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# LSHTM Tavistock Place

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## Sustainability Statement

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## Executive Summary

This Sustainability Statement outlines the environmental and sustainable principles that have been considered in the development of The London School for Hygiene and Tropical Medicine new medical research facility at Tavistock Place 2, in accordance with the relevant planning policy for the London Borough of Camden and BREEAM requirements.

The development replaces existing poor quality buildings of low architectural value and will comprise of two storeys of basement and four upper levels, accommodating dry laboratories, research/write-up spaces and plant. The laboratory space will be housed in a new energy efficient structure that Camden have agreed (through approving the extant planning permission) that preserves the setting of Designated Heritage Assets, such as Listed Buildings and the Conservation Area.

The development will be assessed against the BREEAM New Construction 2014 Office methodology, with a target rating of 'Excellent'.

LSHTM Tavistock Place will enlist a responsible procurement policy, specifying locally sourced materials that aim to achieve BRE Green Guide ratings of 'A' as far as practicable. Careful consideration of operational waste and segregated recycling facilities will further ensure high levels of waste and material efficiency throughout the occupation of the building.

The Energy Strategy follows the London Plan energy hierarchy, to reduce energy consumption and carbon emissions as far as practically possible on the site and on the basis of the projected energy loads. This will be supported by a c.100m<sup>2</sup> area of roof identified as suitable for solar photovoltaic panels on the adjacent existing building. The new roof areas will incorporate biodiverse roof and rainwater harvesting to enhance local biodiversity, air quality, reduce surface water runoff and promote urban cooling.

High efficiency sanitaryware, will reduce water consumption in cold and hot water systems, and also help to reduce the energy used to heat the hot water service.

Opportunities have been explored to introduce natural features as far as possible including a new re-landscaped courtyard, climbing plants, and an area of biodiverse roof with rain water harvesting, which will provide enhanced ecological value as well urban cooling, surface water attenuation and improvements to local air quality. The ecologist has also made specific recommendations with regard to planting species known to be of value to wildlife, with an emphasis on native species, in accordance with the local authority's Biodiversity Action Plan.

SuDS will be incorporated in line with the drainage hierarchy to achieve post development run-off rates that are no greater than the pre development rates. They will also aim to minimise water course pollution, avoiding harm to the water environment and improving water quality. The new building is proposed with a green roof system in combination with a blue roof to provide effective attenuation.

VOC and formaldehyde concentrations will be measured post construction and where necessary, measures will be taken in accordance with the IAQ plan, to reduce levels to within the BREEAM maximum limits set of 100µg/averaged over 30 minutes formaldehyde, and 300µg/over 8 hours TVOC, also in line with building regulation requirements.

Boilers specified will have low NO<sub>x</sub> emissions of <40mg/kWh, to further ensure low levels of pollution are emitted from the development during occupation. Filtration will be included in the air handling unit to filter outside air to G4 and EU7 standard.



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## Introduction

This Sustainability Statement outlines the environmental and sustainable principles that have been considered in the development of the London School for Hygiene and Tropical Medicine's new 3,661m<sup>2</sup> medical research facility at Tavistock Place, in accordance with the relevant planning policy for the London Borough of Camden and BREEAM requirements.

The redevelopment requires the demolition of an existing main storage shed, the two storey wing of the LSHTM main accommodation block and the smaller storage accommodation at 15-17 Tavistock Place. This clearance of poor quality buildings of low architectural value will facilitate the provision of high quality dry laboratory and write up space, forming a new medical research facility consistent with the Class D1 (non-residential institution) use. The laboratory space will be housed in a new energy efficient structure that Camden have agreed (through approving the extant planning permission) that preserves the setting of Designated Heritage Assets, such as Listed Buildings and the Conservation Area.

The new development comprises of two storeys of basement and four upper levels accommodating the dry laboratories, research/write-up spaces and plant.

The purpose of this Sustainability Statement is to demonstrate compliance with planning policy, providing a holistic overview of the scheme's sustainability credentials in terms of the progressive design, construction, infrastructure and operation. It summarises key elements and sets out how the proposed project will meet the principles of local sustainable development policy, in line with the Camden Local Plan, Supplementary Camden Planning Guidance: CPG3, and London Plan. Each aspect has been related to its relevant policy context and refers to supporting documents where appropriate.

## 1.0 Policy Summary

### 1.1 The London Plan 2016

At a regional level, the climate change policies as set out in the London Plan require developments to make the fullest contribution to the mitigation and adaptation to climate change and to minimise carbon dioxide emissions.

#### 1.1.1 Policy 5.2 Minimising Carbon Dioxide Emissions

All new non-domestic buildings should be zero carbon by 2019. London Plan Policy 5.2 states that major development proposals should include a detailed energy assessment to demonstrate how the targets of carbon dioxide emissions reduction outlined above are to be met within the framework of the energy hierarchy.

All developments should demonstrate a reduction in carbon emissions in accordance with the following energy hierarchy:

- Use Less Energy (Be Lean)
- Supply Energy Efficiently (Be Clean); and
- Use Renewable Energy (Be Green)

#### 1.1.2 Policy 5.3 Sustainable Design and Construction

Policy 5.3 states that all Major Developments must meet the standards outlined in the Mayor's Supplementary Planning Guidance. This includes consideration of the following issues:

- Minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems)
- Avoiding internal overheating and contributing to the urban heat island effect
- Efficient use of natural resources (including water), including making the most of natural systems both within and around buildings
- Minimising pollution (including noise, air and urban run-off)
- Minimising the generation of waste and maximising reuse or recycling
- Avoiding impacts from natural hazards (including flooding)
- Ensuring developments are comfortable and secure for users, including avoiding the creation of adverse local climatic conditions
- Securing sustainable procurement of materials, using local supplies where feasible, and
- Promoting and protecting biodiversity and green infrastructure

## 1.2 Camden Local Plan (2017)

The Camden Local Plan, covering the period from 2016 – 2031, replaces the Council's Core Strategy and Development Policies, adopted in 2010. In accordance with the principles of sustainable development as set out in the National Planning Policy Framework (NPPF), the London Plan and other Local Plan Documents, the Camden Local Plan will ensure that Camden planning policies respond to changing circumstances and the Borough's unique characteristics. Camden's contribution to climate change is minimised and protection and improvements to the local environment are made through the following policies:

### **Policy A2: Open space**

The Council take measures to protect open spaces. Developments should seek opportunity to enhance links between open spaces.

### **Policy A3: Biodiversity**

Developments should not directly or indirectly result in loss or harm to a designated nature conservation site or adversely affect the status or population of priority habitats and species.

Demolition and construction, including the movement of works vehicles, must be planned to avoid disturbance to habitats and species and ecologically sensitive areas, and the spread of invasive species. The loss of trees and vegetation should be minimised with features to remain protected in line with BS5837:2012 and additional trees and vegetation incorporated wherever possible.

### **Policy A4: Noise and vibration**

Noise and vibration should be controlled and managed so that levels are within the thresholds set (Noise emission limit at 1 metre external to sensitive façade, is 50dBLAeq, 16hr), unless appropriate attenuation measures can be provided. Developments should also seek to minimise the impact on local amenity from deliveries and the demolition and construction phases of development. A 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be maintained.

### **Policy C5: Safety and security**

Design should demonstrate the incorporation of principles which contribute to community safety and security and promote the development of pedestrian friendly spaces.

### **Policy C6: Access for all**

Spaces, routes and facilities between buildings should be designed to be fully accessible, encourage accessible public transport, and secure car parking for disabled people.

### **Policy CC1: Climate change mitigation**

Development should seek to minimise the effects of climate change and meet the highest feasible environmental standards. This includes following the energy hierarchy towards zero carbon, supporting decentralised energy networks, reducing the need for car travel and optimising resource efficiency.

### **Policy CC2: Adapting to climate change**

Development should achieve a BREEAM 'Excellent' rating and adopt appropriate climate change adaptation measures such as:

- The protection of existing green spaces and promoting new appropriate green infrastructure
- Not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems
- Incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate, and
- Measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy



**Policy CC3: Water and flooding**

Development should seek to ensure it does not increase flood risk and reduces risk of flooding where possible. This should:

- Involve the Incorporation of water efficiency measures
- Avoid harm to the water environment and improve water quality
- Consider the impact of development in areas at risk of flooding (including drainage)
- Incorporate flood resilient measures in areas prone to flooding, and
- Utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve greenfield run-off rates

**Policy CC4: Air quality**

The impact of the development on air quality should be mitigated and exposure to poor air quality reduced including during any demolition and construction works where a Construction Management Plan should be followed to implement mitigation measures against dust and emissions.

**Policy CC5: Waste**

Development should seek to reduce waste, increase recycling and the reuse of materials to meet the London Plan targets.

**Policy T1: Prioritising walking, cycling and public transport**

Development should prioritise the needs of pedestrians and cyclists and ensure that sustainable transport will be the primary means of travel to and from the site by:

- Improving the pedestrian environment by supporting high quality public realm improvement works and providing convenient and safe cycle routes, accessible, secure cycle parking facilities, changing rooms, showers, dryers and lockers, in line with or exceeding London Cycle Design Standards
- Making improvements to the pedestrian environment including the provision of high quality safe road crossings where needed, seating, signage and landscaping
- Easy and safe to walk through ('permeable') routes that are adequately lit, and
- Providing high quality footpaths and pavements that are wide enough for the number of people expected to use them. Features should also be included to assist vulnerable road users where appropriate.

**Policy T2: Parking and car-free development**

Parking should be limited to spaces designated for disabled people where necessary, and/or essential operational or servicing needs. Boundary treatments and gardens should avoid vehicle crossovers.

## 1.3 Camden Planning Guidance: Sustainability CPG3

CPG3 forms a Supplementary Planning Document (SPD), replacing the Camden Planning Guidance 2006. This guidance provides information on ways to achieve carbon reductions and more sustainable developments.

The key focus areas of the CPG3 are:

- The energy hierarchy
- Energy efficiency
- Decentralised energy networks and combined heat and power
- Renewable energy
- Water efficiency
- Sustainable use of materials
- Sustainability assessment tools
- Brown roofs, green roofs and green walls
- Flooding
- Adapting to climate change
- Biodiversity
- Local food growing

## 2.0 Sustainability Strategy

### 2.1 Open space and Biodiversity

The existing site is predominantly buildings and hard standing. No statutory or non-statutory nature conservation designations apply to the site.

An “Extended Phase 1 Habitat Survey” completed by London Conservation services in June 2013 confirmed that the courtyard created in 2010, consisting of raised wooden planters with a variety of exotic perennials, ferns, shrubs and young trees, is, given the limited area of habitat, unlikely to support rare, diverse or large populations of species, providing little in the way of ecological value.

The London Wildlife Trust have produced an updated ecology assessment, October 2017, which accompanies this planning submission.

The existing buildings provide limited bat roosting potential and an ecologist has been appointed to make recommendations on how to maximise opportunities for biodiversity. It is recommended that an internal and external building inspection is undertaken prior to demolition. The few young trees on the site have limited potential to support nesting birds. The ecologist has recommended that where the scope of works requires the removal of habitats suitable for breeding birds, works should be scheduled to take place outside the bird breeding season (March to August). Alternatively, an experienced ecologist should carry out a search for any nesting birds prior to any works.

Opportunities have been explored to introduce natural features as far as possible including a new re-landscaped courtyard, climbing plants, and an area of biodiverse roof with rain water harvesting, which will provide enhanced ecological value as well urban cooling, surface water attenuation and improvements to local air quality. The ecologist has also made specific recommendations with regard to planting species known to be of value to wildlife, with an emphasis on native species, in accordance with the local authority’s Biodiversity Action Plan.

The proposed ecological improvements and re-landscaping of the courtyard to enhance links between open spaces on a very tight urban site demonstrates compliance with Camden Local Plan policies A2, A3, and CPG3.

## 2.2 Noise and vibration

CLP policy A4 seeks to ensure that noise sensitive uses are not negatively impacted by noise and vibration, and that existing uses are not unduly restricted through the introduction of nearby noise sensitive uses.

The site is bounded by noise sensitive dwellings to the north, west, and east, with the existing LSHTM situated to the south. The presence of the existing buildings provides significant screening effects from road traffic noise on surrounding roads. The noise climate in the vicinity was otherwise dominated by moderate road traffic, as established during the baseline noise survey carried out by BDP Acoustics, February 2015, in accordance with BS4142:2014 *Methods for rating and assessing industrial and commercial sound*. Attended and unattended environmental noise surveys were undertaken at positions representative of nearby noise sensitive dwellings during both the day and night time periods.



Fig x. Measurement Locations

In order to meet the Local Plan policy A4, relating to noise emissions from fixed plant, plant noise emissions limits of between 31dB (night) and 39dB (day) have been set depending upon whether or not plant has distinguishable discreet acoustic notes or distinct acoustic impulses.

There is an existing underground train line running nearby the proposed site. Vibration caused by this may affect sensitive laboratory equipment. Demanding equipment requirements have not been identified to date. Should sensitive equipment be required, anti-vibration tables will be provided and anti-vibration pads installed below larger equipment pieces if required.

## 2.3 Safety and security

CLP policy C5 promotes pedestrian friendly spaces and the incorporation of principles that contribute to community safety and security.

It is proposed that security will be managed at the site boundary. The site perimeter is walled to the North with existing buildings surrounding the site to the remaining sides. The site is currently accessed via three existing pends and the proposal is to maintain this arrangement. Entrance gates at the boundary to each pend will be locked down out of hours and will only be useable to building users to exit through. All ground floor accommodation doors will be provided with card access, and glazing and doors will be specified to Secure by Design PAS23/24 standard.

The entrance door at this location will be kept unlocked during working hours with security provided by a manned reception inside the atrium. Reception will double up as the security office and will be lockable at night through use of a folding grille.

External CCTV will provide an enhanced degree of security for staff and visitors. This will be supported by good levels of illuminance around the building for night time working.

A review of the proposals will be undertaken with LSHTM security and Metropolitan Police during the next stage of design, to ensure that the development is securely designed.

## 2.4 Climate change mitigation

CLP policy CC1 sets out that in order to minimise the effects of climate change, development should follow the energy hierarchy 'Lean', 'Clean', 'Green', towards zero carbon, in line with the London Plan. Priorities involve optimising resource efficiency, supporting decentralised energy networks and incorporating renewable energy technologies.

Developments are expected to achieve a 20% reduction in regulated carbon dioxide emissions from on-site renewable energy generation (which can include sources of site related decentralised renewable energy), unless it can be demonstrated that such provision is not feasible.

Energy modelling has been completed for the proposed design, to ensure that it meets the requirements of Part L, policies 5.2 of the London Plan and CC1 of the Camden Local Plan. The assessment demonstrates a 37.8% carbon emission reduction over the Part L2A Notional Building, confirming compliance. This is achieved through the following measures:

- 100m<sup>2</sup> photovoltaics contributing approximately 4kWh/m<sup>2</sup> annually
- Spectrally selective solar control glazing, which filters out solar gain whilst allowing daylight in
- Natural ventilation at the perimeter areas above Ground floor
- High efficiency boilers
- Photoelectric dimming and occupancy sensing controls
- A BMS capable of automatic measurement and targeting.

The energy statement that accompanies this planning submission in accordance with CPG3, outlines the baseline energy demand and carbon dioxide emissions, as well as demonstrating a breakdown of the reduction in energy demand and resulting carbon emissions through 'lean', 'clean' and 'green' measures.

The Camden Local Plan requires all new developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible, connecting to an identified future decentralised network or establishing a new network.

Current studies indicate that Combined Heat and Power (CHP) has shown to be of limited benefit due to seasonal variations in the heat demand profile of the building. No local District Energy Networks are presently available, however, allowance has been made for a future network.

Resource efficiency will be optimised by:

- Reducing waste
- Reducing energy and water use during construction and water demands once the building is in use
- Minimising materials required, and
- Using materials with low embodied carbon content

As addressed in the architectural outline specification, the majority of materials specified will aim to have a Green Guide rating of 'A', and will be responsibly and locally sourced where possible.

## 2.5 Adapting to climate change

CLP policy CC2 promotes the highest standards of sustainable design and construction in development to mitigate and adapt to climate change. This sustainability statement outlines how the development will meet the highest standards of sustainable design and construction with consideration of principles including passive solar design, water efficiency standards, sustainable drainage, reuse and recycling, renewable energy technologies, and green roofs and spaces, which promote biodiversity and green infrastructure in addition to urban cooling. All new development should meet the standards for sustainable design and construction set out in the London Plan. All new non-residential development over 500m<sup>2</sup> should be assessed against BREEAM and meet a rating of ‘Excellent’ as minimum.

A BREEAM pre-assessment has been completed, under the BREEAM New Construction 2014 methodology (Office Building) which confirms that 76.11% credits are deemed achievable on the basis of the current design, surpassing the minimum requirement for ‘Excellent’ (>70%).

BREEAM Section	Credits Available	Credits Predicted	% Predicted	Weighting	Overall Weighted Percentage
Management	21	17	80.95%	12.00%	9.71%
Health & Wellbeing	17	12	70.59%	15.00%	10.59%
Energy	23	15	65.22%	15.00%	9.78%
Transport	9	9	100.00%	9.00%	9.00%
Water	8	5	62.50%	7.00%	4.38%
Materials	13	9	69.23%	13.50%	9.35%
Waste	9	7	77.78%	8.50%	6.61%
Land Use & Ecology	10	8	80.00%	10.00%	8.00%
Pollution	13	10	76.92%	10.00%	7.69%
Innovation	10	1	10.00%	10.00%	1.00%
				<b>Total</b>	<b>76.11% ‘Excellent’</b>

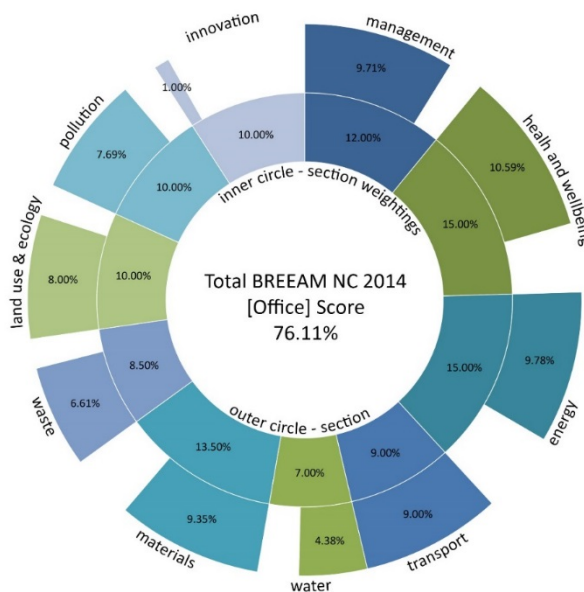


Figure 1. BREEAM Doughnut

The pre-assessment document accompanies this Sustainability Statement, and will provide the framework within which the design should be developed. The predicted score shown is not definitive, but will be used as a guide to lead design. The overall performance objective and target rating are committed to.

## 2.6 Water and flooding

Development should seek to ensure it does not increase flood risk and should reduce risk of flooding where possible, in line with CLP policy CC3. Tavistock Place 2 is situated in flood zone 1, meaning there is less than a 1 in 1,000 annual probability of river or sea flooding (<0.1%). There is no risk of surface water flooding, although there is a low risk directly North West of the site, as indicated by figure 2.

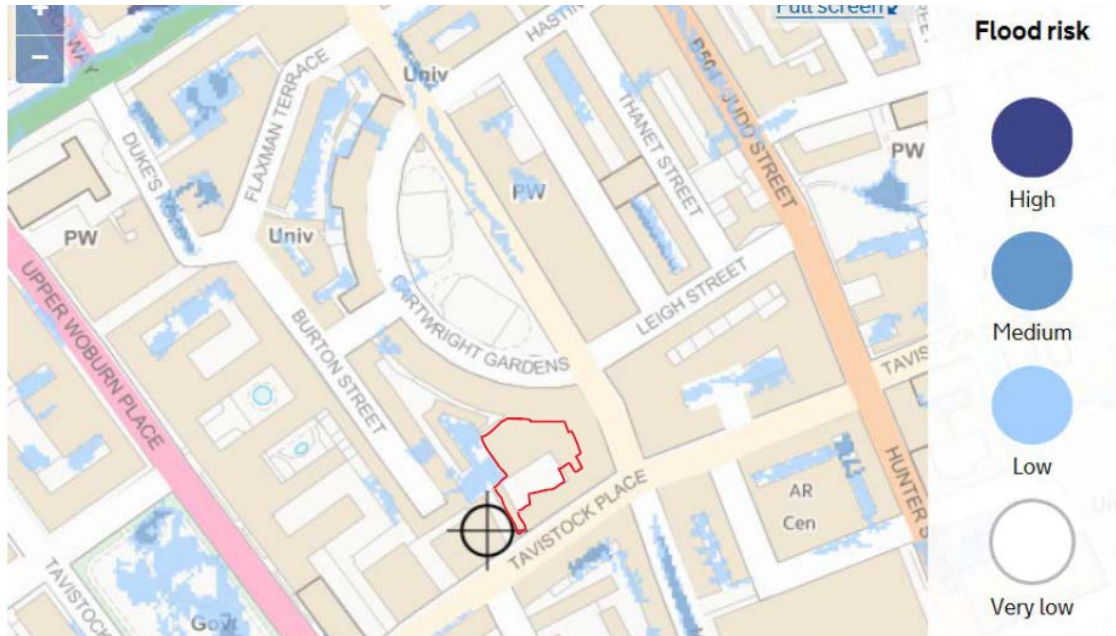


Figure 2. Environment Agency flood map for surface water

SuDS will be incorporated in line with the drainage hierarchy to achieve post development run-off rates that are no greater than the pre development rates. They will also minimise water course pollution, avoiding harm to the water environment and improving water quality.

The Ground Investigation and Basement Impact Assessment report confirms that the existing surface water drainage arrangements will not be materially changed, however there is a need for a storm water strategy for the area as a whole. Storm water discharges off site should be reduced by 50% using SuDS. The new building is proposed with an attenuation tank and green roof system, in combination with a blue roof, to provide effective attenuation. The Sustainable Urban Drainage Statement, issued by Wilde Carter Clack, September 2017, confirms that the attenuation tank is based on a 50% reduction of the existing flows and includes a 30% increase in rainfall for climate change

The Ground Investigation report also reveals the findings of contamination testing, indicating an elevated concentration of aqueous total petroleum hydrocarbons, in a sample of groundwater taken from one boreholes. Although, no concentrations of contaminants have been measured in the soil above the generic risk based screening values for a commercial end use.

An underground fuel tank was been identified in the northwest of the site which will need to be removed and further investigation will be required in this area. The basement excavation should remove any contaminated soils present and end users will be effectively isolated from direct contact with the identified contaminants. As such no further remedial measures are considered to be required.

Water consumption will be reduced onsite through the installation of sanitary fittings with low flow rates, to achieve a minimum reduction of 25% below the notional building. Water metering and a leak detection system will permit adequate monitoring. This will ensure the development achieves 2 credits under BREEAM issue Wat 01 and 1 credit under issue Wat 02.

## 2.7 Air quality

Camden have some of the poorest air quality levels in London and since 2000 the whole of the borough has been declared an Air Quality Management Area (AQMA) for both NO<sub>2</sub> (Nitrogen Dioxide) and PM<sub>10</sub> (Particulate Matter). Camden is also working to assess and address PM<sub>2.5</sub>, as research suggests that particulates of this size have the worst health impacts.

The Air Quality Assessment carried out by Peter Brett Associates LLP, October 2017, confirms that measured and estimated background concentrations for the site show NO<sub>2</sub> background concentrations to be above the objective of 40 µg/m<sup>3</sup>. The PM<sub>10</sub> and PM<sub>2.5</sub> background concentrations are below the objective.

The main potential effects during construction are dust deposition and elevated PM<sub>10</sub> concentrations. Based on the SPG on 'The control of dust and emissions during construction and demolition' criteria, the risk of dust emissions is considered to be low, as the project would involve the demolition and construction of structures located in the rear of the site, with less than 20,000 m<sup>3</sup> to be demolished or built.

CLP policy CC4 requires that the impact of development on air quality is mitigated and exposure to poor air quality reduced, including during demolition and construction works.

The study area is considered to be of medium sensitivity, due to the residential properties within 50 m and shops within 20 m. Appropriate mitigation corresponding to a low risk site is therefore required during the construction phase. With mitigation in place the construction impacts are judged as not significant. Mitigation measures are outlined on page 20 of the AQA.

LSHTM Tavistock Place will be registered under the Considerate Constructors Scheme, which assesses efforts being made to minimise the impact of air pollution among other criteria related to the site. An exemplary level of practice has been targeted.

The AQA concludes that the development will not lead to exposure to air pollution levels exceeding the relevant national air quality objectives. No mitigation against poor air quality is therefore required within the site and there are no air quality constraints to the proposed development.

VOC and formaldehyde concentrations will be measured post construction and where necessary, measures will be taken in accordance with the IAQ plan, to reduce levels to within the BREEAM maximum limits set of 100µg/averaged over 30 minutes formaldehyde, and 300µg/over 8 hours TVOC, also in line with building regulation requirements.

Boilers specified will have low NO<sub>x</sub> emissions of <40mg/kWh, to further ensure low levels of pollution are emitted from the development during occupation. Filtration will be included in the air handling unit to filter outside air to G4 and EU7 standard.

In compliance with policy 7.14 of the London Plan, Tavistock Place will at least be air quality neutral.



## 2.8 Waste

CLP policy CC5 promotes the reduction of waste and increase in recycling and reuse to meet the London Plan targets following the waste hierarchy. The CLP outlines a requirement for developments to divert 85% of waste from landfill.

During the construction process, a Site Waste Management Plan will be required. The significant majority of non-hazardous construction waste generated by the development will be diverted from landfill and reused or recycled. Reuse of materials from the existing structure (as crushed aggregate) will be explored as this reduces the number of waste collections during the construction phase. Storage of this waste will be an issue due to the constrained site and therefore discussions with the Contractor will be key in finding a balance between materials saved versus not disrupting works onsite.

The development will seek to ensure the amount of non-hazardous construction waste generated on-site remains  $\leq 6.5$  tonnes per 100m<sup>2</sup> (gross internal floor area).

Adequate provision for operational waste and segregated recycling will also be provided on-site. This designated area will be easily accessible and clearly labelled for ease of use.

## 2.9 Transport and Access

Spaces, routes and facilities between buildings are designed to be fully accessible, encourage accessible public transport, and provide secure car parking for disabled people, in accordance with CLP policy C6.

The site has a private courtyard which will be maintained in principle as a shared external space adjacent to the modest service yard. An initial transport assessment by Wilde Carter Clack in 2015, indicated that vehicular servicing requirements of the building are light.

The Design and Access Statement that accompanies this planning submission demonstrates how inclusion will be maintained and managed, and how the principles of inclusive design, including the specific needs of disabled people, have been integrated into the proposed development. Car parking at LSHTM Tavistock Place will be limited to two disabled access spaces, these will be located off road, within the new courtyard. This shows compliance with CLP policy T2.

The Tavistock Place site lies within a Controlled Parking Zone and a 20mph speed limit zone. A one-way traffic system eastbound has also been implemented on Tavistock Place. These restrictions serve to provide a disincentive to travel to and from the application site by private motor vehicle and encourage sustainable travel.

The central site location with good public transport connections benefits from a public transport accessibility level (PTAL) score of 6b, the highest score achievable. This enables pedestrian and cyclist access to be prioritised.

There are a large range of shopping and leisure facilities within the immediate vicinity of the site, allowing a number of trips for a variety of purposes to be undertaken on foot during break periods. An extensive residential area is also accessible on foot or by bicycle, access by the latter mode is facilitated by two cycle routes that pass the frontage of the site on Tavistock Place.

Secure cycle storage will be provided in in the service yard and throughout an external covered lightwell that provides access around the perimeter of building. Cycle facilities and storage will be provided in compliance with CLP policy T1 and the BREEAM minimum requirements of Tra 03, to provide no less than 1 space per every 10 members of staff for the first 200 members, and 1 space for every 15 staff for the next 100 members after that, etc., this will total 64 secure cycle storage spaces.

The revised Transport Assessment produced by Wilde Carter Clack, October 2017, accompanies this planning submission.

## 1.0 Conclusion

The preceding document outlines the key environmental considerations incorporated into the development of the London School for Hygiene and Tropical Medicine's new medical research facility at Tavistock Place, in line with local sustainable development policy. Planning policies and guidance documents have been referenced throughout this Sustainability Statement where appropriate, with justification provided that the development complies with the requirements of the London Plan, Camden Local Plan and Supplementary Camden Planning Guidance: CPG3.

The development will be assessed against the BREEAM New Construction 2014 Office methodology, with a target rating of 'Excellent'. Following this methodology in line with relevant planning policies demonstrates how sustainability principles have been incorporated as far as practicable, including; the specification of water efficient sanitary fittings, responsibly sourced materials with low environmental impact, adequate provision for operational waste and recycling, and an energy strategy that meets the requirements of Part L, CLP policy CC1, CPG3 and policy 5.2 of the London Plan, following the energy hierarchy to reduce consumption and carbon emissions towards zero, through 'Lean' measures and the integration of PV.

In compliance with CLP policies A2, A3 and CC3, the site's development will improve the local environment through measures including the maximisation of green and open space, such as the newly landscaped courtyard and green roof to mitigate flood risk, enhance biodiversity, and improve local air quality and drainage.

The design of the new medical research facility at Tavistock Place is also being developed in consultation with the Met Police to ensure the highest levels of safety and security, in line with CLP policy C5, and transport and access requirements have been assessed to maximise opportunities for sustainable transport, in accordance with CLP policies C6 and T2.

Opportunities have been explored to introduce natural features as far as possible including a new re-landscaped courtyard, climbing plants, and an area of biodiverse roof with rain water harvesting, which will provide enhanced ecological value as well urban cooling, surface water attenuation and improvements to local air quality. The ecologist has also made specific recommendations with regard to planting species known to be of value to wildlife, with an emphasis on native species, in accordance with the local authority's Biodiversity Action Plan.

SuDS will be incorporated in line with the drainage hierarchy to achieve post development run-off rates that are no greater than the pre development rates. They will also aim to minimise water course pollution, avoiding harm to the water environment and improving water quality. The new building is proposed with a green roof system in combination with a blue roof to provide effective attenuation.

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Boilers specified will have low NO<sub>x</sub> emissions of <40mg/kWh, to further ensure low levels of pollution are emitted from the development during occupation. Filtration will be included in the air handling unit to filter outside air to G4 and EU7 standard.

## **Appendix A: LSHTM Tavistock Place 2: BREEAM Pre-Assessment**

Credit Title	Credit Ref	Title	Available Credits	Compliance Requirements	Not Achievable	Potentially Achievable	Confirmed Achievable	Responsibility
Project Brief and Design	Man 01-01	Stakeholder consultation (project delivery)	1	Prior to completion of the Concept Design (RIBA Stage 2 or equivalent), the project delivery stakeholders have met to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery.			1	Design Team
	Man 01-02	Stakeholder Consultation (third party)	1	Prior to completion of the Concept Design stage, all relevant third party stakeholders have been consulted by the design team and this covers the minimum consultation content. The project must demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design.			1	Design Team
	Man 01-03	Sustainability Champion (design)	1	A Sustainability Champion has been appointed to facilitate the setting and achievement of BREEAM performance target and the design stage Sustainability Champion is appointed to perform this role during the feasibility stage.			1	BREEAM Assessor
	Man 01-04	Sustainability Champion (monitoring progress)	1	A Sustainability Champion is appointed to monitor progress against the agreed BREEAM performance target(s) throughout the design process and formally report progress to the client and design team.			1	BREEAM Assessor
Life Cycle Cost and Service Life Planning	Man 02-01	Elemental Life Cycle Cost (LCC)	2	An elemental life cycle cost (LCC) analysis has been carried out, at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2) together with any design option appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008.		2		Cost Consultant
	Man 02-02	Component Level LCC Plan	1	A component level LCC plan has been developed by the end of Process Stage 4 (equivalent to Technical Design - RIBA Stage 4) in line with PD 156865:2008 and includes the following component types (where present): a. Envelope, e.g. cladding, windows, and/or roofing b. Services, e.g. heat source cooling source, and/or controls c. Finishes, e.g. walls, floors and/or ceilings d. External spaces, e.g. alternative hard landscaping, boundary protection.		1		Cost Consultant
	Man 02-03	Capital Cost Reporting	1	Report the capital cost for the building in pounds per square metre (£k/m2), via the BREEAM Assessment Scoring and Reporting tool, Assessment Issue Scoring tab, Management section.		1		Client
Responsible Construction Practices	Pre-req	Legal Timber	Y	All timber and timber based products used on the project is 'Legally harvested and traded timber'			Y	Contractor
	Man 03-01	Environmental Management	1	The principal contractor operates an environmental management system (EMS) covering their main operations.			1	Contractor
	Man 03-02	Sustainability Champion (construction)	1	A Sustainability Champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target(s), during the Construction, Handover and Close Out stages (as defined by the RIBA Plan of Works 2013, stages 5 and 6).			1	Contractor
	Man 03-03	Considerate Construction	2	Where the principal contractor has used a 'compliant' organisational, local or national considerate construction scheme and their performance against the scheme has been confirmed by independent assessment and verification. - One credit where the contractor achieves 'compliance' with the criteria of a compliant scheme. - Two credits where the contractor significantly exceeds 'compliance' with the criteria of the scheme. Refer to the Relevant definitions section for a list of compliant schemes and therefore how performance, as determined by a compliant scheme, translates in to BREEAM credits.			2	Contractor
	Man 03-Ex	Exemplary Performance Criteria [CCS]	1	In addition to meeting the criteria for two credits, the contractor achieves compliance with the criteria of the compliant scheme to an exemplary level of practice			1	Contractor
	Man 03-04	Monitoring of Construction Site Impacts	2	Responsibility has been assigned to an individual(s) for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from all on-site construction processes (and dedicated off-site monitoring) throughout the build programme.			2	Contractor
Commissioning and Handover	Man 04-01	Commissioning and testing schedule and responsibilities	1	A schedule of commissioning and testing that identifies and includes a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and testing and inspecting building fabric.			1	Contractor
	Man 04-02	Commissioning building services	1	For buildings with complex building services and systems, a specialist commissioning manager is appointed during the design stage (by either the client or the principal contractor) with responsibility for: a. Undertaking design reviews and giving advice on suitability for ease of commissioning. b. Providing commissioning management input to construction programming and during installation stages. c. Management of commissioning, performance testing and handover/post-handover stages.			1	Contractor
	Man 04-03	Testing and inspecting building fabric	1	The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of post construction testing and inspection.			1	Contractor
	Man 04-04	Handover	1	A Building User Guide (BUG) is developed prior to handover for distribution to the building occupiers and premises managers. A training schedule is prepared for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans.			1	Contractor
Aftercare	Man 05-01	Aftercare support	1	There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupier(s), which includes the following as a minimum. - meeting between aftercare team and building occupier/management (prior to initial occupation) to introduce the aftercare team and present key information about the building. - on-site facilities management training - initial aftercare support for the first month of building occupation - longer term aftercare support for the first 12 months There are resources in place for collection and monitoring of energy and water consumption for a minimum of 12 months.			1	Contractor
	Man 05-02	Seasonal commissioning	1	Seasonal commissioning activities will be completed over a minimum 12-month period, once the building becomes occupied. Full load and part load conditions			1	Contractor
	Man 05-03	Post occupancy evaluation	1	The client or building occupier makes a commitment to carry out a post-occupancy evaluation (POE) exercise one year after initial building occupation. This is done to gain in-use performance feedback from building users to inform operational processes, including re-commissioning activities, and maintain or improve productivity, health, safety and comfort. The POE shall cover: - a review of design intent and construction process - feedback from a wide range of building users including Facilities Management on design and environmental conditions of building. The client or building occupier makes a commitment to carry out the appropriate dissemination of information.			1	Client
	Man 05-Ex	Exemplary Performance Criteria [POE]	1	There is (or will be) operational infrastructure and resources in place to co-ordinate the following activities at quarterly intervals for the first three years of building occupation: a. Collection of occupant satisfaction, energy consumption and water consumption data. b. Analysis of the data to check the building is performing as expected and make any necessary adjustments to systems controls or to inform building user behaviours. c. Setting targets for reducing water and energy consumption and monitor progress towards these. d. Feedback any 'lessons learned' to the design team and developer for use in future projects. e. Provision of the actual annual building energy, water consumption and occupant satisfaction data to BRE.		1		Client

Visual Comfort	Hea 01-01	Glare Control	1	The potential for disabling glare has been designed out of all relevant building areas using a glare control strategy, either through building form and layout and/or building design measures. E.g. Blinds, bioclimatic design, brise soleil.			1	Architect
	Hea 01-02	Daylighting	1	Daylighting criteria have been met using either of the following options: a. The relevant building areas meet good practice daylight factor(s) and other criterion as outlined in Table - 10 and Table - 11. OR b. The relevant building areas meet good practice average and minimum point daylight illuminance criteria as outlined in Table - 12.		1		Architect
	Hea 01-03	View Out	1	95% of the floor area in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out. The window/opening must be ≥ 20% of the surrounding wall area	1			Architect
	Hea 01-04	Internal and External Lighting	1	All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts.  All internal and external lighting, where relevant, is specified in accordance with the appropriate maintained illuminance levels (in lux) recommended by CIBSE. In all relevant building areas, lighting is appropriately zoned and occupant controllable with the option for commonly required lighting settings to be selected quickly and easily.			1	Lighting Designer
	Hea 01-Ex	Exemplary Performance Criteria [Daylight]	1	Daylighting criteria have been met using either of the following options: a. Relevant building areas meet exemplary daylight factor(s) and the relevant criteria in Table - 15. OR b. Relevant building areas meet exemplary average and minimum point daylight illuminance criteria in Table - 16.		1		Architect
Indoor Air Quality	Hea 02-01	Indoor Air Quality Plan	1	An indoor air quality plan has been produced, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building.			1	Contractor
	Hea 02-02	Ventilation	1	The building has been designed to minimise the concentration and recirculation of pollutants			1	M&E
	Hea 02-03	VOC Emission Levels (products)	1	All decorative paints and varnishes specified meet the criteria in Table - 18 At least five of the seven remaining product categories listed in Table - 18 meet the testing requirements and emission levels criteria for volatile organic compound (VOC) emissions.			1	Architect
	Hea 02-04	VOC Emission Levels (post construction)	1	The formaldehyde concentration level is measured post construction (but pre-occupancy) and is found to be less than or equal to 100µg/averaged over 30 minutes (WHO guidelines for indoor air quality: Selected pollutants, 20102).  The total volatile organic compound (TVOC) concentration level is measured post construction (but pre-occupancy) and found to be less than 300µg/over 8 hours, in line with the building regulation requirements.  Where VOC and formaldehyde levels are found to exceed the limits defined in criteria 10 and 11, the project team confirms the measures that have, or will be taken, in accordance with the IAQ plan, to reduce the levels to within these limits.			1	Contractor
	Hea 02-05	Adaptability - Potential for Natural Ventilation	1	Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy.	1			M&E
	Hea 02-Ex	VOC Emission Levels	2	All seven remaining products categories listed in Table - 18 meet the testing requirements and emission levels criteria for Volatile Organic Compound (VOC) emissions (listed in the technical manual). For products B to F listed in Table - 18, the formaldehyde emission levels have been measured and found to be less than or equal to 0.06mg/m3 air (one credit) or 0.01mg/m3 air (two credits), in accordance with the approved testing standards in Table - 18.		2		Architect
Thermal Comfort	Hea 04-01	Thermal Modelling	1	Thermal modelling has been carried out using software in accordance with CIBSE AM11 1 Building Energy and Environmental Modelling.			1	M&E
	Hea 04-02	Adaptability for Climate Change	1	The thermal modelling demonstrates that the relevant requirements set out in criteria 3 are achieved for a projected climate change environment. Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrates how the building has been adapted, or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements under criterion 6.			1	M&E
	Hea 04-03	Thermal Zoning and Controls	1	The thermal modelling analysis (undertaken for compliance with criteria 1 to 4) has informed the temperature control strategy for the building and its users.			1	M&E
Acoustic Performance	Hea 05-01	Acoustic Performance	3	For two credits, the building meets the appropriate acoustic performance standards and testing requirements defined in the checklists and tables section which defines criteria for the acoustic principles of: a. Sound insulation b. Indoor ambient noise level c. Reverberation times. For three credits, a SQA defines a bespoke set of performance requirements using the three principles above.			3	Acoustician
Safety and Security	Hea 06-01	Safe Access	1	Dedicated cycle paths provide direct access from site entrance to any cycle storage provided. Footpaths provide direct access from site entrance to building entrance and connect to public footpaths. Dedicated pedestrian crossings are provided where pedestrian routes cross vehicle access routes. Delivery areas are not directly accessed through general parking areas.		1		Landscape Architect
	Hea 06-02	Security of Site and Building	1	A suitably qualified security specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent) and develops a set of recommendations or solutions.		1		Architect
Reduction of CO2 Emissions - Energy	Ene 01-01	Energy Performance	12	Calculate an Energy Performance Ratio for New Constructions (EPRNC) using BREEAM's Ene 01 calculator.		5	7	M&E
	Ene 01-Ex	Exemplary Performance Criteria [Energy]	5	<b>Five credits</b> 5. The building is 'carbon negative' in terms of its total modelled operational energy consumption (see Relevant definitions in the Additional Information section of this issue).  <b>Up to four credits</b> 6. The building achieves an EPRNC ≥0.9 and zero net CO2 emissions (see Relevant definitions) 7. An equivalent percentage of the buildings modelled 'regulated' operational energy consumption, as stipulated in the table below, is generated by carbon neutral on-site, near-site or 'accredited external' sources and used to meet energy demand from 'unregulated' building systems or processes.	5			M&E
Energy Monitoring	Ene 02-01	Sub-metering - Major Energy Consuming Systems	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. The energy consuming systems in buildings with a total useful floor area greater than 1,000m2. are metered using an appropriate energy monitoring and management system.			1	M&E
	Ene 02-02	Sub-metering - High Energy Load and Tenancy Areas	1	An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, covering a significant majority of the energy supply to tenanted areas or, in the case of single occupancy buildings, relevant function areas or departments within the building/unit.			1	M&E
External Lighting	Ene 03-01	External Lighting	1	The building has been designed to operate without the need for external lighting OR  The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt. All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.			1	Lighting Designer

Low Carbon Design	Ene 04-01	Passive Design Analysis	1	The project team carries out an analysis of the proposed building design/development to influence decisions made during Concept Design stage (RIBA Stage 2 or equivalent) and identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services.		1	Architect / M&E
	Ene 04-02	Free Cooling	1	The passive design analysis carried out under criterion 2 includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions. The building uses ANY of the free cooling strategies listed below: 1. Night time cooling (which could include the use of a high exposed thermal mass) 2. Ground coupled air cooling 3. Displacement ventilation (not linked to any active cooling system) 4. Ground water cooling 5. Surface water cooling 6. Evaporative cooling, direct or indirect 7. Desiccant dehumidification and evaporative cooling, using waste heat 8. Absorption cooling, using waste heat 9. The building does not require any significant form of active cooling or mechanical ventilation (i.e. naturally ventilated).	1	M&E	
	Ene 04-03	Low Zero Carbon Feasibility Study	1	A feasibility study has been carried out by the completion of the Concept Design stage (RIBA Stage 2 or equivalent) by an energy specialist to establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy source(s) for the building/development. A local LZC technology/technologies has/have been specified for the building/development in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated carbon dioxide (CO2) emissions.	1	M&E	
Energy efficient transportation systems	Ene 06-01	Energy Consumption	1	An analysis of the transportation demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators and/or moving walks. The energy consumption has been calculated in accordance with BS EN ISO 25745 Energy performance of lifts, escalators and moving walks, Part 2: Energy calculation and classification for lifts (elevators) and/or Part 3: Energy calculation and classification for escalators and moving walks.	1	Architect	
	Ene 06-02	Energy Efficient Features	2	a. The lifts operate in a standby condition during off-peak periods. For example the power side of the lift controller and other operating equipment such as lift car lighting, user displays and ventilation fans switch off when the lift has been idle for a prescribed length of time. b. The lift car lighting and display lighting provides an average lamp efficacy, (across all fittings in the car) of >55 lamp lumens/circuit Watt. c. The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor.	2	M&E	
Energy Efficient Equipment	Ene 08-01	Unregulated Energy Loads	2	Identify functions identify which will be responsible for the significant majority of unregulated energy consumption in the building. Ensure these function comply with relevant criteria.	2	Client	
Public Transport Accessibility	Tra 01-01	Accessibility Index	3	The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded in accordance with the table of building types, AI benchmarks and BREEAM credits in Table - 29	3	BREEAM Assessor	
Proximity to Amenities	Tra 02-01	Local Amenities	1	Where the building is located within close proximity and accessible to amenities	1	BREEAM Assessor	
Cyclist Facilities	Tra 03-01	Cycle Storage	1	Compliant cycle storage spaces that meet the minimum levels set out in Table - 32 (see checklists and tables) are installed.	1	Landscape Architect	
	Tra 03-02	Cyclist Facilities	1	At least two of the following types of compliant cyclist facilities have been provided for all staff a. Showers b. Changing facilities c. Lockers d. Drying spaces	1	Architect	
Maximum Car Parking Capacity	Tra 04-01	Car Parking Capacity	2	The building's car parking capacity is compared to the maximum car parking capacity permitted according to the benchmarks in the table provided, and the relevant number of BREEAM credits awarded.	2	Client	
Travel Plan	Tra 05-01	Travel Plan	1	A travel plan has been developed as part of the feasibility and design stages which considers all types of travel relevant to the building type and users.	1	Client	
Water Consumption	Wat 01-01	Water Consumption	5	An assessment of the efficiency of the building's domestic water consuming components is undertaken using the BREEAM Wat 01 calculator	3	2	Architect
	Wat 01-Ex	Exemplary Performance Criteria [Water]	1	All other information as above, where the water consumption (litres/person/day) for the assessed building is compared against a notional baseline performance and BREEAM credits awarded as follows: 65% improvement over baseline - Exemplary performance	1	Public Health	
Water Monitoring	Wat 02-01	Water Monitoring	1	A water meter with a pulsed output will be installed on the mains supply to each building/unit. Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area	1	Public Health	
Water Leak Detection and Prevention	Wat 03-01	Leak Detection System	1	A leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter.	1	Public Health	
	Wat 03-02	Flow Control Devices	1	A flow control device is fitted to each WC area/facility to ensure water is supplied only when needed (and therefore prevent minor water leaks):	1	Public Health	
Life Cycle Impacts	Mat 01-01	Major Building Elements	5	Up to six credits are available, determined by the Green Guide to Specification ratings for the major building/finishing elements.	2	3	Architect
	Mat 01-Ex	Exemplary Performance Criteria [Materials]	2	Where assessing four or more applicable building elements, the building achieves at least two points additional to the total points required to achieve maximum credits under the standard BREEAM criteria OR Where assessing fewer than four applicable building elements, the building achieves at least one point additional to the total points required to achieve maximum credits under the standard BREEAM criteria.	2	Architect	
Hard Landscaping and Boundary Protection	Mat 02-01	Hard Landscaping and Boundary Protection	1	Where at least 80% of all external hard landscaping and boundary protection (by area) achieves an A or A+ rating, as defined in the Green Guide to Specification.	1	Landscape Architect	
Responsible Sourcing of Materials	Mat 03-01	Sustainable Procurement Plan	1	The principal contractor sources materials for the project in accordance with a documented sustainable procurement plan	1	Contractor	
	Mat 03-02	Responsible Sourcing	3	To achieve points for any given building element, at least 80% of the materials that make-up that element must be responsibly sourced. Confirmation that all timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy.	1	2	Contractor
	Mat 03-Ex	Exemplary Performance Criteria [Sourcing]	1	Where 70% of the available responsible sourcing points have been achieved.	1	Contractor	

Insulation	Mat 04-01	Embodied Impact	1	Thermal insulation products used in the building have a low embodied impact relative to their thermal properties, determined by the Green Guide to Specification ratings. The Insulation Index for the building fabric and services insulation is the same as or greater than 2.5.			1	Architect
Designing for Durability and Resilience	Mat 05-01	Protecting Vulnerable Parts of the Building	1	The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. The relevant building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors.			1	Architect
Material Efficiency	Mat 06-01	Optimising Use of Material	1	Measures have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life			1	Architect
Construction Waste Management	Wst 01-01	Construction Resource Efficiency	3	The amount of non-hazardous construction waste (m3/100m2 or tonnes/100m2) generated on site by the development is the same as or better than good or best practice levels.		1	2	Contractor
	Wst 01-02	Diversion of resources from landfill	1	Significant majority of non-hazardous construction waste generated by the development will be diverted from landfill and reused or recycled			1	Contractor
	Wst 01-Ex	Exemplary Performance Criteria	1	Non-hazardous construction waste generated by the building's design and construction is no greater than the exemplary level resource efficiency benchmark. The percentage of non hazardous construction and demolition waste (if relevant) diverted from landfill meets or exceeds the exemplary level percentage benchmark.		1		Contractor
Recycled Aggregates	Wst 02-01	Recycled Aggregates	1	The total amount of recycled and/or secondary aggregate specified is greater than 25% (by weight or volume) of the total high-grade aggregate specified for the development.		1		Contractor
	Wst 02-Ex	Exemplary Performance Criteria [Aggregates]	1	The total amount of recycled and/or secondary aggregate specified is greater than 35% (by weight or volume) of the total high-grade aggregate specified for the project.		1		Contractor
Operational Waste	Wst 03-01	Operational Waste	1	There is dedicated space(s) to cater for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. The space is clearly labelled and accessible.			1	Architect
Speculative Floor and Ceiling Finishes	Wst 04-01	Speculative Floor and Ceiling Finishes	1	1. For tenanted areas (where the future occupant is not known), prior to full fit-out works, carpets, other floor finishes and ceiling finishes have been installed in a show area only. 2. In a building developed for a specific occupant, that occupant has selected (or agreed to) the specified floor and ceiling finishes.			1	Architect
Adaptation to Climate Change	Wst 05-01	Structural and Fabric Resilience	1	Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of Concept Design (RIBA Stage 2 or equivalent),			1	C&S
	Wst 05-Ex	Exemplary Performance Criteria [Climate Change]	1	A holistic approach to the design and construction of the current building's life cycle, to mitigate against the impacts of climate change, is represented by the achievement of these criteria.		1		Architect
Functional Adaptability	Wst 06-01	Functional Adaptability	1	A building-specific functional adaptation strategy study has been undertaken by the client and design team by Concept Design (RIBA Stage 2 or equivalent), which includes recommendations for measures to be incorporated to facilitate future adaptation.			1	Architect
Site Selection	LE 01-01	Previously Developed Land	1	At least 75% of the proposed development's footprint is on an area of land which has previously been developed for use by industrial, commercial or domestic purposes in the last 50 years.			1	Architect
	LE 01-02	Contaminated Land	1	The site is deemed to be significantly contaminated as confirmed by a contaminated land specialist's site investigation, risk assessment and appraisal. The client or principal contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan.			1	C&S
Ecological Value of Site and Protection of Ecological Features	LE 02-01	Ecological Value of Site	1	Land within the construction zone is defined as 'land of low ecological value'.			1	Ecologist
	LE02-02	Protection of Ecological Features	1	All existing features of ecological value within and surrounding the construction zone and site boundary area are adequately protected from damage during clearance, site preparation and construction activities in line with BS42020: 2013			1	Contractor
Mitigating Ecological Impact	LE 03-01	Minimal Negative Change in Ecological Value	1	The change in ecological value of the site is less than zero but equal to or greater than minus nine			1	Ecologist / Landscape Architect
	LE 03-02	No Negative Change in Ecological Value	1	Where the change in ecological value of the site is equal to or greater than zero i.e. no negative change			1	Ecologist / Landscape Architect
Enhancing Site Ecology	LE 04-01	Ecologist's Report and Recommendations	1	A suitably qualified ecologist (SQE) has been appointed to report on enhancing and protecting the ecology of the site and: a. The SQE provides an Ecology Report with appropriate recommendations for protection and enhancement of the site's ecology. b. The report is based on a site visit/survey by the SQE (see also compliance note 'timing of ecologist's survey and report')..		1		Ecologist
	LE 04-02	Increase in Ecological Value	1	The requirements of the first credit are achieved. The recommendations of the Ecology Report for enhancement and protection of site ecology have been implemented, and the suitably qualified ecologist confirms that this will result in an increase in ecological value of 6 plant species or greater.		1		Ecologist / Landscape Architect
Long Term Impact on Biodiversity	LE 05-01	Managing Ecological Impact	2	A suitably qualified ecologist confirms that all relevant UK and EU legislation relating to protection and enhancement of ecology has been complied with during the design and construction process.  A landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion. Where additional measures to improve the assessed site's long term biodiversity are adopted, according to Table - 55.			2	Ecologist / Contractor
Impact of Refrigerants	Pre-req	Refrigerant pre-requisite	Y	All systems (with electric compressors) must comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.		Y		M&E
	Pol 01-01	Impact of Refrigerants	2	Two credits where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELCO2e) of ≤ 100 kgCO2e/kW cooling capacity OR where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤10. One credit can be awarded where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions of (DELCO2e) of ≤ 1000 kgCO2e/kW cooling capacity.  Awarded by default where no refrigerants are present.		2		M&E
	Pol 01-02	Leak Detection	1	Where systems using refrigerants have a permanent automated refrigerant leak detection system installed; OR where an in-built automated diagnostic procedure for detecting leakage is installed.  Awarded by default where no refrigerants are present.		1		M&E



NOx Emissions	Pol 02-01	NOx Emission Levels	3	Where the plant installed to meet the building's delivered heating and cooling demand has, under normal operating conditions, a dry NOx emission level (measured at 0% excess O2) as follows: <100mg/kWh (space heating and cooling) - 1 credit <70mg/kWh (space heating and cooling) - 2 credits <40mg/kWh (space heating and cooling PLUS <100mg/kWh (water heating) - 3 credits			3	M&E
Surface Water Run-off	Pol 03-01	Flood Risk	2	<b>Two Credits</b> Where the assessed development is situated in a flood zone that is defined by the relevant planning, policy and technical guidance documents, as having a low annual probability of flooding <b>One Credit</b> Where the assessed development is situated in a flood zone that is defined by the relevant planning, policy and technical guidance documents, as having a medium or high annual probability of flooding and is not within the Functional Floodplain AND			2	C&S
	Pol 03-02	Peak Run-off	1	Where drainage measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site.			1	C&S
	Pol 03-03	Drainage Systems	1	Where flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance) and post development run-off volume is no greater than pre development for a 100 year 6 hour event. Any additional is prevented from leaving through the use of SUDS			1	C&S
	Pol 03-04	Minimising Water Course Pollution	1	No discharge for rainfall up to 5mm. Effective on site treatment such as Sustainable Drainage Systems (SUDs) or oil separators have been specified in areas that are or could be a source of watercourse pollution.			1	C&S
Reduction of Night Time Light Pollution	Pol 04-01	External Lighting Strategy	1	The external lighting strategy has been designed in compliance with the ILP Guidance notes for the reduction of obtrusive light, 2011			1	Lighting Designer
Reduction of Noise Pollution	Pol 05-01	Building Services Plant Noise	1	New sources of noise from the development do not give rise to the likelihood of complaints from existing noise-sensitive premises and amenity or wildlife areas that are within the locality of the site.			1	Acoustician