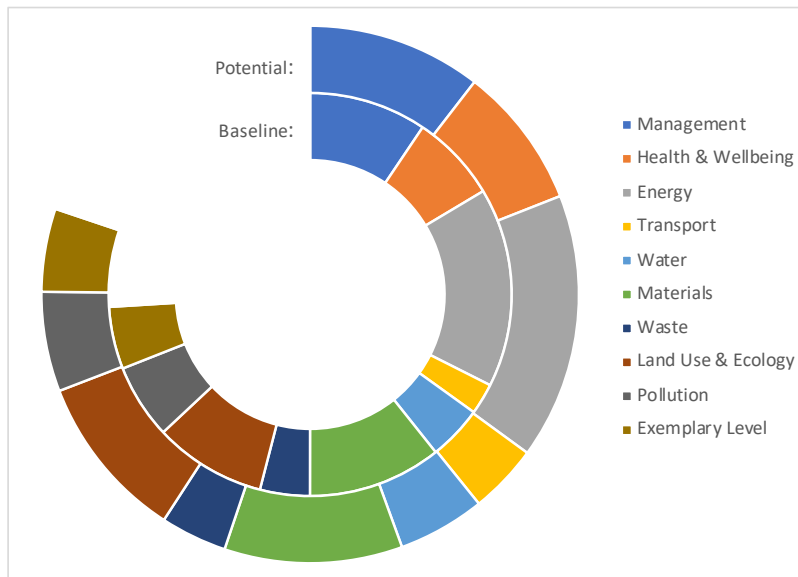
Client: Vale of Glamorgan / Morgan Sindall

Date: 22.03.2021



Overview

Credit	Available	Baseline	Potential
Man	11%	9%	10%
Hea	14%	7%	9%
Ene	16%	16%	16%
Tra	10%	3%	4%
Wat	7%	4%	5%
Mat	15%	11%	11%
Wst	6%	4%	4%
LE	13%	9%	10%
Pol	8%	6%	6%
Exe	0%	5%	5%
Total	100%	74.02%	80.16%
Rating	-	Excellent	Excellent



Assessment Summary

Credit	Credit Name	Available	Baseline	Potential	Credit Requirements / Assumptions	VoG	Morgan Sindall	Site
Management (Credit Value 0.52%)								
Man 01	Project Delivery Planning	1	1	1	Identify and define roles and responsibilities for key project phases	◆	◆	
	Stakeholder Consultation	1	0	1	Independent Third Party Consultation of Stakeholders		◆	
	BREEAM AP (Concept Design)	1	1	1	Identify Strategy Performance Targets & Establish BREEAM Strategy	◆	◆	
	BREEAM AP (Developed Design)	1	1	1	Monitor Strategy Performance Targets & BREEAM Strategy		◆	
Man 02	Elemental Life Cycle Cost	2	2	2	Life Cycle Cost Consultant to report on Elemental LCC of building		◆	
	Component Level LCC Plan	1	1	1	Life Cycle Cost Consultant to evaluate and report on LCC options		◆	
	Capital Cost Reporting	1	1	1	Report capital cost of building		◆	
Man 03	Environmental Management	1	1	1	Main contractor to be EMS certified (e.g. ISO 14001)		◆	
	BREEAM AP (Site)	1	1	1	Main contractor to appoint a BREEAM AP during Construction		◆	
	Responsible Construction Management (M)	2	2	2	Implement best practice construction management processes		◆	
	Monitoring of Construction Site Impacts	2	1	1	Monitor Utility and Transport Emissions during Construction		◆	
Man 04	Commissioning - Testing Schedule (M)	1	1	1	Identify Commissioning Roles & Responsibilities		◆	
	Commissioning - Design & Preparation	1	1	1	Establish Commissioning Requirements		◆	
	Testing & Inspecting Building Fabric	1	0	1	Undertake a Thermographic Survey of Building		◆	
	Handover (M)	1	1	1	Produce Training Schedules & Building User Guides		◆	
Man 05	Aftercare Support	1	1	1	Soft Landings approach to Handover		◆	
	Commissioning - Implementation (M)	1	1	1	12 Months Seasonal Commissioning of Building Services		◆	
	Post Occupancy Evaluation	1	1	1	Commit to undertake Post Occupancy Evaluation	◆		
Total Management Credits		21	18	20				
Total Addition to Overall Score (%)		11%	9%	10%				

Credit	Credit Name	Available	Baseline	Potential	Credit Requirements / Assumptions	VoG	Morgan Sindall	Site
Health & Wellbeing (Credit Value 0.78%)								
Hea 01	Control of Glare from Sunlight	1	1	1	Reduce the impact of glare from sunlight through provision of blinds to all occupied spaces		◆	
	Daylighting	2	0	0	Achieve 2% daylight factor in all occupied spaces. Internal Spaces would preclude this credit		◆	
	View Out	1	0	0	All desks to be within 8m distance of an external window. Internal Spaces would preclude this credit		◆	
	Internal & External Lighting	1	1	1	Best practice lighting design, control & zoning		◆	
Hea 02	Indoor Air Quality Plan	-	-	-	Produce an Indoor Air Quality Plan at RIBA Stage 3 to establish a strategy to minimise indoor air pollution		◆	
	Ventilation	1	0	0	Design ventilation strategy to minimise indoor air pollution.		◆	
	Emissions from Construction Products	2	0	0	Specify low VOC fittings & furnishings. Note limited BREEAM 2018 compliant products on the market		◆	
	Post Construction Indoor Air Quality	1	0	1	Undertake post construction VOC testing		◆	
Hea 04	Thermal Modelling	1	1	1	Evaluate thermal comfort of building occupants based on current and future climatic scenarios		◆	
	Design for Future Thermal Comfort	1	1	1			◆	
	Thermal Zoning & Controls	1	1	1	Provide occupant control of heating & cooling systems		◆	
Hea 05	Sound Insulation	1	1	1	Design & test building to BB93 standards		◆	
	Indoor Ambient Noise Level	1	1	1			◆	
	Room Acoustics	1	1	1			◆	
Hea 06	Security of Site & Building	1	1	1	Client brief requires that the school shall follow the principals of Secured by Design, NOT to achieve accreditation		◆	
Hea 07	Safe Access	1	0	0	Provide dedicated safe pedestrian & cyclist access to building		◆	◆
	Outside Space	1	0	1	Provide outside space with a amenity area		◆	
Total Health & Wellbeing Credits		18	9	11				
Total Addition to Overall Score (%)		14%	7%	9%				

Energy (Credit Value 0.7%)								
Ene 01	Energy Performance (M)	9	9	9	Design and deliver a Passivhaus principle building. 4/9 credits minimum requirement for Excellent		◆	
	Prediction of Operational Energy Consumption	4	4	4	Evaluate anticipated energy consumption in use based on CIBSE TM54 methodology at RIBA Stage 4 & RIBA Stage 6		◆	
Ene 02	Sub Metering of End Use Categories (M)	1	1	1	Sub meter all gas & elec energy loads >10%		◆	
	Sub Metering of High Energy Load	1	1	1	Sub meter relevant departments/floor plates		◆	
Ene 03	External Lighting	1	1	1	Provide energy efficient external lighting systems & controls		◆	
Ene 04	Passive Design Analysis	1	1	1	HLM Green Build have evaluated passive design strategy to reduce energy use	◆		
	Free Cooling	1	1	1	Implement Night Time Cooling Strategy. Dedicated cooling restricted to IT/Server Rooms.		◆	
	Low & Zero Carbon Feasibility Study	1	1	1	HLM Green Build have evaluate suitable renewable energy solutions for building	◆		
Ene 06	Energy Consumption (Lifts)	1	1	1	Conduct a lift study to establish optimum number and size of lifts		◆	
	Energy Efficient Features (Lifts)	1	1	1	Specify energy efficient lift features		◆	
Ene 08	Energy Efficient Equipment	2	2	2	Specify energy efficient kitchen equipment in accordance with CIBSE Guide TM50		◆	
Total Energy Credits		23	23	23				
Total Addition to Overall Score (%)		16%	16%	16%				

Transport (Credit Value 0.83%)								
Tra 01	Travel Plan	2	2	2	Undertake a site-specific travel assessment/statement to assist in the development of a travel plan for the site		◆	
Tra 02	Provision of School Bus Service	3	0	0	Dedicated bus services to Cowbridge Comprehensive School - Unlikely for Primary School	◆		
	Electric Vehicle Recharging	1	0	0	Provide electric vehicle recharging for at least 10% of total car parking spaces. Not currently included within existing car park		◆	
	Car Sharing Scheme	1	0	0	Provide and promote car sharing for at least 5% of total car parking spaces. Not currently included within existing car park		◆	
	Improve Local Cycling & Pedestrian Routes	2	0	0	Consult with LA to establish ways to improve local cycle and pedestrian network	◆	◆	
	Cycle Spaces	1	0	1	1 Form Entry Primary School requires 5no. Cycle spaces		◆	
	Cyclist Facilities	1	0	1	Provide dedicated changing space and lockers for each cycle space. Assumption existing provision within existing school		◆	
	Proximity to Amenities	1	1	1	500m of 3no. of the following: Food, Cash, Outdoor Space, Leisure Facility, Community Facility, Pharmacy			◆
Total Transport Credits		12	3	5				
Total Addition to Overall Score (%)		10%	3%	4%				

Credit	Credit Name	Available	Baseline	Potential	Credit Requirements / Assumptions	VoG	Morgan Sindall	Site
Water (Credit Value 0.88%)								
Wat 01	Water Consumption (M)	5	2	3	Low water use sanitary fittings. Rainwater harvesting not assumed		◆	
Wat 02	Water Monitoring (M)	1	1	1	Sub meter areas of building that consume >10% of water		◆	
Wat 03	Leak Detection System	1	1	1	Provide leak detection on incoming water supply to building		◆	
	Flow Control Devices	1	1	1	Specify solenoid valves to toilet areas.		◆	
Total Water Credits		8	5	6				
Total Addition to Overall Score (%)		7%	4%	5%				

Credit	Credit Name	Available	Baseline	Potential	Credit Requirements / Assumptions	VoG	Morgan Sindall	Site
Materials (Credit Value 1.07%)								
Mat 01	LCA - Superstructure (Concept Design)	4	4	4	HLM Green Build have evaluated the environmental impact of superstructure building options at RIBA Stage 2	◆		
	LCA - Superstructure (Technical Design)	2	2	2	Evaluate environmental impact of superstructure building options		◆	
	LCA - Substructure & Hard Landscaping	1	1	1	HLM Green Build evaluated the environmental impact of sub-structure & hard landscaping building options at RIBA Stage 2	◆		
Mat 02	Environmental Product Declarations	1	0	0	Procure materials that are EPD certified			
Mat 03	Enabling Sustainable Procurement (M)	1	1	1	Morgan Sindall operate a Sustainable Procurement Policy		◆	
	Measuring Responsible Sourcing	3	1	1	Procure materials that are ISO 14001/BES 6001/CARES certified		◆	
Mat 05	Designing for Durability and Resilience	1	1	1	Evaluate building components for robustness & durability		◆	
Mat 06	Material Efficiency	1	0	0	Continually evaluate design opportunities to minimise waste			
Total Materials Credits		14	10	10				
Total Addition to Overall Score (%)		15%	11%	11%				

Credit	Credit Name	Available	Baseline	Potential	Credit Requirements / Assumptions	VoG	Morgan Sindall	Site
Waste (Credit Value 0.67%)								
Wst 01	Construction Resource Efficiency	3	1	1	Restrict construction waste to less than 13.3m3/100m2 GIFA		◆	
	Diversion of Resources from Landfill	1	1	1	Divert 70% of construction waste from landfill		◆	
Wst 02	Recycled & Sustainably Sourced Aggregates	1	0	0	Specify recycled & responsibly sourced aggregate		◆	
Wst 03	Operational Waste (M)	1	1	1	Provide sufficient space for a dedicated recycling area	◆	◆	
Wst 05	Adaptation to Climate Change	1	1	1	Evaluate the design strategy against future climatic scenarios		◆	
Wst 06	Design for Disassembly & Adaptability	2	2	2	Design & delivery building for adaptability & disassembly		◆	
Total Waste Credits		9	6	6				
Total Addition to Overall Score (%)		6%	4%	4%				

Credit	Credit Name	Available	Baseline	Potential	Credit Requirements / Assumptions	VoG	Morgan Sindall	Site
Landuse & Ecology (Credit Value 1%)								
LE 01	Previously Occupied Land	1	1	1	Site is an school sports pitch which is classified as previously occupied land.			◆
	Contaminated Land	1	0	0	The site is not considered to be contaminated			◆
LE 02	Survey & Evaluation	1	1	1	Identify and understand the ecological risks and opportunities associated with the site to inform the determination of the strategic outcome for the site	◆	◆	
	Determining Ecological Outcomes	1	1	1			◆	
LE 03	Planning, Liaison, Implementation & Data	1	1	1	Recognition of steps taken to avoid impacts on existing site ecology as far as possible		◆	
	Managing Negative Impacts of the Project	2	2	2			◆	
LE 04	Liaison, Implementation & Data Collection	1	1	1	Recognition of steps taken to enhance site ecology. Opportunity to enhance ecological value of wider site		◆	
	Enhancement of Ecology	3	0	1			◆	
LE 05	Long Term Ecological Management	2	2	2	Encourage long term maintenance and management of ecology on site		◆	
Total Land Use & Ecology Credits		13	9	10				
Total Addition to Overall Score (%)		13%	9%	10%				

Credit	Credit Name	Available	Baseline	Potential	Credit Requirements / Assumptions	VoG	Morgan Sindall	Site
Pollution (Credit Value 0.67%)								
Pol 01	Impact of Refrigerants	2	1	1	Design building to minimise the use of refrigerants		◆	
	Leak Detection	1	0	0	Specify a leak detection system on all refrigerants			
Pol 02	Local Air Quality	2	2	2	Specify low NOx space heating (<24mg/kWh) and hot water (<40mg/kWh) systems, i.e. ASHP/Electric Systems		◆	
Pol 03	Flood Resilience	2	1	1	NRW Flood Risk Map suggested that western extent of the site is considered to be at risk of flooding			◆
	Surface Water Run Off - Rate	1	1	1	Attenuate surface water run to ensure rate and volume of water is no greater than existing site - including an allowance for climate change		◆	
	Surface Water Run Off - Volume	1	1	1			◆	
	Minimising Watercourse Pollution	1	1	1	Restrict and filter first 5mm of run off to reduce impact to local water courses		◆	
Pol 04	Reduction of Night Time Light Pollution	1	1	1	Design lighting to avoid or reduce impact of night time light pollution		◆	
Pol 05	Reduction of Noise Pollution	1	1	1	Avoid or reduce the impact of external noise from the building		◆	
Total Pollution Credits		12	9	9				
Total Addition to Overall Score (%)		8%	6%	6%				

Exemplary Credits (Credit Value 1%)								
Credit	Credit Name	Available	Baseline	Potential	Credit Requirements / Assumptions	VoG	Morgan Sindall	Site
Man 03	Responsible Construction Management	1	0	0	Implement all best practice construction management processes			
Hea 01	Daylighting	1	0	0	Achieve enhanced daylight levels in all occupied spaces			
Hea 02	Emissions from Construction Products	1	0	0	Specify low VOC fittings & furnishings			
Hea 06	Security	1	0	0	Project is evaluated and independently certified against SABRE			
Ene 01	Beyond Zero Net Regulated Carbon	2	2	2	Building is net zero carbon, i.e. building is passive and all regulated & unregulated emissions are off set through renewables		◆	
	Carbon Negative	1	1	1			◆	
	Post Occupancy Stage	2	2	2	Client to evaluate the energy performance of building post occupation	◆		
Wat 01	Water Consumption	1	0	0	Specification of low use sanitary fittings plus greywater/rainwater harvesting systems			
Mat 01	LCA - Core Building Services (Concept Design)	1	0	0	Evaluate environmental impact of building services design options at RIBA Stage 2			
	LCA and LCC Alignment	1	0	0	Evaluate and report on environmental impact and Life Cycle Cost of all design options		◆	
	LCA - Third Party Verification	1	0	0	Undertake third party verification of LCA work			
Mat 03	Responsible Sourcing of Construction Products	1	0	0	Procure 100% of materials that are BES 6001 certified			
Wst 01	Construction Resource Efficiency	1	0	0	Restrict construction waste to less than 1.6m3/100m2 GIFA			
Wst 02	Recycled & Sustainably Sourced Aggregates	1	0	0	Specify recycled & responsibly sourced aggregate			
Wst 05	Adaptation to Climate Change	1	0	0	Achieve 6 credits under Ene 01, Passive Design, 3 credits under Wat 01, Mat 05, and 3 credits under Pol 03			
LE 02	Determining Ecological Outcomes	1	0	0	Achieve compliance with wider ecological credits, i.e. Hea 07, Pol 03 (including Minimising Water Course Pollution), and Pol 05			
		18	5	5				
		1%	5%	5%				