

# Dyne House and Island Tunnel Building, Highgate School

Sustainability Statement

Highgate School

December 2022

## Quality information

| Prepared by | Checked by | Verified by | Approved by |
|-------------|------------|-------------|-------------|
| CMJ         | GA         | RH          | JE          |

## Revision History

| Revision | Revision date | Details                                | Authorized | Name | Position |
|----------|---------------|----------------------------------------|------------|------|----------|
| 1        | 27/07/2022    | QA                                     | Y          | GA   | AD       |
| 2        | 10/07/2022    | QA                                     | Y          | GA   | AD       |
| 3        | 11/08/2022    | QA                                     | Y          | RH   | AD       |
| 4        | 03/11/2022    | Final report                           | Y          | GA   | AD       |
| 5        | 23/11/2022    | Incorporation of final client comments | Y          | GA   | AD       |
| 6        | 19/12/2022    | Revision of drawings                   | Y          | GA   | AD       |

**Prepared for:**

Highgate School

**Prepared by:**

AECOM Limited  
Aldgate Tower  
2 Leman Street  
London E1 8FA  
United Kingdom  
aecom.com

© 2022 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

## Table of Contents

|                                                                                               |           |
|-----------------------------------------------------------------------------------------------|-----------|
| <b>1. Executive Summary.....</b>                                                              | <b>6</b>  |
| Overview .....                                                                                | 6         |
| Proposed Development.....                                                                     | 6         |
| Summary of Design Response.....                                                               | 6         |
| <b>1. Introduction.....</b>                                                                   | <b>9</b>  |
| <b>2. The Site and the Proposed Development.....</b>                                          | <b>11</b> |
| <b>3. Planning Policy Context.....</b>                                                        | <b>13</b> |
| 3.1 Policy overview .....                                                                     | 13        |
| 3.2 Regional Policy (Greater London Authority) .....                                          | 13        |
| 3.2.1. The London Plan .....                                                                  | 13        |
| 3.2.2. Sustainable Design and Construction SPG .....                                          | 13        |
| 3.3 Local Planning Policy (Haringey) .....                                                    | 13        |
| 3.3.1. Haringey Local Plan .....                                                              | 14        |
| 3.3.2. Haringey Development Management DPD .....                                              | 14        |
| 3.3.3. Haringey New Local Plan: First Steps Engagement.....                                   | 15        |
| 3.3.4. Haringey Sustainable Design and Construction SPD.....                                  | 15        |
| 3.3.5. Highgate School Supplementary Planning Document.....                                   | 15        |
| 3.3.6. London Borough of Haringey Quality Review Panel and Pre-Application Consultation ..... | 16        |
| <b>4. Assessment Methodology .....</b>                                                        | <b>17</b> |
| <b>5. Sustainability Assessment .....</b>                                                     | <b>18</b> |
| 5.1 Resource Management.....                                                                  | 18        |
| 5.1.1. Land use .....                                                                         | 18        |
| 5.1.2. Site Layout and Building Design .....                                                  | 18        |
| 5.1.4. Daylight and Sunlight .....                                                            | 19        |
| 5.2. Energy use and carbon emissions .....                                                    | 19        |
| 5.2.1. 'Be Lean' – Passive Design and Energy Efficiency .....                                 | 19        |
| 5.2.2. 'Be Clean' – District Heating.....                                                     | 19        |
| 5.2.3. 'Be Green' – On-site Renewable Energy Generation .....                                 | 20        |
| 5.2.4. Carbon offsetting .....                                                                | 21        |
| 5.2.5. 'Be Seen' – Monitoring, Verification and Reporting .....                               | 21        |
| 5.2.6. Demand Side Response .....                                                             | 21        |
| 5.3 Water efficiency.....                                                                     | 21        |
| 5.4 Materials.....                                                                            | 21        |
| 5.4.1. Embodied Carbon in the Construction .....                                              | 22        |
| 5.4.2. Circular Economy Principles .....                                                      | 22        |
| 5.5 Waste .....                                                                               | 23        |
| 5.5.1. Construction, Demolition and Excavation Waste.....                                     | 23        |
| 5.5.2. Operational Recycling & Waste.....                                                     | 23        |
| 5.6 Nature Conservation, Biodiversity and Landscaping.....                                    | 24        |
| 5.7 Climate change adaptation.....                                                            | 26        |
| 5.7.1. Tackling Increased Temperatures and Drought .....                                      | 26        |
| 5.7.2. Flooding Risk and Surface Water Run-off Management .....                               | 26        |
| 5.8 Pollution management .....                                                                | 27        |
| 5.8.1. Land Contamination .....                                                               | 27        |
| 5.8.2. Air Pollution .....                                                                    | 27        |
| 5.8.3. Noise and Vibration .....                                                              | 27        |
| 5.8.4. Light Pollution.....                                                                   | 28        |
| 5.8.5. Water Pollution.....                                                                   | 28        |
| 5.9 Health and wellbeing of the design .....                                                  | 28        |

|                                                      |           |
|------------------------------------------------------|-----------|
| 5.9.1. Designing Inclusive Environments .....        | 28        |
| 5.9.2. Security .....                                | 28        |
| 5.9.3. Indoor Comfort and Health and Wellbeing ..... | 29        |
| 5.9.4. Sustainable Construction Methods.....         | 29        |
| 5.10 Sustainable transport .....                     | 29        |
| <b>6. BREEAM .....</b>                               | <b>31</b> |
| 6.1 Introduction to BREEAM .....                     | 31        |
| 6.2 Proposed Target Rating.....                      | 32        |
| 6.3 BREEAM Pre-assessment .....                      | 32        |
| <b>7. Conclusions .....</b>                          | <b>37</b> |

## Figures

|                                                                                             |    |
|---------------------------------------------------------------------------------------------|----|
| Figure 2-1 Site location of the Proposed Development (Source: Hopkins) .....                | 11 |
| Figure 2-2 Proposed Development red line boundary (Source: Hopkins).....                    | 12 |
| Figure 5-1 Extract from London Heat Map (the site is shown with a red star).....            | 20 |
| Figure 5-2 Waste Hierarchy .....                                                            | 23 |
| Figure 5-3 Proposed Development Landscape Illustrative Masterplan (Source: LDA Design)..... | 25 |
| Figure 5-4 Urban Greening Factor Calculations (Source: LDA Design) .....                    | 25 |
| Figure 6-1 BREEAM rating benchmarks .....                                                   | 31 |

## Tables

|                                                           |    |
|-----------------------------------------------------------|----|
| Table 1 BREEAM – Proposed Target Ratings and Scores ..... | 32 |
| Table 2 BREEAM New Construction 2018 Pre-assessment ..... | 33 |

# 1. Executive Summary

## Overview

AECOM's Sustainable Development Group has been commissioned by Highgate School to prepare a Sustainability Statement, to accompany a detailed planning application for the redevelopment of Dyne House and the Island Site Tunnel Building (hereafter referred to as the 'Proposed Development') located in the administrative boundary of the London Borough of Haringey (LBH).

The approximately 0.57 ha plot of land (hereafter referred to as the 'Site') is accessed via Southwood Lane. The Site is bound by residential properties and Highgate Bowl which is privately owned land located to the north of Highgate High Street.

## Proposed Development

The detailed application seeks planning permission for:

*'Redevelopment of Dyne House, to include: 1) Retention, refurbishment and extension of the principal five storey (plus plant and lift over run) Dyne House structure; 2) Demolition and redevelopment of the rear extension and associated buildings with a part one, part two storey structure; 3) Retention of the Parade Ground open space, with new sports pitch surface; 4) Associated improvements to the Island Site access and underground tunnel, including demolition and redevelopment of service block; and 5) Associated landscaping and improved provision for emergency services, servicing and disabled parking.'*

The overall Proposed Development will provide 6,216 m<sup>2</sup> Gross Internal Area (GIA). This area includes classrooms, staff offices, common room &, study areas and music practice rooms.

## Summary of Design Response

The Proposed Development will contribute to sustainable development, as identified in the technical reports submitted alongside/with the planning application, in relation to key sustainability issues as follows:

- Optimising the use of land by building on previously developed land. Currently, the tunnel which provides access to the Site for students has unsatisfactory level changes at both ends which does not conform to Building Regulation as there is no wheelchair access provided. Within the Dyne House building although there is a lift capable of accommodating a wheelchair, the size and shape of the lift is not Part M compliant.
- A daylight and sunlight assessment has been undertaken regarding key surrounding residential properties. The study concludes that the scheme has been actively designed to best protect daylight and sunlight amenity to the surrounding properties.
- The proposed energy strategy for the Site includes the following measures, which results in a site-wide regulated carbon saving of 1.6 tCO<sub>2</sub>/year, which is 9% of the baseline emissions of 18.7 tCO<sub>2</sub>/year. The preferred energy strategy for the Site is:
  - Energy efficient fabric and building services design;
  - A Ground Source Heat Pump (GSHP) system to provide space heating and cooling to the building;
  - A photovoltaic (PV) array on the roof of the building.
- Specification of low water use fittings, water meters, leak detection and flow control devices to minimise water usage is proposed. The design of the Proposed Development will aim to minimise internal potable water consumption within the building by a minimum of 25% over the baseline building water consumption in line with the BREEAM New Construction (NC) 2018 credit Wat 01.
- To reduce the burden on the environment of the major building elements, the overall impact will be assessed using whole life cycle models and Environmental Product Declarations (EPDs).

- The Proposed Development will provide internal, dedicated and appropriately labelled and segregated waste management facilities, to enable and encourage future occupants to recycle waste. A minimum of 65% of municipal waste generated by the Proposed Development will be diverted from landfill for reuse, recycling, or recovery in line with the London Plan.
- Circular Economy commitments for the Proposed Development have been developed through a collaborative, cross-disciplinary approach. The Circular Economy Statement details the circular economy opportunities identified for the Proposed Development. A Construction Resource Management Plan (CRMP) will also be produced by the contractor/s in line with BREEAM requirements.
- An ecologist has been appointed at an early design stage to inform the design process. A Preliminary Ecological Appraisal (PEA) has been undertaken and appropriate measures, as necessary, will be implemented for the avoidance, mitigation or compensation of the potential impacts of the Proposed Development.
- Significant levels of landscaping and planting are to be included within the scheme including:
  - Planting of small trees, shrubs, and herbaceous perennials on the terraced roofs of the Proposed Development.
  - Planting around the perimeter of the Parade Ground to reduce the area of hardstanding and maximise areas of soft landscape and to create a woodland dell that captures the spirit of the 'Highgate Bowl'.
  - Planting within the three accessible courtyards – The Gibbon Garden, the Sunken Garden and the Southern Terrace.
  - Use of living green roofs.
- The landscape strategy confirms an Urban Greening Factor (UGF) of 0.53 due to the variety of habitats on site including, flower rich perennial planting, intensive and extensive green roofs, a green wall and a number of tree species.
- The Proposed Development is implementing mitigation measures to help create a development which has the capacity to adapt to the projected effects of climate change including: fabric first approach to the building envelope, use of native planting, green roof areas, a drainage strategy accounting for future climate change and provision of low water-use fittings. A climate change adaptation strategy appraisal is being developed in line with BREEAM requirements.
- A Flood Risk Note (FRN) has been prepared and submitted alongside the planning application which cross refers to the previous FRA undertaken in 2019 which covers the Bishopswood campus (Mallinson Sports Centre, temporary accommodation within the current sports pitch, RMC, Orchard Synthetic Pitch and Tatham's Field Synthetic Pitch) and the Senior School Campus (Science block, Island Site Tunnel Building and Dyne House). The FRN confirms that the Site is located in Flood Zone 1. Therefore, the risk of flooding from fluvial and tidal sources to the Site is low. Other sources of flooding such as infrastructure flooding, surface water flooding and groundwater flooding and sewer flooding have been reviewed but are reported to be low/no risk.
- The scheme incorporates attenuation, positive drainage in the soft landscaping and intensive green roofs which result in the calculated Site's discharge rate of 5 L/s (greenfield rate).
- The Proposed Development Site falls within the Haringey Air Quality Management Area (AQMA). An Air Quality Assessment (AQA) has been carried out and concludes that the Proposed Development is Air Quality Neutral for Transport and Building Related Emissions.
- An External Plan Sound Assessment has been carried out for the Proposed Development and submitted alongside the planning application. Based on the results of the survey, mechanical plant sound emission criteria have been proposed in accordance with BS 4142, to be achieved at the worst affected window of the nearest appropriate assessment location. A full plant sound emission assessment will be completed to discharge any planning conditions regarding sound.
- The proposed external lighting will be designed in line with best practice and BREEAM NC 2018 credit Pol 04. It will be automatically controlled for prevention of operation during daylight hours and ensure that upward

lighting will be minimised, reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.

- Considerations have been made for all users including, but not limited to, people with mobility impairments and people with visual impairments in line with Approved Document M (July 2020).
- The Site is located within an area of 'good' public transport accessibility. Within the locality of the Site there is a wide network of footways, providing connections to the local public transport nodes (including Highgate Underground station).
- The project is targeting BREEAM NC 2018 credit Man 03 - Responsible Construction Practices which recognises and encourages construction sites which are managed in an environmentally and socially considerate, responsible and accountable manner. A Construction Methodology and Management Plan has also been prepared and is submitted in support of the planning application and includes traffic management, waste management and noise and dust mitigation measures. The contractor, once appointed, will be conditioned to develop further construction management measures.
- A BREEAM Pre-assessment has been undertaken for the Proposed Development and identified that a "Very Good" rating can be targeted. However, Highgate have an aspiration to uplift to Excellent, if feasible a full BREEAM New Construction 2018 assessment will be undertaken post planning at which point a further review will be undertaken to confirm whether the target rating can be uplifted to Excellent.

# 1. Introduction

- 1.1 AECOM's Sustainable Development Group has been commissioned by Highgate School to prepare a Sustainability Statement, to accompany a detailed planning application for the construction of Dyne House and part of the Island Site (hereafter referred to as the 'Proposed Development') located in the administrative boundary of the London Borough of Haringey (LBH).
- 1.2 The approximately 0.57 ha plot of land (hereafter referred to as the 'Site') is accessed via Southwood Lane. The Site is bound by residential properties, and Highgate Bowl which is a privately owned, open land located to the north of Highgate High Street.
- 1.3 The detailed application seeks planning permission for:  
  
*'Redevelopment of Dyne House, to include: 1) Retention, refurbishment and extension of the principal five storey (plus plant and lift over run) Dyne House structure; 2) Demolition and redevelopment of the rear extension and associated buildings with a part one, part two storey structure; 3) Retention of the Parade Ground open space, with new sports pitch surface; 4) Associated improvements to the Island Site access and underground tunnel, including demolition and redevelopment of service block; and 5) Associated landscaping and improved provision for emergency services, servicing and disabled parking.'*
- 1.4 The overall Proposed Development will provide 6,216 m<sup>2</sup> Gross Internal Area (GIA). This area includes classrooms, staff offices, common room & café, study areas and music practice rooms.
- 1.5 For further details on the design of the Proposed Development, please refer to the Design and Access Statement (DAS) and the Planning Statement submitted with the planning application.
- 1.6 This report provides a summary of the contribution that the Proposed Development will make to sustainable development and examines how it responds to national, regional, and local sustainability policies.
- 1.7 The Sustainability Statement has been prepared using information included in a number of documents that are submitted with the planning application for the Proposed Development. The sustainability measures described herein have been developed in consultation with members of the design team and wider project team.
- 1.8 The following documents, which will be submitted alongside the planning application, have been consulted while developing this statement:
  - Daylight and Sunlight Report (Anstey Horne);
  - Ecological Impact Assessment (Arbtech);
  - Preliminary Ecology Appraisal (Arbtech);
  - Preliminary Roost Assessment (Bat Survey) (Arbtech);
  - Landscape Design and Access Statement (LDA Design);
  - Site Wide Flood Risk Assessment (Edenvale Young);
  - Flood Risk Note (Expedition);
  - Tree Survey Report (Arbtech);
  - Tree Constraints Plan (Arbtech);
  - Sustainable Urban Drainage Statement (Expedition);
  - Site Investigation & Basement Impact Assessment (Geotechnical & Environmental Associates);
  - Air Quality and Dust Risk Assessment (Highgate School);
  - Design and Access Statement (Hopkins);
  - Construction Methodology and Management Plan (Sky Blue Building);
  - Transport Statement (Transport Planning Associates);

- Travel Plan (Transport Planning Associates);
- Pre-Demolition and Pre-Redevelopment Audit (KaNect);
- Circular Economy Statement (AECOM);
- Whole Life Carbon Assessment (AECOM);
- Air Quality Assessment (AECOM);
- External Plant Sound Assessment – Environmental Sound Survey (Applied Acoustic Design);
- Operational Waste Management Plan (KaNect);
- Energy Statement (AECOM);
- Dyne House Archaeology Assessment (Compass);
- Island Site Archaeology Assessment (Compass);
- Heritage Statement Dyne House and Island Site (Bidwells);

## 2. The Site and the Proposed Development

- 2.1 The approximately 0.57 ha Site is located between 16 and 18 Southwood Lane, Highgate and is bound by residential properties and Highgate Bowl which is a privately owned, open land located to the north of Highgate High Street.
- 2.2 Dyne House building currently houses the Music Department and Sixth Form Centre. The teaching accommodation comprises 17 classrooms/ seminar rooms, numerous practice rooms and support facilities. The remainder of the Site comprises the Classroom Building (1904), Gymnasium (1950) and the redundant open air swimming pool (1950). In addition, there are two pupil amenity areas; Gibbon Garden located between Dyne House and the Classroom Building; and the Parade Ground which occupies the whole of the east end of the Site.
- 2.3 The DAS details how the proposal seeks to retain the existing Dyne House building but strip it back to its frame. A new rear extension is to be constructed to the rear of Dyne House stepping down to the Parade Ground with a modest new extension at the front of Dyne House.
- 2.4 Pupil access between Dyne House site and the Island site is via the existing tunnel. The stair access currently does not conform to Building Regulations and there is no wheelchair access provided. Hence, part of the Dyne House refurbishments includes the provision of new stairs and access lift within the Island Site connection. New functions of the Island Site building are also proposed including an electrical substation, external refuse bin storage and WCs. Figure 2.1 below shows site location and Figure 2.2 shows the red line boundary for Dyne House and the Island Site.



Figure 2-1 Site location of the Proposed Development (Source: Hopkins)

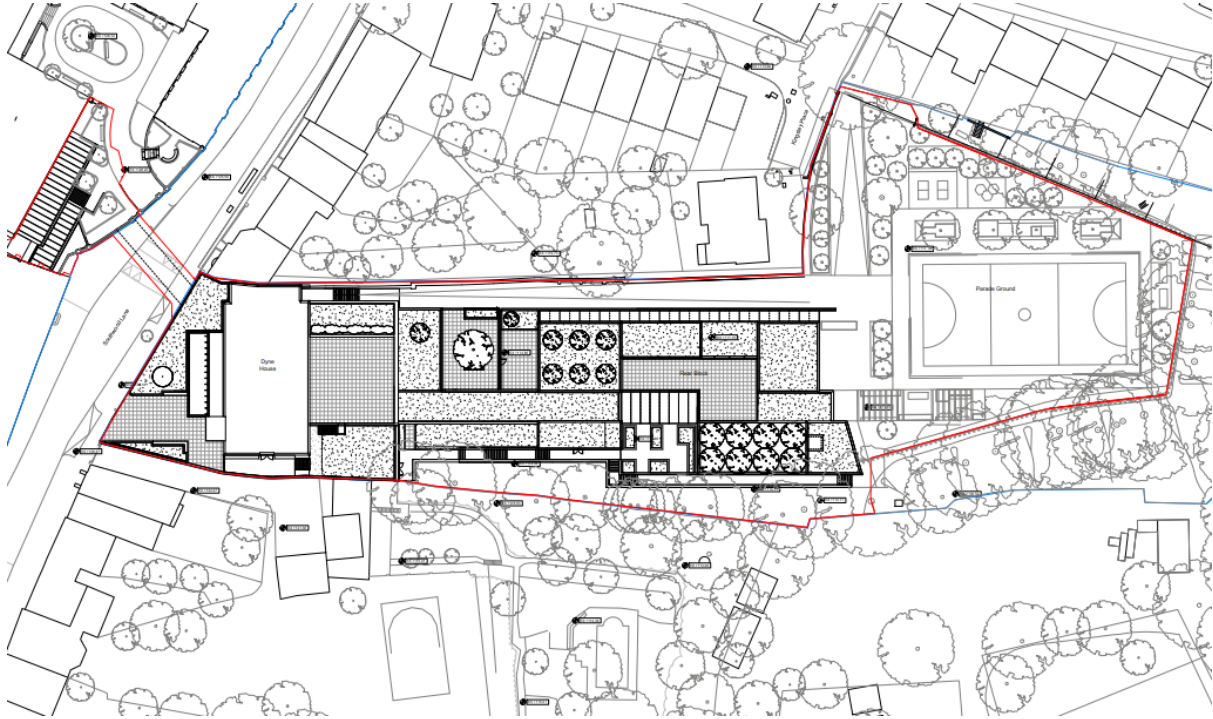


Figure 2-2 Proposed Development red line boundary (Source: Hopkins)

## 3. Planning Policy Context

### 3.1 Policy overview

- 3.1 The sustainability strategy for the Proposed Development has been developed in response to regional and local policies that aim to ensure a sustainable built environment.
- 3.2 Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires planning applications to be determined in accordance with the statutory Development Plan, unless material considerations indicate otherwise. The Statutory Development Plan for the Site includes the London Plan 2021 at a regional level and the Haringey Local Plan 2017, which is reviewed in more detail below.
- 3.3 The main policies of relevance are summarised below.

### 3.2 Regional Policy (Greater London Authority)

#### 3.2.1. The London Plan

- 3.4 The London Plan: The spatial development strategy for Greater London, published on 2 March 2021, sets out a framework for how London will develop over the next 20-25 years and the Mayor's vision for Good Growth. The London Plan is part of the statutory development plan for London, meaning that the policies in the London Plan should inform decisions on planning applications across the capital. Borough's Local Plans must be in 'general conformity' with the London Plan, ensuring that the planning system for London operates in a joined-up way and reflects the overall strategy for how London can develop sustainably, which the London Plan sets out.
- 3.5 The key objectives of the London Plan include the concept of Good Growth – growth that is socially and economically inclusive and environmentally sustainable – underpins the London Plan and ensures that it is focused on sustainable development.
- 3.6 The key policies within the London Plan which are relevant to the development of the sustainability strategy for the Proposed Development include, but are not limited to, the following:
  - Policy G5 Urban greening;
  - Policy SI 1 Improving air quality;
  - Policy SI 2 Minimising greenhouse gas emissions;
  - Policy SI 5 Water Infrastructure;
  - Policy SI 7 Reducing waste and supporting the circular economy;
  - Policy SI 8 Waste capacity and net waste self-sufficiency;
  - Policy SI 12 Flood risk management; and
  - Policy SI 13 Sustainable drainage.

#### 3.2.2. Sustainable Design and Construction SPG

- 3.7 The Mayor of London Sustainable Design and Construction Supplementary Planning Guidance (SPG) has been revoked and is cited as being no longer relevant for the London Plan<sup>1</sup>. However, the structure of the SPG has been used to structure preparation of this Sustainability Statement.

### 3.3 Local Planning Policy (Haringey)

- 3.8 The Haringey planning guidance consists of a series of documents that together form an overall set of rules. The council's Planning Committee must normally take these rules into account when making planning

---

<sup>1</sup> <https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance-and-spgs>

decisions on things like new homes, shops and other facilities, so it's important they are right and meet the ambitions of local people.

3.9 Those of relevance to the sustainability strategy of the Proposed Development include:

- Local Plan: Strategic Policies 2013 (with alterations 2017);
- Haringey Development Management Development Plan Document (DPD), 2017;
- Haringey New Local Plan: First Steps Engagement, 2020;
- Sustainable Design & Construction, Supplementary Planning Document Adopted March 2013; and
- Highgate School SPD, March 2021.

### 3.3.1. Haringey Local Plan

3.10 There are several key policies and documents that planning applications in Haringey are determined by. The Local Plan 2017 sets out a vision and key policies for the future development of the borough up to 2026. It takes forward the priorities of Haringey's Sustainable Community Strategy and other plans and strategies, to identify a vision for Haringey as a place to live, work and visit, and contains key policies and an implementation framework to deliver the vision.

3.11 The design of the Proposed Development will need to respond to the relevant policies in the Haringey Local Plan including, but not limited to, the following:

- Policy SP4: Working towards a low carbon Haringey details:
  - "1....all new developments to take measures to reduce energy use and carbon emissions during design, construction and occupation, by incorporating the following measures:*
  - b. From 2011 onwards all new non-residential development shall be built to at least BREEAM "very good" standard and should aim to achieve BREEAM "excellent" or the current nationally agreed standard. All new non-residential development shall be zero carbon from 2019....*
  - "2. The Council will promote low- and zero-carbon energy generation through the following measures:*
  - c. Requiring all developments to assess, identify and implement, where viable, site-wide and area-wide decentralised energy facilities including the potential to link into a wider network;*
  - d. Establishing local networks of decentralised heat and energy facilities by requiring developers to prioritise connection to existing or planned networks where feasible;*
  - e. Working with neighbouring boroughs and other partners to explore ways of implementing sub-regional decentralised energy networks including the potential in the Upper Lee Valley Opportunity Area; and*
  - f. All new developments are required, where viable, to achieve a reduction in predicted carbon dioxide emissions of 20% from on-site renewable energy regeneration, which can include connections to local sources of decentralised renewable energy".*

### 3.3.2. Haringey Development Management DPD

3.12 The Development Management Development Plan Document (DPD), adopted in 2017, documents that it gives effect to Haringey's spatial strategy and the key objectives of the Strategic Policies Local Plan by supporting proposals that contribute to the delivery of sustainable development in accordance with the strategy, and providing a clear framework for resisting development that would be at odds with the Local Plan. DPD Development Management policies relevant to the sustainability strategy for Dye House include the following:

- Policy DM4: Provision and design of waste management facilities, states that, *"All proposals should consider how to sustainably manage waste arising from the development during the design, construction and occupation phases of new developments."*

- Policy DM21: Sustainable design, layout and construction, requires that, *“All new development, including building and landscape works, will be expected to consider and implement sustainable design, layout and construction techniques. Proposals should:*
  - (a) *Apply the energy hierarchy to minimise energy use in order to meet, and if possible exceed, minimum carbon dioxide reduction requirements;*
  - (b) *Apply the cooling hierarchy to reduce the potential for overheating and limit reliance on mechanical air conditioning systems;*
  - (c) *Maximise opportunities to enhance biodiversity on-site, including through appropriate landscaping, Sustainable Drainage Systems, living roofs and green walls*
  - (d) *Wherever possible, use building materials with high environmental performance ratings; and*
  - (e) *Seek opportunities for locally sourced labour.”*

### 3.3.3. Haringey New Local Plan: First Steps Engagement

- 3.13 Haringey has begun the process of preparing a New Local Plan which will replace the existing Local Plan documents adopted in July 2017. Formal consultation on the New Local Plan: First Steps ran from 16 November 2020 until 1 February 2021.
- 3.14 The New Local Plan First Steps Engagement document sets out the key issues to be addressed by the New Local Plan, asks about the issues and challenges facing the future planning of the borough and seeks views on options to address them.
- 3.15 A Draft Local Plan is due to be published for consultation in summer 2022 but no document has been published yet (accurate at time of writing report). For further consideration of the new Local Plan, please refer to the Planning Statement.

### 3.3.4. Haringey Sustainable Design and Construction SPD

- 3.16 The Haringey Sustainable Design and Construction Supplementary Planning Document (SPD) was adopted in February 2013. The document supports the Local Plan: Strategic Policies (adopted March 2013) and is considered in determining applications.
- 3.17 The Haringey Sustainable Design and Construction SPD has been a key document of reference in the development of the Highgate School Dyne House and Island Site sustainability strategy.

### 3.3.5. Highgate School Supplementary Planning Document

- 3.18 A supplementary planning document has been produced by Haringey in consultation with Highgate School specifically for the Highgate School Masterplan and was adopted in March 2021. The SPD *“provides direction on how the policies of the statutory Development Plan will apply in considering any application brought forward by the School and recognises the Council’s obligations under the National Planning Policy Framework (NPPF)”* and is a material consideration in determining planning applications for the School
- 3.19 Key sustainability considerations set out within the Highgate School Supplementary Planning Document include:
- *encourage, work with and persuade families, employees and other members of the local community to adopt sustainable habits including (see below) driving to school less;*
  - *demonstrate how it is protecting and enhancing the biodiversity of its estate within future applications. The Council will encourage development which reduces energy demand and carbon emissions through the uses and/or the specification of sustainable/renewable building materials including energy-efficiency lighting, passive solar and other energy methods, as well as relying on natural light and ventilation, utilising other low carbon technologies. These measures should be considered alongside policies on climate change (SP4). In new build developments, the Council will expect all developments within the School to be Zero Carbon in accordance with the London Plan and Haringey’s Local Plan Policy SP4.*

- 3.20 The Council will also expect Highgate School to achieve at least a BREEAM Very Good rating with an aspiration to reach Excellent where feasible. For refurbishments, this would be a target (given the limitations associated with older construction technologies).

### 3.3.6. London Borough of Haringey Quality Review Panel and Pre-Application Consultation

- 3.21 Highgate School have engaged with Haringey through a Quality Review Panel consultation. As described on Haringey's website, the QRP *"brings together a team of independent professionals from a range of backgrounds to scrutinise all major development proposals. The QRP advises applicants, council officers and the Planning Committee on their consideration of how well a development scheme is meeting the principles of the Haringey Development Charter (see Policy DM1 in Haringey's Development Management DPD)"*.

- 3.22 A Report of Formal Review Meeting: Dyne House, Highgate School dated 2<sup>nd</sup> February 2022 which included the following comments in relation to Sustainability and low carbon design:

- *The decision to retain and remodel the structure of Dyne House provides a strong basis for the project's sustainability and low carbon design.*
- *Where partial demolition takes place, the panel would encourage careful thought about re-use of materials.*
- *A circular economy strategy that takes a holistic approach to the different buildings being redeveloped at Highgate School could maximise opportunities for material re-use.*
- *Similarly, there may be potential for a holistic energy strategy, exploring the re-use of waste heat.*
- *Although the school has recently installed a gas heating system, the site should be future proofed for installation of more efficient systems such as heat pumps. Considering space requirements to allow for this will be essential.*
- *The panel would encourage clear embodied carbon targets to be set as part of the planning submission.*
- *While a 35 per cent reduction in CO<sub>2</sub> emissions beyond Building Regulation requirements is proposed, the panel would encourage the team to aim for a more ambitious target.*
- *The Department for Education's School Output Specification Generic Design Brief (November 2021) and Technical Annex 2H: Energy provide a useful benchmark for setting energy and sustainability targets.*
- *Both photovoltaic panels and biodiverse roofs are proposed, and achieving the ideal balance between these will need careful thought.*
- *As a general comment, the panel would encourage an approach that maximises biodiversity net gain.*
- *South facing glazed corridors risk overheating and may benefit from greater solidity or shading.*

- 3.23 A further pre-application sustainability meeting was held 11<sup>th</sup> February 2022 where AECOM presented the sustainability strategy for Dyne House and the Island Site. Haringey provided a Pre-Application Planning Advice Note in response and the comments included the following specific items in relation to Dyne House and the Island Site:

- *Address how the noise from the classrooms to adjacent classrooms or properties is mitigated during hot weather.*
- *Submit a plan to show which spaces require mechanical cooling.*
- *Submit details of the mechanical cooling energy demand (kWh/m<sup>2</sup>/year), energy use, specification of equipment and efficiency, and how the cooling demand has been reduced as far as possible in line with the Cooling Hierarchy for those spaces.*

- *Submit a plan showing which areas will rely on passive/natural ventilation and how the strategy will work.*
- *Add commentary on why the roofs of buildings to rear will not be able to viably accommodate solar PV.*
- *Consider the potential solar gains of the front façade.*
- *The living roofs cannot be sedum – please see guidance for minimum substrate levels.*
- *Proposed landscaping looks promising, subject to the detail. Ensure it considers fully climate change adaptation (flooding, hot weather, winds), adaptation from ball games, climate change adaptation for users (shading, providing sunny spots in colder weather), ensuring diversity of native planning species. Ensure you maximise the greening in other areas too.*
- *Good to see the GSHP proposal, please ensure you provide the relevant spec and details for this in the application. Include detail on whether it will meet 100% of the space heating/hot water demand.*
- *BREEAM Very Good currently targeted and achievable; please see how you can push this scheme further to achieve Excellent.*

## 4. Assessment Methodology

- 4.1 This Sustainability Statement has been structured around the Greater London Authority's (GLA's) and Haringey sustainable development aims and objectives and assesses/reviews the sustainability features included in the Proposed Development.
- 4.2 The sustainability measures described in this Sustainability Statement have been developed in consultation with members of the design and project team through the review of the various documents as listed in Section 1: Introduction.
- 4.3 A BREEAM Pre-assessment has been undertaken for the Proposed Development and identified that a "Very Good" rating can be targeted. However, Highgate School have an aspiration to uplift to Excellent, if feasible. A full BREEAM New Construction 2018 assessment will be undertaken post planning at which point a further review will be undertaken to confirm whether the target rating can be uplifted to Excellent.

## 5. Sustainability Assessment

### 5.1 Resource Management

#### 5.1.1. Land use

- 5.1 The existing site is currently occupied by the following buildings/areas; Dyne House, Gibbon Garden, Classroom Building, Gymnasium; Swimming Pool, and Parade Ground. The Design and Access Statement (DAS) states that additional and improved space is needed to meet the academic requirements of the Senior School campus and the only way to achieve this is through the sensitive redevelopment of the Dyne House Site and Island Site. It goes on to report that the existing Dyne House site is spatially inefficient, inaccessible to wheelchair users (or those with ambulatory impairments) and has an unsatisfactory main pupil entrance via a congested tunnel from the Island Site. There is scope to ease this congestion with re-worked entry points to the tunnel, but significant relief will be provided by consolidating sixth form functions largely in one location.
- 5.2 The existing site comprises of an existing building and hard standing and therefore constitutes brownfield land. The use of a brownfield site for the Proposed Development is in line with the London Plan 2021 Policy GG2 and BREEAM NC 2018 credit LE 01.

#### 5.1.2. Site Layout and Building Design

- 5.3 The DAS outlines the design for the Proposed Development. A key feature of the proposal is the retention, refurbishment and extension of the existing five storey Dyne House structure with demolition and redevelopment of the rear extension and associated buildings. The DAS details how the Proposed Building takes advantage of the existing levels on site, which step down towards the Parade Ground to the east of the Site.
- 5.4 A level approach to the main entrance framed by landscaping is provided from Southwood Lane into the ground floor, which contains the Sixth Form Common Room. This looks down into the Informal Assembly Area and out towards the Parade Ground from the external terraced area. The upper floors contain offices, seminar rooms, computer studies, collaborative areas and IT Study Area.
- 5.5 Pupil Access between the Island Site and Dyne House Level -01 is provided via a tunnel link into the Informal Assembly Area which has a visual connection with staff offices on the first floor via the glazed skylight. A direct circulation route connects the basement with the ground floor and extension to the rear that steps down with the existing topography of the Site. Sixth Form seminar rooms are located above ground level with the music department primarily located at basement levels, providing natural auditory protection. Any practice rooms with windows use sealed high specification glazing to prevent noise breakout.
- 5.6 The roof of the extension includes planting to enhance the aesthetic and ecological value of the site with PV located on the roof of the western part of the building as described in section 6.1.2 and the Energy Statement.
- 5.7 The modest front extension has been aligned to avoid stepping outwards towards neighbouring properties. This reduces the scale of the development in respect to the neighbouring context by protecting rights of light and key sightlines. The new structures proposed will be lightweight and glazed to maximise views and transparency.
- 5.8 The DAS describes how the proposed scheme follows the aesthetics of the surrounding areas, respecting the smaller scale of the surrounding residential properties by breaking the mass required to achieve the accommodation brief into domestic scale elements.
- 5.9 The new functions of the Island Site building, include an electrical substation, external refuse bin storage, WC's, new stairs and access lift. The building footprint steps back from the Island Site boundary line by placing the WC provision below ground. This creates an opportunity for a new courtyard and landscaping space. From the courtyard a new lift will provide full wheelchair access to the Dyne House Site, Central Hall, and between the Chapel Quad and Science Quad. The redeveloped stair and pedestrian tunnel will provide much needed additional circulation space, compliance with modern Building Regulations and wheelchair access.

5.10 Please refer to the DAS, submitted with the planning application, for further details.

#### 5.1.4. Daylight and Sunlight

5.11 A daylight and sunlight assessment has been undertaken regarding key surrounding residential properties. The study details how the scheme has been actively designed to best protect daylight and sunlight amenity to the surrounding properties. The assessment found that good levels of daylight and sunlight are retained in the proposed condition. For the 12 Southwood Lane Annex Buildings and 16 Southwood Lane, some small light gains are identified with the Proposed Development in place. The study concludes that the Proposed Development will not significantly reduce sunlight or daylight exposure to existing surrounding properties and so satisfies Haringey's planning policy on daylight and sunlight to neighbouring properties

5.12 Refer to the Daylight and Sunlight Report, submitted with the planning application, for further details.

### 5.2. Energy use and carbon emissions

5.13 An Energy Statement has been produced for the Proposed Development. The Energy Statement describes the proposed energy strategy as per the GLA Energy Hierarchy of 'Be Lean'; 'Be Clean'; 'Be Green'; and 'Be Seen', as set out in the London Plan.

5.14 The preferred energy strategy for the Site is:

- Energy efficient fabric and building services design;
- A GSHP system to provide heating and cooling;
- A photovoltaic (PV) array on the roof of the building.

5.15 Calculations suggest this strategy would save 1.6 tCO<sub>2</sub>/year, which is 9% of the baseline emissions of 18.7 tCO<sub>2</sub>/year.

5.16 The below sections detail the response of the design to each level of the Energy Hierarchy.

#### 5.2.1. 'Be Lean' – Passive Design and Energy Efficiency

5.17 The passive design measures included in the proposed building are outlined in the design and access statement. Measures include:

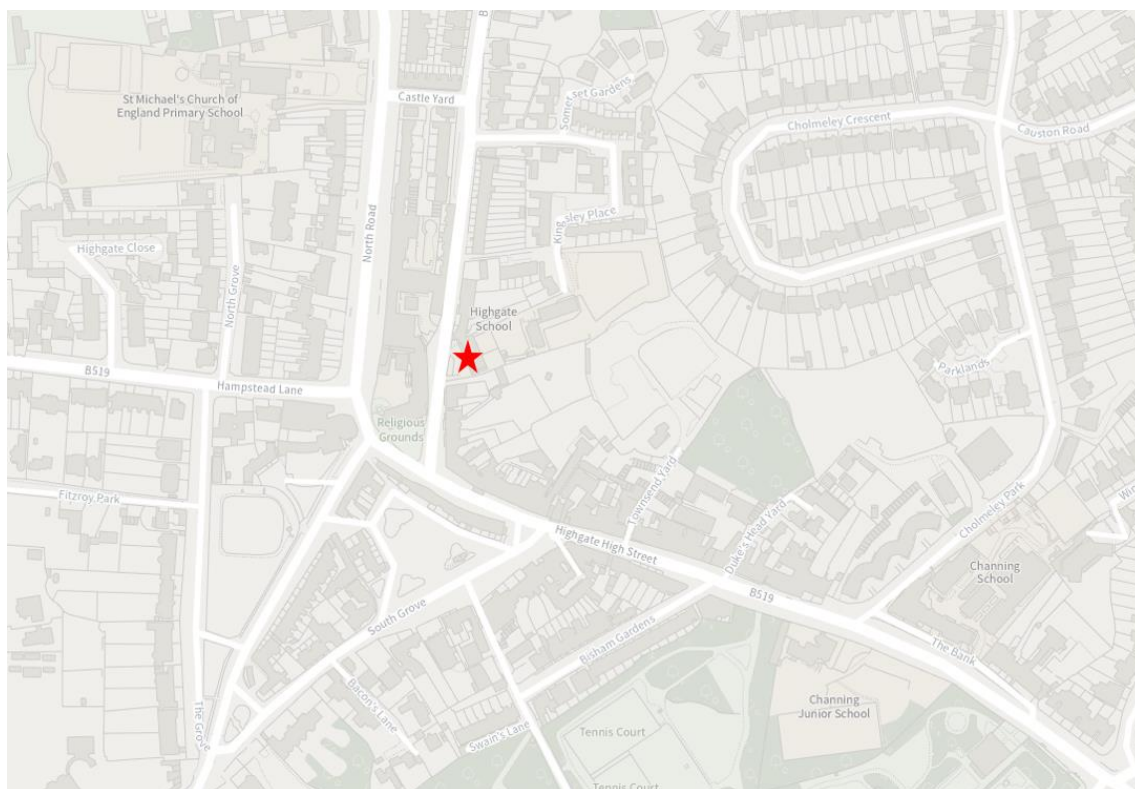
- Efficient building fabric with U-values optimised to reduce heating and cooling loads.
- Solar control glazing to optimise daylighting and thermal gains whilst minimising cooling demand.
- Service routes minimised to reduce heat loss.
- Solid panels and shading included in the building façade to manage solar gains.

#### 5.2.2. 'Be Clean' – District Heating

5.18 The London Heat Map<sup>2</sup> has been consulted in order to determine whether there are any existing or planned heat networks within the vicinity of the development. In the map extract in Figure 5-1 below, the Site location is marked with a red star. The map shows that there are no existing heat networks in the vicinity of the Proposed Development (which would be shown in red if these were present). There are also no proposed networks (which would be shown in orange). The Site lies on the boundary of the heat network priority area.

---

<sup>2</sup> <https://maps.london.gov.uk/heatmap>



**Figure 5-1 Extract from London Heat Map (the site is shown with a red star)**

- 5.19 Connection to the wider school site was also considered for the proposed building. The buildings opposite Dyne House which form part of the school estate on the opposite side of Southwood Lane were considered to investigate if any were suitable for connection to Dyne House. The buildings nearby are either not being redeveloped, have limited space for plant or will not be able to provide any heat for “export” to the proposed Dyne House Site. Further it is expected that the proposed ground source heat pump system for Dyne House will also have limited capacity to provide heat to other buildings due to the constrained nature of the Site limiting borehole array size.
- 5.20 The LBH Highgate School SPD acknowledges that connection of the school buildings together in a heat network is not unviable. It states that *“Whilst it would be desirable to establish a school-wide decentralised heat and energy facility, including the potential link into a wider network should one come forward, the fragmented nature of the School’s estate makes this unviable. The Council will assess the approach to energy and carbon conservation against policy on a site-by-site basis in the detailed planning application stage looking to make each building as energy efficient as possible.”*
- 5.21 For the reasons outlined above, connection of the Site to the wider school estate is not proposed. The proposed development is designed to have a building-scale heating system, and connection to wider heat networks is not considered likely to provide operational carbon benefits to this development.

### 5.2.3. ‘Be Green’ – On-site Renewable Energy Generation

- 5.22 Solar PV are being proposed on the roof to generate electricity and offset grid electricity and help meet peak demands, which will further reduce carbon emissions.
- 5.23 An area of roof suitable for approximately 76 m<sup>2</sup> of PV panels was identified. It was calculated that a PV array on this roof area could supply approximately 13,736 kW h of electricity per year, with a carbon saving of 1.9 tCO<sub>2</sub>/year.
- 5.24 The feasibility assessment of low and zero carbon technology options also found GSHP to be suitable for the Site. Other technologies were ruled out due to site constraints, air quality, noise and access issues or incompatibility with the preferred options.

## 5.2.4. Carbon offsetting

- 5.25 To meet the GLA requirement of achieving 100% reductions in regulated emissions, it will be necessary to offset the residual regulated carbon emissions through a cash-in-lieu contribution to the LBH carbon offsetting fund. Over a 30-year period it is estimated that the cumulative shortfall would be 512 tCO<sub>2</sub>. This would result in an estimated payment of approximately £48,645 at the GLA carbon offset price of £95/tonne. This is subject to agreement with LBH.

## 5.2.5. 'Be Seen' – Monitoring, Verification and Reporting

- 5.26 To address the final step of the hierarchy ('Be Seen') comprehensive monitoring and metering systems to measure actual energy and carbon performance will be installed as part of the works. These will enable the building's owner to report operational energy use to the Mayor for at least five years via an online portal in line with the 'Be Seen' criteria in the London Plan.

## 5.2.6. Demand Side Response

- 5.27 The London Plan Policy SI 2 encourages developments to minimise both annual and peak energy demand. The Energy Statement outlines the measures that the Proposed Development is reviewing to respond to this policy.
- 5.28 Refer to the Energy Statement, submitted with the planning application, for further details.

## 5.3 Water efficiency

- 5.29 The design of the Proposed Development will aim to minimise internal potable water consumption within the building by a minimum of 25% over the baseline building water consumption (as calculated by BRE's water calculator tool) in line with the BREEAM NC 2018 credit Wat 01. This will be achieved through the specification of water-efficient sanitary fittings such as low flush toilets and wash hand basins.
- 5.30 Water meters are proposed to help prevent water wastage. The water meters will be connected to the Building Management System (BMS) to provide visibility of the consumption to make changes to minimise usage.
- 5.31 Water leak detection and flow control devices will be provided in line with the BREEAM criteria. These will regulate the water supply to each WC area according to demand and provide a monitoring system to alert if there is a major leak to further reduce water wastage.

## 5.4 Materials

- 5.32 Preference will be given to materials with lower environmental impacts. To reduce the burden on the environment of the major building elements, the overall impact is being assessed using whole life cycle models in line with BREEAM NC 2018 credit Mat 01 and the London Plan Policy SI 2 Minimising Greenhouse Gas Emissions. This is described further below.
- 5.33 The use of cement replacements such as Ground Granulated Blast-furnace Slag (GGBS) have been considered for the substructure and superstructure and is discussed further within the Circular Economy Statement and Whole Life Carbon Assessment. The use of alternative materials, such as K-briq and Biohm (mycelium) insulation will also be explored further during specification in detailed design. These materials are highly circular as they are derived either from recycled materials or from a natural renewable source.
- 5.34 Along with consideration of materials with lower environmental impact within Dyne House and Island Site, in line with BREEAM NC 2018 credit Mat 02 - new materials will be selected which have robust independently verified Environmental Product Declarations (EPDs), where possible. Furthermore, materials chosen will be robust, low maintenance and long lasting to suit the location and intended use wherever in line with BREEAM NC 2018 credit Mat 05.

- 5.35 Smart procurement will be implemented where possible, which will involve examining the sourcing of materials and logistics strategies of the supply chain to see if reductions in vehicle movements could be made.

### 5.4.1. Embodied Carbon in the Construction

- 5.36 The design team has carried out a Life Cycle Assessment (LCA) to assess the embodied carbon impact of the construction of the Proposed Development in accordance with the BREEAM NC 2018 credit Mat 01 and undertaken a Whole-Life Cycle Carbon Assessment (WLCCA) in line with the requirements of the London Plan. The Assessment provides the design team with information that will assist in identifying choices when finalising design solutions, to demonstrate where Whole life Carbon (WLC) savings have been made and where further WLC reductions could potentially be made.
- 5.37 The WLC Assessment confirmed that the overall whole life-cycle carbon of the Proposed Development over a 60-year study period (the 'reference study period' provided in the GLA's Draft Whole Life-Cycle Carbon Assessment Guidance (October 2020)) is 9,367 tonnes CO<sub>2</sub>eq which corresponds to 1,507 kg CO<sub>2</sub>eq/m<sup>2</sup>.
- 5.38 The embodied carbon of the Proposed Development has been reduced through measures such as retaining the existing basement to the front of the Site.
- 5.39 The completed GLA WLCCA template is submitted in support of the planning application. Please refer to the completed assessment results for details.

### 5.4.2. Circular Economy Principles

- 5.40 The principles of circular economy have been examined by the design team during the pre-planning stage and a Circular Economy Statement has been developed in accordance with the GLA guidance and submitted alongside the planning application. Circular Economy commitments for the Proposed Development have been developed through a collaborative, cross-disciplinary approach. The Circular Economy Statement details the circular economy opportunities identified for the Proposed Development, as explored through application of the nine circular economy principles.
- 5.41 The Circular Economy Statement culminates in a series of targets which include:
- To target diversion of a minimum of 95% of non-hazardous waste demolition waste from landfill for reuse, recycling or recovery;
  - To target diversion of a minimum of 95% of excavation waste generated from the Proposed Development from landfill for beneficial use;
  - To target diversion of a minimum of 95% of construction waste generated by the Proposed Development from landfill for reuse, recycling or recovery;
  - To facilitate recycling levels in operation which will exceed the municipal waste recycling target of 65% by 2030;
  - To specify a minimum 20% of the total value of the selected products and materials to include recycled and reused content; and
  - Principal contractor to provide a Post-Construction report to the Greater London Authority.
- 5.42 In line with the circular economy principles, the Proposed Development has been designed for adaptability. The new build areas including the basement areas will have generous floor to ceiling heights and the ventilation systems have been designed to work for different room partitions.
- 5.43 A prefabricated system is being considered for the façade and superstructure with the potential to allow panels to be demounted from the structure if required. Currently, the preferred option is the use of traditional masonry. The feasibility of using lime mortar within the façade is to be explored through detailed design and through contractor engagement. This would assist in allowing for disassembly at end-of-life, as lime mortar allows for bricks to be easily separated which can then be cleaned for reuse.
- 5.44 Refer to the Circular Economy Statement, submitted alongside the planning application, for further details.

## 5.5 Waste

- 5.45 Sustainable waste management procedures will be adopted during demolition, construction and operational stages to target waste minimisation and high recycling rates. A Construction Methodology and Management Plan has also been prepared and is submitted in support of the planning application and includes waste management.

### 5.5.1. Construction, Demolition and Excavation Waste

- 1.1.1 Waste management measures will be implemented in accordance with the Waste Hierarchy (see Figure 5-2).

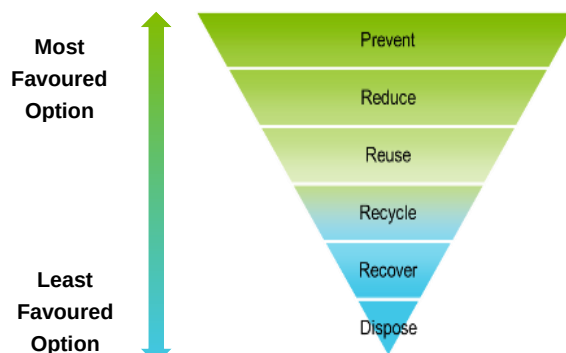


Figure 5-2 Waste Hierarchy

- 5.46 In line with BREEAM NC 2018 credit Wst 01, the Proposed Development aspires not to generate more than 13.3m<sup>3</sup> (or 11.1 tonnes) of construction waste per 100m<sup>2</sup> GIA and to divert at least 80% by volume (or 90% by weight) of demolition waste to be diverted from landfill. In excess of BREEAM targets and as described in Section 5.4.2. Circular Economy Principles, the Proposed Development will target 95% beneficial use of demolition, excavation, and construction waste, in line with the London Plan and as detailed in the Circular Economy Statement.
- 5.47 The retention of the existing front building's primary concrete columns and floor slabs, as well as the lower-level theatre retaining walls will allow for significant material savings. The use of pre-cast structural columns is proposed, assisting in reducing the quantities of construction waste generated on the Site. The standardisation within the design will also facilitate the use of precast or prefabricated risers, which will be further considered through detailed design. This standardisation will help to reduce offcuts and other construction waste.
- 5.48 The Pre-demolition and pre-refurbishment audit highlighted materials which would be able to be recycled these include, but are not limited to, the bricks, metals, and asphalt. The reuse of materials on-site is recommended to be further investigated by the Contractor.
- 5.49 The Principal Contractor will be required to monitor waste generated during the construction works to maximise reuse and recycling potential, which should allow for the levels of reuse and recycling to be increased throughout the construction period.
- 5.50 A Resource Management Plan (RMP) will be developed in line with the BREEAM 2018 criteria before works commence on site by the Principal Contractor to identify the waste arising from the Proposed Development, the RMP will aim to promote resource efficiency and to prevent illegal waste activities. Resource efficiency includes minimising waste at source and ensuring that clients, designers, and principal contractors assess the use, reuse and recycling of materials and products on site and off site.

### 5.5.2. Operational Recycling & Waste

- 5.51 The Operational Waste and Recycling Management Strategy Plan (OWMP) within the submitted Circular Economy Statement for the Proposed Development demonstrates how sustainable methods for waste and recycling management have been considered. The OWMP provides estimates of the quantities of waste generated and locations of temporary storage locations for bins in line with London Plan Guidance.

- 5.52 The OWMP details how Highgate School is anticipated to produce 94,279 L of waste from all buildings per week, equating to approximately 422 tonne per year. To note, Highgate School comprises of three schools including the Pre-Preparatory School, Junior School and Senior School and the OWMP covers all three schools.
- 5.53 In line with the BREEAM NC 2018 criteria, the bins will be clearly labelled, to assist with segregation, storage, and collection of the recyclable waste streams. The waste store within the Proposed Development will be easily accessible to facilities operators for the deposit of materials. Adequate signage will be provided to encourage occupants to participate in maximising the diversion from landfill.
- 5.54 A minimum of 65% of municipal waste generated by the Proposed Development will be diverted from landfill for reuse, recycling, or recovery in line with the London Plan.
- 5.55 Refer to the OWMP, submitted with CE Statement in support of the planning application, for further details.

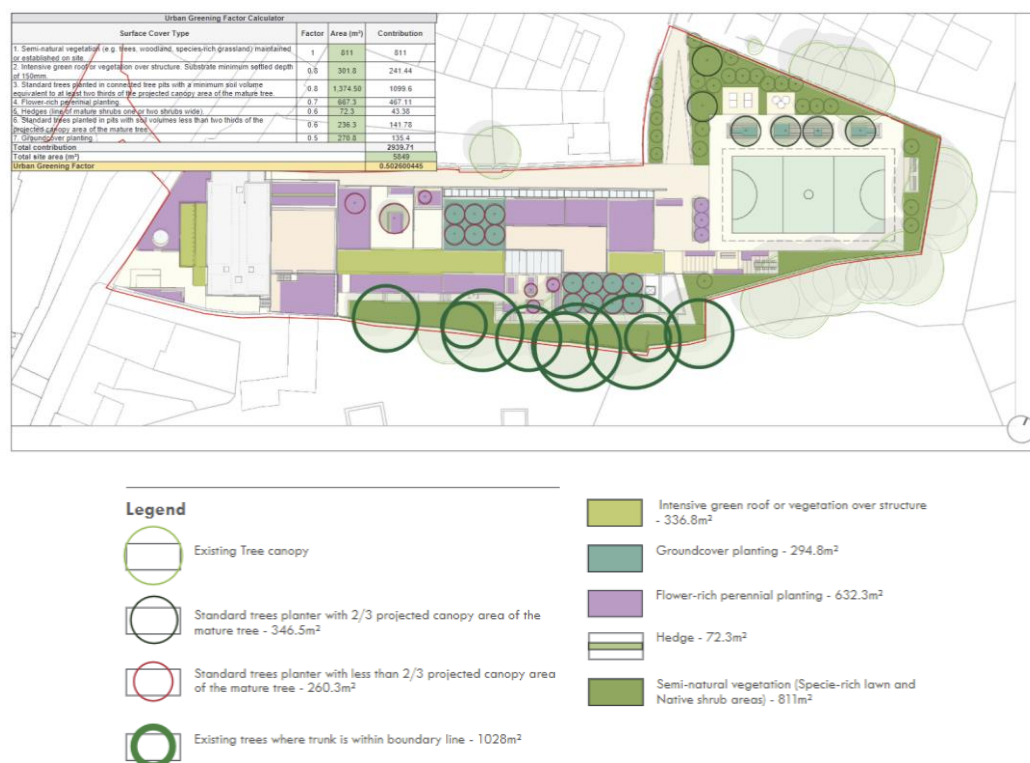
## 5.6 Nature Conservation, Biodiversity and Landscaping

- 5.56 A suitably qualified ecologist (SQE), as defined by BREEAM, has been appointed at early design stages to review the existing site ecology and provide to advice on enhancement opportunities as part of the Proposed Development.
- 5.57 An Ecological Impact Assessment (EclA) of the existing site including a bat survey have been undertaken and submitted alongside the planning application. The EclA was undertaken to provide a current ecological baseline at the Site and to assess potential effects of the Proposed Development in relation to any identified ecological constraints and highlight opportunities for enhancement. The EclA concluded that there are no priority or notable habitats on the Site or located close by.
- 5.58 No features of bat roosting value were observed within or on the buildings and trees within the Site and no bat evidence was found. The urban site also has negligible value for commuting bats.
- 5.59 In line with recommendations made within the EclA, habitat boxes for birds/bats shall be installed and the native tree species shall be planted. The key features of the proposed landscape strategy are:
- Planting of small trees, shrubs, and herbaceous perennials on the terraced roofs of the Proposed Development.
  - Planting around the perimeter of the Parade Ground to reduce the area of hardstanding and maximise areas of soft landscape and to create a woodland dell.
  - Planting within the three accessible courtyards – The Gibbon Garden, the Sunken Garden and the Southern Terrace.
  - Use of living green roofs.
- 5.60 The existing mature trees along the boundary are proposed to be retained. Where it is not possible to avoid construction within the root protection area, the structural root zone will be respected with no work taking place within this zone.



**Figure 5-3 Proposed Development Landscape Illustrative Masterplan (Source: LDA Design)**

- 5.61 It is proposed that a landscape and habitat management plan appropriate to the Site shall be produced prior to occupation (in accordance with BREEAM requirements). The plan will cover at least the first five years after project completion and aims to ensure that the Site ecology is properly managed.
- 5.62 The benefits of the proposed extensive green roofs and planting include increased biodiversity through native planting, reduction in surface water run-off and local cooling benefits. Overall, the landscape strategy confirms an Urban Greening Factor (UGF) of 0.53 due to the variety of proposed habitats including, flower rich perennial planting, intensive and extensive green roofs, a green wall and a number of tree species.



**Figure 5-4 Urban Greening Factor Calculations (Source: LDA Design)**

- 5.63 Refer to the PEA, Landscape DAS and EcIA submitted with the planning application for further details.

## 5.7 Climate change adaptation

### 5.7.1. Tackling Increased Temperatures and Drought

- 5.64 The Proposed Development is implementing the below mitigation measures to help create a development which has the capacity to adapt for the projected effects of climate change:
- Designing a fabric first approach with a high-performance façade and glazing being proposed to ensure a low air permeability;
  - Creating biodiverse (green) roof areas;
  - The proposed planting will include native species to reduce water required for irrigation;
  - A Flood Risk Assessment and separate Drainage Strategy has been produced to mitigate the risk of off-site flooding and integrate the use of Sustainable urban Drainage Systems (SuDS) within the Proposed Development;
  - The provision of low water-use fittings to reduce the demand for water use;
  - The use of durable materials in accordance with BREEAM NC 2018 credit Mat 05 (Designing for durability and resilience).
- 5.65 A Climate Change Adaptation Strategy will be produced in accordance with BREEAM NC 2018 credit Wst 05 (Adaptation to climate change) to identify the hazards and risks associated with future climate, and proposed mitigation measures.

### 5.7.2. Flooding Risk and Surface Water Run-off Management

- 5.66 A Flood Risk Note (FRN) has been prepared and submitted alongside the planning application which cross refers to the previous FRA undertaken in 2019 which covers the Bishopswood campus (Mallinson Sports Centre, temporary accommodation within the current sports pitch, RMC, Orchard Synthetic Pitch and Tatham's Field Synthetic Pitch) and the Senior School Campus (Science block, Island Site Tunnel Building and Dyne House). The Site Wide Flood Risk Assessment for the Highgate School Campus confirms that the Site is located in Flood Zone 1 – an area assessed as having a less than 1 in 1,000 annual probability of fluvial or sea flooding (<0.1%). Therefore, the risk of flooding from fluvial and tidal sources to the Site is low. Other sources of flooding such as infrastructure flooding, surface water flooding and groundwater flooding and sewer flooding have been reviewed but are considered low/no risk.
- 5.67 A Basement Impact Assessment (BIA) has also been undertaken which considers any risks from ground water displacement and reviews the impact of the basements across the Site. The BIA found that there is a low risk of ground water flooding, there is a very low risk of surface water flooding on the Site and there are no significant impacts to the wider hydrological environment due to the basement of the Proposed Development.
- 5.68 The Drainage Strategy has been developed in consultation with the LBH, the lead local Flood Authority (LLFA). The report confirms that the Site's discharge rate is proposed to be 5 L/s (greenfield rate). An allowance of 40% has been made for climate change in all calculations in line with the Environment Agency's guidance. The following SuDS have been deemed most appropriate to provide source control, improve water quality, reduce flood risk, and restrict surface water run-off:
- Positive drainage in the soft landscaping in the Parade Ground;
  - Attenuation within the subbase build up for the Multi Use Games Area and adjacent; permeable footpaths;
  - Intensive and extensive green roofs.
- 5.69 Refer to the Site Wide FRA, Flood Risk Note and Drainage Strategy, submitted with the planning application, for further details.

## 5.8 Pollution management

### 5.8.1. Land Contamination

- 5.70 The Site Investigation Report details that site investigations found that elevated concentrations of arsenic, lead and polycyclic aromatic hydrocarbons were found in some samples of the made ground that were tested. The underlying London Clay is classed as Unproductive Strata and therefore contamination to the chalk aquifer at depth is not anticipated. The basement excavation will remove much of the made ground and the hardstanding will provide a barrier between the contaminated soil and end users. The redevelopment will not introduce any pathways to the measured contamination, however localised remediation will be required in any new soft landscaping areas.

### 5.8.2. Air Pollution

- 5.71 An Air Quality Assessment (AQA) has been prepared, and submitted in support of the planning application, which presents the findings of an assessment of the likely effects on air quality as a result of the Proposed Development. The AQA considers the construction phase of the Proposed Development and the impact on local air quality of emissions from road traffic associated with construction and operation of the Proposed Development.
- 5.72 The AQA concludes that the Proposed Development is considered to be Air Quality Neutral for Transport and Building Related Emissions as the development is defined as 'car-free' and has a zero-emission heat source as defined by the Air Quality Neutral London Plan Guidance.
- 5.73 An Air Quality and Dust Risk Assessment has been produced to assess the impact of the proposed redevelopment of Dyne House and Island Site, in line with The Control of Dust and Emissions during Construction and Demolition SDG 2014. A further assessment which will form the Air Quality and Dust Management Plan (AQDMP) will be carried out by the contractor once appointed. The Air Quality and Dust Risk assessment found that the dust emission magnitude for the demolition, earthworks, construction and track-out is medium due to the scale of the works, new basement, and presence of concrete in both the existing and proposed buildings.
- 5.74 The assessment details proposed mitigation measures including the implementation of best practice methods such as:
- Daily cleaning of the Site;
  - Production of a Construction Traffic Management Plan which will include measures such as consolidating deliveries;
  - Preparing of materials (where possible) off-site;
  - Requiring the contractor during demolition to carry out soft stripping to screen dust and prevent dispersion with water suppressions to damp down dust where necessary.
- 5.75 In addition, there will be continuous site monitoring which will allow the contractor to manage the generation of dust including PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>x</sub> emissions during construction and demolition.
- 5.76 Refer to the AQA, submitted alongside the planning application, for further details.

### 5.8.3. Noise and Vibration

- 5.77 An External Plant Sound Assessment has been carried out for the Proposed Development and submitted alongside the planning application. Environmental sound level surveys have been undertaken at the proposed development Site to establish the prevailing background sound levels at the Site with respect to the installation of new building services plant equipment. Based on the results of the survey, mechanical plant sound emission criteria have been proposed in accordance with BS 4142, to be achieved at the worst affected window of the nearest appropriate assessment location. A full plant sound emission assessment will be completed to discharge any planning conditions regarding sound.

- 5.78 Refer to the Noise and Vibration Assessment, submitted alongside the planning application, for further details.

#### 5.8.4. Light Pollution

- 5.79 The Design and Access statement details how the Proposed Development will aim to ensure that night illumination around the Site will be designed to minimise light pollution but also avoid creating areas of shadow, especially along access route and at the building entrance.
- 5.80 In line with BREEAM NC 2018 credit Pol 04 the external upward lighting will be minimised to reduce unnecessary light pollution, energy consumption and nuisance to neighbouring properties. The external lighting will be automatically controlled for prevention of operation during daylight hours and presence of detection in areas of intermittent pedestrian traffic.

#### 5.8.5. Water Pollution

- 5.81 In line with BREEAM NC 2018 credit Man 03 best practice pollution prevention policies and procedures on site in accordance with Pollution Prevention Guidelines will be implemented. These include green roofs and SUDs which will reduce water course run-off from the Site.
- 5.82 The Construction Methodology and Management Plan confirms that the contractor will be expected to carry out the works in such a way that, as far as is reasonably practicable, the amount of spoil and waste (including groundwater, production water and run-off) to be disposed of is minimised. Disposal of run-off water from dust suppression activities and cleaning will be done in accordance with the appropriate legal requirements.

### 5.9 Health and wellbeing of the design

#### 5.9.1. Designing Inclusive Environments

- 5.83 Inclusive design has been an integral part of the design philosophy and will continue to inform the design process as it develops. Considerations have been made for all users including, but not limited to, people with mobility impairments and people with visual impairments in line with Approved Document M (July 2020).
- 5.84 The DAS states that:
- Any highly reflected surfaces will be carefully chosen so that they avoid causing confusion or disorientating people with sensory disabilities;
  - All corridors allow ample width for disabled users and doors and corridors will be designed to standards to facilitate easy movement for wheelchair users. Doors on all circulation routes will either be on hold-open devices or designed with a minimum opening force of less than 30 Newtons;
  - All new doorways on routes to be used by people in wheelchairs will have 300mm offsets and will be a minimum of 800mm wide per leaf unless power operated or held open;
  - All lifts will be designed to meet current standards of AD Part M as a minimum.

- 5.85 Refer to the DAS, submitted with the planning application, for further details.

#### 5.9.2. Security

- 5.86 The Proposed Development has been reviewed by a Metropolitan Police Service's Designing Out Crime Officer (DOCO) who is part of the Crime Prevention, Inclusion and Engagement (CPIE) team. Advice was provided about the incorporation of Secured By Design principles into the design of the Proposed Development. Due to Dyne House, the Island site and neighbouring buildings currently being in operation, it is unlikely that an increased number of people will be moving through the site. In which case, anti-social behaviour and crime should not be more frequent.

- 5.87 Due to the condition of the proposed routes, external lighting and landscaping the DOCO did not have any significant concerns regarding the occurrence of crime and antisocial behaviour in and around the site. Careful consideration has been given to maximise natural surveillance across the site.

### 5.9.3. Indoor Comfort and Health and Wellbeing

- 5.88 The design of the building aims to promote a healthy living environment that will reduce environmental stresses, facilitate physical activity, and promote mental wellbeing, daylight penetration, quality views, a good acoustic environment and access to outdoor spaces.
- 5.89 A project-specific indoor air quality plan, in line with the BREEAM NC 2018 criteria, will be produced to facilitate a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the buildings.
- 5.90 Internal acoustics will be designed in accordance with relevant standards by a suitably qualified acoustician to ensure that the acoustic performance is fit for purpose. This is demonstrated by the BREEAM pre-assessment which details how the full credits for credit Hea 05 - Acoustic Performance are targeted.
- 5.91 In addition, the Proposed Development is targeting Hea 01 Part D: Internal and External Lighting Levels, Zoning, this credit encourages improved visual comfort for building users.
- 5.92 Refer to the DAS, submitted with the planning application, for further details.

### 5.9.4. Sustainable Construction Methods

- 5.93 The project is targeting BREEAM NC 2018 credit Man 03 - Responsible Construction Practices which recognises and encourages construction sites which are managed in an environmentally and socially considerate, responsible, and accountable manner. During the construction process, environmental impacts will be monitored including recording and reporting energy use, water consumption and transport data (where measured) resulting from all on-site construction processes throughout the build programme in line with the BREEAM criteria. All parties who at any stage manage the construction site (e.g. the principal contractor, the demolition contractor) will be required to operate an EMS (environmental management system) covering their main operations.
- 5.94 In addition, the Site is expected to be registered with the Considerate Contractors Scheme (CCS) to ensure that the construction site is managed in an environmentally and socially considerate, responsible, and accountable manner. The Principal Contractor will comply with and exceed, where possible, the minimum requirements of the CCS.
- 5.95 Further details on traffic management, waste management and noise and dust mitigation are included in the Construction Methodology and Management Plan submitted in support of the application.

## 5.10 Sustainable transport

- 5.96 A Transport Statement has been produced and submitted in support of the Planning Application. The Transport Statement confirms that the Site is located within an area of 'good' public transport accessibility, which has been given a 4 Public Transport Accessibility Level (PTAL) rating. The Site is highly accessible for pedestrians and cyclists, supported by good infrastructure provision. Highgate School also provide a local door to door school bus services for pupils, with three routes currently in operation.
- 5.97 Two bus stops are located within close proximity to the Site providing direct connections to Brent Cross, Archway, Finsbury Park, Hampstead and Kings Cross. These bus stops are located on North Road, adjacent to the Site and are served by bus routes 143, 214 and 603. In addition, two further services, the 210 and 271, operate from the bus stops on Highgate High Street. Route 210 provides additional connections to Brent Cross, Archway and Finsbury, while route 210 provides connections to Holloway, Highgate and Moorgate.
- 5.98 The Site is located approximately 800m south of Highgate Underground Station, on the High Barnet branch of the Northern Line.

- 5.99 Despite the absence of formal London Cycle Network routes within the immediate vicinity of the Site, the Site still is easily accessible by cycle users due to the informal cycle routes located locally, in addition to the high-quality road network and the low car speeds.
- 5.100 The Site benefits from very good pedestrian accessibility, with bus stops, services and facilities and controlled crossings located within the vicinity of the Site and a safe connection between the different School buildings and facilities.
- 5.101 A total of 128 cycle parking spaces are provided within the school, across all its sites and buildings. Of these, 20 are covered (within the Junior School). For safety, all bike users must dismount their bikes at the school gate.
- 5.102 Refer to the Transport Statement submitted with the planning application, for further details.

## 6. BREEAM

### 6.1 Introduction to BREEAM

- 6.1 BREEAM (the Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building's environmental performance.
- 6.2 BREEAM seeks to minimise the adverse effects of new buildings on the environment at global and local scales, whilst promoting healthy indoor conditions for the occupants. Building projects are assessed at the design and post-construction stages using a system of environmental issues grouped within the following categories:
- Management;
  - Health and Wellbeing;
  - Energy;
  - Transport;
  - Water;
  - Materials;
  - Waste;
  - Land Use & Ecology;
  - Pollution; and
  - Innovation.
- 6.3 The assessment of the building results in a final report and BRE Global BREEAM certificate detailing the performance of the assessed building against the environmental issues covered by the standard. The building's performance is expressed as a BREEAM rating to the scale shown on Figure 6-1 below.

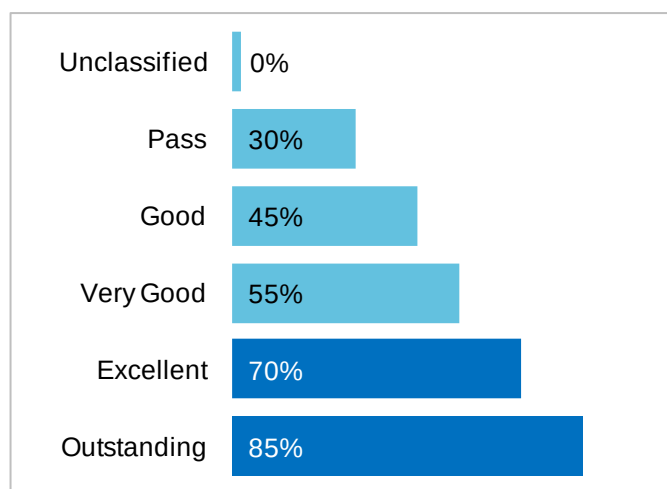


Figure 6-1 BREEAM rating benchmarks

## 6.2 Proposed Target Rating

- 6.4 The Proposed Development has been registered with the BRE under v3.0 of the BREEAM New Construction (NC) 2018 manual for fully fitted educational buildings. A BREEAM Pre-assessment has been undertaken and the proposed ratings are detailed in Table 1 below:

**Table 1 BREEAM – Proposed Target Ratings and Scores**

| <i>Building</i>                              | <i>Target Rating</i> | <i>Target Score</i> |
|----------------------------------------------|----------------------|---------------------|
| Dyne House and Island Site<br>(Fully fitted) | Very Good            | <b>67.46%</b>       |

- 6.5 The section below provides further detail on the route to these ratings.
- 6.6 A BREEAM Pre-assessment has been undertaken for the Proposed Development and identified that a “Very Good” rating can be targeted. However, Highgate School have an aspiration to uplift to Excellent, if feasible. A full BREEAM New Construction 2018 assessment will be undertaken post planning at which point a further review will be undertaken to confirm whether the target rating can be uplifted to Excellent.

## 6.3 BREEAM Pre-assessment

- 6.7 This initial Pre-assessment is an indication of credits that could be targeted for the Proposed Development and is based on a series of assumptions and discussion with the design team.
- 6.8 To address the sustainability issues within BREEAM, a number of meetings have been held between the BREEAM Assessor and the design team. These workshops/meetings were used to identify target credits based on current design intent. BREEAM Pre-assessments were then produced and circulated to the client and design team for comment.
- 6.9 A summary of the Proposed Development’s performance is provided in Table 2 below.

Table 2 BREEAM New Construction 2018 Pre-assessment

|                             |                                           |                                  | <i>Educational Building</i> |
|-----------------------------|-------------------------------------------|----------------------------------|-----------------------------|
| <i>Credit Ref.</i>          | <i>Credit Name</i>                        | <i>Maximum Available Credits</i> | <i>Targeted Credits</i>     |
| <b>Scope</b>                |                                           |                                  | Fully fitted                |
| <b>Target Score</b>         |                                           |                                  | <b>67.46%</b>               |
| <b>Target BREEAM Rating</b> |                                           |                                  | Very Good (≥55%)            |
| Man 01                      | Project Brief and Design                  | 4                                | 3                           |
| Man 02                      | Life Cycle Cost and Service Life Planning | 4                                | 3                           |
| Man 03                      | Responsible Construction Practices        | 6                                | 6                           |
| Man 04                      | Commissioning and Handover                | 4                                | 4                           |
| Man 05                      | Aftercare                                 | 3                                | 1                           |
| <b>Totals</b>               |                                           | <b>21</b>                        | <b>17</b>                   |
| Hea 01                      | Visual Comfort                            | 4                                | 2                           |
| Hea 02                      | Indoor Air Quality                        | 4                                | 2                           |
| Hea 04                      | Thermal Comfort                           | 3                                | 2                           |
| Hea 05                      | Acoustic Performance                      | 3                                | 3                           |
| Hea 06                      | Security                                  | 1                                | 0                           |
| Hea 07                      | Safe and Healthy Surroundings             | 2                                | 2                           |
| <b>Totals</b>               |                                           | <b>17</b>                        | <b>11</b>                   |

|                    |                                              |                                  | <i>Educational Building</i> |
|--------------------|----------------------------------------------|----------------------------------|-----------------------------|
| <i>Credit Ref.</i> | <i>Credit Name</i>                           | <i>Maximum Available Credits</i> | <i>Targeted Credits</i>     |
| Ene 01             | Reduction of Energy Use and Carbon Emissions | 13                               | 6                           |
| Ene 02             | Energy Monitoring                            | 2                                | 2                           |
| Ene 03             | External Lighting                            | 1                                | 1                           |
| Ene 04             | Low Carbon Design                            | 3                                | 1                           |
| Ene 06             | Energy Efficient Transportation Systems      | 3                                | 2                           |
| Ene 07             | Energy Efficient Laboratory Systems          | n/a                              | n/a                         |
| Ene 08             | Energy Efficient Equipment                   | 2                                | 0                           |
| <b>Totals</b>      |                                              | <b>24</b>                        | <b>12</b>                   |
| Tra 01             | Transport Assessment and Travel Plan         | 2                                | 2                           |
| Tra 02             | Sustainable Transport Measures               | 10                               | 2                           |
| <b>Totals</b>      |                                              | <b>12</b>                        | <b>5</b>                    |
| Wat 01             | Water Consumption                            | 5                                | 2                           |
| Wat 02             | Water Monitoring                             | 1                                | 1                           |
| Wat 03             | Water Leak Detection                         | 2                                | 2                           |
| Wat 04             | Water Efficient Equipment                    | 1                                | 1                           |
| <b>Totals</b>      |                                              | <b>9</b>                         | <b>6</b>                    |

|                    |                                                                                              |                                  | <i>Educational Building</i> |
|--------------------|----------------------------------------------------------------------------------------------|----------------------------------|-----------------------------|
| <i>Credit Ref.</i> | <i>Credit Name</i>                                                                           | <i>Maximum Available Credits</i> | <i>Targeted Credits</i>     |
| Mat 01             | Environmental Impacts from Construction Products – Building Life Cycle Assessment (LCA)      | 7                                | 7                           |
| Mat 02             | Environmental Impacts from Construction Products – Environmental Product Declarations (EPDs) | 1                                | 1                           |
| Mat 03             | Responsible Sourcing of Construction Products                                                | 4                                | 1                           |
| Mat 05             | Designing for Durability and Resilience                                                      | 1                                | 1                           |
| Mat 06             | Material Efficiency                                                                          | 1                                | 1                           |
| <b>Totals</b>      |                                                                                              | <b>14</b>                        | <b>11</b>                   |
| Wst 01             | Construction Waste Management                                                                | 5                                | 3                           |
| Wst 02             | Use of Recycled and Sustainably Sourced Aggregates                                           | 1                                | 0                           |
| Wst 03             | Operational Waste                                                                            | 1                                | 1                           |
| Wst 05             | Adaptation to Climate Change                                                                 | 1                                | 1                           |
| Wst 06             | Design for Disassembly and Adaptability                                                      | 2                                | 2                           |
| <b>Totals</b>      |                                                                                              | <b>10</b>                        | <b>7</b>                    |
| LE 01              | Site Selection                                                                               | 2                                | 1                           |
| LE 02              | Ecological Risks and Opportunities                                                           | 2                                | 2                           |
| LE 03              | Managing Negative Impacts on Ecology                                                         | 3                                | 3                           |
| LE 04              | Managing Impacts on Ecology                                                                  | 4                                | 4                           |

|                    |                                              |                                  | <i>Educational Building</i> |
|--------------------|----------------------------------------------|----------------------------------|-----------------------------|
| <i>Credit Ref.</i> | <i>Credit Name</i>                           | <i>Maximum Available Credits</i> | <i>Targeted Credits</i>     |
| LE 05              | Long Term Ecology Management and Maintenance | 2                                | 2                           |
| <b>Totals</b>      |                                              | <b>13</b>                        | <b>12</b>                   |
| Pol 01             | Impact on Refrigerants                       | 3                                | 0                           |
| Pol 02             | Local Air Quality                            | 2                                | 2                           |
| Pol 03             | Flood and Surface Water Management           | 5                                | 3                           |
| Pol 04             | Reduction of Night Time Light Pollution      | 1                                | 1                           |
| Pol 05             | Reduction of Noise Pollution                 | 1                                | 1                           |
| <b>Totals</b>      |                                              | <b>12</b>                        | <b>7</b>                    |

## 7. Conclusions

- 7.1 This Sustainability Statement demonstrates how the Proposed Development responds to the sustainability targets set out in the London Plan 2021 and LBH sustainability objectives.
- 7.2 The key sustainability features of the Proposed Development are as follows:
- Optimising the use of land by building on previously developed land, with a high-quality design appropriate to the historical context of the Site and local townscape.
  - The proposed energy strategy for the Site includes the following measures, which results in a site-wide regulated carbon saving of 1.6 tCO<sub>2</sub>/year, via energy efficient fabric and building services design, an all-electric heating and cooling solution and by installing photovoltaic panels to generate renewable energy.
  - Good practice environmental design, including good daylight, ventilation and acoustics which will contribute to occupant health and wellbeing.
  - Ensuring that staff and students have access to most of the terraces and landscaped areas offering amenity space.
  - Specifying water efficient fittings to reduce potable water demand.
  - Using responsibly sourced materials with robust environmental information, including low-VOC finishes and fittings, where feasible.
  - Providing ecological enhancements through a landscape strategy that aims to have a net positive impact to the Site biodiversity and has generated an UGF of 0.53 compared with the minimum value of 0.3 required by the London Plan.
- 7.3 In addition, an initial BREEAM Pre-assessment has been undertaken for the development. A full BREEAM New Construction 2018 Fully Fitted assessment will be undertaken post planning. A 'Very Good' rating is being targeted with an aspiration to uplift to Excellent, if feasible.
- 7.4 Overall, the Proposed Development aligns with national, regional, and local policy. The approach that is being implemented to integrate or embed sustainability principles fully onto the design of the Proposed Development.

