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Feasibility Study
BREEAM 2014
Refurbishment & Fit Out
KOKO

Document information

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Executive Summary
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Introduction

Eight Associates have been appointed, as registered BREEAM assessors, to carry out a credit review of the proposed refurbishment of KOKO, in the London Borough of Camden. The version of BREEAM that would be applicable to this section of the development is BREEAM Refurbishment and Fit-Out 2014 (Non-Domestic Buildings). This document has been prepared based on information provided by the design team in April and March 2017.

Score summary

Following a detailed review of every BREEAM credit, the maximum available score for this part of the development is 46.81%, which equates to a GOOD rating (45% required as minimum).

A further 8.19% would be required to achieve a Very Good rating and an additional 24.19% would be required to achieve an Excellent rating.

In addition, please note that Eight Associates recommend a safety margin of 3-5% is maintained to ensure the desired rating is secure through to practical completion.

Justification/analysis

It is highly unlikely the current scope of works for the refurbishment would be able to achieve a Very Good rating. Of the four parts of BREEAM Refurbishment and Fit-Out only parts one (fabric and structure) and two (core building services) are applicable. As the scope of works includes replacement and refurbishment of some of the windows, and no other major changes to the building's fabric or structure, there is limited potential to score credits under part one of the assessment.

The project is also unable to achieve the majority of materials credits (see page 12 for further details). At present there is limited life cycle assessment and responsible sourcing data available for core building services (including heat sources, communication and security systems, fire and lighting protection, lift installations, water and waste installations and sanitary installations). Typically, developments can offset against this by ensuring fabric, structural and fit-out elements are highly rated in terms of their environmental impacts and responsible sourcing.

In the case of this refurbishment there are an insufficient number of new materials being specified that are capable of achieving certification under BREEAM recognised life cycle assessment and responsible sourcing schemes.

Furthermore, there are a limited number of credits available under the Health and Wellbeing, Energy and Pollution sections.

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BREEAM Introduction
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The BREEAM Standard

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building's environmental performance.

Building projects are assessed at design and post-construction stages using a system of environmental issues grouped within the following categories:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use & Ecology
- Pollution
- Innovation

The assessment of the building results in a final report and issuing of a BRE Global BREEAM certificate detailing the performance of the assessed building against the environmental issues covered by the standard. The building's performance is expressed as a BREEAM rating of PASS, GOOD, VERY GOOD, EXCELLENT or OUTSTANDING.

BREEAM is developed, operated and maintained by BRE Global Ltd and the operation and direction of the method is overseen by an independent Sustainability Board, representing a wide cross-section of construction industry stakeholders. Further information about BREEAM, including copies of the BREEAM standards, can be found at www.breeam.org.

Aims of BREEAM

- To mitigate the impacts of buildings on the environment
- To enable buildings to be recognised according to their environmental benefits
- To provide a credible, environmental label for buildings
- To stimulate demand for sustainable buildings

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Process of the assessment

BREEAM Refurbishment and Fit-out 2014 is a performance based assessment method and certification scheme for existing building refurbishment and fit-out projects. The primary aim of BREEAM Refurbishment and Fit-out 2014 is to promote the delivery of sustainable refurbishment and fit-out, in order to mitigate the life cycle impacts of existing buildings on the environment in a robust and cost effective manner.

The scheme intends to measure, evaluate, and reflect the performance of refurbishment or fit-out projects against best practice in an independent and robust manner.

All BREEAM assessments take place over two phases:

a. **Design Stage Assessment:** This is based on the final design for the development and the intentions of the design team.
b. **Post Construction Review:** This is based on the completed development and requires the BREEAM assessor to carry out a site inspection.

Following completion of the Design Stage Assessment the BRE will issue an interim certificate; final certification is awarded following the completion of the Post Construction Review.

For projects with a short or programme it is also possible to complete a Post Construction Assessment (PCA), whereby the design and post-construction stages are combined; interim certificates are unavailable for Post Construction Assessments.

BREEAM Refurbishment and Fit-Out provides a modular framework for projects. The scheme is split into the following parts, which are selected according to the scope of works. Each part defines a set of individual measures and associated criteria against which a project is assessed.

- Part 1: Fabric and Structure.
- Part 2: Core Services.
- Part 3: Local Services.
- Part 4: Interior Design.

This approach provides the scheme's users with a flexible means of measuring the environmental performance of their building and comparing it with other buildings across the property market, backed with the assurance that independent third party certification of the assessment process provides.

A project can choose which parts they wish to gain certification against and the certificate will clearly highlight the parts that the project have been assessed under.

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Ratings

The assessment process results in a rating on a scale of PASS, GOOD, VERY GOOD, EXCELLENT and OUTSTANDING. The rating bands for each are as follows:

Rating	%
Pass (P)	30%
Good (G)	45%
Very Good (VG)	55%
Excellent (E)	70%
Outstanding (O)	85%

Mandatory credits

Some credits within the above categories are mandatory to achieve certain ratings:

BREEAM Issue	P	G	VG	E	O
Man 03: Responsible Construction Practices	-	-	-	1 credit	2 credits
Man 04: Commissioning and Handover	-	-	-	Criterion 9[1]	Criterion 9[1]
Man 05: Aftercare	-	-	-	1 credit[2]	1 credit[2]
Ene 01: Reduction of CO_2 emissions	-	-	-	6 credits	10 credits
Ene 02: Energy Monitoring	-	-	1 credit[3]	1 credit[3]	1 credit[3]
Wat 01: Water Consumption	-	1 credit[4]	1 credit[4]	1 credit[4]	2 credits[4]
Wat 02: Water Monitoring	-	Criterion 1[5]	Criterion 1[5]	Criterion 1[5]	Criterion 1[5]
Mat 03: Responsible Sourcing	Criterion 1[6]	Criterion 1[6]	Criterion 1[6]	Criterion 1[6]	Criterion 1[6]
Wst 01: Construction Waste Management	-	-	-	-	1 credit
Wst 03: Operational Waste	-	-	-	1 credit	1 credit

[1] Building User Guide
[2] Seasonal commissioning (only applicable to assessment parts 2 and 3)
[3] Only applicable to assessment parts 2, 3 and 4)
[4] Where applicable (if water consuming equipment or plant is included)
[5] Mains water meter specified (only applicable to assessment part 2)
[6] All timber and timber-based products to comply the UK Government's definition of 'legally harvested and traded'

Please note that full details for each credit follow later in this document.

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Score Breakdown
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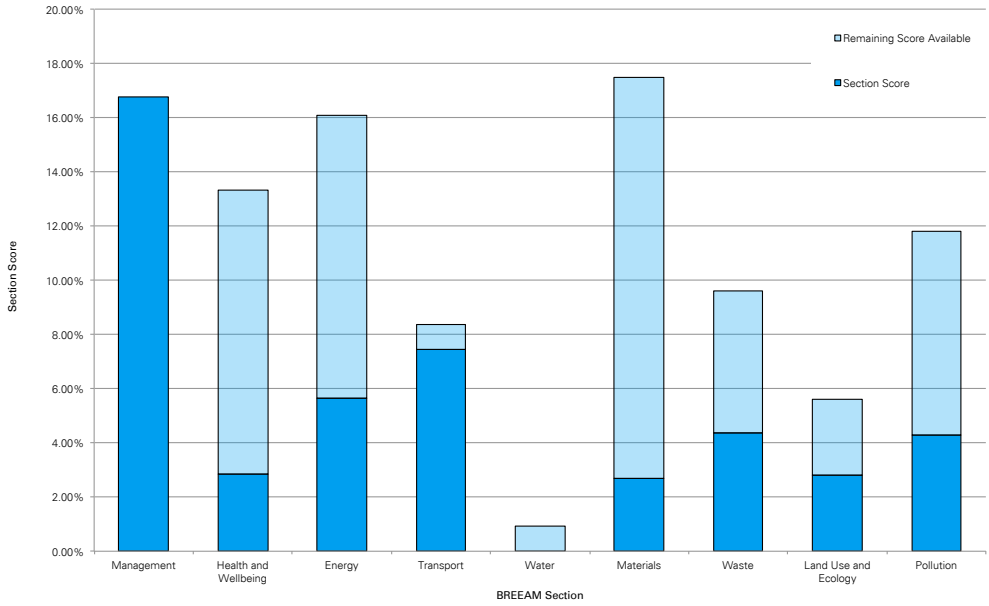
Rating summary

The following table summarises the maximum possible score that could be achieved under each section of BREEAM. At least an additional 8.19% is required to achieve the minimum score for a Very Good rating (55%). Having reviewed each applicable credit issue (see following pages) there are no further credits that could be achieved by the development.

Credit Issue	Targeted Credits	Available Credits	% Achieved	Weighting	Score
Management	21	21	100.00%	16.77%	16.77%
Health and Wellbeing	3	14	21.43%	13.34%	2.85%
Energy	7	20	35.00%	16.09%	5.63%
Transport	8	9	88.89%	8.38%	7.44%
Water	0	1	0.00%	0.93%	0.00%
Materials	2	13	15.38%	17.47%	2.68%
Waste	5	11	45.45%	9.61%	4.36%
Land Use and Ecology	1	2	50.00%	5.59%	2.79%
Pollution	4	11	36.36%	11.82%	4.29%
Innovation	0	10	0.00%	10.00%	0.00%
				Total	**46.81%**
					GOOD

Graphical breakdown of credits awarded

The graph below shows the maximum available score under each section of BREEAM (light blue) and the maximum possible score that the development could achieve (dark blue).



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Applicable Assessment Parts

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Parts assessed

Part 1: ✓
Part 2: ✓
Part 3: ✗
Part 4: ✗

Part 1: Fabric and Structure (included in assessment)
The developer has indicated that at least 50% of windows will be replaced, refurbished and/or upgraded; Part 1 is therefore applicable.

Part 2: Core Services (included in assessment)
A Part 2 assessment is appropriate as the developer has indicated that **at least two** of the following are being installed or upgraded to a level that requires compliance with the Building Regulations Compliance Guide:

- Central air handling unit
- Heating boiler
- More than 50% of heat distribution chiller plant
- More than 50% of chiller distribution
- Water services (sanitary fittings in core)
- Building management system
- Community heating system (e.g. CCHP)
- Low and zero carbon technologies.

Part 3: Local Services (not included in assessment)
Part 3 is not applicable as the following fixed local building services are not being installed or upgraded (e.g. a replacement or new installation of local heating/cooling units):

- Replacement of more than 50% of light fittings, system and controls
- Upgrade of zone controls
- Local ventilation
- Local heating units (including sources not connected to core services)
- Local cooling units (including sources not connected to core services)
- Point of use water heaters.

Part 4: Interior Design (not included in assessment)
Part 4 is not applicable, as the refurbishment does not include any major changes to the layout or redecoration.

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Credit Review
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The following credit review identifies all the credit issues that would be applicable to this part of the project, should a full BREEAM Refurbishments and Fit-Out assessment be completed. The review outlines which credits the scheme could achieve; where credits are unachievable a justification is provided explaining why this is the case.

BREEAM Issue		Credit details and justification of applicability	Credits
Man 01: Project brief and design	✓	**Stakeholder consultation (project delivery)** The design team has confirmed that prior to completion of RIBA Stage 2 (Concept Design) the project team have met to identify and define their roles and responsibilities, as well as contributions for each key phase of the project. During this stage the team produced a clear sustainability brief outlining the sustainability objectives for the project, the timescales and budget, specific client requirements, potential constraints, and any professional appointments that may be required.	1
	✓	**Stakeholder consultation (third party)** The design team has confirm that prior to completion of RIBA Stage 2 (Concept Design), all relevant third party stakeholders (e.g. local residents, businesses, existing partnerships and networks that may have knowledge of similar buildings, potential users of any shared facilities, and/or intended building users) will be consulted and it will be demonstrated that the outcomes of the consultation exercise have influenced the initial project brief and concept design.	1
	✓	**Sustainability champion** Although a BREEAM AP has not currently been appointed for this element of the scheme such an appointment is feasible for the project; two credits are therefore achievable for this assessment issue.	2
Man 02: Life cycle cost and service life planning	✓	**Elemental life cycle cost** Elemental life cycle cost analysis is not currently included within the developer's scope of works; however, this report could be commissioned, if required, by the end of RIBA Stage 2.	2
	✓	**Component level life cycle cost plan** Production of a component level life cycle cost plan is not currently included within the developer's scope of works; however, this report could be commissioning, if, required, by the end of RIBA Stage 4.	1
	✓	**Capital cost reporting** It would be feasible to report the capital cost of the refurbishment in pounds per square meter.	1

Man 03: Responsible construction practices	✓	**Environmental management** The design team have confirmed they will appoint a principal contractor who operates an Environmental Management System, certified under ISO14001/ EMAS or an equivalent standard, covering their main operations.	1
	✓	**Sustainability champion** Although not currently appointed for this element of the scheme it would be feasible to appoint a BREEAM AP for the construction stage of the project.	1
	✓	**Considerate Constructors** The design team has confirmed that the contractor will be required to register the scheme under the Considerate Constructors Scheme (CCS) and will be committed to achieve at least 35 points, with a minimum of 7 points in each section.	2
	✓	**Monitoring of site impacts** The design team has confirmed that the contractor will be required to monitor energy and water consumption data in addition to transport data for deliveries of all materials to site and removal of waste from site.	2
Man 04: Commissioning and handover	✓	**Commissioning** The design team has confirmed that a member of the design team will be appointed to monitor commissioning in line with best practice (CIBSE, BSRIA and Building Regulations), with a specialist commissioning agent appointed for any complex systems.	2
	✓	**Testing of building fabric** Although not currently within the developer's scope of works it would be feasible to commission a thermographic survey to examine the integrity of the building fabric. It should, however, be noted that such a survey would be of limited use as the proposals only include refurbishment of some of the windows, there are therefore few opportunities to improve the thermal performance of the building.	1
	✓	**Handover** The production of a non-technical building user guide in line with the BREEAM requirements is feasible. In addition, the design team has confirmed that a training schedule will be prepared for building occupiers / facilities managers to aid handover.	1

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Man 05: Aftercare	✓	**Aftercare support** The design team has confirmed that there will be resources in place to provide aftercare support to the building occupier in line with the BREEAM requirements.	1
	✓	**Seasonal commissioning** Although not currently within the developer's scope of works, seasonal commissioning could be included in the project programme.	1
	✓	**Post occupancy evaluation** Although not currently within the developer's scope of works, the client could commit to undertake a post occupancy evaluation exercise one year after initial building occupation.	1
Hea 01: Visual comfort	✗	**Daylighting** It is unlikely the refurbishment would result in a sufficient improvement in daylight levels to result in any credits being awarded for this issue.	0
	✗	**View out** As the refurbishment will not result in a change of layout or addition of any new windows the credit for view out is not achievable for the project.	0
Hea 02: Indoor air quality	✓	**Indoor air quality** Although not currently within the developer's scope of works a BREEAM-compliant indoor air quality plan could be commissioned.	1
	✗	**Ventilation** Although the scheme will comply with the BREEAM requirement for supply of fresh air, given the building's location air intakes and extracts will not be able to be located at least 10 metre apart and at least 20 metres from sources of external pollution.	0
	✗	**Potential for natural ventilation** It is not possible to provide fresh air entirely via a natural ventilation strategy.	0
Hea 03: Safe containment in laboratories	✗	Assessment issue not applicable to building type.	n/a

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Hea 04: Thermal comfort	✓	**Thermal modelling** Although not currently planned for this part of the scheme it would be possible to complete thermal comfort modelling in line with the BREEAM requirements. It should, however, be noted that such modelling would be of limited value as the developer is not proposing any changes that would have a major impact on summer or winter operative ranges.	1
	✗	**Adaptation for a projected climate change scenario** No changes are proposed that would have a significant impact on the building's ability to comply with the thermal comfort criteria for the projected climate change scenario.	0
	✗	**Thermal zoning and controls** The current scope of works does not include provision for BREEAM-compliant thermal zoning and controls.	0
Hea 05: Acoustic performance	✗	No works are planned that would have an impact on the acoustic performance of the building.	0
Hea 06: Safety and security	✓	Although a BREEAM-compliant Security Needs Assessment has not currently been completed, it is feasible that this report could be commissioned for the project prior to completion of RIBA Stage 2.	1
Ene 01: Reduction of energy use and carbon	✓	Although limited upgrades are being made to the building's fabric; upgrades to the lighting and building services should be sufficient to ensure the building's Energy Performance Ratio (for non-domestic refurbishment) is equal to or greater than 0.30.	5
Ene 02: Energy monitoring	✓	Although not currently within the developer's scope of works BREEAM-compliant pulsed sub-meters could be installed allowing occupants to monitor the energy of all systems and function areas.	2
Ene 03: External lighting	✗	Assessment issue not applicable to building type.	n/a
Ene 04: Low carbon design	✗	**Passive design analysis** No passive design measures are currently proposed.	0
	✗	**Free cooling** No free cooling strategies are currently proposed.	0
	✗	**Low and zero carbon technologies** The building's listed status means it is unlikely any on-site low or zero carbon technologies will be permitted.	0
Ene 05: Energy efficient cold storage	✗	Assessment issue not applicable to building type.	n/a
Ene 06: Energy efficient transportation systems	✗	Assessment issue not applicable to building type.	n/a

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Ene 07: Energy efficient laboratory systems	✗	Assessment issue not applicable to building type.	n/a
Ene 08: Energy efficient equipment	✗	Assessment issue not applicable to building type.	n/a
Ene 09: Drying space	✗	Assessment issue not applicable to building type.	n/a
Tra 01: Sustainable transport solutions	✓	Given the building's location maximum credits would be achievable for this issue.	5
Tra 02: Proximity to amenities	✓	Given the building's location maximum credits would be achievable for this issue.	1
Tra 03: Cyclist facilities	✓	Cycle storage BREEAM-compliant cycle storage is currently proposed.	1
	✗	Cyclist facilities No cyclist facilities (showers, changing areas, lockers and/or drying space) are included within the developer's scope of works.	0
Tra 04: Maximum car parking capacity	✗	Assessment issue not applicable to building type.	n/a
Tra 05: Travel plan	✓	The design team has confirmed that a travel plan will be produced.	1
Wat 01: Water consumption	✗	Assessment issue not applicable to building type (no water consuming equipment or appliances to be installed).	n/a
Wat 02: Water monitoring	✗	Assessment issue not applicable to building type.	n/a
Wat 03: Leak detection	✗	This credit is not achievable as no new water meters or monitoring equipment will be installed for this part of the development.	0
Wat 04: Water efficient equipment	✗	Assessment issue not applicable to building type.	n/a
Mat 01: Environmental impact of materials	✗	Limited life cycle assessment data is currently available for building services; it is therefore unlikely the project would achieve any credits for this issue.	0
Mat 03: Responsible sourcing of materials	✓	Sustainable procurement plan Although not currently a requirement, it is feasible that the main contractor could operate a BREEAM-compliant sustainable procurement plan.	1
	✗	Responsible sourcing of materials Limited responsible sourcing information is currently available for building services; it is therefore unlikely the project would achieve any credits for this issue.	0
Mat 04: Insulation	✓	Although no building fabric insulation is being installed, it is feasible that all new building services insulation could achieve a Green Guide rating of A+.	1

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Mat 05: Designing for durability and resilience	✗	This credit is unachievable as no internal (installation of hard-wearing floor and wall finishes) or external (installation of bollards or raised curbs) durability measures are included within the scope of works.	0
Mat 06: Material efficiency	✗	This credit is unachievable as there are limited opportunities within the developer's scope of works to implement material efficiency measures.	
Wst 01: Construction waste management	✓	**Pre-refurbishment audit** A pre-refurbishment waste audit could be undertaken of all existing buildings, structures and hard surfaces within the scope of the scheme to establish which materials can be reused or recycled where possible, in line with BREEAM requirements	1
	✗	**Reuse and direct recycling of materials** There will be limited opportunities for the reuse of waste material (on or off site). It is unlikely any waste will be generated that can be sent back to the manufacturer for closed loop recycling.	0
	✓	**Resource efficiency** A resource management plan will be provided covering the waste arising from the refurbishment, with the aim of minimising waste, recording construction waste streams and reporting accurate data on waste arisings.	1
	✓	**Diversion of waste from landfill** It is likely that at least 85% (by volume) or 90% (tonnage of non-hazardous construction waste generated will be diverted from landfill.	1
Wst 02: Recycled aggregates	✗	There will be limited opportunity to use recycled, secondary aggregates on this part of the project.	0
Wst 03: Operation waste	✓	The design team has confirmed that a dedicated recyclable waste storage area will be provided for the scheme. The space will be clearly labelled and accessible.	1
Wst 04: Speculative finishes	✗	Assessment issue not applicable to building type.	n/a
Wst 05: Adaptation to climate change	✓	Although limited in scope a climate change adaptation and resilience strategy could be commissioned; this is not currently within the developer's scope of works.	1
Wst 06: Functional adaptability	✗	As a purpose-built performance venue there will be few (if any) functional adaptation measures that can be implemented to accommodate future changes of use over the building's lifespan.	0

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Le 01: Site selection	✗	Assessment issue not applicable to building type.	n/a
Le 02: Protection of ecological features	✓	There are no features of ecological value to protect on site; this credit can be awarded by default.	1
Le 03: Minimising impact on existing ecology	✗	Assessment issue not applicable to building type.	n/a
Le 04: Ecological enhancement	✗	There is limited available space for incorporation of measures to improve the site's ecological value.	0
Le 05: Long term impact on biodiversity	✗	Assessment issue not applicable to building type.	n/a
Pol 01: Impacts of refrigerants	✓	**Impact of refrigerants** The design team has indicated that systems using refrigerants will have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_{2e}) of ≤ 1000 $kgCO_{2e}$ per kW cooling/heating capacity.	1
	✗	**Leak detection** The design team has indicated that it will not be possible to install a BREEAM-compliant refrigerant leak detection system.	0
Pol 02: NO_X emissions	✗	The design team has indicated that the credits for NO_X emissions are not achievable.	0
Pol 03: Flood risk and reducing surface water run-off	✓	**Flood risk management** A site-specific Flood Risk Assessment will be undertaken for the site and it is expected to confirm that the site is in a low flood risk area.	2
	✓	**Surface water run-off** There will be no increase in impermeable surfaces as a result of the refurbishment works; the first credit is therefore achievable. There is insufficient space to include the necessary attenuation to reduce the development's run-off; the second credit is therefore unachievable.	1
	✗	**Minimising watercourse pollution** There is insufficient space to include the necessary attenuation to ensure there is no discharge from the site for rainfall depths of up to 5mm.	0
Pol 04: Reduction of night-time light pollution	✗	Assessment issue not applicable to building type.	n/a
Pol 05: Noise attenuation	✗	Assessment issue not applicable to building type.	n/a

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Conclusion
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Conclusion

The project is unable to achieve many of the credits available under part one of BREEAM 2014 Refurbishment and Fit-Out. These credits are linked to upgrades to the building's fabric and structure, and as the current proposals only include replacement of some windows (on a like for like basis) there is limited potential for targeting these credits.

Furthermore, the majority of the credits under the materials section are unattainable. At present there is limited life cycle assessment and responsible sourcing data available for building services (including heat sources, communication and security systems, fire and lightning protection, lift installations, water and waste installations and sanitary installations). Typically, developments can offset against this by ensuring fabric, structural and fit-out elements are highly rated in terms of their environmental impacts and responsible sourcing.

In the case of this refurbishment there are an insufficient number of new materials being specified that are capable of achieving certification under BREEAM recognised life cycle assessment and responsible sourcing schemes.

The project's maximum score is also restricted by restrictions on the use of on-site renewable technologies and limited potential for improving the building's thermal performance, acoustics and daylight provision.