University College School, Hampstead

Sustainability Statement

Planning Submission

30th April 2024

MAX FORDHA

MAX FORDHAM

Max Fordham LLP
42/43 Gloucester Crescent
London
NW1 7PE

T 020 7267 5161

maxfordham.com

ISSUE HISTORY

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MAX FORDHAM LLP TEAM CONTRIBUTORS

Engineer (Initials)	Role
MF	Sustainability Consultant
JH	Sustainability Consultant

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1.0 EXECUTIVE SUMMARY

This statement summarises how the proposed University College School development fulfils the sustainability requirements set out in the GLA London Plan and London Borough of Camden Local Plan. It describes the key design aspects and strategies that would be adopted during the construction and operational phases of the development.

The project is the partial demolition of the existing Giles Slaughter wing, retaining some of the structural elements, and the erection of a new 2-storey building in its' place, a one-storey extension, re-provision of tennis courts on the roof, external plant equipment and enclosures, external landscaping works.

1.1 Planning Requirements

A summary of the following key sustainability policies is provided in *APPENDIX I Overview of Applicable Policies & Requirement*. The proposed development adheres to these policies as outlined in Section 3 of this statement:

- National Planning Policy Framework (2021)
- GLA London Plan (2021)
- The Sustainable Design and Construction SPG (2014)
- Camden Local Plan 2017 and CPG documents
- Energy efficiency and adaptation CPG (2021)

Due to the scale of the development, the scheme is not GLA referable. However, an agreement has been made with the Camden Council that the development will submit a Circular Economy Statement as part of the application.

1.2 Development Options

Please refer to CE Assessment for Existing Buildings for Demolition report for detailed analysis on development options.

There has been a thorough optioneering process in regard to how much of the existing structure on site can be retained. From this process, it has been decided to partially retain the Giles Slaughter Wing, with removal of the Fives Building and Maintenance Hut. The latter were assessed to be at the end of their useful life. The Fives Building has not been used for its' as-built purpose for some time, is of poor construction and is not readily adaptable. The Maintenance Hut is a simple building used solely for storage, and its' key location in the south-east corner of the site adds great benefit to the new development, so it is proposed to remove this. There is a consideration to donate the shed if this is feasible.

For the redevelopment optioneering process, the following five option were considered:

1. Full demolition
2. Partial retention of GS Wing, GS Wing retaining wall, Fives and Maintenance Hut
3. Partial retention of GS Wing, full demolition of all else inc retaining wall
4. Partial retention of GS Wing and retaining wall, full demolition of all else
5. Full retention of ground rc slab, foundations and part retaining wall

Option 4 was chosen and The Giles Slaughter Wing will be partially retained, in that the ground reinforced concrete slab, foundations and 50% of the East retaining wall will be retained.

The reasoning behind this was that the existing building has a wide number of issues, namely in the waterproofing of the building fabric and the existing air conditioning strategy. In addition, the building as it stands is not adaptable to deliver the requirements set in the project brief. The Applicant team therefore concluded retention of the entire building was not practical and considered the alternative approach. Of partial demolition and partial retention.

1.3 Energy Strategy

In response to The London Plan Policy SI2 'Minimising Greenhouse Gas Emissions' and Camden's Energy Efficiency:

The energy strategy for the project has been developed following the London Plan, and the GLA guidance on energy strategies. The development is aligned with the Mayor's net zero carbon target. The Energy and Overheating statement provided as part of this application details the various strategies proposed for the development.

- At the **'Be Lean'** stage the proposed development achieves a **9% reduction** below the baseline. This is below the expected 15% improvement required at this stage.
- **'Be Clean'** stage is not targeted as there is no connection to a district heating system, with on-site heating generation proposed.
- The **'Be Green'** strategy achieves a total carbon emissions reduction of **18%.** This is below the expected 20% improvement required at this stage.
- The be green reductions were achieved using ASHPs, on-site PV panels as well as implementation of off-site PV Panels outside of the red line boundary, on the Modern Languages Building.
- The **total cumulative carbon emissions reduction** amount to **27%**.
- This is below the GLA's 35% reduction requirement for new developments but the GLA Energy Assessment Guidance updates – Part L 2021 (15 June 2022) acknowledge that achieving the on-site carbon reduction may vary for different types of development.

1.4 Sustainability Strategies

Resilience / Climate Change Risk Adaptation
In Response to London Plan Policy GC6 'Increasing Efficiency and Resilience' and SI4 'Managing Heat Risk' and Policy SI13 'Sustainable Drainage' as well as Camden Core strategy Policy CC2 Adapting to climate change:

The cooling hierarchy has been applied to minimise overheating risk, with the following strategies applied:

- Openable windows are provided, to allow **passive ventilation** in classrooms.
- **Active cooling** is provided in certain spaces deemed necessary due to acoustic constraints. (This will be provided through the use of highly efficient Mechanically Ventilated Heat Recovery units and AHUs)
- Strategic **solar shading** in the form of a horizontal overhang, providing solar gain protection on the exposed West façade is also provided.

Other strategies such as:

- **Sustainable drainage systems** to mitigate risk from surface water flooding and;
- **Drought-tolerant planting** to minimise water stress will also be implemented.

Health and Wellbeing
In response to London Plan Policy SI1 'Improving Air Quality', Camden Local Plan Policy CC4 Air Quality and Camden CPG Air Quality Jan 2021, Policy A4 Noise and Vibration:

Both noise and air pollution impact assessments have been undertaken for the proposed development with mitigation measures specified as required. Results show that:

- Plant noise meets the required criteria for daytime, however the ASHPs will need to be reduced by 6dB to meet the night time criteria
- Activity noise meets the required criteria for daytime
- The Air Quality Assessment shows the site meets the WHO guideline limits for nitrogen dioxide (40µg/m^3), PM10 (20µg/m^3)

A daylight assessment has also been carried out and show that:

- The required daylighting (sDA) of 200 lux for over 50% of occupied hours is achieved in all classrooms with 100% of occupied hours meeting the threshold

The BREEAM Hea06 security credit is being targeted so that the school is safe for occupants.

Nature, Landscape and Biodiversity
In response to London Plan Policy G1 'Green Infrastructure', Policy G4 'Open Space', Policy G5 'Urban Greening', Policy G6 'Biodiversity and access to nature', Policy G7 'Trees', Camden Local Plan Policy A3 Biodiversity, and CPG Biodiversity March 2018

The proposal involves the redevelopment of external areas around the school. Biodiversity and ecology benefits of this have been carefully considered and encouraged. The redevelopment will lead to a:

- Biodiversity Net Gain (BNG) of 41% for Habitat Units and 91% for Hedgerow Units (43% total) and;
- Urban Greening Factor or 0.3

Water and Surface Water Run-off
In response to London Plan Policy SI5 'Water Infrastructure', Camden Local Plan Policy CC1 Climate change mitigation, Policy SI13 'Sustainable Drainage' and Camden Local Plan Policy CC3 Water and flooding:

The development is targeting a 40% reduction over the BREEAM notional baseline in mains water consumption through the use of low-flow rate sanitaryware.

The 'Drainage Hierarchy' has been applied and a number of SuDS features are proposed including blue-green roofs, tank storage and permeable/porous paving. The surface water will be gradually discharged to the local sewer network improving against the existing situation. This aligns with planning policy and helps to reduce the risk of flooding downstream. A Flood Risk Assessment and SuDS report is provided as part of the application.

Whole Lifecycle Carbon
In response to London Plan Policy SI2 'Minimising Greenhouse Gas Emissions' and In response to CPG Energy Efficiency and Adaptation January 2021 and Camden Local Plan Policy CC1 Climate change mitigation,

WLC carbon modelling has been carried following the methods set out in RICS Whole Life Carbon Assessment for The Built Environment and using the One Click LCA Software. The results of this and strategies to reduce Whole Lifecycle carbon are detailed in the *Whole Lifecycle carbon and Circular Economy Statement.*

When comparing to RIBA and LETI benchmarks, the following categories are excluded: non-fixed FF&E, external works outside the building footprint, and renewable electricity generation.

	Upfront Carbon A1-A5 ($kgCO_2e/m^2$)
LETI 2030 design target	<300
GLA WLC Benchmark	<750
University College School *(excl. Ext Works/FF&E)*	**795**
University College School *(all elements)*	**1012**

	Embodied Carbon A1-C4 ($kgCO_2e/m^2$)
RIBA 2030 design target	<540
GLA WLC Benchmark	<1000
University College School *(excl. Ext Works/FF&E)*	**1070**
University College School *(all elements)*	**1270**

Materials, Circular Economy, and Waste
In response to London Plan Policy SI7 - Reducing Waste and Supporting the Circular Economy and Camden Local Plan Policy CC5 Waste

The development required to meet the GLA targets. This includes meeting the London Plan requirements to:

- Divert a minimum of 95% (either by volume or tonnage) of all construction and excavation waste from landfill
- Include at least 20% recycled content in building materials

Estimated demolition waste is 1,255 tonnes of which the project will aim to recycle, and or reuse, 95% of this waste stream.

The proposed development is targeting between 15-20% by weight of demolished and strip-out materials to be reused either on-site and/or off-site.

The London Plan requires schemes to meet a minimum target of 20% recycled or reused content, by value of a scheme. This will be a challenging target to meet for a steel framed, precast hollow core slab scheme. However, the project aspiration is to review inclusion of some aspects of the element specification.

Please refer to the J7271 UCS P200 - Whole Life Carbon and Circular Economy Statement for more detail on the Circular Economy Strategy.

BREEAM
The project is aiming for a BREEAM Excellent rating, using the New Construction 2018 assessment. This is being achieved with the following:

- Target score of 77%
- Potential score of 89.9%.
- 60% of Energy
- 60% Water credits
- 40% of Material credits

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2.0 INTRODUCTION

2.1 Development Summary

The description of the development is as follows and Planning Permission is sought for the following:

The project is the partial demolition of the existing Giles Slaughter wing, retaining some of the structural elements, and the erection of a new 2-storey building in its' place, a one-storey extension, re-provision of tennis courts on the roof, external plant equipment and enclosures, external landscaping works.

Figure 1 - Drawing of the proposal (Ed Toovey Architects)

2.2 Site Location

The current site consists of the Giles Slaughter Wing, Fives building, two outdoor tennis courts, and grounds located on the University College School Campus in Hampstead, London Borough of Camden.

The site is located on the East side of the campus, set back from the road and backs onto residential area.

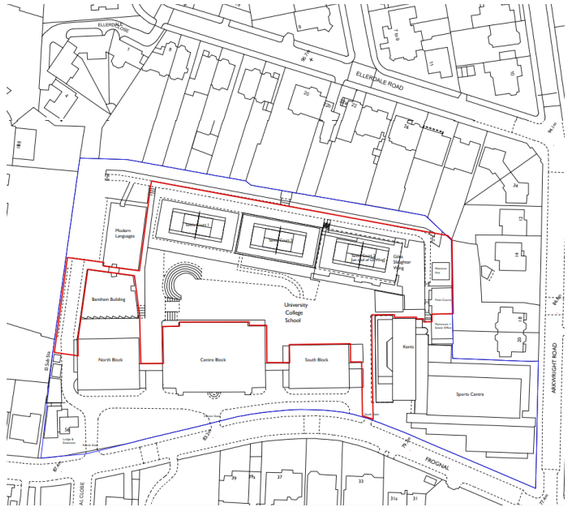

Figure 2 - Site Map

2.3 Sustainability Targets

The development team aspires to meet the ambitious sustainability targets for the development and in doing so deliver an exemplar building for sustainable design.

The scheme aims to become certified and achieve:

- BREEAM Excellent

The development is also committed to minimising Carbon emissions. This will be delivered through:

- Optimising design to minimise embodied carbon.
- Reduce heating and cooling consumption through passive design measures.
- Reducing operational carbon with efficient systems.
- Implement low and zero carbon technology.
- Maximise use of renewables.
- Focus on performance in use.

3.0 RESPONSE TO SUSTAINABILITY POLICY

3.1 Energy and As Built Performance

Principles of sustainable design and construction have been adopted into the design in line with the London Plan Policy SI2 'Minimising Greenhouse Gas Emissions' and Camden's Energy Efficiency and Adaptation Supplementary Planning Guidance January 2021.

Please refer to the Energy and Overheating Statement J7271-MXF-XX-XX-RP-J-51000 P02 for more information on the Energy strategy.

Energy Demand Reduction - Be Lean

Massing and Orientation
Classrooms are provided with optimised glazing to benefit from natural daylight whilst controlling unwanted solar gains. Classroom floorplates have good clear ceiling heights, floor to floor of 3.48m, and are relatively clear of structure. Shading will be provided through a covered walkway on the South-west facing side of the classroom block.

Building Fabric
Best practice levels of insulation and airtightness are proposed for the development. New construction fabric performance shall improve beyond the current Building Regulation notional specification.

Envelope Performance Parameters	Proposed UCS Specification	Notional Building Specification
Thermal Transmittance U-values in W/(m².K):		
Flat Roofs	0.09	0.15
External walls (solid wall construction)	0.15	0.18
External walls (opaque elements of curtain walls system)	-	0.18
Party walls	-	1.80
Floor	0.11	0.15
Windows and transparent curtain walling (whole window, i.e. inc. frames)	0.90	1.6
Horizontal roof windows and glazed roof-lights (whole window, i.e. including frames)	-	2.2
Glazed doors (inc. frames)	-	1.6
Opaque doors	1.2	2.20
Semi-glazed doors	-	1.6
Vehicle access and similar large doors	-	1.3
High-usage entrance doors	-	3
Glazing Solar and Optical Properties:		
g-value	0.34	n/a
Light transmittance	0.65	n/a
Airtightness:		
Air permeability (m³/(h.m²) at 50 Pa)	2.0	8.0
Thermal bridging:		
Alpha value (%)	25.03% of U-value equivalent	n/a

Table 1 - Building fabric performance

Design of Windows and Openings
Windows and openings have been designed to maximise natural daylight and views, whilst controlling unwanted solar gains. The various façade orientations and window designs on the building have been developed to respond well to different sun angles, mitigating unwanted solar gains and promote good daylight and natural ventilation (where specified). Louvred vents have been incorporated to allow background minimum ventilation levels and secure night cooling.

Figure 3 - Window design; openable and maximising daylighting

Passive Cooling
The UCS building has been reviewed in accordance with the GLA cooling hierarchy in order to reduce the demand for cooling. The following measures are proposed:

	Cooling Hierarchy	Steps taken
1	Reduce the amount of heat entering the building through orientation, shading, high albedo materials, fenestration, insulation, and the provision of green infrastructure	The external façade form and windows placement is designed to provide external shading using horizontal overhangs to the west façade. High performance solar controlled glass is proposed to help manage solar gains. Green roof area provided to limit conductive heat gains through the fabric.

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2	Minimise internal heat generation through energy efficient design	High efficacy lighting to reduce associated waste heat. Heating distribution pipework is insulted, and main distribution routes / voids are indirectly ventilated. Major plant rooms are located in south and north parts of the building limiting unwanted internal heat gain contribution to occupied spaces. Efficient IT and AV equipment will minimise additional gains.
3	Manage the heat within the building through exposed internal thermal mass and high ceilings	High thermal mass at the Classrooms and the Common Room with natural night cooling and automatic controls based on internal and external temperatures.
4	Passive ventilation	An overheating study has been carried out to test the natural ventilation potential using the CIBSE TM52 overheating criteria. The finding show that this can be satisfied in the following rooms: - Classrooms and common room - Consultation room (west) - Meeting room (west) - Wellbeing director office - PSHE office - Counsellor study office - Staff office (2p.) - Staff office (1p.) - Rest room (west) Openable windows are provided in the façade to allow for passive ventilation/mixed mode operation in the cafeteria and the drama studio (20p.). Natural ventilation is limited by acoustic constraints at the rest of the spaces.
5	Mechanical ventilation	Spaces have mechanical ventilation with variable heat recovery system for summer mode operation. This will allow the system to make use of 'free cooling' where the outside temperature is below that in the building during summer months.
6	Provide active cooling	Active cooling is proposed for certain South-facing and high-density rooms, as well as spaces where acoustic constraints make it impractical to implement natural ventilation and cooling. Generation is provided using reversible heat pumps with buffer vessels, offering high seasonal energy efficiency ratios (exceeding the NCM notional building values).

Table 2 – Summary of Steps Following Cooling Hierarchy

This ensures the building is future-proofed and therefore durable. The analysis of the upgrade path is currently in progress, but we anticipate that the building will need background cooling to remain comfortable in this possible future climate. The heating systems and distribution routes will be designed to facilitate this without requiring wholesale replacement.

Energy Demand Reduction: Energy Efficient Services
Space heating and cooling to the building is provided by reversible 2-pipe air source heat pumps delivering low temperature and chilled water to meet building demands. The heat pump system includes buffer vessels for thermal storage and to improve the longevity and efficiency of the heat pumps.

Mechanical ventilation with heat recovery is provided to all fresh air mechanical ventilation in order to minimise ventilation heat loss whilst ensuring sufficient fresh air rates. During warmer weather, natural ventilation in a number of spaces allows management of internal temperatures and comfort.

Efficient lighting controls have been provided to spaces to reduce lighting consumption:

- Offices/Classrooms: Absence control and occupancy switching, with automatic daylight dimming control
- Cafeteria: Manual with absence detection and dimming
- Lecture theatre/Recital Room: Manual
- Plantroom/Stores: Manual with absence detection
- Foyer: Manual
- WCs / Prep & Servery: Presence detection
- Circulation: Presence detection

Connected heat, electrical and water meters will monitor energy use to allow the building occupants to understand and monitor where energy is being used and to aid the implementation of measures to reduce energy usage. Major plant shall be monitored and alarmed should they be operating outside of range.

Heating Infrastructure - Be Clean
A review has been completed for district heating networks in the vicinity of the site, either existing or planned in the future.

As there is no current or planned site wide heat network in the vicinity of the site the development is then expected to provide a communal heat network allowing for a safeguarded single point of connection to the site.

The building will be heated by air source heat pumps (ASHPs), serving fan-assisted radiators (in classrooms and offices) and warm air via air handling units (in music, drama, and lecture spaces).

The heat pumps are tucked between the building and retaining wall, where noise emissions can be easily controlled to avoid disturbing the school and its neighbours.

Renewable Energy - Be Green
Consideration of Low and Zero Carbon Technologies
A review of the low and zero carbon technologies has been undertaken and concludes that the most appropriate options are the use of air source heat pump for heating and cooling, and on site solar photovoltaic electrical generation. Details of this review can be found in the Energy and Overheating Statement.

There is limited opportunity given all the competing demands for roof space on this project. However, an array of vertically-mounted PVs is proposed at the top of the retaining wall. The PVs face slightly South of due West. Their output will be approximately 75% of that of optimally-orientated roof-top PV. These PVs are expected to generate 5.4 MWh/year.

Off-site Renewable Energy
As the proposal does not meet London Plan requirements for on-site renewable energy generation, some PVs are to be provided on the UCS site, outside the red line boundary. This will be approximately 48m^2 of PV on the Modern Languages Building rooftop, oriented South with a 10^o inclination. An estimation of 6.5 MWh/year generated from the PVs has been calculated.

GLA London Plan Energy Hierarchy
The GLA energy assessment uses the London Plan 2021 new SAP10.2 carbon factors.

- At the **'Be Lean'** stage the proposed development achieves a **9% reduction** below the baseline. This is below the expected 15% improvement required at this stage.
- **'Be Clean'** stage is not targeted as there is no connection to a district heating system, with on-site heating generation proposed.
- The **'Be Green'** strategy achieves a total carbon emissions reduction of **18%.** This is below the expected 20% improvement required at this stage.
- The be green reductions were achieved using ASHPs, on-site PV panels as well as implementation of off-site PV Panels outside of the red line boundary, on the Modern Languages Building.
- The **total cumulative carbon emissions reduction** amount to **27%**.
- This is below the GLA's 35% reduction requirement for new developments but the GLA Energy Assessment Guidance updates – Part L 2021 (15 June 2022) acknowledge that achieving the on-site carbon reduction may vary for different types of development.

Applying London Plan policy
As outlined in the GLA Energy Assessment Guidance updates - Part L 2021 (15 June 2022), the application of the new Part L 2021 means achieving on-site carbon reduction vary for different development types:

- Initially, the proposed development may find it more challenging to achieve significant on-site carbon reductions beyond Part L 2021 to meet both the energy efficiency target and the minimum 35% improvement. **The proposed development achieves a 12% improvement.**

3.2 Resilience / Climate Change Risk Adaptations

In Response to London Plan Policy GC6 'Increasing Efficiency and Resilience' and SI4 'Managing Heat Risk' and Policy SI13 'Sustainable Drainage' as well as Camden Core strategy Policy CC2 Adapting to climate change

Reducing and Managing Overheating Risk
Potential overheating risk has been identified early in the design process and suitable passive measures have been incorporated within the building envelope and services design to mitigate overheating and reduce cooling demand.

An overheating risk analysis was also carried out following CIBSE TM52 methodology and criteria for the proposed development.

The dynamic simulation overheating analysis was carried out using the IES VE 2023 modelling software. The GLA Energy Assessment Guidance states that both domestic and non-domestic developments should be assessed using the DSY1 (Design Summer Year) 2020 High emissions, 50% scenario weather file.

The results of the analysis show that all residential units and affordable workspace pass the overheating assessment through natural ventilation for the DSY1 weather file. Please see the J7271 UCS P200 - Energy and Overheating Statement for more detail.

Flood Risk
A Flood Risk Assessment (FRA) and Sustainable Drainage Systems (SuDS) report is provided as part of the planning application and has been prepare in consultation with Thames Water.

The Flood Risk Assessment (FRA) demonstrates that the proposed development complies with the NPPF and local planning policy with respect to flood risk and as such is an appropriate development at this location. According to the Environment Agency (EA)'s Flood Map for Planning, the site falls within Flood Zone 1 (low probability) and the risk of flooring from rivers and the sea is therefore low. The proposed development classification is proposed to be compatible. The below map shows the potential for surface water flooding, which was assessed to have the highest risk for the site.

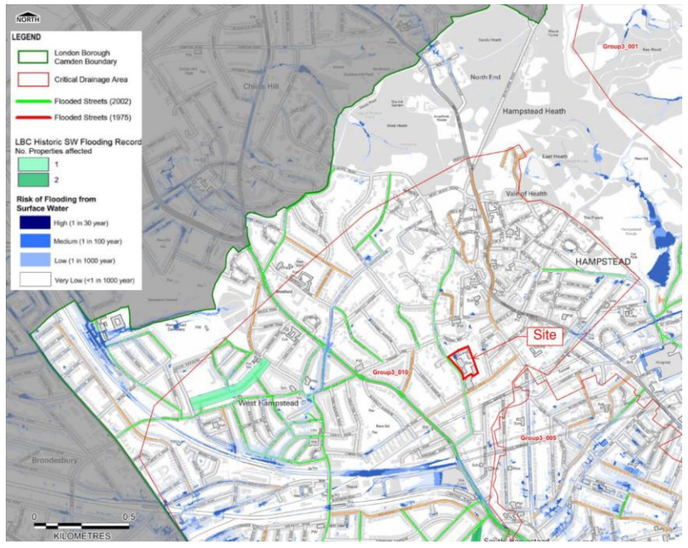

Figure 4 - Surface Water Flooding Risk Map

As the site is located on a hill, the likelihood of extreme flooding is assessed to be low. Flood mitigation measures will be proposed through the use of SuDS including underground attenuation tanks and a maintenance strategy.

With the proposed measures in place, the risk of flooding from all sources is reduced. Surface water runoff assessment have determined that rates have improve over the existing condition.

Adapting to Climate Change
Additional climate change adaptation measures have been included in the development scheme including:

- Incorporating bio-diverse roofs
- Combination green and blue roofs
- Intensive planting
- Permeable surface
- Openable windows to allow mixed mode options in the office in the future

Impact on microclimate
The construction of the proposed development is for the similar scale to the existing buildings and will therefore have minimal variation on the local microclimate.

3.3 Health and Wellbeing

Air quality
In response to London Plan Policy SI1 'Improving Air Quality', Camden Local Plan Policy CC4 Air Quality and Camden CPG Air Quality Jan 2021

The Air Quality Assessment (AQA) has been carried out and this demonstrated that air quality neutral will be achieved.

It was also concluded that the closest and most representative monitoring locations monitored NO2, PM10 and PM2.5 annual mean concentrations which were well below their annual mean objective in 2022. Therefore, world Health Organisation guideline limits for nitrogen dioxide (40µg/m3), PM10 (20µg/m3) and M2.5 (10µg/m3) annual mean concentrations have been met.

The proposed development is considered air quality neutral in relation to the proposed transport emissions.

All heating and hot water will be provided using Air Source Heat Pumps (ASHP). As such, the air quality neutral assessment for building emissions has not been undertaken as no gas will be utilised on site.

A construction and demolition risk assessment of dust levels associated with the proposed development has been carried out. The impact of dust soiling and PM10 can be reduced to negligible through appropriate litigation measures. Details of these measures and the full assessment can be found in the Air Quality Assessment.

Noise
In response to Camden Local Plan Policy A4 Noise and Vibration

Please see the 'Noise Impact Assessment' for further details. The findings are summarised below.

External and internal plant noise will be controlled so as to not impact on the local area and building occupants. An initial survey of existing noise levels has been carried out in order to establish a baseline. From these results, a Noise Impact Assessment of external plant noise and activity noise from the recital room was carried out. For the assessment of plant noise, the daytime noise level was assessed to be 30dB, and the night-time 32dB. This means that the proposals meet the necessary criteria for daytime, but the two ASHPs will need to be reduced by a minimum of 6dB for night-time use to meet the criteria.

For the assessment of activity noise, the daytime noise level was assessed to be 30dB. This means that the proposals meet the necessary criteria.

Internal plant noise will be controlled through attenuation at inlets and outlets, with duct velocities to be specified as set out in the Acoustic Report.

Daylight and Sunlight
The proposed development is withing the profile and massing of the existing building so will result in no greater impact than is already deemed acceptable.

Spatial Daylight Autonomy simulations were carried out for the classroom spaces. The occupied hours were taken to be 0800-1600. The results of the assessment conformed that all classroom spaces achieve 200 lux for the required minimum of 50% of occupied hours with all 12 classrooms achieving the required 200 lux for 100% of occupied hours.

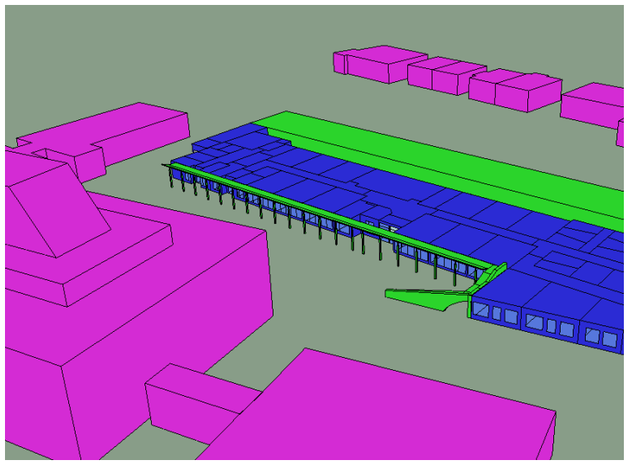

Figure 5 - Daylight Model

Security
The BREEAM credit Hea06 Security is being targeted for the development. For this a Security Needs Assessment has been carried out. Two 'reasonable worst case' threats were identified;

- Novice attackers with no tools
- Experienced forced entry using manual attack

Recommendations for security measures have been made based on these potential threats. The security requirements for University College School development are:

- To provide security features that support the marketing and operation of the development through meeting or exceeding likely guest requirements.
- To provide security that is visible and reassuring without being imposing.

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- To provide a safe and secure environment for staff, guests, and assets so that the security risk to them is 'as low as reasonably practicable based on 'reasonable worst-case' security threats.
- To facilitate the management as a controlled environment, with only authorised people being granted access beyond semi-public areas.
- To provide the above against the following Design Basis Threat:
    - Multiple experienced aggressors
    - Concealable hand tools

The development is designed to accommodate these recommendations so that the school will be a safe place for occupants.

3.4 Nature, Landscape and Biodiversity

In response to London Plan Policy G1 'Green Infrastructure', Policy G4 'Open Space', Policy G5 'Urban Greening', Policy G6 'Biodiversity and access to nature', Policy G7 'Trees', Camden Local Plan Policy A3 Biodiversity, and CPG Biodiversity March 2018

Green Infrastructure
The development proposed a sustainable landscape scheme for a new school building. The scheme's green infrastructure includes:

- Over 400m^2 of biodiverse roof planting.
- A green wall system.
- Flower rich perennial planting.
- Climbing plants to create shade for the users of the building and privacy for its neighbours.
- A robust drought tolerant planting pallet
- Retention of existing trees and planting of new trees.

All of the urban greening and green infrastructure demonstrated in Figure 6 amounts to an Urban Greening Factor of 0.3.

Ecology and Biodiversity
A preliminary ecological appraisal was undertaken to assess the ecological value of the site. It was found that the site supports the following habitat areas:

- Line of trees
- Native hedgerow
- Scattered trees
- Standing water

These habitats will all be considered in the landscape design and specification for the development, following the ecological mitigation hierarchy with an aim to create no net loss.

The appraisal identified a number of protected and/or notable species likely to be impacted by the proposed development. In particular, a bat roost assessment and habitat suitability index assessment for greater crested newts were recommended.

A Bat Roost Assessment has been undertaken on the site. This found that only the Main School Building has high potential to support roosting. The buildings proposed to be demolished in this application have negligible potential, so a further assessment is not required. However, recommendations made should be considered in the design of green infrastructure and external lighting.

An assessment of the proposed landscape and ecological enhancements has calculated that the proposed development is likely to lead to a biodiversity net gain (BNG) of 0.76 biodiversity units total (0.66 BU – habitats and 0.10 BU Hedgerows), provided that these habitats are created, managed, and maintained appropriately. This constitutes a Biodiversity Net Gain percentage of 43%, which exceeds the 10% BNG advocated by the Environmental Act 2021.

3.5 Water and Surface Water Run-off

Water strategy
In response to London Plan Policy SI5 'Water Infrastructure', Camden Local Plan Policy CC1 Climate change mitigation, Policy CC3 Water and flooding and Camden CPG Energy Efficiency and Adaptation January 2021

The proposed scheme will strip back and reuse the existing clean water supply to the Giles Slaughter Wing. As there are no showers, commercial kitchens, or other high water consumption facilities included in the development, the existing water supply does not need to be enhanced

To minimise water usage in the development, low flow rate sanitaryware is to be specified. A target of a 40% reduction over the BREEAM notional baseline performance has been set.

Planting and Irrigation
All of the proposed planting across the development will be specified to be drought tolerant. The biodiverse roofs will be designed to live without irrigation and would only require watering for repair or under extreme heat and dry spell circumstances.

Sustainable Urban Drainage
In response to London Plan Policy SI13 'Sustainable Drainage' and Camden Local Plan Policy CC3 Water and flooding

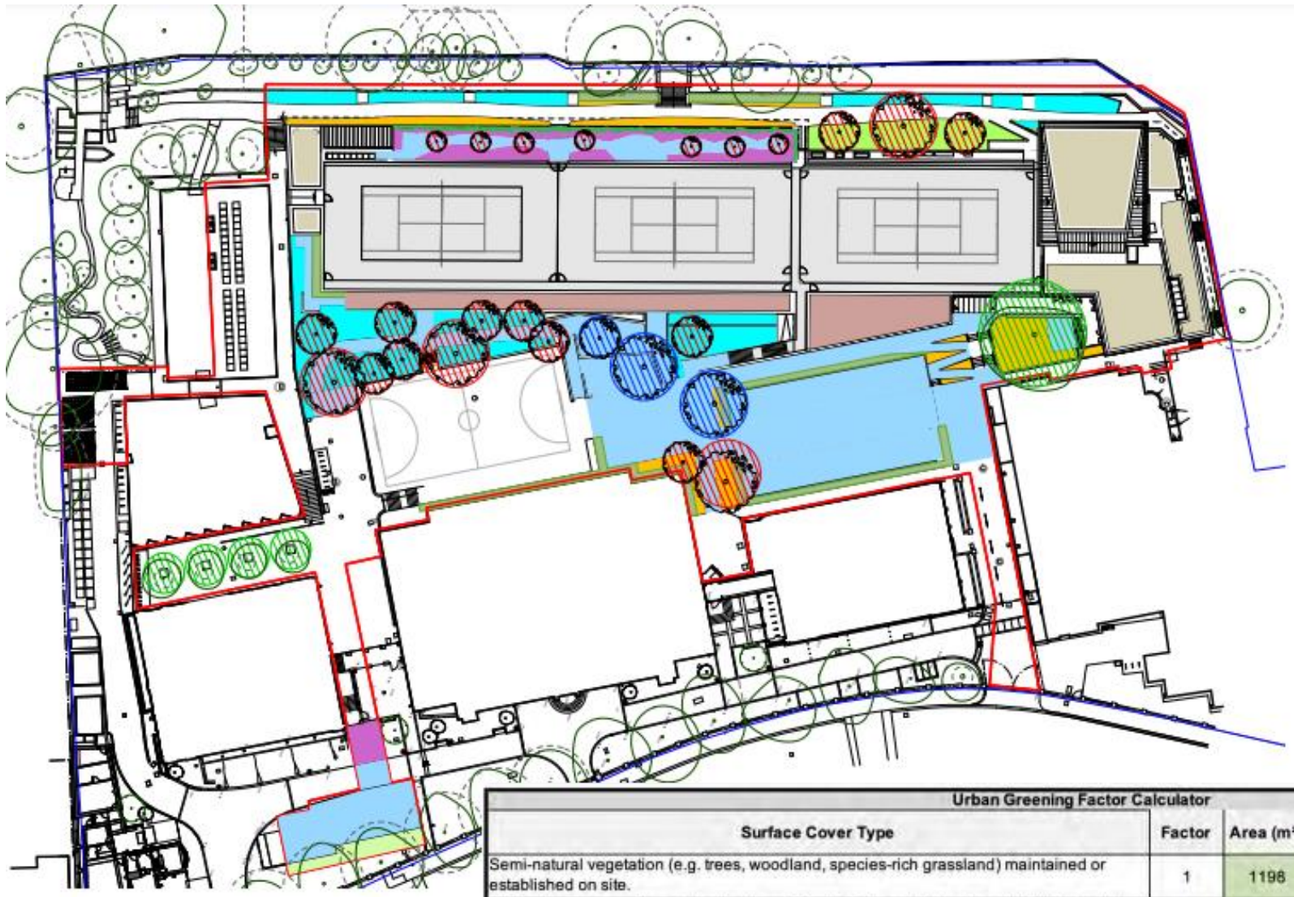
A Flood Risk Assessment (FRA) and Sustainable Drainage Systems (SuDS) report is provided as part of the planning application and has been prepared in consultation with Thames Water, please refer to this document for more detail.

The proposals are for the SuDS measures to be used can be seen below:

SuDS Method	Area Used on-site	Comment
Green roof	470.0 m^2	No storage considered
Detention Basin	57.4 m^2	With overflow connection to the wider system
Rain Garden	N/A	Area included in semi-natural vegetation area
Permeable Paving	480.5 m^2	N/A
Attenuation tank	480.5 m^2	Outflow restricted to 2.5 l/s for the 1 in 2-year RP and 9.3 l/s for the 1 in 100-year RP plus 40% CC

Table 3 - SuDS Measures

All run-off from the site is routed to a form of sustainable drainage.



Urban Greening Factor Calculator

Surface Cover Type	Factor	Area (m²)	Contribution	Notes
Semi-natural vegetation (e.g. trees, woodland, species-rich grassland) maintained or established on site.	1	1198	1198	Includes ex tree canopies, heath planting to south and scrub planting to north & intensive roof areas (planted with heath species)
Wetland or open water (semi-natural; not chlorinated) maintained or established on site.	1	0	0	
Intensive green roof or vegetation over structure. Substrate minimum settled depth of 150mm.	0,8	0	0	
Standard trees planted in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree.	0,8	651	520,8	
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) – meets the requirements of GRO Code 2014.	0,7	419	293,3	
Flower-rich perennial planting.	0,7	211	147,7	
Rain gardens and other vegetated sustainable drainage elements.	0,7	0	0	Included in semi-natural heath planting
Hedges (line of mature shrubs one or two shrubs wide).	0,6	183	109,8	
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	0,6	185	111	
Green wall –modular system or climbers rooted in soil.	0,6	296	177,6	
Groundcover planting.	0,5	181	90,5	
Amenity grassland (species-poor, regularly mown lawn).	0,4	44	17,6	
Extensive green roof of sedum mat or other lightweight systems that do not meet GRO Code 2014.	0,3		0	
Water features (chlorinated) or unplanted detention basins.	0,2		0	
Permeable paving.	0,1	1548	154,8	
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone).	0		0	
Total contribution			**2821,1**	
Total site area (m²)			9231	
Urban Greening Factor			**0,305611526**	

A — Green wall measurement adjusted — 10/12/23
ISSUE — REASON FOR ISSUE — DATE

STATON COHEN
Landscape Architecture
The Studio, 34 Warwick Road, Barnet, EN5 5EH
www.statoncohen.com
office@statoncohen.com
0208 441 8629

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Figure 6 - Urban greening and green infrastructure landscape plans

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3.6 Whole Lifecycle Carbon

Reuse and optimising resource efficiency
In response to CPG Energy Efficiency and Adaptation January 2021 and Camden Local Plan Policy CC1 Climate change mitigation

The existing building on the site have undergone a detailed review to assess the potential to reuse the existing building and explore development options in order to provide a sustainable development. A variety of strategies to reduce the Carbon emissions for the scheme are to be implemented.

As part of the pre-application stages condition and feasibility studies have been carried out for all buildings in order to provide a transparent and holistic approach to assessing options. These studies are summarised in The Whole Life Carbon and Circular Economy Report.

Whole Life Carbon (WLC) Modelling
In response to London Plan Policy SI2 'Minimising Greenhouse Gas Emissions'

WLC modelling has been carried following the methods set out in RICS Whole Life Carbon Assessment for The Built Environment and using the One Click LCA Software, by Max Fordham. The software tool makes use of several databases of materials, building products, Environmental Product Declarations (EPDs) and in-house environmental data. An allowance for a 10% design margin is included for future variation and additional items not yet included. Details of assumptions made for the modelling can be found in the Whole Life carbon and Circular Economy Statement.

The tables below illustrate the modelling results for the proposed building.

A Mat 01 Study is also being undertaken for the BREEAM assessment. The results from the optioneering required for this will be used to reduce the Embodied Carbon for the development as much as possible.

For more details on Whole Life Carbon at Mat 01 optioneering, please refer to The Whole Life Carbon and Circular Economy Statement.

Minimising Operational Carbon
Operational Carbon will be reduced through energy efficiency measures detailed in 1.1 Energy and As Built Performance. The need for mechanical cooling is reduced through the overheating measures taken, reducing operational energy and carbon further. Water efficiency measures taken will also contribute to this reduction.

Results
When comparing to RIBA and LETI benchmarks, the following categories are excluded: non-fixed FF&E, external works outside the building footprint, and renewable electricity generation.

3.7 Materials, Circular Economy, and Waste

Construction, demolition, and excavation waste
This development is non-referable; therefore a circular economy statement is not required, however Camden have requested a Circular Economy statement in the case of this development. The development is also required to meet the GLA targets. This includes meeting the London Plan requirements to:

- Divert a minimum of 95% (either by volume or tonnage) of all construction and excavation waste from landfill
- Include at least 20% recycled content in building materials

Additionally, the Principal contractor will be required to implement routes for Best practice recovery of waste streams. Key actions will include:

- Following the waste hierarchy and provide adequate space and facilities for efficient segregation and processing of waste streams.
- Minimisation of water and energy use during construction through management procedures and monitoring; and in-use through low carbon design and specification of energy and water efficient equipment

	Upfront Carbon A1-A5 ($kgCO_2e/m^2$)
LETI 2030 design target	<300
GLA WLC Benchmark Embodied Carbon A1-C4 ($kgCO_2e/m^2$)	
RIBA 2030 design target	<540
GLA WLC Benchmark	<1000
University College School *(all Ext Works, FF&E)*	**1002**
University College School *(all elements)*	**1270**

Material Selection and procurement
Commitments have been made to source materials responsibly and reduce embodied carbon impacts by specifying low carbon material options. The proposed approach is adopts a modular solution using Steel frame and pre-cast concrete planks; leading to reduction in on-site construction waste, construction related transport emissions and steel frames could be disassembled for reuse at end of life.

As part of design development, the project aims to:

- Reduce ceiling finishes through exposed ceiling
- Specify floor finishes such as carpets with higher recycled content and re-use floor boards from the existing building
- Options for higher recycled content aluminium frame for windows and glazing to be proposed by the main contractor

Circular Economy
In response to London Plan Policy SI7 - Reducing Waste and Supporting the Circular Economy and Camden Local Plan Policy CC5 Waste

A Circular Economy design tree has been followed to determine the approach for the development. Reuse of the retaining wall and RC slab forms part of the developing Circular Economy strategy for the development.

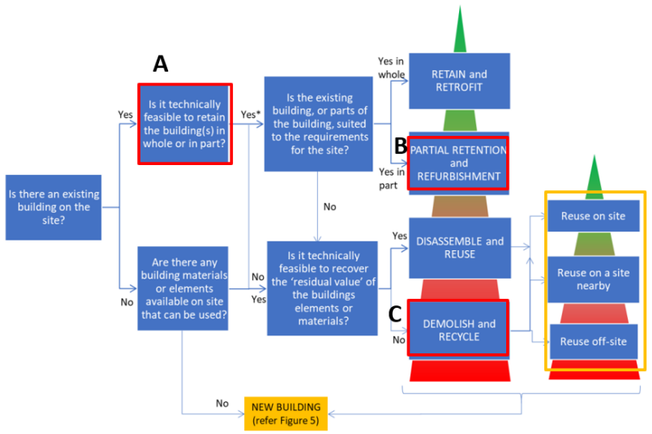

Figure 7 - Circular Economy Design Tree

A pre-demolition audit has been carried out on-site, and this has been used to inform the Circular Economy. A number of materials have been identified for potential re-use on site, and the possibility of re-use offsite or nearby for other materials is being explored.

Additionally, the new buildings are being designed with adaptability and flexibility in mind. Potential future extensions have been considered and where possible considerations have been made to allow this. The building will be designed in layers to allow future refurbishment if necessary. There are no internal load-bearing walls, allowing future adaptation of the interior space. Connections will be designed to be demountable where possible.

Materials and Resource conservation
In response to Camden's CPG 'Design' January 2021

The building is to be designed to be durable and resilient in order to ensure to maximise the building lifespan and reduce need for replacement. Doors with kickplates and robust materials will be specified in all areas. CCTV will be used to discourage any potential malicious damage to the building.

Environmental factors on building fabric degradation such as solar radiation and water ingress have also been considered. The proposed external finishes should be resistant to solar radiation, and the proposed SuDS strategy should mitigate risks of water damage to the building.

For more detail on Materials, Circular Economy and Waste, please refer to the Circular Economy statement.

3.8 BREEAM

Overview
Camden Local Plan requires new major developments to achieve BREEAM 'Excellent'. The project is aiming to achieve BREEAM 'Excellent' under BREEAM New Construction V6 2023.

The assessment is being undertaken by Eight Versa. Hero Bennet from Max Fordham LLP is the BREEAM AP for the development.

A BREEAM pre-assessment strategy for the project has been developed for the project achieving a targeted score of 77%. This equates to an 'Excellent' rating. Further potential credits have been identified. These could increase the score to 89.9%, equating to an Outstanding rating. The Design Team have been advised that all time the project should maintain a contingency to provide a healthy buffer as it moves through design and construction. All the minimum requirements are on track to be achieved.

For further information please refer to the University College School BREEAM Pre-assessment within *APPENDIX II BREEAM Pre-Assessment*.

The following sections outline key BREEAM criteria that are targeted by the design:

Management
To ensure the building's systems perform as they are intended, a thorough commissioning process will be followed by the design and construction team. This will ensure the building doesn't use more energy than predicted and deliver the desired occupant comfort levels.

The integrity of the building fabric will be quality assured through completion of post construction testing and inspection. This will include a thermographic survey as well as an airtightness test and inspection by a qualified professional. Any defects will be rectified prior to building handover/close out. A technical manual and Building User Guide will be provided on completion to ensure the facilities management and building occupiers are able to use the building correctly.

The contractor will be expected to exceed compliance with the Considerate Constructors Scheme in order to demonstrate that the construction site is managed in an environmentally and socially considerate, responsible and accountable manner. Similarly, construction site impacts will be monitored, for example, through the recording of energy, water and transport usage.

Health and Wellbeing
An Indoor Air Quality plan has been created with the objective of facilitating a process that leads to design, specification and installation decisions, and actions, which minimise indoor air pollution during occupation of the building. Additionally, low VOC finishes will be specified to ensure the risk of indoor toxins are minimised post construction.

To ensure a thermally comfortable environment for occupants, calculations are being undertaken so that the comfort criteria in CIBSE Guide A are met. The building design and services strategy will deliver the required thermal comfort levels in all occupied spaces.

The design team are targeting best practice levels of acoustic performance and sound insulation, particularly in the drama and music rehearsal spaces.

Energy
At least 60% of energy credits are targeted to be achieved.

To achieve a rating of BREEAM Excellent, it is important to achieve a good number of credits for reducing CO_2 emissions over the Part L Energy requirements. The design team is carrying out predictive energy modelling of the design, which includes the consideration of 'unregulated' energy loads. This level of modelling meets the mandatory requirements for BREEAM Excellent.

A combination of measures is being incorporated to ensure high levels of energy efficiency are met. These include passive design measures, energy high fabric energy performance, and a fully electric heating strategy. For full details, see the Energy and Overheating Statement.

Transport
A travel plan will be developed based on the transport assessment, including proposals for increasing and improving opportunities for use of sustainable transport measures on site. This will be measures such as electrical vehicle charging and public transport information systems.

Water
At least 60% of water credits are targeted to be achieved.

Sanitaryware will need to be specified to meet a 25% reduction in water consumption compared to a base building of the same type.

To encourage further reductions in water consumption, a water meter will be installed on the mains water supply and sub-meters fitted to water-consuming plant or building areas which consume 10% or more of the building's total water demand.

In addition, a leak detection system will be fitted to the mains water supply within the building and between the building and the utilities meter. Similarly, flow control devices will be fitted to each WC area to ensure water is only supplied when needed.

Materials
At least 40% of materials credits are targeted to be achieved.

Materials used within the main building elements will be sourced, wherever possible, to have a minimal environmental impact. This includes the walls, floors, roof, windows, floor finishes, insulation, and hard landscaping. A Life Cycle Assessment (LCA) study has been carried out at Concept Design and findings shared with the team to help inform the design. This assessment includes the core building services. A further analysis is to be carried at technical design stage.

Key building materials will be sourced based on industry-wide responsible sourcing standards, such as FSC, BES 6001 and ISO 14001. This will be facilitated through a responsible sourcing plan. The building will be designed with durability, resilience and efficiency in mind.

Waste
Procedures and commitments for minimising construction waste will be set by the contractor to ensure high levels of resource efficiency. Waste is to be diverted from landfill through employing methods such as: reusing materials on site, using reclaimed materials, returning waste to suppliers via 'take-back' schemes and using an approved waste management contractor to recover and recycle waste.

An appropriately sized space for the segregation and storage of operational recyclable waste is provided in the development. The space is accessible to building occupants for the deposit of materials and collections by waste

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management contractors. Recycling bins will be labelled, to assist with segregation, storage and collection of the relevant waste streams.

Land Use and Ecology
An ecologist has been appointed to ensure that the site manages to maximise the biodiverse potential for the development. Recommendations will be provided for protection of local flora during works as well as a habitat management plan.

Pollution
An effort is being made to only specify refrigerants which have low life cycle Global Warming Potential, thus reducing the level of greenhouse gas emissions arising from the leakage of refrigerants from building systems.

Surface water is proposed to be attenuated before leaving the site, aiming to minimise any stress placed on the local water system.

Finally, noise sources from the development must not exceed ambient noise level; with attenuation measures employed where this is not possible (See Acoustician's report).

3.9 Conclusion

In conclusion, the proposed University College School development fulfils the sustainability delivery requirements to achieve BREEAM Excellent as well as the minimum requirements of 60% Wat, 60% Ene and 40% Mat credits. The submission has demonstrated that the proposal complies with the NPPF, London Plan and Camden planning policy with respect to sustainable development at this location.

APPENDIX I OVERVIEW OF APPLICABLE POLICIES & REQUIREMENT

Introduction

The proposed development is submitted within the context of national, regional, and local planning policies that seek to address the challenges of climate change and sustainable development. The policies outline how the Government, the Mayor of London, and the London Borough of Islington are endeavouring to improve the way energy and other resources are used in London's building stock.

Policy Summary

- **Climate Change Act (2008):** 80% reduction in greenhouse gas (GHG) emissions compared to 1990 levels by 2050.
- **Current 2013 Part L of the Building Regulations for England & Wales:** Sets out maximum levels of CO_2 emissions by comparing the actual buildings, to a notional building.
- **Consideration of High-efficiency Alternative Systems**: Building Standards requires the technical, environmental, and economic feasibility of high-efficiency alternative systems such as renewables, cogeneration, district heating and heat pumps to be considered.
- **National Planning Policy Framework (2019):** Development to encourage sustainable modes of transport and use of technology; support transition to low carbon future, mitigating and adapt to climate change, including taking account of flood risk, water supply and biodiversity.
- **London Plan (2020):** Comes into force autumn 2019. The new energy hierarchy to be followed: be lean, be clean, be green and be seen, all developments to be zero carbon, offsetting can still be used, CHP strongly discouraged due to air quality and grid decarbonisation.
- **London Borough of Camden:**
    - Camden Local Plan (2017)
    - Camden Climate Action Plan 2020-25
    - Biodiversity CPG (2018)
    - Energy efficiency and adaptation CPG (2021)
- **London Air Quality Management Areas**: The development is located within one of London's Air Quality Management Areas (AQMA), and within an Air Quality Focus Area (Kilburn Regeneration Area).

The Climate Change Act (2008)

The Climate Change Act (2008) commits the UK to a reduction of greenhouse gas emissions (GHGs) by at least 80% by 2050 from 1990. The Act also requires annual emissions reduction targets are set. They restrict the amount of greenhouse gas the UK can legally emit in a five-year period. The UK is currently in the third carbon budget period (2018 to 2022). The 3rd Carbon budget (2018-22) is targeting a reduction of 37% by 2020 from the base year.

UK emissions were 41% below 1990 levels in 2016. The first carbon budget (2008 to 2012) was met, and the UK is currently on track to outperform on the second (2013 to 2017) and third (2018 to 2022). However, it is not on track to meet the fourth (2023 to 2027).

To meet future carbon budgets and the 80% target for 2050, the UK Government will need to apply more challenging measures. The construction and operation of UK buildings account for approximately 60% of national carbon dioxide emissions. Therefore, planning legislation seeks to mitigate the impact (in particular) of new construction in order to minimise these emissions and to meet the national targets.

National Planning Policy Framework (2019)

The National Planning Policy Framework (NPPF) sets out the governments planning policies on the delivery of sustainable development through the planning system and how these are expected to be applied. It provides a framework within which local people and their councils can produce their own local and neighbourhood plans, which reflect the needs and priorities of their communities.

9. Promoting Sustainable Transport: Developments to consider the environmental implications of traffic and mitigate the impacts. Air quality and public health can be improved through encouraging sustainable modes of transport and offering genuine choices.

14. Meeting the challenge of climate change, flooding, and coastal change: Planning system should support the transition to low carbon future in a changing climate, taking full account of long-term implications for flood risk, coastal change, water supply , biodiversity and landscapes, and risk of overheating from rising temperatures.

15. Conserving and enhancing the natural environment: Policies and decisions should contribute to enhance the natural and local environment.

The London Plan 2021

The London Plan 'Spatial Development Strategy for Greater London', published in March 2021, forms the statutory development plan for Greater London over the next 20-25 years. In it, the Mayor of London lays out the London-wide policy context within which London Boroughs should set their local planning policies.

All policies within the plan promote sustainable development, including mitigating and adapting to the impacts of climate change, as well as promoting health and equality within London. A number of policies directly related to energy use within buildings and energy generation, which form an integral part of the London Plan.

Policy GG6 'Increasing Efficiency and Resilience'
Help London become a more efficient and resilient city:

- Improve energy efficiency and support move toward a low carbon circular economy, contributing towards London becoming a zero-carbon city by 2050.
- Building and infrastructure are designed to adapt to a changing climate, making efficient use of water, reducing impacts from natural hazards like flooding and heatwaves, and avoiding contributing to the heat Island effect.

Policy S4 'Play and Informal Recreation
Development proposals are required to increase opportunities for play and information recreation and enable children and young people to be independently mobile.

For residential schemes at least $10m^2$ of playspace is required per child that:

- Provides a stimulating environment;
- Can be accessed safely from the street by children and young people independently;
- Forms an integral part of the surrounding neighbourhood;
- Incorporates trees and/or other forms of greenery;
- Is overlooked to enable passive surveillance; and
- Is not segregated by tenure.

Accessible routes to existing play provision, should and youth centres within the local area should also be incorporated where relevant.

Policy G1 'Green Infrastructure'
Development proposals should incorporate appropriate elements of green infrastructure that are integrated into London's wider green infrastructure network.

Policy G4 'Open Space'
Development proposals should not result in a loss of protected open space. Where possible, proposals should also create areas of publicly accessible open space, particularly in areas of deficiency.

Policy G5 'Urban Greening'
Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls, and nature-based sustainable drainage.

Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments… the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses).

Policy G6 Biodiversity and access to nature
Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process

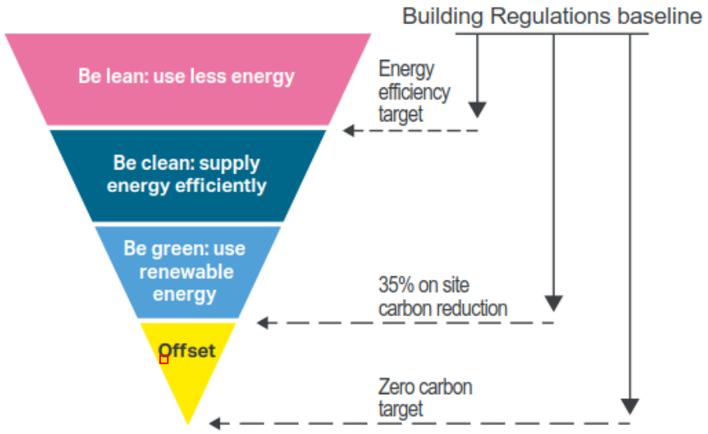
Policy G7 'Trees'
Development proposals should ensure that, wherever possible, existing trees of quality are retained. If it is imperative that trees have to be removed, there should be adequate replacement based on the existing value of the benefits of the trees removed. The planting of additional trees should generally be included in new developments – particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy.

Policy SI1 'Improving Air Quality'

- All major developments need to demonstrate that they will be at least air quality neutral.
- All energy proposals should have emissions lower than those generated by ultra-low NOx emission gas boilers.
- Developments in Air Quality Focus Areas (AQFA) will be under particular scrutiny.
- For major developments preliminary Air Quality Assessments (AQAs) should be carried out before designing the development to inform the design process.

Policy SI2 'Minimising Greenhouse Gas Emissions'
The existing requirements have been strengthened, and some aspirations of the previous plan have been clarified:

The New Energy Hierarchy:



Be Lean: Use less energy and manage demand during operation

Be Clean: Exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly

Be Green: Maximise opportunities for renewable energy by producing, storing, and using renewable energy onsite

Be Seen: Monitor, verify and report on energy performance

- Major developments to be net-zero carbon overall, although this can be achieved through off-site or offsetting payments.
- As with current London Plan at least a 35% reduction on building regulations must be achieved on site.
- For residential developments 10% of the reductions must be achieved through energy efficiency.
- For non-domestic 15% of reductions must be achieved through energy efficiency.
- Major development proposals should calculate and minimise carbon emissions of unregulated emissions.
- Development proposals referable to the Mayor should calculate whole lifecycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.
- All developments to demonstrate how the development will achieve net-zero carbon on-site by 2050.
- All major developments to monitor and report on their energy use for 5 years after completion. It has suggested that DECs might be used to do this (currently only required for public buildings).
- Gas-engine CHP will not be permissible in developments due to the new air quality standards and decarbonising electricity grid.
- The Mayor recognises that Building Regulations use outdated carbon emission factors and that this will continue to cause uncertainty until they are updated by Government. Further guidance on the use of appropriate emissions factors will be set out in the Mayor's Energy Planning Guidance to help provide certainty to developers on how these policies are implemented.
- Demand-side response, specifically through installation of smart meters, minimising peak energy demand and promoting short-term energy storage, as well as consideration of smart grids and local micro grids where feasible, required.

Policy SI3 'Energy Infrastructure'
Major development proposals within Heat Network Priority Areas should have a communal **low-temperature** heating system.

Requirement for an energy masterplan for large-scale developments (town centres and areas of multiple developments) which should consider:

1) major heat loads (including anchor heat loads, with particular reference to sites such as universities, hospitals, and social housing)
2) heat loads from existing buildings that can be connected to future phases of a heat network
3) major heat supply plant including possible opportunities to utilise heat from energy from waste plants
4) secondary heat sources
5) opportunities for low temperature heat networks
6) possible land for energy centres and/or energy storage
7) possible heating and cooling network routes
8) opportunities for futureproofing utility infrastructure networks to minimise the impact from road works
9) infrastructure and land requirements for electricity and gas supplies
10) Implementation options for delivering projects, considering issues of procurement, funding and risk, and the role of the public sector.
11) opportunities to maximise renewable electricity generation and incorporate demand-side response measures

The heat source for the communal heating system should be selected in accordance with the following **heating hierarchy:**

a) connect to local existing or planned heat networks
b) use available zero-emission or local secondary heat sources (in conjunction with heat pump, if required
c) Use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network).
d) Use ultra-low NOx gas boilers.

CHP and ultra-low NOx gas boiler communal or district heating systems to meet the requirements of policy SI1 (Air Quality).

Policy SI4 'Managing Heat Risk'
Show steps to minimise overheating and avoid active cooling:

1) minimise internal heat generation through energy efficient design
2) reduce the amount of heat entering a building through orientation, shading, albedo, fenestration, insulation and the provision of green roofs and walls
3) manage the heat within the building through exposed internal thermal mass and high ceilings
4) provide passive ventilation
5) provide mechanical ventilation
6) Provide active cooling systems.

Policy SI5 'Water Infrastructure'
In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner.

Minimise the use of mains water in line Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption).

Encourage to incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future proofing.

Policy SI7 'Reducing Waste and Supporting the Circular Economy'
Waste reduction, increases in material re-use and recycling and reductions in waste going for disposal will be achieved by:

1) Promoting a more circular economy that improves resources efficiency and innovation to keep products and materials at their highest use for as long as possible.
2) Encouraging waste minimisation and waste avoidance through the reuse of materials and using fewer resources in the production and distribution of products.
3) Ensuring that is zero biodegradable or recyclable waste to landfill by 2026.
4) Meeting or exceeding the recycling targets for each of the following waste streams and generating low-carbon energy in London from suitable remaining waste:
   a) Municipal waste – 65% by 2030.
   b) Construction, demolition, and excavation waste – 95% by 2020.
5) Designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

Referable applications should promote circular economy outcomes and aim to be net zero-waste. A circular economy statement should be submitted, to demonstrate:

1) How all materials arising from demolition and remediation works will be re-used and/ or recycled.
2) How the proposal's design and construction will enable building materials, components, and products to be disassembled and re-used at the end of their useful life.
3) Opportunities for managing as much waste as possible on site
4) Adequate and easily accessible storage space to support recycling and re-use.
5) How much waste the proposal is expected to generate, and how and where the waste will be handled.

Policy SI12 'Flood Risk Management'
Current and expected flood risk from all sources across London should be managed in a sustainable and cost-effective way in collaboration with the Environment agency, the Lead Local Flood Authorities, developers, and infrastructure providers.

Policy SI13 'Sustainable Drainage'
Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible in line with the following drainage hierarchy:

1) Rainwater harvesting (including a combination of green and blue roofs).
2) Infiltration techniques and green roofs.
3) Rainwater attenuation in open water features for gradual release.
4) Rainwater discharge direct to a watercourse (unless not appropriate).
5) Rainwater attenuation above ground (including blue roofs).
6) Rainwater attenuation below ground.
7) Rainwater discharge to a surface water sewer or drain.
8) Rainwater discharge to a combined sewer.

Development proposals for impermeable paving should be refused where appropriate, including on small surfaces such as front gardens and driveways

Drainage should be designed and implemented in ways that address issues of water use efficiency, river water quality, biodiversity, amenity, and recreation.

Policy T2 'Healthy Streets'
Development proposals should deliver patterns of land use that facilitate residents making shorter, regular trips by walking or cycling.

In opportunity areas and other growth areas, new and improved walking, cycling and public transport networks should be planned at an early stage, with delivery phased appropriately to support mode shift towards active and public transport travel. Designs for new or enhanced streets must demonstrate how they deliver against the **ten** healthy streets indicators.

Development proposal should:

1) Demonstrate how they will deliver improvements that support the ten healthy streets indicators in line with transport for London guidance.
2) Reduce dominance of vehicles on London's streets whether stationary or moving.
3) be permeable by foot and cycle and connect to local walking and cycling networks as well as public transport.

Policy T5 'Cycling'
(…) development proposals should help remove barriers to cycling and create a healthy environment in which people choose to cycle. This will be achieved through:

1) Supporting the delivery of a London-wide network of cycle routes, with new routes and improved infrastructure.
2) Securing the provision of appropriate levels of cycle parking which should be fit for purpose, secure and well-located. Developments should provide cycle parking in accordance with the minimum standards set out within the London Plan (see below) and should be designed and laid out in accordance with the guidance contained in the London Cycling design Standards.

Where it is not possible to provide suitable short stay cycle parking off the public highway, the borough should work with stakeholders to identify an appropriate on-street location for the require provision. This may mean the reallocation of space from other uses such as on-streetcar parking. (…)

Where it is not possible to provide adequate cycle parking within residential developments, boroughs must work with developers to propose alternative solutions which met the objectives of the standard these may include options such as providing spaces in secure, conveniently located, on street parking facilities such as bicycle hangers.

Where flexible commercial uses are proposed and exact uses are not determined at the point of application, the highest potential applicable cycle parking standard should be applied.

Policy T6.1 'Residential Parking'
The London Plan sets limits on the maximum parking allowable for new residential development with at least 20% of the car parking provision provided with active charging facilities. The remaining provision should be provided with passive provision.

Minimum standards for disabled persons parking bays are also set:

- For 3% of dwellings, at least one designated disabled persons parking bay per dwelling available from the outset; and
- Demonstrate as part of the Parking Design and Management Plan, how an additional 7% of dwelling should be provided with one designated disabled persons parking space per dwelling in future upon request.

Camden Local Plan

C1 Health and Wellbeing
Development to positively contribute to creating high quality, active, safe, and accessible places. Proposals for major development schemes to include a Health Impact Assessment (HIA).

C6 Access for all
All buildings and places to meet the highest practicable standards of accessible and inclusive design so they can be used safely, easily and with dignity by all. Development should encourage accessible public transport and secure car parking for disabled people.

T1 Prioritising walking, cycling and public transport
Provide for accessible, secure cycle parking facilities with provision for high quality facilities that promoting cycle usage.

T2 parking and car free development
Limit on-site parking to spaces designated for disabled people where necessary and/or essential operational or servicing needs.

A3 Biodiversity
Realise benefits for biodiversity through the layout, design and materials used in the built structure and landscaping elements. Incorporate additional trees and vegetation wherever possible.

CC1 Climate change mitigation
The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

As London plan plus requires all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building. All developments to optimise resource efficiency by:

- reducing waste;
- reducing energy and water use during construction;
- minimising materials required;
- using materials with low embodied carbon content; and
- enabling low energy and water demands once the building is in use.

all developments involving five or more dwellings and/or more than 500 sqm gross internal floor space are encouraged to assess the embodied carbon emissions associated with the development within the energy and sustainability statement.

CC2 Adapting to climate change
All developments should adopt appropriate climate change adaptation measures, such as:

a. the protection of existing green spaces and promoting new appropriate green infrastructure;
b. not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems;
c. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and
d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

Non-domestic developments of 500 sqm of floorspace or above to achieve "excellent" in BREEAM assessments and encouraging zero carbon in new development from 2019

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All new developments will be expected to submit a statement demonstrating how the London Plan's 'cooling hierarchy' has informed the building design.

CC3 Water and flooding
Development to incorporate water efficiency measures;

Development should not increase flood risk and reduce the risk of flooding where possible. Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable.

Refurbishments and other non-domestic development will be expected to meet BREEAM water efficiency credits.

CC4 Air Quality
Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.

CC5 Waste
Developments should include facilities for the storage and collection of waste and recycling.

The Council will encourage the submission of a site waste management plan prior to construction.

Energy efficiency and adaptation CPG (2021)

- Developments are to target a 20% reduction in carbon dioxide emissions from on-site renewable energy technologies
- Preference is for PVs to be flush to the roof or wall, but considerations will include the efficiency of the panel/s and whether they are visible.
- Applicants are to confirm the number and size of panels or the overall square meters to be installed shown on plan as well as any tilt
- A meter is to be installed on the system for monitoring
- Energy statements should demonstrate how a development has been designed following the steps in the energy hierarchy
- Deep refurbishments (i.e. refurbishments assessed under Building Regulations Part L1A/L2A) should also meet the London Plan carbon reduction targets for new buildings.
    - Zero carbon, minimum 35% reduction below Part L Building Regulations onsite, with 15% reduction through on-site energy efficiency measures) (London Plan Local Plan CC1)
- Residential Refurbishment (assessed under L1B): Greatest possible reduction - meeting Part L1B for retained thermal elements (London Plan 5.4, Local Plan CC1)
- Condition and feasibility study, and options appraisal. (applies to major redevelopment applications, any development proposing substantial demolition)
- Whole Life Carbon assessment and pre-demolition audit. (All applications where the option is substantial demolition)
- Resource efficiency plan. (All major applications, and new buildings)

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eight versa
+44 (0)20 7043 0418
info@eightversa.com

Document Information

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Edward Toovey
Ed Toovey Architects

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Document prepared by
Nikita Bansal

Quality assured by
Alex Reed

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eight versa
+44 (0)20 7043 0418
info@eightversa.com

Executive Summary

Introduction
Eight Versa, as registered BREEAM assessors, have carried out an assessment of the proposed new development at University College School (UCS). This assessment is under BREEAM Version 6 New Construction methodology, with a fully fitted scope.

This summary is a pre-assessment of the development and details the anticipated score following the information provided by the design team at a meeting held on 6th September 2023 with BREEAM Accredited Professional Alex Reed, and subsequent discussions.

Project summary
The project consists of the demolition of existing buildings to create a new education building with flexible classroom space and dedicated facilities including cafeteria, recital room and drama studio. The project is located on the USC campus in Frognal, Hampstead in the London Borough of Camden.

Planning requirement for the new build development is as follows:

- Excellent BREEAM rating

Score summary
The site reviewed currently targets a score of 77%, which equates to an Excellent rating. A score of 70% is required for an Excellent rating.

The action plan near the end of this document details the potential measures that could be considered in order to increase the target score to 89.9%, which equates to an Outstanding rating.

Eight Versa recommends a safety margin of at least 3-5% to safeguard any rating at formal assessment.

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+44 (0)20 7043 0418
info@eightversa.com

Introduction

The BREEAM standard
BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's first sustainability rating scheme for the built environment. 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.

To date BREEAM has been used to certify over 560,000 building assessments across the building life cycle and is being applied in over 80 countries.

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.

BREEAM New Construction
BREEAM New Construction is a performance-based assessment method and certification scheme for new buildings.

The primary aim of BREEAM New Construction is to mitigate the life cycle impacts of new buildings on the environment in a robust and cost-effective manner. It attempts to quantify and reduce the environmental burdens of buildings by rewarding those designs that take positive steps to minimise their environmental impacts.

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

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

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Process of the assessment
Under BREEAM New Construction Version 6, assessments take place over two phases:

- Design Stage (DS): This is based on the final design for the development and the intentions of the design team. Submission before the completion of RIBA Stage 4.
- Post Construction Stage (PCS): This is based on the built development and requires the BREEAM assessor to carry out a site visit. Submission at RIBA Stage 6.

An interim certificate will be provided following submission of the Design Stage Assessment, with final certification being awarded following the completion of the PCS Assessment.

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	Minimum score required	Performance equivalent to (% of UK new non-domestic buildings)
Pass (P)	30%	<75% (standard good practice)
Good (G)	45%	<50% (intermediate good practice)
Very Good (VG)	55%	<25% (advanced good practice)
Excellent (E)	70%	<10% (best practice)
Outstanding (O)	85%	<1% (innovator)

Mandatory credits
Some credits, or criteria within credits, 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 & handover	-	-	1 credit[1]	1 credit	1 credit
Man 04: Commissioning & handover	-	-	Criterion 11[2]	Criterion 11	Criterion 11
Man 05: Aftercare	-	-	-	1 credit[3]	1 credit
Ene 01: Reduction of CO2 emissions	-	-	-	4 credits	10 credits
Ene 02: Energy monitoring	-	-	1 credit	1 credit	1 credit
Wat 01: Water consumption	-	1 credit	1 credit	1 credit	2 credits
Wat 02: Water monitoring	-	Criterion 1[4]	Criterion 1	Criterion 1	Criterion 1
Mat 03: Responsible sourcing	Criterion 1[5]	Criterion 1	Criterion 1	Criterion 1	Criterion 1
Wst 01: Construction waste	-	-	-	-	1 credit
Wst 03: Operational waste	-	-	-	1 credit	1 credit

[1] Commissioning – testing schedule and responsibilities must be produced for the site.
[2] A Building User Guide must be developed prior to handover, for distribution to the building occupiers and premises managers.
[3] Complete required commissioning activities over a minimum 12-month period once the building has become occupied.
[4] A water meter must be specified on the mains water supply to each building.
[5] All timber and timer-based products used on the project must be legally harvested and traded.
Full details for each credit follow later in this document.

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Early-stage considerations

There are a number of key actions that need to be undertaken at RIBA Stages 1, 2 and 4 of the design to achieve BREEAM credits, as required for the project. Below is a summary of the credits targeted that require these considerations to be made. Issues greyed out are not targeted to this project.

Credit	RIBA Stage	Requirement	Responsibility
Man 01 Project delivery planning	Stage 2	Project stakeholders must meet to define their roles, responsibilities and contributions for each key phase of the project by the end of RIBA Stage 2.	Project Manager, key design team members
Man 01 Stakeholder Consultation	Stage 2	Public consultation must be carried out with third party stakeholders (e.g. future building users, local community group).	Architect, Planning Consultant, Client
Man 01 BREEAM AP (Concept Design)	Stage 1 Stage 2	Appoint a sustainability champion (BREEAM AP) Agree BREEAM performance target.	Client / Project Manager
Man 02 Elemental level Life Cycle Costing (LCC) options appraisal	Stage 2	An Elemental level Life Cycle Costing analysis must be carried out before the end of RIBA Stage 2.	Specialist Consultant
Man 02 Component level Life Cycle Costing (LCC) options appraisal	Stage 4	A Component level Life Cycle Costing analysis must be carried out before the end of RIBA Stage 4.	Specialist Consultant
Hea 06 Security of site and building	Stage 2	Consult with a suitably qualified security consultant to produce a security needs assessment and security recommendations to be implemented within the design	Architect, Security Consultant
Ene 04 Passive Design Analysis	Stage 2	A Passive Design Analysis must be carried out at the early design stages to identify opportunities to implement passive design measures within the building design	Energy Specialist / M&E Consultant
Ene 04 Low Zero Carbon Feasibility Study	Stage 2	A feasibility study must be carried out before the end of RIBA Stage 2 to establish the most appropriate local low or zero carbon (LZC) energy source(s) for the building	Energy Specialist
Tra 01 Transport Assessment and Travel Plan	Stage 2	A site-specific transport assessment and draft travel plan to assess existing local transport and identify improvements to make it more sustainable.	Transport Consultant
Mat 01 Environmental impacts from construction products - Building life cycle assessment (LCA)	Stage 2	Concept design stage: The options appraisal summary document must be carried out before the end of RIBA Stage 2, and prior to submission of the planning application.	Life Cycle Analysis Consultant
Mat 01 Environmental impacts from construction products - Building life cycle assessment (LCA)	Stage 4	Technical design stage: The options appraisal summary document must be carried out before the end of RIBA Stage 4.	Life Cycle Analysis Consultant
Mat 03 Enabling sustainable procurement	Stage 2	A sustainable procurement plan must be developed to guide specification to sustainable construction products.	Architect / client
Mat 06 Materials Efficiency	Stage 2	Materials efficiency must be investigated, and considerations recorded at RIBA stage 2, and each stage thereafter.	Specialist Consultant / Architect / M&E
Wst 01 Pre-demolition audit	Stage 2	Audit of the existing building to maximise recovery of materials before the end of Concept Design.	Demolition contractor
Wst 05 Climate Change Adaptation	Stage 2	A climate change adaptation strategy appraisal must be carried out for structural and fabric resilience before the end of the Concept Design stage.	Specialist Consultant / M&E Consultant

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Credit	RIBA Stage	Requirement	Responsibility
Wst 06 Design for disassembly and adaptability	Stage 2	A building-specific functional adaptation strategy study must be undertaken by the Concept Design, which includes recommendations to facilitate future adaptation.	Client / Design Team
LE02 Identifying & understanding the risks and opportunities for the project	Stage 1 - 2	A Suitably Qualified Ecologist (SQE) is appointed at a project stage that ensures early involvement in site configuration and, where necessary, can influence strategic planning decisions	Client / Project Manager / Ecologist
LE03 Managing negative impacts on ecology	Stage 2 - 4	Roles and responsibilities for managing negative impacts on ecology are clearly defined at an early enough stage to influence the Preparation and Brief or Concept Design	Client / Project Manager / Ecologist

Extra appointment considerations
It should also be considered that there are a number of external consultant reports that will be required to meet some of the BREEAM requirements for the credits that have been targeted.

These include the following appointments / reports:

- Life Cycle Cost (LCC) Analysis: LCC analysis (Man 02) at RIBA Stage 2 and 4
- Acoustician: Acoustic Performance (Hea 05) and Noise Attenuation (Pol 05)
- Security Consultant: Safety and Security (Hea 06)
- Energy Consultant: Reduction of energy Use and Carbon Emissions (Ene 01), Low Carbon Design (Ene 04) and Thermal Comfort (Hea 04)
- Transport Consultant: (Tra 01): Travel Plan
- Demolition expert: Pre-Demolition Audit (Wst 01)
- Ecologist: Minimising impact on existing site ecology, enhancing site ecology and long term impact on biodiversity (LE 03, LE 04 and LE 05)
- Flood Risk Consultant: Surface Water run off (Pol 03)

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info@eightversa.com

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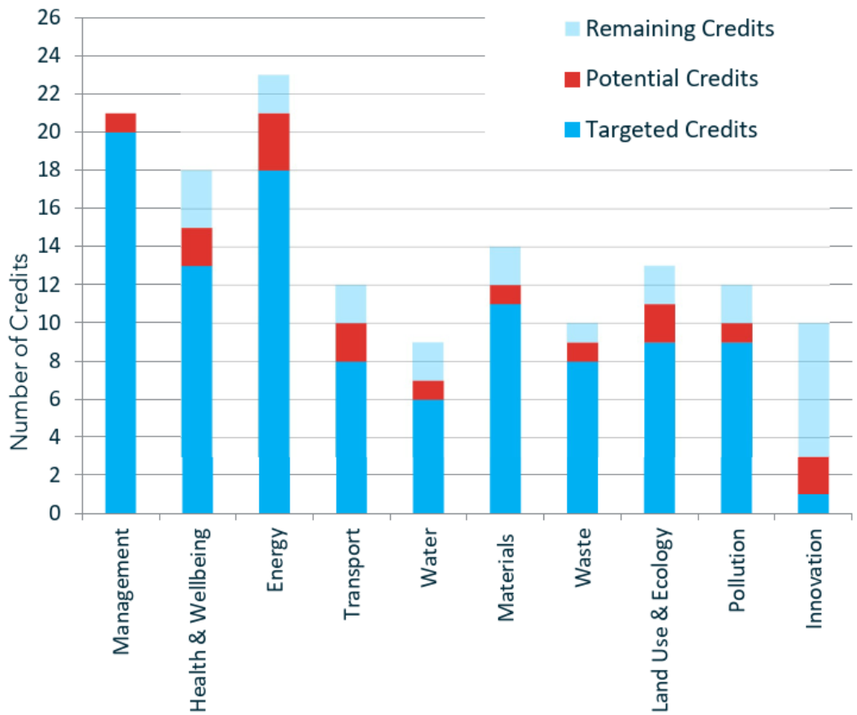
Score Breakdown

Rating summary
The following summary represents the scheme's preliminary score based on the assumptions in the following pages.

Credit Categories	% Targeted	Weighting	Score
Management	95%	11%	10.47%
Health & Wellbeing	72%	14%	10.11%
Energy	78%	16%	12.52%
Transport	67%	10%	6.66%
Water	67%	7%	4.66%
Materials	79%	15%	11.78%
Waste	80%	6%	4.80%
Land Use & Ecology	69%	13%	9.00%
Pollution	75%	8%	6.00%
Innovation	10%	10%	1.00%
			77.00%
Rating			Excellent

Graphics breakdown
The graph below shows the credits currently targeted (dark blue), action credits (red) and remaining credits in each BREEAM section (light blue).



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info@eightversa.com

Management

Man 01: Project brief and design — 4 of 4

Project delivery planning (one credit)
The design team has met to identify roles and responsibilities, as well as contributions for each key phase of the project.

Stakeholder consultation (one credit)
The design team has undertaken consultation with the appropriate stakeholders in accordance with BREEAM requirements.

BREEAM AP (two credits)
The design team has confirmed that a BREEAM Accredited Professional (AP) will be involved to monitor and report progress against the established BREEAM targets by attending key project team meetings during all stages of the design and construction. The BREEAM AP attended the initial design team meeting and will continue to attend key meetings, identifying risks and opportunities to achieving each target and provide feedback to the project team.

In total, four out of four credits are currently targeted for this issue.

Man 02: Life cycle cost and service life planning — 4 of 4

Elemental life cycle costing (two credits)
An elemental life cycle cost analysis will be carried out at RIBA stage 2 in accordance with PD 156865-2008. The design team will provide examples of how the analysis has influenced the design to minimise life cycle costs.

Component level life cycle options appraisal (one credit)
A component level LCC options appraisal is targeted and should be carried out by RIBA stage 4 to minimise life cycle costs and maximise value. The design team will provide examples of how the analysis has influenced the design to minimise life cycle costs.

Capital cost reporting (one credit)
The design team has committed to report the capital cost for the building in pounds per square metre (£k/m2), via the BREEAM Assessment Scoring and Reporting tool in line with BREEAM requirements.

In total, four out of four credits are currently targeted for this issue.

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info@eightversa.com

Man 03: Responsible construction practices 6 of 6

Mandatory requirements
At least one credit must be awarded under responsible construction management to achieve an Excellent rating.

Timber (prerequisite)
The contractor will be required to ensure all site timber, such as hoarding, will be legally harvested and traded with FSC or PEFC certification.

Environmental management (one credit)
The design team will appoint a principal contractor who operates an Environmental Management System for their main operations, certified under ISO14001/ EMAS or an equivalent standard.

BREEAM Accredited Professional (AP) (prerequisite)
The client and the contractor will formally agree performance targets. A BREEAM AP has been involved in the project at an appropriate time and level as shown by this preliminary report produced at RIBA Stage 2.

BREEAM AP (site) (one credit)
The BREEAM AP will ensure ongoing compliance with the relevant sustainability performance on site once the contractor is appointed. The BREEAM AP will be involved with the project team undertaking regular spot checks to ensure risks are minimised and monitoring construction progress.

Responsible construction management (two credits)
The contractor will be required to complete all the BREEAM required items in the table in Appendix A of this report in order to achieve two credits. The contractor will aim for a target score of 35 points (with at least 11 points in each section) under the Considerate Constructor's Scheme.

Monitoring of construction-site impacts (two credits)
The design team has confirmed that the contractor will be required to ensure an individual is responsible for monitoring, recording and reporting the following:

- Energy (kWh) consumption for the site as a result of construction plant, equipment and site accommodation. Total carbon dioxide emissions must be reported.
- Water (m^3) consumption arising from the use of construction plant, equipment and site accommodation.
- Transport resulting from delivery of construction materials to site and removal of construction waste from site:
    - Transportation of materials from the point of supply to the building site:
        i. Materials used in major building elements; and,
        ii. Ground works and landscaping materials.
    - Transportation of construction waste from the construction gate to waste disposal processing or recovery centre gate.
    - The following information will be recorded:
        i. Litres of fuel used;
        ii. Distance travelled (km); and,
        iii. Carbon dioxide emissions ($kgCO_2$ eq).

In total, six of six credits are currently targeted for this issue.

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+44 (0)20 7043 0418
info@eightversa.com

Man 04: Commissioning and handover 4 of 4

Mandatory requirements
A Building User Guide must be produced in order to achieve an Excellent rating (even if this credit is not targeted).

Commissioning (two credits)
A member of the design team will be appointed to monitor commissioning in line with best practice (CIBSE, BSRIA and Current Building Regulations), with a specialist commissioning agent appointed for any complex systems.

Testing and inspecting building fabric (one credit)
The design team has confirmed that an air tightness test will be carried out as standard, along with a thermography survey to be undertaken.

Handover (one credit)
The production of a technical manual and a non-technical building user guide in line with the BREEAM requirements is planned. In addition, a training schedule will be prepared for building occupiers / facilities managers to aid handover and correct use of the building and its services upon occupation.

In total, all four credits are currently targeted for this issue.

Man 05: Aftercare 2 of 3

Mandatory requirements
Seasonal commissioning must be carried out in order to achieve an Excellent rating.

Aftercare support (one credit)
There will be operational infrastructure and resources in place to provide aftercare support to the building occupier and to coordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is occupied.

Commissioning implementation (one credit)
Seasonal commissioning activities will be completed over a minimum 12-month period, once the building becomes substantially occupied.

Post occupancy evaluation (one credit)
The client or building occupier will explore the possibility of carrying out a post occupancy evaluation (POE) exercise one year after initial building occupation. The credit is not currently targeted.

In total, two of three credits are currently targeted for this issue.

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info@eightversa.com

Health and Wellbeing

Hea 01: Visual comfort — 2 of 5

Control of glare from sunlight (one credit)
The design team has confirmed blinds will be utilised on any windows to areas at risk of glare.

Daylighting (one credit)
Daylight modelling is not currently expected for the development.

View out (one credit)
The design team has confirmed it is unlikely that the view out requirements will be met.

Internal and external lighting levels, zoning and controls (one credit)
The design team has confirmed the following will be met for the scheme:

- All fluorescent and compact fluorescent lamps will be fitted with high frequency ballasts;
- Internal lighting will provide illuminance levels in accordance with the SLL Code of Lighting 2012 (and any other relevant industry standard);
- For areas where computer screens are regularly used the lighting design will comply with the appropriate sections of CIBSE Lighting Guide 7;
- All external lighting will provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately;
- Internal lighting will be appropriately zoned to allow for occupant control within relevant building areas in accordance with the BREEAM criteria;
- External lighting will be specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting – Lighting of workplaces – Part 2: Outdoor workplaces);

In total, two of five credits are targeted for this issue.

Hea 02: Indoor air quality — 3 of 4

Indoor air quality plan (prerequisite)
A formalised Indoor Air Quality plan will be produced for the development and implemented to facilitate a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building.

Ventilation (one credit)
The design team has confirmed that the ventilation design will meet BREEAM requirements.

Emissions from construction products (two credits)
The design team has confirmed that at least three of the product types listed in the BREEAM New Construction Version 6 manual Table 5.11 will meet the emission limits for VOC, formaldehyde, and Cat 1A & 1B carcinogens, in addition to the testing requirements and any additional items outlined within the BREEAM criteria. One out of two credits are targeted currently.

Post-construction indoor air quality measurement (one credit)
The design team has confirmed they will be targeting the air quality testing to measure VOC and formaldehyde concentration levels at post-construction stage.

In total, three of four credits are currently targeted for this issue.

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info@eightversa.com

Hea 04: Thermal comfort **3 of 3**

Thermal modelling (one credit)
Thermal modelling, in line with CIBSE AM11, will be undertaken for the development using full dynamic thermal analysis software. Summer and winter operative temperature ranges in occupied spaces will be in accordance with the criteria set out in CIBSE Guide A Environmental design.

Design for future thermal comfort (one credit)
The design team has confirmed that the thermal modelling will include an allowance for a projected climate change environment.

Thermal zoning and controls (one credit)
The thermal modelling analysis will inform the thermal comfort strategy. The heating and cooling are to be zoned and controlled appropriately for the building type and its users' requirements.

In total, three of three credits are currently targeted for this issue.

Hea 05: Acoustic performance **3 of 3**

The design team has confirmed that acoustic testing will take place to confirm compliance with the acoustic principles of:

- Sound insulation
- Indoor ambient noise level
- Room acoustics

The above will be confirmed via a programme of pre-completion testing, carried out by a compliant test body.

In total, all three credits are currently targeted for this issue.

Hea 06: Security **1 of 1**

Security of site and building (one credit)
The design team has targeted this credit for a suitably qualified security consultant to be consulted during Stage 2 to produce a Security Needs Assessment.

Hea 07: Safe and healthy surroundings **1 of 2**

Safe access (one credit)
The design team have not targeted separate access routes for pedestrians, cyclists and vehicles.

Outside space (one credit)
The design team has confirmed the provision of an outside amenity area for building users.

In total, one out of two credits are currently targeted for this issue.

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info@eightversa.com

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Energy

Ene 01: Reduction of CO_2 emissions 9 of 13

Mandatory requirements
At least four credits must be achieved in order to secure an Excellent rating.

Energy performance (nine credits)
An energy assessment will be undertaken at design stage, based on Part L 2021 standards. Based on the building services and fabric specified, it is assumed that five of the available nine credits under this issue will be achieved.

Please note that the BREEAM guidance requests a copy of the Building Regulations Output (BRUKL Output Document) based on the design stage and an as-built copy of the document for the post construction stage.

Prediction of operational energy consumption (Pre-requisite)
To achieve the following operational energy credits, the passive design analysis must be carried out in concept design stage.

Prediction of operational energy consumption (four credits)
It is confirmed that relevant members of the design team will hold a design workshop focusing on operational energy performance. The operational energy modelling will be updated to reflect the 'as built' development.

Nine of thirteen credits are targeted for this issue.

Ene 02: Energy monitoring 2 of 2

Mandatory requirements
The minimum requirement for sub-metering of end-use categories must be met in order to achieve an Excellent rating.

Sub-metering of end-use categories (one credit)
Pulsed sub-meters will be provided to ensure the following are met:

1. Energy metering systems are installed that enable at least 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems.
2. The energy consuming systems in buildings with a total useful floor area greater than 1,000m^2 are metered using an appropriate energy monitoring and management system.
3. The systems in smaller buildings are metered either with an energy monitoring and management system or with separate accessible energy sub-meters with pulsed or other open protocol communication outputs, to enable future connection to an energy monitoring and management system.
4. The end energy consuming uses are identifiable to the building users, for example through labelling or data outputs.

Sub-metering of high energy load & tenancy areas (one credit)
The design team has confirmed that there will be sub-metering per floor plate.

Two of two credit is currently targeted for this issue.

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Ene 03: External lighting 1 of 1

The design team has confirmed that any external lighting will have an average initial luminous efficacy of greater than 70 luminaire lumens per circuit Watt. All external light fittings will be automatically controlled to prevent operation during daylight hours.

One of one credit is currently targeted for this issue.

Ene 04: Low carbon design 2 of 3

Passive design analysis (one credit)
The project team will carry out an analysis of the proposed building design/development to influence decisions made during Stage 2 Concept Design stage and identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services.

The building will use passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis, and the analysis will demonstrate a meaningful percentage reduction in the total energy demand.

Free cooling (one credit)
The design team has not confirmed that the credit for free cooling can be targeted as mixed mode ventilation is proposed.

Low and zero carbon technologies (one credit)
A feasibility study will be carried out at Stage 2 by an independent energy specialist to establish the most appropriate local low or zero carbon energy source for the development, and an LZC technology will be specified in line with the recommendations of this report (resulting in a reduction in CO_2 emissions).

Two of three credits are currently targeted for this issue.

Ene 06: Energy Efficient Transportation Features 2 of 2

Energy consumption (one credit)
The design team has confirmed that a transportation demand and usage pattern analysis for the building to determine the optimum number and size of lifts, escalators or moving walks is accordance with BS EN ISO 25745. The energy consumption will be calculated for at least two types of system and the one with the lowest energy consumption will be specified.

Energy efficient features (one credit)
The design team has confirmed they will be specifying the following energy efficient features for each lift:

- A standby condition for off-peak periods.
- The lift car lighting and display lighting provides an average luminous efficacy across all fittings in the car of >70 luminaire lumens per circuit Watt.
- Use of a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVF) control of the drive motor.

Regenerative drives are considered where these would produce an energy saving greater than the additional standby energy used to support the drives.

Two of two credits are targeted.

Ene 08: Energy Efficient Equipment 2 of 2

Energy efficient equipment (two credits)
The design team has confirmed they will identify the building's unregulated energy consuming loads, ad estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical or standard specification.
They will identify the systems or processes that use a significant proportion of the total annual unregulated energy consumption of the building to demonstrate a meaningful reduction in the total annual unregulated energy consumption of the building.

Two of two credits are targeted.

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+44 (0)20 7043 0418
info@eightversa.com

Transport

Tra 01: Transport assessment and travel plan **2 of 2**

Travel plan (two credits)
The design team has confirmed that during the feasibility and design stages a travel plan will be developed based on a site-specific travel assessment or statement.

The travel plan will include proposals to increase/improve sustainable modes of transport and movement of people and goods.

Two of two credits are targeted for this issue.

Tra 02: Sustainable transport measures **6 of 10**

Transport options implementation (ten credits)
The design team has confirmed that sustainable transport measures can be targeted, with the following considered for inclusion:

- Electric vehicle charging for 10% of car parking spaces.
- Proximity to three existing amenities.
- Provision of a new accessible amenity in the form of an outside space providing building users with external amenity area.
- Public transport information system.

Six out of ten credits are targeted for this issue.

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Water

Wat 01: Water consumption — 3 of 5

Mandatory requirements
At least one credit is required for an Excellent rating.

Water consumption (five credits)
The design team has confirmed that they will aim for a 40% improvement in water consumption (litres/person/day) compared to BREEAM's notional baseline performance.

To achieve this, it is anticipated that specified sanitaryware will meet the following thresholds:

- WCs will have 3.75 litres effective flush volume.
- Wash hand basins will have a flow rate of no greater than 5 litres/min
- Showers will have a flow rate of no greater than 6 litres/min.
- Kitchen taps will have a flow rate of no greater than 6 litres/min
- Domestic dishwashers will have a capacity of no greater than 12 litres/cycle.
- Commercial dishwashers will have a capacity of no greater than 5 litres/rack.
- Domestic washing machine will have a capacity of no greater than 40 litres/use.
- Commercial washing machine will have a capacity of no greater than 7.5 litres/kg.

Alternatively higher flush volumes and flow rates can be provided if there is a rainwater harvesting system installed in compliance with BS EN 16941-1:2018.

Three of five credits are currently targeted for this issue.

Wat 02: Water monitoring — 1 of 1

Mandatory requirements
A water meter must be specified (even if this credit is not targeted) in order to achieve an Excellent rating.

Water monitoring (one credit)
The design team has confirmed that a pulsed water meter will be installed on the mains water supply to each building. Any water-consuming plant or building areas consuming 10% or more of the building's total water demand will have easily accessible pulsed sub-meters. All meters will be connected to the BMS.

The available credit is currently targeted for this issue.

Wat 03: Water leak detection and prevention — 2 of 2

Leak detection (one credit)
The design team has confirmed a major leak detection system on the mains water supply within the building and between the building and the utilities water meter will be provided. The system will comply with the following:

- Permanent and automated.
- Activated when the flow of water is at a flow rate above a pre-set maximum for a pre-set period of time.
- Able to identify different flow and leakage rates.
- Programmable to suit the owner/occupiers' water consumption criteria.
- Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.

Sanitary shut-off system (one credit)
Flow control devices that regulate the supply of water to each WC area according to demand will be installed (e.g. solenoid valves linked to PIR). This will assist with minimising water leaks and wastage from worn sanitary fittings.

All credits are currently targeted for this issue.

Wat 04: Water efficient equipment — 0 of 1

This design team is not currently targeting the credit for unregulated water demands.

Zero of one credit targeted.

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Materials

Mat 01: Environmental impacts from construction products building life cycle assessment (LCA) **5 of 7**

Superstructure (six credits)
The design team has confirmed that a Life Cycle Assessment (LCA) will be carried out at key stages to demonstrate that the specification of material build-ups and their impact has been considered. The Stage 2 LCA will be uploaded to the BRE prior to planning submission.

Four out of six credits are targeted.

Substructure and hard landscaping options appraisal during concept design (all building types) (one credit)
The design team has confirmed that during Concept Design, the LCA will include options for substructure and hard landscaping.

Core building services options appraisal (exemplary level credit)
The design team has confirmed that the LCA will include an analysis of core building services to achieve one exemplary level credit.

In total, five of seven credits plus one exemplary credit are targeted for this issue.

Mat 02: Environmental impacts for construction products Environmental Product Declarations (EPD) **1 of 1**

The contractor will be asked to source materials covered by an Environmental Product Declaration (EPD) where possible, however it is not yet confirmed if this credit will be achievable.

The available credit is targeted for this issue.

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Mat 03: Responsible sourcing of materials 3 of 4

Mandatory requirements
The pre-requisite for this issue must be complied with (even if this issue is not targeted) in order to achieve any rating.

Pre-requisite
The design team has confirmed that all timber used on the project will be legally harvested and traded timber with FSC or PEFC certification.

Enabling sustainable procurement (one credit)
The design team will implement a sustainable procurement plan for this development prior to Concept Design to guide specification towards sustainable construction products.

Measuring responsible sourcing (three credits)
The design team has confirmed that, where possible, key building elements will be responsibly sourced (e.g. all timber FSC certified, and any bricks, pavers, concrete, glass, metals, plaster etc. covered by BRE Global, BES 60001 certification, or EMS certified for both the key process and supply chain extraction process). Two credits are targeted.

Three of four credits are targeted for this issue.

Mat 05: Designing for durability and resilience 1 of 1

Protecting vulnerable parts of the building from damage
Materials and features will be specified to protect vulnerable parts of both the internal and external areas of the building. A futureproofing workshop has been undertaken with the design team.

Protecting exposed parts of the building from material degradation
The relevant building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors. The elements will either achieve an appropriate quality or durability standard or a resilience assessment will be carried out on the element. A futureproofing workshop has been undertaken with the design team.

The available credit is targeted for this issue.

Mat 06: Material efficiency 1 of 1

The design team will have confirmed they the opportunities will be identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life.

The available credit is targeted for this issue.

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Waste

Wst 01: Construction site waste management — 4 of 5

Pre-demolition audit (one credit)
The design team will complete a pre-demolition audit, during Stage 2 Concept Design, of any existing buildings or hard surfaces being considered for demolition. This will be used to determine whether refurbishment or reuse of materials is feasible.

Construction resource efficiency (three credits)
The design team has confirmed that a BREEAM compliant Site Waste Management Plan will be produced by the contractor and will ensure that non-hazardous waste generated throughout the building's design and construction (excluding demolition and excavation waste) will be less than 7.5m^3 (or 6.5 tonnes) per 100m^2 of gross internal floor area.

Diversion of resources from landfill (one credit)
The contractor will be required to ensure that at least 70% by volume (80% by weight) of non-hazardous non-demolition waste generated by the project will be diverted from landfill, and 80% by volume (90% by weight) of non-hazardous demolition waste will be diverted from landfill.

Four of five credits are targeted for this issue.

Wst 02: Use of recycled and sustainably sourced aggregates — 0 of 1

Project sustainable aggregate points (one credit)
The design team is investigating if the use and type of aggregates within the development will be identified, as well as the total amount of recycled and/or secondary aggregate, the region the aggregate was sourced, and the distance travelled. If targeted, the contractor would be required to ensure recycled and secondary aggregates are used to achieve this credit.

The available credit is currently not targeted for this issue.

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Wst 03: Operational waste 1 of 1

Mandatory requirements
One credit is required in order to achieve an Excellent rating.

Operational waste (one credit)
The design team has confirmed that there will be a dedicated recyclable waste storage area. The space will be clearly labelled and accessible. A compactor / baler are not currently thought to be required for the building function.

Where consistent and large amounts of compostable waste are generated, vessels will be provided for composting organic waste OR adequate spaces for storing segregated food waste and compostable organic material for collection and delivery to an alternative composting facility. A water outlet must be provided adjacent or within the facility for cleaning and hygiene purposes where organic waste is to be stored or composted on site.

Suitable signage, in line with BREEAM requirements, will be provided.

The available credit is targeted for this issue.

Wst 05: Adaptation to climate change 1 of 1

Resilience of structure, fabric, building services and renewables installation (one credit)
The design team has confirmed that a climate change adaptation strategy will be undertaken for the development. A futureproofing workshop has been undertaken with the design team.

The available credit for this issue is currently targeted.

Wst 06: Designing for disassembly and adaptability 2 of 2

Design for disassembly and functional adaptability recommendations (one credit)
The design team will conduct a study to explore the ease of disassembly and functional adaptation potential of different scenarios before the end of Concept Design. A futureproofing workshop has been undertaken with the design team.

Disassembly and functional adaptability implementation (one credit)
The design team will provide an update during Technical Design of how the recommendations of the study have been implemented or developed.

All credits are targeted for this issue.

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Land Use and Ecology

LE 01: Site selection 1 of 2

Previously developed land (one credit)
The development is situated on at least 75% previously developed land.

Contaminated land (one credit)
A contamination study is being undertaken to confirm if the development land is affected by contamination. To achieve this credit, the design team would need to confirm that a remediation strategy will be implemented in line with the contamination study.

One of two credits are targeted for this issue.

LE 02: Identifying and understanding the risks and opportunities for the project 2 of 2

Prerequisite - Assessment route role
The contractor will be required to confirm that compliance is monitored against all relevant UK and EU legislation relating to the ecology of the site.

Route 2 - Survey and evaluation (two credits)
The design team has confirmed that the ecologist was appointed at an early project stage to ensure early involvement in the project. An appropriate level of survey and evaluation has been carried out (during the preparation and brief) to determine the ecological baseline of the site.

Two of two credits are targeted for this issue.

LE 03: Managing negative impacts on ecology 2 of 3

Pre-requisite – Ecological risks and opportunities
LE 02 is achieved to meet the pre-requisite requirements.

Planning and measures on-site (one credit)
The design team has confirmed that individuals are aware of their roles and responsibilities with regards to ecology and biodiversity. The potential impact of site preparation and construction works will be identified by the ecologist to optimise benefits and outputs for biodiversity.

The project team (whilst liaising and collaborating with representative stakeholders and, taking into consideration data collated and shared), has confirmed they will propose solutions and selected measures to be implemented during site preparation and construction works.

One of one credit targeted.

Route 2 - Managing negative impacts of the project (two credits)
The design team expects that loss of ecological value will be minimised from site preparation and construction works will be managed according to the hierarchy in line with recommendations from the ecologist.

In total, two of three credits are targeted for this issue.

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LE 04: Ecological change and enhancement **2 of 4**

Prerequisite – Managing negative impacts on ecology
Roles and responsibilities have been clearly defined by the design team, site preparation and construction works have been planned, and all UK and EU legislation will be complied with.

Route 2 – Ecological enhancement (one credit)
Measures will be implemented that enhance ecological value, based on input from the project team and in collaboration with representative stakeholders.

Route 2 - Change and enhancement of ecology (up to 3 credits)
The project team has confirmed they will liaise and collaborate with representative stakeholders, taking into consideration data collated and shared. There is expected to be a positive change in ecological value occurring as a result of the project, but this has yet to be confirmed by the suitably qualified ecologist for the scheme. One of two credits are currently targeted.

In total, two of four credits are targeted for this issue.

LE 05: Long term ecology management and maintenance **2 of 2**

Prerequisite – Statutory obligations, planning and site implementation
The design team has confirmed that all UK and EU legislation will be complied with.

Planning, liaison, data, monitoring and review management and maintenance (one credit)
The project team has confirmed that they will liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented. Monitoring and reporting of outcomes and successes will be completed. A section on ecology and biodiversity will be included as part of the building owner information.

Landscape and ecology management plan (or similar) development (one credit)
The project team has confirmed that a landscape and ecology management plan will be developed in accordance with BS 42020:2013, covering, as a minimum, the first five years after the project completes.

In total, two of two credits are targeted for this issue.

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Pollution

Pol 01: Impact of refrigerants 2 of 3

Pre-requisite
All systems with electronic compressors will comply with the requirements of BS EN 378:2016 (parts 2 and 3) and, where systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.

Impact of refrigerants (two credits)
The design team confirmed that the refrigerants of the scheme are expected to have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_2e) of ≤ 1000 $kgCO_2e/kW$ cooling/heating capacity.
One of two credits targeted.

Leak detection (one credit)
The design team has confirmed a refrigerant leak detection system will be installed.

Two of three credits are targeted for this issue.

Pol 02: Local air quality 2 of 2

The design team has confirmed that the heating, cooling and hot water will be supplied using electricity, therefore both credits are awarded by default.

Two of two credits are targeted for this issue.

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Pol 03: Surface water run-off 3 of 5

Flood risk (two credits)
A site-specific Flood Risk Assessment will be undertaken for the site, confirming the flood risk zone. Initial investigations indicate the site is in flood zone 1.
Two of two credits targeted.

Surface water run-off (two credits)
The design team has confirmed that measures will be specified to ensure that the peak run off rate for the developed site will have a 30% reduction compared to the pre-developed site. The design team confirmed that the post development run-off volume, over the development lifetime, will not be greater than it would have been prior to the site's development and flooding of property will not occur in the event of local drainage system failure.
One of two credits targeted.

Minimising watercourse pollution (one credit)
This credit is currently not targeted but the design team will investigate the potential for no discharge from the site for rainfall depths of up to 5 mm.

In total, three of five credits are targeted for this issue.

Pol 04: Reduction of night-time light pollution 1 of 1

The design team has confirmed that external lighting will be designed and installed in compliance with ILP Guidance. All external lighting will have the capacity to be switched off automatically between 11pm and 7am.

One of one credit is targeted for this issue.

Pol 05: Noise attenuation 1 of 1

A Suitably Qualified acoustic consultant will conduct a noise impact assessment in compliance with BS 4142:2014. The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise- sensitive development, must be at least 5dB lower than the background noise throughout the day and night. Where necessary, attenuation measures will be specified.

One of one credit is targeted for this issue.

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info@eightversa.com

MAX FORDHAM

Potential Credits Action Plan

Action plan
The following Action Plan outlines the credits that could be targeted to achieve an Outstanding rating. Please note that Eight Versa recommends a safety margin of 3-5% above the minimum score in order to ensure that the rating is secured at assessment stage. 85% is required for an Outstanding rating.

Current Score	EXCELLENT (minimum 70%)	77.00%
Man 03: Responsible Construction Practices	One additional exemplary credit could be achieved if all items on the responsible construction checklist in Appendix A are completed.	1.00%
Man 05: Post Occupancy Evaluation (POE)	One credit could be achieved if a POE is undertaken one year after initial building occupation by an independent 3rd party.	0.52%
Hea 01: View out	One credit could be if all workstations/benches are 8m from window AND window area is at least 20% of surrounding wall area, OR window to room depths comply with Table 1.0 BS 8206	0.78%
Hea 01: Internal Lighting Levels	One exemplary credit could be achieved if lighting in each zone can be manually dimmed to 20% of the maximum light output using dimmer switches.	1.00%
Hea 02: Emissions from construction products	An additional credit could be achieved if the design team aim for all 5 product types to meet the BREEAM requirements for formaldehyde, TVOC and carcinogens.	0.78%
Ene 01: Reduction of Energy Use	The design team has indicated two additional credits could be achieved for energy performance. These credits will be checked when the design stage BRUKLs are completed.	1.40%
Ene 04: Free Cooling	One credit could be achieved if free cooling strategy implemented (or building naturally ventilated).	0.70%
Tra 02: Sustainable Transport Measures	Two additional credits are available if additional sustainable transport measures are implemented in line with Table 7.4 of the BREEAM NC Version 6 manual including car sharing and cycle storage.	1.60%
Mat 01: Environmental Impacts of Construction Products	The design team has indicated that one additional credit could be achieved once the life cycle assessment for the project has been finalised.	1.07%
Wat 04: Water efficient equipment	One credit could be achieved if we could mitigate significant unregulated water demands OR where there is no significant water demand is present.	0.78%
Wst 02: Project sustainable aggregate points	One credit could be achieved if the use and type of aggregates within the development will be identified, as well as the total amount of recycled and/or secondary aggregate, the region the aggregate was sourced, and the distance travelled.	0.60%
LE 01: Contaminated land	One credit could be achieved if site investigation confirming contamination and remediation is undertaken.	1.00%
LE 04: Change and enhancement of ecology	An additional credit could be achieved based on the ecological enhancement of the site as measured by the ecologist. Currently, two credits are targeted.	1.00%
Pol 03: Surface water run-off volume	One credit could be achieved if there is no discharge from the site for rainfall depths of up to 5 mm.	0.67%
Score with actions	OUTSTANDING (minimum 85%)	89.90%

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Appendix A – Man 03

Ref	Criteria	Required for two credits plus the exemplary credit
Risk evaluation and implementation		
The principal contractor evaluates the risks (on site sand off site), plans and implements actions to minimise the identified risks, covering the following, where appropriate:		
Vehicle movement		
a	Manage the construction site entrance to minimise the impacts (e.g. safety, disruption) arising from vehicles approaching and leaving the development footprint.	X
b	Ensure the development footprint is accessible for delivery vehicles fitted with safety features (e.g. side under run protection) to remove or limit the need for on street loading or unloading. Where on-street loading is unavoidable, this should be appropriately managed.	X
c	Identify access routes to the development footprint, including for heavy vehicles to minimise traffic disruption and safety risks to others.	X
Pollution management		
d	Minimise the risks of air, land and water pollution.	X
e	Minimise the risks of nuisance from vibration, light and noise pollution.	X
Tidiness		
f	Practices ensure the development footprint is safe, clean and organised at all times. This includes, but is not limited to, facilities, materials and waste storage.	X
g	Ensure clear and safe access in and around the buildings at the point of handover.	X
Health and wellbeing		
h	Provide processes and equipment required to respond to medical emergencies.	X
i	The principal contractor identifies and implements initiatives to promote and maintain the health and wellbeing of all site operatives within the development footprint. This can be via site facilities, site management arrangements, staff policies etc.	X
j	Establish management practices and facilities encouraging equality, fair treatment and respect of all site operatives.	X
k	Provide secure, clean and organised facilities (e.g. changing and storage facilities) for site operatives within the development footprint.	X
Security processes		
l	Minimise risks of the site becoming a focus for antisocial behaviour in the local community (e.g. robust perimeter fencing, CCTV, avoid creating dark corners etc.).	X
Training, awareness and feedback		
The principal contractor is responsible for ensuring:		
m	Aspects of the construction process that might impact the community are communicated regularly, ensuring that nuisance and intrusion are minimised.	X
n	Ensure ongoing training is provided, and up to date, for personnel and visitors (covering items a to l above, as appropriate.)	X
o	The principal contractor ensures that site operatives are trained for the tasks they are undertaking (including any site specific considerations).	X
p	The fleet operators undertake driver training and awareness to promote safety within the development footprint and off site.	X
Monitoring and reporting		
The principal contractor ensures:		
q	The fleet operator captures and investigates any road accidents, incidents and near misses and reports them back to the principal contractor. The principal contractor analyses these items.	X
r	All visitor, workforce and community accidents, incidents and near misses are recorded and action is taken to reduce the likelihood of them reoccurring.	X
s	Processes are in place to facilitate collecting and recording feedback from the community and to address any concerns related to the development footprint.	X