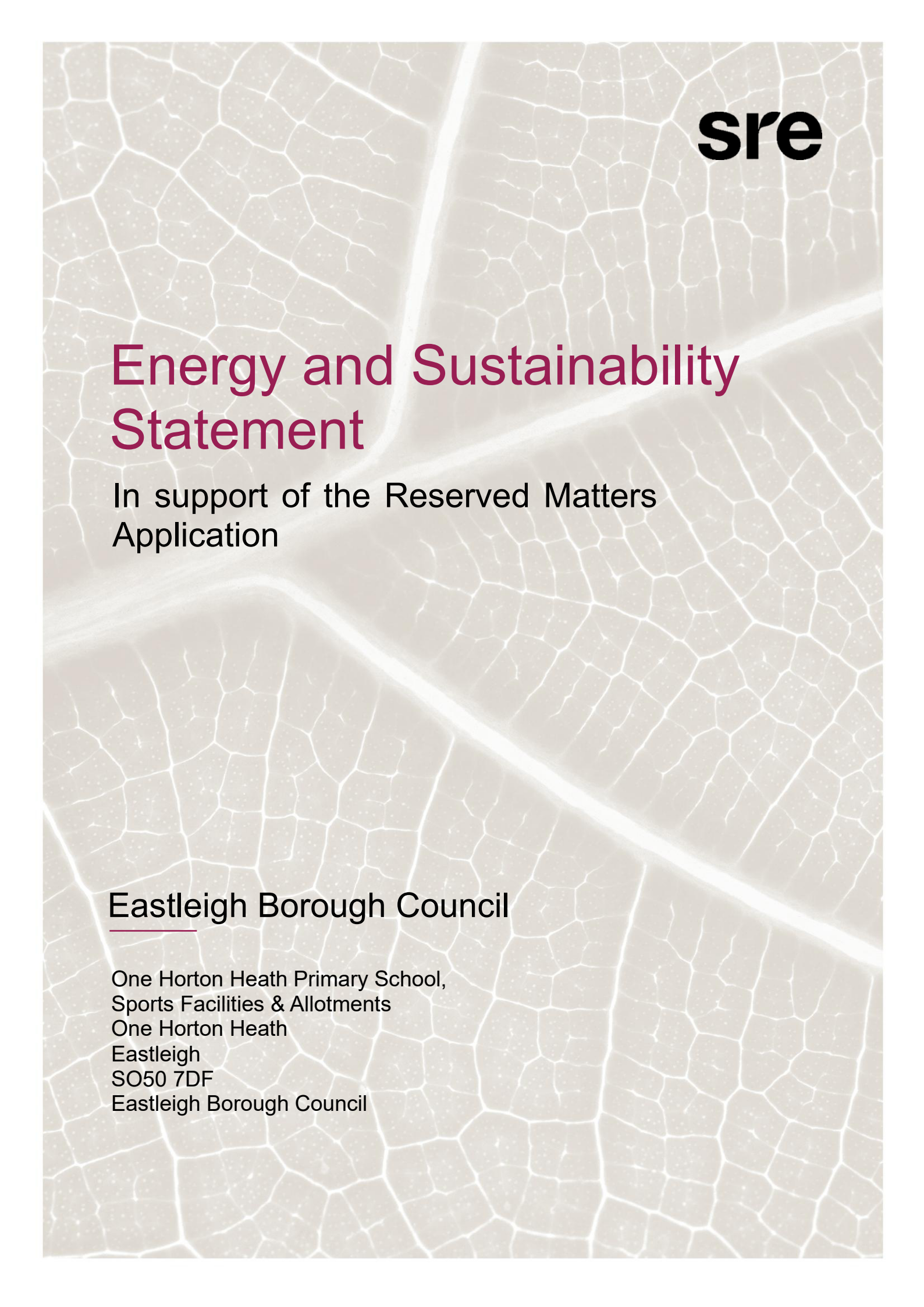




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Energy and Sustainability Statement

In support of the Reserved Matters
Application

Eastleigh Borough Council

One Horton Heath Primary School,
Sports Facilities & Allotments
One Horton Heath
Eastleigh
SO50 7DF
Eastleigh Borough Council

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Executive Summary

This Energy and Sustainability Statement is prepared by SRE for the new Primary School at One Horton Heath, Eastleigh (the Proposed Development) on behalf of Eastleigh Borough Council (the Client). SRE's contribution will inform the architecturally led scheme during RIBA Stage 2 Development of Concept Design and support the Reserved Matters submission.

The Proposed Development has been designed to incorporate a range of energy efficiency and sustainability strategies that respond to both local planning policy requirements and wider sustainability objectives. Through the implementation of these design measures, the Proposed Development is anticipated to comply with, and where applicable, exceed the requirements of Building Regulations 2021 Part L (Volume 2) and the relevant planning policies of Eastleigh Borough Council.

The proposed development consists of the new construction of a Primary School, Sports facilities and allotments on a greenfield site. The resulting development will comprise a hall, teaching area, office space, sports and leisure facilities and allotments, together with a supporting car park. The building will comprise of 21 classrooms and accommodate 630 number of students.

Proposed Energy Strategy

The energy strategy for the primary school has been developed by following the Energy Hierarchy of: 'Lean, Clean, Green and Seen.' The chosen energy strategy includes passive and active design measures and Green Low and Zero Carbon (LZC) technologies to reduce the global warming potential (GWP) and CO₂e emissions as far as practical and viable in line with Building Regulations 2021 Part L V2.

A TM54 Dynamic Operational Energy Assessment has been undertaken at Stage 3 to verify energy performance and support compliance with the relevant regulations and guidance. Please refer to the Prediction of Performance and Operational Energy Use report prepared by SRE Ltd for more details.

The proposed energy strategy for the Proposed Development is summarised below and addresses Condition 33 of the decision notice:

- **Heating and Hot Water System:** Ground Source Heat Pump (GSHP) - Kensa Q80 (SCOP 3.48) with radiators, providing efficient space heating and hot water.
- **Building Fabrics:** All thermal elements exceed Building Regulations Part L standards, reducing overall heating demand.
- **Openings:** Double-glazed windows with a low solar heat gain g-value of 0.4 specified throughout.
- **Lighting Services:** 100% LED lighting with an average efficacy of 120 lm/W.
- **Ventilation:** A combination of natural ventilation and a Natural Ventilation with Heat Recovery (NVHR) system.
- **Photovoltaic System:** A photovoltaic array is proposed and will be sized to target Net Zero Carbon in Operation in line with the DfE Generic Design Brief, with the final system capacity to be confirmed at Stage 3.

The Proposed Development will exceed the target set by the Eastleigh Borough Council and national policies, achieving 79.13% site-wide CO₂e reduction over the Baseline. Hence, the development complies with Condition 33 of the Outline Planning Application decision notice, which requires 15% reduction in carbon emission target via low or zero-carbon energy generation on-site.

Energy Hierarchy	CO ₂ e emissions (t/yr)	Improvement over Baseline (%)
Baseline	11.5	
Lean	9.2	20.00
Clean	9.2	20.00
Green	2.4	79.13

Table 1 - Summary of sitewide regulated CO₂e savings for the Proposed Development

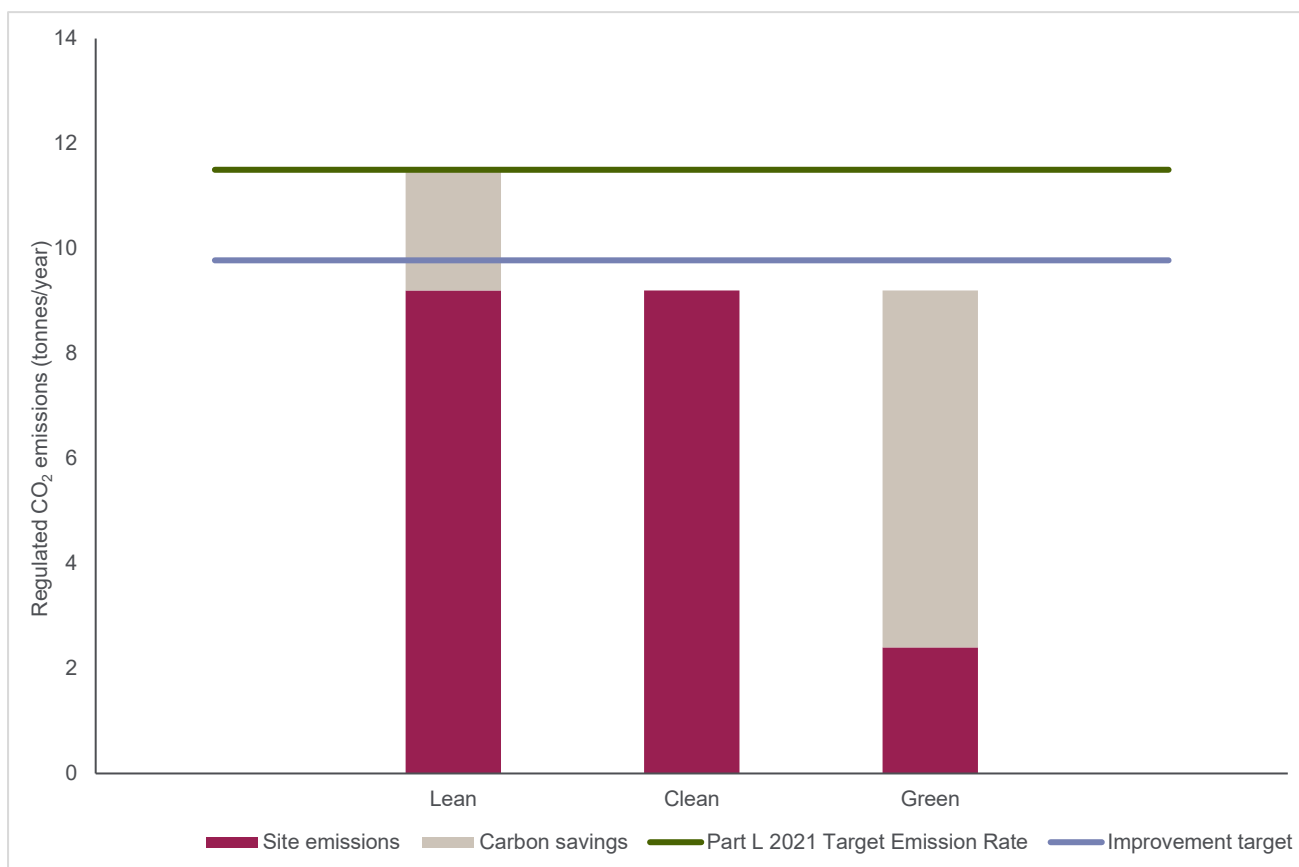


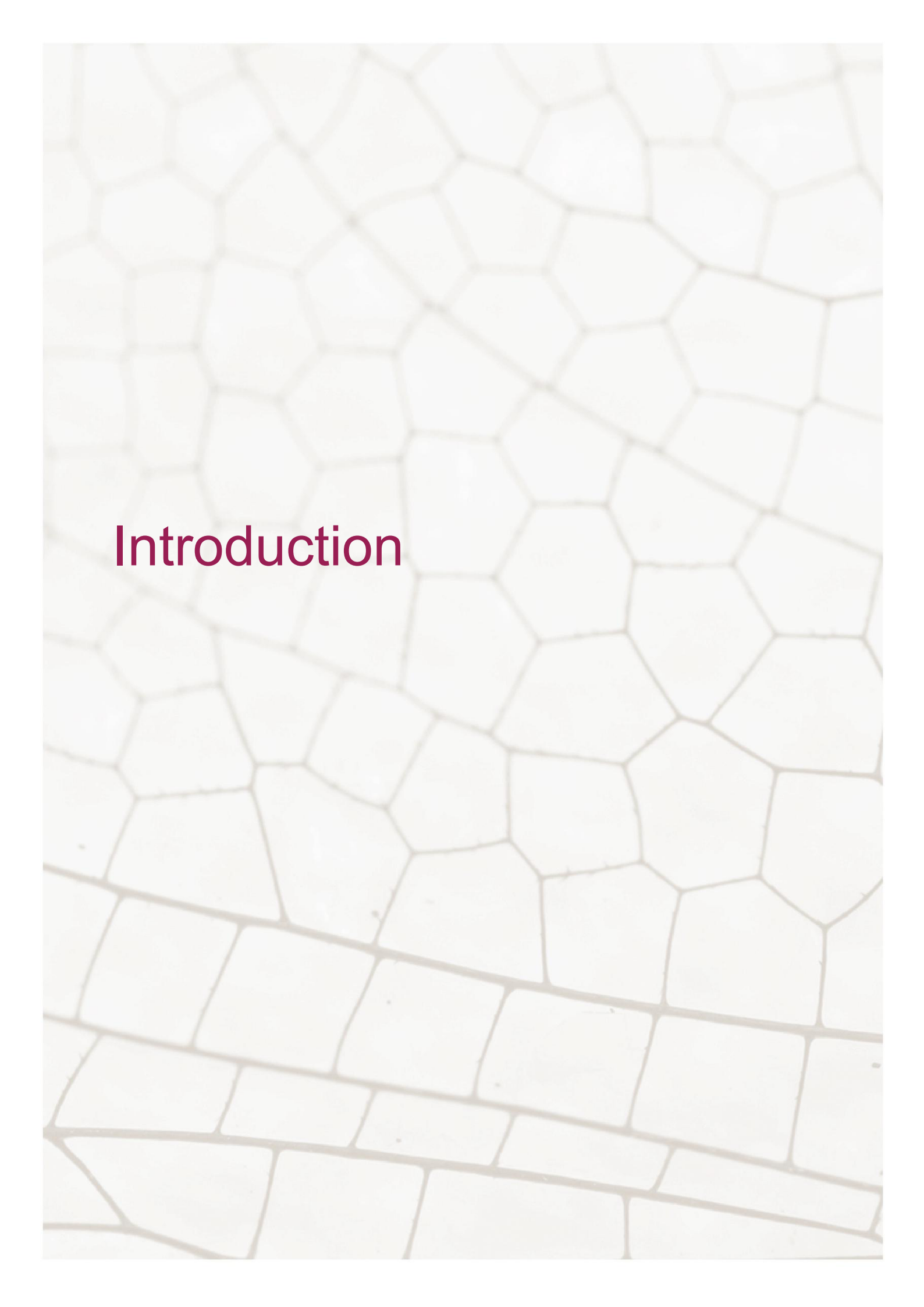
Figure 1 - Energy Hierarchy CO₂e emissions reduction graph - Sitewide

Proposed Sustainability Strategy

Through the incorporation of sustainability principles, the Proposed Development adopts numerous good practices resulting in positive design and construction methodology. These measures ensure all policy requirements are met with the following notable proposed implementations:

- **Air Quality:** On-site air pollution will be minimised through an all-electric heating & hot water strategy, installation of photovoltaic (PV) panels to reduce grid electricity consumption, and the use of low-VOC finishes and furnishings.
- **Noise:** Noise and vibration will be controlled through a fabric-first design, high insulation and airtightness, quiet plant equipment, and encouragement of sustainable transport. During construction, measures such as acoustic screening and traffic management will be implemented to mitigate impacts.
- **Light Pollution:** Daylight levels will be optimised, low-energy fittings installed, rooflights provided, light-sensitive window treatments used, and security lighting controlled to reduce light pollution for occupants and local wildlife.
- **Flood Risk:** The site is in a very low flood risk zone from surface water and rivers and sea. Appropriate SuDS strategy will be implemented to ensure that the development does not increase flood risk.
- **Sustainable Transport:** The Proposed Development will facilitate low-impact transport modes, including walking, cycling, public transport access, and provisions for ultra-low and zero-emission vehicles.
- **Resource Efficiency:** Resource efficiency will be prioritized by minimizing construction waste, maximizing recycling, and using low-impact materials such as FSC-certified timber and EAF steel.
- **Waste Management:** Construction and operational waste will be managed according to the waste hierarchy, maximising reuse and recycling, using locally sourced materials where feasible, and ensuring efficient transport of materials.
- **Water Conservation:** Mains water consumption will be minimised through high-efficiency fittings, flow restrictors, and appliances.
- **Ecology and Biodiversity:** Measures will be implemented to protect and enhance biodiversity, ensuring no net loss and supporting local green infrastructure and habitats.
- **BREEAM Target:** The Proposed Development is targeting a BREEAM UK New Construction Version 6.1 'Excellent' rating and has been registered as a 'Fully Fitted' assessment, with both the building fabric and internal fit-out assessed through a single, integrated approach.

As a result, the Proposed Development aligns with Policies S1, S9, DM2, DM3, DM4, DM5, DM6, DM7, DM8, DM10, and DM11, as well as relevant supporting Supplementary Planning Documents, thereby supporting the Reserved Matters submission and requirements of Eastleigh Borough Council.

The background of the slide is a microscopic image of plant tissue, likely from a leaf. It shows a network of cells with thickened corners, characteristic of cornuata cells. The cells are arranged in a somewhat regular pattern, with some larger cells and some smaller ones. The overall color is a light beige or cream, with the cell walls appearing slightly darker.

Introduction

1.0 Introduction

This Energy and Sustainability statement has been written by SRE for the new Primary School at One Horton Heath, Eastleigh (the Proposed Development) on behalf of Eastleigh Borough Council (the Client). SRE's input will support and inform the Reserved Matters submissions being made to Eastleigh Borough Council.

The scope of the report covers the following aspects of the Energy and Sustainability assessment:

- Examine the energy strategy proposed and the feasibility of concept energy measures for the Proposed Development.
- Part L Pre-assessment for building services and proposed building fabric and addressing planning/potential Building Control requirements.
- Analytical review of the passive design measures considered at RIBA Stage 2 Development of Concept Design.
- Qualitative assessment of the integration of surrounding environment within the context of Sustainability

All results described herein are based on the output from Integrated Environment Solutions Virtual Environment (IES VE) 2025, but these conditions cannot be guaranteed to be an indication of the final situation. The results herein are to be read in the context of Part L compliance purposes only and should not be used for design sizing or any other purpose.

It is important to note that with any modelling exercise, there are assumptions and approximations that must be made. Details of assumptions made, and approximations used are provided as part of the report. All results and strategies are directly affected by the inputs listed in this document; any deviation from these may produce different results.

1.1 Proposed Development

One Horton Heath (OHH) is a comprehensive redevelopment scheme to the west of Horton Heath, which will provide new retail, employment, residential, senior living, a new primary school, and a new local centre, amongst other new uses on land which is currently undeveloped. Outline planning permission for OHH was granted on 27 October 2025 under application reference O/20/89498.

The proposed 3FE Primary School and the adjoining sports facilities are part of the phased mixed-use development. The Proposed Development consists of the new construction of a Primary School on a greenfield site at One Horton Heath. The resulting development will comprise of halls, teaching areas, office spaces, sports and leisure facilities, together with a staff car park. The building will comprise of 21 classrooms and accommodate 630 number of students. The pavilion building will be developed in accordance with the school and comply with Part L building regulation, the SBEM will be completed during RIBA Stage 3'

Figure 2 shows the site plan of the Proposed Development.



Figure 2 - Site plan of the Proposed Development (Re-Format LLP)

Please refer to Appendix A for the floor plans of the Proposed Development.

1.2 Planning Policies

The Development Plan for the Site comprises:

- Eastleigh Borough Local Plan (2016-2036) - Adopted April 2022.

- Biodiversity Supplementary Planning Document – Adopted December 2009.
- Environmentally Sustainable Development - Supplementary Planning Document – Adopted 5 March 2009.
- Trees and Development Supplementary Planning Document - Adopted April 2022.
- One Horton Heath, Outline Planning Application, Sustainability and Energy Statement prepared by Hilson Moran.

The planning policy requirements relevant to the energy and sustainability aspects of the Proposed Development are summarised in Table 2. The policies are presented either in full or in summary form for clarity. The Proposed Development will be assessed against these policies in relation to energy performance, sustainability objectives and regulatory requirements.

Planning Policy	Requirement
Eastleigh Borough Local Plan (2016-2036) - Adopted April 2022	<u>Strategic policy S1 - Delivering sustainable development (Summary)</u> Strategic Policy S1 sets out the overarching principles for sustainable development within Eastleigh Borough, requiring development to balance social, environmental, and economic considerations. The policy promotes the provision of community facilities, inclusive access to services, climate change mitigation and adaptation, reduced energy use and greenhouse gas emissions, sustainable transport choices, protection of water resources, biodiversity enhancement, efficient use of resources, and the safeguarding of local environmental and landscape quality. <u>Strategic policy S9 - Green infrastructure (Summary)</u> Strategic Policy S9 seeks to ensure that new development contributes to the provision, retention, and enhancement of a multifunctional green infrastructure network across Eastleigh Borough. The policy promotes the integration of green infrastructure within new and existing development, including connected open spaces, landscape and habitat links, street trees and other green features, sustainable walking and cycling connections, and the incorporation of heritage landscapes. It also supports the creation of green links between community facilities and open spaces, biodiversity connectivity, and opportunities for local food growing. <u>Policy DM2 - Environmentally sustainable development (Extracted in Full)</u> 1. The Borough Council requires that: a. all new build residential development (C3 Use Class only) must achieve at the time a Reserved Matters or Full Planning Application is submitted: i. a 19% improvement in predicted carbon emissions, compared with the building regulations standard current at the time, through increased energy efficiency of the building fabric, unless this is superseded by an updated building regulations requirement equivalent to 'zero carbon homes'; and ii. a predicted mains water consumption of no more than 110 litres/person/day.

- b. all other development that is above 500 sq.m of floorspace measured externally (including extensions and conversions to existing buildings) must achieve BREEAM 'excellent' (or equivalent) or BREEAM 'very good' plus 'passivhaus' certification including a 15% improvement in predicted carbon emissions, compared with the building regulations current at the time, through low or zero carbon energy generation on site or in a Borough location agreed by the Council.
 - c. all other larger developments above 10,000 sq.m of floorspace should also seek to fund post occupancy evaluation (POE) in addition to the above.
- 2. In addition to the above, all development above 500 sq.m of floorspace measured externally (including extensions and conversions to existing buildings) and external spaces within the curtilage serving developments of this size should where practical and viable:
 - a. incorporate energy-efficient passive design principles, the best use of natural daylight and natural ventilation systems wherever possible;
 - b. connect to any existing near or adjacent low carbon local energy network unless this is proved unviable;
 - c. use recycled, low embodied carbon, low environmental impact and locally sourced materials in construction where possible;
 - d. be designed with sufficient flexibility to enable the life of the building to be extended by re-use for other purposes where feasible;
 - e. aim to deliver at least 1% of all residential units within the whole scheme which achieve full 'passivhaus' certification.

Policy DM3 - Adaptation to climate change (Extracted in Full)

- 1. All development should be designed to adapt to the predicted climate change impacts for the Borough
 - a. To reduce the potential impacts of surface water flooding, sustainable drainage systems need to be implemented as part of an integrated SuDS strategy for the site in accordance with policy DM6 (Sustainable surface water management and watercourse management) and as part of the landscape framework for the site including green open space and green roofs where appropriate.
 - b. New development should have a cooling strategy which can include:
 - i. cooling through generous green infrastructure and trees
 - ii. areas of shade
 - iii. water cooling
 - iv. building design and orientation to reduce overheating
 - v. 'cool roofs' or green roofs and green walls
 - vi. porous cool pavements
 - c. To adapt to water stress, new development should be designed to reduce demand. Measures can include:
 - i. reduced residential mains water consumption (as per policy DM2)
 - ii. water efficient appliances, fittings and leak detection devices for non-residential and non C3 use class residential development
 - iii. rainwater harvesting and grey water recycling

iv. drought resistant landscape design and planting

Policy DM4 - Zero or low carbon energy (Extracted in Full)

1. The Borough Council will permit the development of infrastructure to:
 - a. generate zero or low carbon energy; and/or
 - b. make more efficient use of energy sources e.g. installations deploying combined heat and power (CHP technology);
2. Subject to general development criteria and provided that the development:
 - a. has no significant adverse impact on the landscape or landscape features, biodiversity or the significance of heritage assets;
 - b. does not involve the loss of land in public recreational use (see policy DM32);
 - c. does not involve the permanent loss of the best and most versatile agricultural land (BMV).

Policy DM5 - Managing flood risk (Extracted in Full)

1. Development will only be permitted within the areas at risk of flooding, now and in the future, as identified on the Environment Agency most recent flood maps and the Council's Strategic Flood Risk Assessment provided that:
 - a. it meets the sequential and exception test (where required) as outlined in Government guidance;
 - b. a site-specific flood risk assessment demonstrates that the development, including the access, will be safe without increasing flooding elsewhere, and where possible, will reduce flood risk overall;
 - c. the scheme incorporates flood protection, flood resilience and resistance measures appropriate to the character and biodiversity of the area and the specific requirements of the site and where appropriate takes advantage of opportunities to utilise natural flood management techniques;
 - d. appropriate flood warning and evacuation plans are in place; and
 - e. new site drainage systems are designed taking account of events which exceed the normal design standard.
2. Development should not increase flooding elsewhere.
3. Sustainable Drainage Systems (SuDS) must be designed in accordance with policy DM6.

Policy DM6 - Sustainable surface water management and watercourse management (Summary)

This policy requires new development to incorporate Sustainable Drainage Systems (SuDS) in order to manage surface water runoff, reduce flood risk, and protect water quality. It promotes the use of naturalised drainage features as part of a treatment train, with the number and type of measures dependent on site size and proximity to sensitive water environments, including the River Itchen and Solent Maritime Special Areas of Conservation. SuDS schemes are expected to be designed in accordance with recognised guidance, manage runoff at source, limit discharge rates, and include long-term management and maintenance arrangements. The policy also seeks to retain and enhance existing watercourses, avoid culverting, and requires site-specific

environmental management measures where development drains into protected water bodies.

Policy DM7 - Flood Defences, Land Reclamation and Coast Protection (Summary)

Policy DM7 requires that development in areas at risk of coastal, fluvial, or surface water flooding should not create the need for additional flood or coast protection works beyond those identified in approved management plans. Where necessary, developments may be required to contribute to the cost of protective works and must consider watercourse ownership and long-term management. Flood defence and coast protection proposals are supported if consistent with approved management plans. Land reclamation is generally not permitted unless it can be demonstrated that it will not impede navigation, disrupt recreational access, or adversely affect nature conservation, landscape, or heritage assets along the coast or river.

Policy DM8 - Pollution (Extracted in Full)

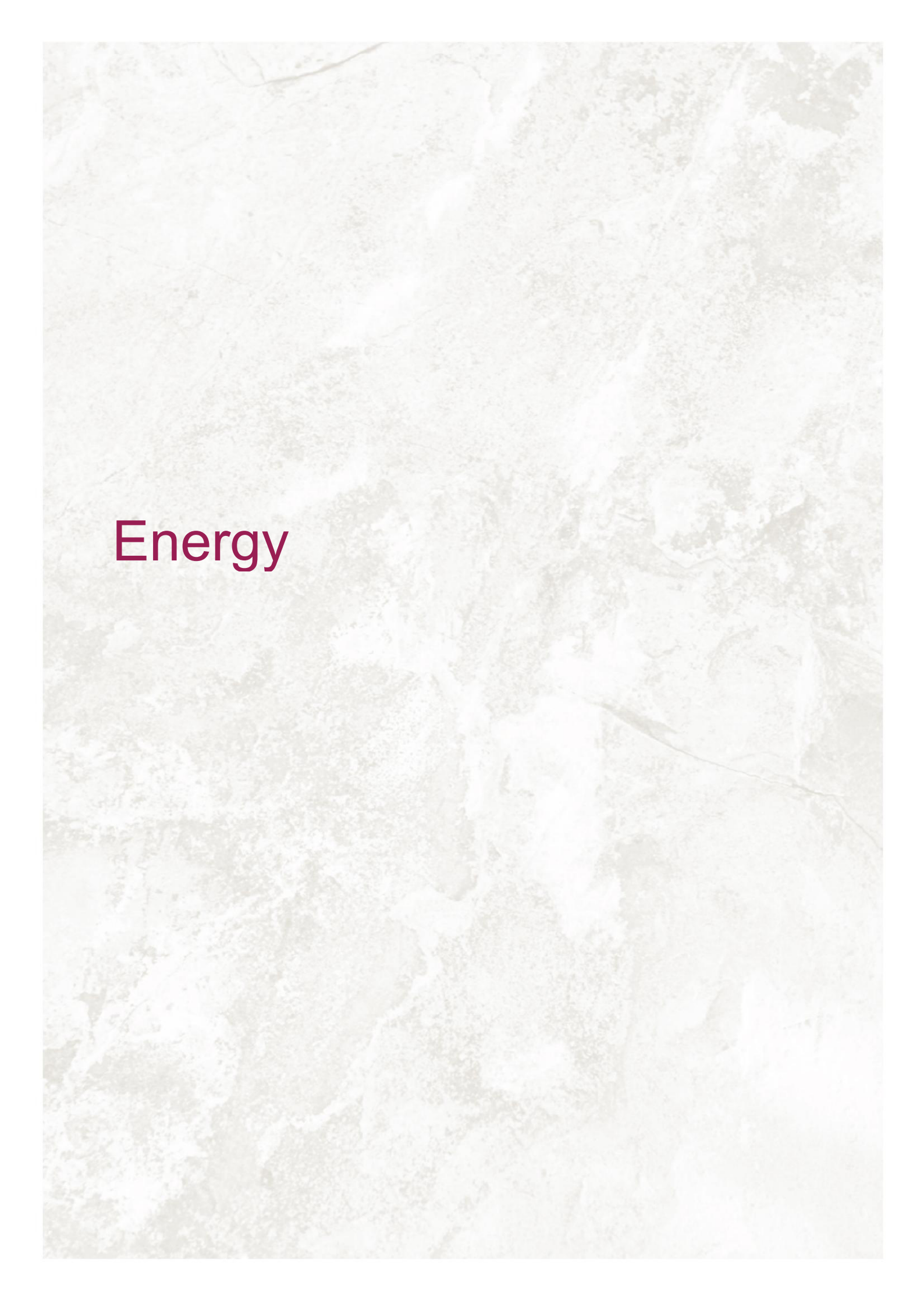
1. Development will not be permitted if it is likely to cause loss of amenity or impact on public health or other unacceptable environmental impacts through:
 - a. air pollution (including odours or particulate emissions);
 - b. pollution of surface, underground, coastal waters or other watercourses;
 - c. noise or vibration;
 - d. light intrusion, both generally and with respect to the South Downs National Park's status as an International Dark Night Skies reserve; or
 - e. land contamination.
2. Development susceptible to particular forms of pollution will not be permitted:
 - a. where it will be adversely affected by such pollution, unless measures can be taken that adequately mitigate the polluting effects; or
 - b. where it would inhibit existing economic or other activities giving rise to acceptable polluting effects.
3. Where a development site is known or suspected to be contaminated, before the site is developed the Borough Council will require the contamination to be remediated to a standard where as a minimum it cannot be defined as 'contaminated land' under Part IIA of the Environmental Protection Act 1990.

Policy DM10 - Water and Waste Water (Extracted in Full)

1. Where new water supply or waste water infrastructure is required or proposed in support of new development the development will be phased alongside the provision of the infrastructure to ensure:
 - a. compliance with the Habitats Regulations;
 - b. that there is no deterioration of the status of water bodies which might impact adversely on Water Framework Directive requirements; and

	c. the avoidance or mitigation of any other adverse impacts. 2. Wherever possible measures should be implemented which would improve the water environment. <u>Policy DM11 - Nature conservation (Summary)</u> Policy DM11 seeks to ensure that new development protects, conserves and enhances biodiversity across the Borough. It requires the safeguarding of international, national and locally designated nature conservation sites, as well as the wider network of habitats, watercourses, trees and ecological corridors. Development is expected to contribute to biodiversity net gain, support green infrastructure, and assist in meeting biodiversity targets set out in relevant Biodiversity Action Plans. Proposals must avoid adverse impacts on designated sites, priority habitats and protected species, with mitigation or compensation only permitted where impacts are unavoidable and no reasonable alternatives exist. The policy also places strong emphasis on protecting irreplaceable habitats, maintaining appropriate buffer zones, preserving water quality in sensitive catchments, and undertaking robust ecological surveys to inform development proposals.
Biodiversity Supplementary Planning Document - Adopted December 2009	The Eastleigh Borough Council Biodiversity Supplementary Planning Document (SPD), adopted in December 2009, provides supporting guidance to assist in the interpretation and implementation of the Council's adopted nature conservation policies. The SPD outlines the approach to protecting, conserving, and enhancing biodiversity within new developments, including expectations around ecological assessment, avoidance of harm to habitats and species, and the incorporation of appropriate mitigation and enhancement measures where necessary.
Environmentally Sustainable Development - Supplementary Planning Document - Adopted 5 March 2009	The Environmentally Sustainable Development SPD (adopted March 2009) provides guidance to support the implementation of the Council's sustainability-related planning policies. SPD outlines best-practice principles relating to energy efficiency, water conservation, sustainable materials, transport, and overall environmental performance, which are relevant to the proposed primary school development.
Trees and Development Supplementary Planning Document - Adopted April 2022	The Trees and Development SPD (adopted April 2022) provides guidance on the protection, retention, and integration of trees within new development. The SPD sets out expectations for tree-informed site design, appropriate mitigation and replacement planting, and the role of trees in supporting biodiversity, climate resilience, and amenity, all of which are relevant to the proposed primary school development.

Table 2 - Summary of local planning policy requirements

The background of the entire page is a light beige or cream-colored paper with a marbled texture. The marbling consists of irregular, swirling patterns of slightly darker beige and light tan, giving it a natural, organic appearance. The texture is subtle and consistent across the entire surface.

Energy

2.0 Energy

2.1 Method

The energy strategy design follows the national policy guidance¹ and seeks to be Lean, Clean, Green and Seen, as shown in Figure 3.

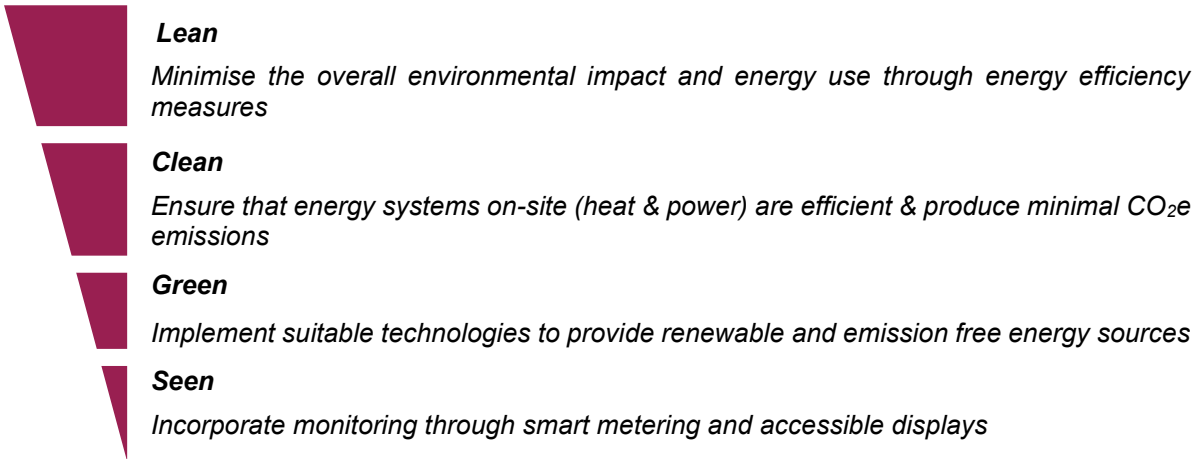


Figure 3 - The Energy Hierarchy

CO₂e Conversion Factors in Table 3 below have been taken from the 2021 Building Regulations. However, within *Integrated Environment Solutions Virtual Environment (IES VE) 2025*, the CO₂e conversion factor for electricity varies over the course of the year due to the changing mix of inputs to the electricity grid, i.e., increased Photovoltaic (PV) generation in the summer months.

Energy Source	CO ₂ e Conversion Factor (kgCO ₂ e/kWh)
Electricity (mains)	0.136 ²
Electricity (offset)	-0.136 ²
Gas (mains)	0.210

Table 3 - CO₂e conversion factors by energy source

The Proposed Development is assessed under Building Regulations 2021 Part L V2 using Dynamic Simulation Model (IES VE 2025 Compliance), under the building use class as outlined below:

¹ Energy Assessment Guidance (2022)

² This value is not directly used but rather represents the average of the month-to-month values used.

- D1: Primary or Secondary School (Primary)

The Target Emission Rate (TER) from the Lean scenario provides the energy baseline and is the exact size and shape of the Proposed Development. The Baseline uses notional U-values and heating specifications outlined in the *2021 Building Regulations Approved Document Part LV2*. The Baseline CO₂e emissions are shown in Table 4.

Energy Hierarchy	CO ₂ e emissions (t/yr)
Baseline - Sitewide	11.5

Table 4 - Baseline values for CO₂e emissions

2.2 LEAN – Demand Reduction

In line with Condition 33, through passive and active design measures, the Proposed Development can achieve the following carbon reduction requirements in 2021 Building Regulations Approved Document Part L V2 as shown in Table 5.

Energy Hierarchy	Sitewide CO ₂ e emissions (t/yr)	Improvement (%)
Baseline	11.5	
Lean	9.2	20.00

Table 5 - Lean CO₂e emissions improvement over fabric

2.2.1 Passive Design Measures

Passive design measures have been enhanced where possible throughout the site to maximise building efficiency within the confines of the site constraints and budget requirements. The buildings have been positioned within the site to maximise the usable space, both for the building and the external spaces. This section presents a detailed outline of the passive design measures considered in the design.

Building Envelope

The Proposed Development follows a fabric-first approach, creating a high-performance building envelope. The Proposed Development is anticipated to potentially utilise a Cross-Laminated Timber (CLT) construction system, among other options under consideration. A fabric-first approach will ensure high levels of insulation throughout the external elements, with a high air tightness, aiming to reduce heat loss through infiltration.

The U-values will exceed 2021 Building Regulations Approved Document Part L V2 requirements. Proposed U-values are summarised in Table 6. The construction details are provided in Appendix B.

Element	Proposed U-value (W/m ² K)	
	Part L – Limiting Values	Proposed
External Walls	0.26	0.12
Roofs (Flat)	0.18	0.10
Roofs (Pitched)	0.16	0.10
Ground Floor	0.18	0.10
Windows, & Glazed Door	1.60	1.20
Additional Elements	Detail measures	
Air Tightness @50 Pa	3 (m ³ /m ² hr)	

Table 6 - Sitewide Fabric energy efficiencies

The high-quality design of the Proposed Development reduces the energy demand of the building, thus reducing the associated CO₂e emissions and the operational costs of the building occupants.

Building Fenestration

The building fenestration design has been carefully developed to maximise natural daylight and beneficial passive solar heat gain while avoiding the risk of overheating. The orientation, size and distribution of glazing have been designed to allow useful solar gains during cooler months, contributing to space heating demand reduction and improved thermal comfort.

Most façades incorporate external shading measures, including overhangs and brise-soleil, which are integrated into the building form to limit excessive solar gains during warmer months while still permitting low-angle winter sun to enter the building. Additional shading is provided by the building massing, surrounding context, and internal curtains or blinds where required.

Double glazing with a low g-value of 0.4 has been specified to achieve an appropriate balance between solar heat gain and heat loss across the year, supporting passive solar performance while maintaining comfortable internal conditions.

Ventilation

Natural purge ventilation will be provided in the whole development through openable windows and doors, which will help address any potential overheating risks.

2.2.2 Active Design Measures

This section details the Active measures incorporated in the design. Details of the final systems used are provided in the specification sheet in Appendix B.

Lighting

The Proposed Development will utilise 100% light-emitting diode (LED) lighting throughout, with an average lighting efficacy of approximately 120 lm/W, exceeding the minimum requirements of Building Regulations Part L. Lighting within all regularly occupied and daylight-accessible spaces will be controlled by a combination of PIR occupancy sensors and daylight sensors to reduce unnecessary energy use. External lighting will be carefully positioned and controlled to avoid excessive light spill and light pollution, with appropriate sensor and time-based controls implemented where required.

Mechanical Ventilation

In modern, well-sealed school buildings, an effective ventilation strategy is essential to maintain good indoor air quality, control moisture levels and support occupant health and wellbeing. The Proposed Development will adopt a low-energy ventilation approach that combines natural ventilation with mechanical assistance where required.

Ventilation to the primary school will be provided through a Natural Ventilation with Heat Recovery (NVHR) system. NVHR systems utilise controlled mechanical extract with heat recovery to support and enhance natural airflow, improving ventilation performance while minimising heat losses during the heating season. This approach reduces energy demand compared to fully mechanical systems, while maintaining consistent indoor air quality.

The NVHR system has been designed to provide a minimum ventilation rate of approximately 8 litres per second per person, which is sufficient to maintain internal carbon dioxide (CO₂) concentrations below 1,000 ppm, in line with recognised best practice for educational buildings. This strategy will support a healthy learning environment, ensure adequate fresh air provision, and limit energy consumption associated with ventilation.

Natural ventilation through openable windows will complement the NVHR system, allowing occupants and teaching staff to increase airflow during warmer conditions and reduce reliance on mechanical operation, thereby contributing to thermal comfort and resilience to overheating.

2.2.3 Cooling Hierarchy

The cooling hierarchy has been used to ensure that passive building design has been optimised to reduce the potential for overheating within the Proposed Development; The design measures proposed are outlined in Table 7.

Cooling Hierarchy	Potential Design Measures
Minimising internal heat generation through energy efficient design	The heat distribution infrastructure, specifically the hot water distribution, should be designed to minimise pipe lengths, use configurations that reduce heat loss, and ensure all pipework is adequately insulated. High efficacy LED lighting throughout with minimal heat output. The hot water cylinder will be appropriately insulated to minimise heat loss and maintain energy efficiency.
Reducing the amount of heat entering the building in summer	Low-E glass windows with a glazing G-value of 0.4 and internal blinds shall be provided to minimise solar gain. All new elements are to be well-insulated with a high level of air tightness, which will reduce the amount of heat entering the building. External shading devices, such as overhangs and brise-soleil
Use of thermal mass and high ceilings to manage the heat within the building	The construction method for the Proposed Development may involve a Cross-Laminated Timber (CLT) structural system, which has a low to medium thermal mass, among other options under consideration. In high-occupancy spaces such as the school hall, double-height volumes are provided to help dissipate heat and improve internal thermal conditions
Passive Ventilation	Openable windows will be provided to all the spaces.
Mechanical Ventilation	Natural Ventilation with Heat Recovery (NVHR) system proposed in all teaching spaces and offices Standard extracts with remote fans to be provided to all wet rooms
Active Cooling	Active cooling is not proposed for this development

Table 7 - Design measures following the Cooling Hierarchy

An overheating assessment has been undertaken in accordance with CIBSE TM52³ and BB101⁴ to evaluate overheating risk. While the SBEM BRUKL assessment indicates an exceedance of the solar thermal gains limit for activity areas located in front of the classrooms at both ground and first floor levels, a detailed BB101 assessment has been carried out. The results of this assessment confirm that there are no overheating issues and that, with the proposed design measures in place, the Proposed Development is expected to achieve acceptable thermal comfort in line with the relevant criteria.

2.3 CLEAN – Heating Infrastructure

To prioritise low-carbon alternatives to gas boilers for providing both heating and hot water, heat networks are being considered. These systems help reduce reliance on centralised power stations by promoting local, low-carbon energy generation through decentralised energy systems.

In accordance with Eastleigh Borough Council planning policies, which encourage the facilitation of future connections to existing or potential energy networks, consideration has been given to nearby energy infrastructure. There are currently no existing or proposed district heating schemes located near the Proposed Development, thus, this has been discounted from the scheme.

The Proposed Development incorporates an air-to-water heat pump. This system provides a viable technical pathway to future connection with a district heating network, once infrastructure becomes available in the area. This future-proofed design reflects the principles and strategic direction highlighted in the planning policies of Eastleigh Borough Council.

Therefore, no further improvement over the 'Clean' scenario has been recorded.

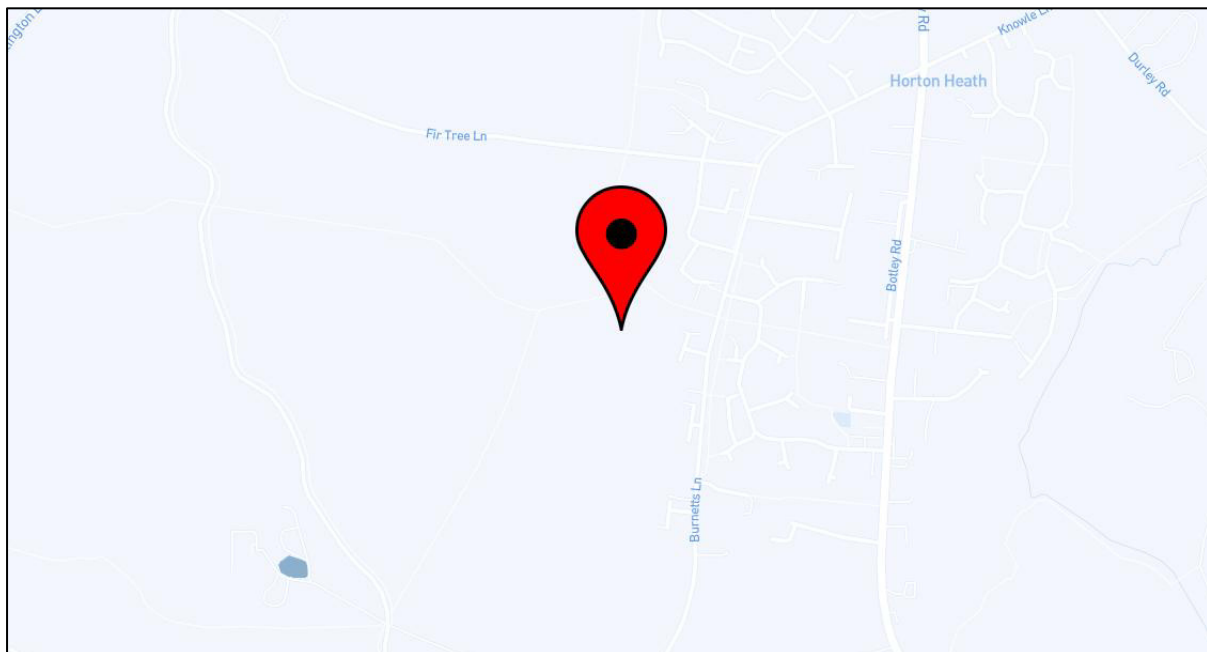


Figure 4 - Heat Network Planning Database, DESNZ (Heat Networks Planning Database | DESNZ & Barbour ABI)

³ CIBSE TM52 The limits of thermal comfort: avoiding overheating (2013)

⁴ BB 101: Ventilation, thermal comfort and indoor air quality 2018

2.4 GREEN – Low Carbon and Renewable Energy

The design team has considered the inclusion of Green technologies to reduce the operational CO₂e emissions and enable the Proposed Development to reduce the reliance on the electricity grid.

The renewable and low carbon energy sources that have been assessed and will be included in the Proposed Development are:

- Ground Source Heat Pumps
- Photovoltaic Panels (PVs)

A summary of the SBEM calculations undertaken can be found in Appendix B.

2.4.1 Ground Source Heat Pumps

The use of heat pumps remains an effective and established approach to reducing operational CO₂e emissions in new developments, with minimal impact on building form or aesthetics. For the Proposed Primary School, a ground source heat pump (GSHP) system – Kensa Q80 (SCOP 3.48) is proposed to provide space heating and hot water, replacing traditional fossil fuel-based heating systems and significantly reducing carbon emissions.

GSHP systems operate using electricity and deliver heat at high efficiency, with the Coefficient of Performance (CoP) representing the ratio of useful heat output to electrical energy input. With a typical SCOP of 3.48, approximately 3.48 units of thermal energy are generated for every unit of electricity consumed, resulting in lower overall energy demand and reduced operational emissions.

The selected GSHP system is well suited to the school's heating and hot water profile and supports the use of low-temperature heat distribution systems. While ground source systems are generally quiet in operation, any noise mitigation requirements will be addressed through design measures to ensure compliance with relevant acoustic standards.

Time, temperature, and optimum start/stop controls will be provided as a minimum, enabling effective zoning and control of heating across different areas of the school to optimise both comfort and energy performance.

2.4.2 Photovoltaic Panels (PVs)

To complement the low-carbon heating strategy and enhance the sustainability of the Proposed Primary School, a southeast-facing photovoltaic (PV) array is proposed. The PV strategy is being developed to target Net Zero Carbon in Operation in accordance with the Department for Education (DfE) Generic Design Brief.

The current design includes an indicative PV array of approximately 140 panels covering around 280 m², installed at a 10° pitch with a panel efficiency of 22%. This array size is currently under review and is expected to be increased, with the final PV capacity to be confirmed at Stage 3 of the design process to support the Net Zero Carbon in Operation objective.

The PV array will generate renewable electricity for direct use within the school, contributing to low-carbon energy supply for lighting, heating systems, and other electrical loads, with any surplus electricity potentially exported to the National Grid. As the system contains no moving parts, it will operate silently and require minimal maintenance.

The provision of on-site renewable energy through the PV installation will further reduce operational carbon emissions and offset a significant proportion of the building's electricity demand, supporting the development's low-carbon and energy-efficient design objectives.

2.4.3 Carbon Emissions Reductions

The net result of implementing these strategies results in a substantial improvement over the baseline CO₂e emissions, as shown in Table 8. In line with Eastleigh Borough Council planning policy and Condition 33 of the Outline Planning Application decision notice, a minimum 15% reduction in operational CO₂ emissions will be achieved through the integration of renewable energy technologies. Compliance with DfE Net Zero Carbon in Operation requirements has been verified through a TM54 Dynamic Operational Energy Assessment conducted at Stage 3, ensuring that predicted energy performance aligns with realistic operational conditions. Please refer to the Prediction of Performance and Operational Energy Use report prepared by SRE Ltd for more details.

Energy Hierarchy	Average CO ₂ e emissions (t/yr)	Improvement over Baseline(%)
Baseline	11.5	
Green	2.4	79.13

Table 8 - Green CO₂e emissions and improvement over Baseline

2.5 SEEN – In-use Monitoring

Achieving genuinely low-carbon and energy-efficient buildings necessitates an accurate understanding of their real-world operational energy performance. While Part L calculations and Energy Performance Certificates (EPCs) provide theoretical performance estimates, a well-documented "performance gap" exists between these design predictions and actual energy consumption.

It is recommended that the Proposed Development be supplied with Smart Meters (where available from the utility supplier) with associated internal energy displays. This will further improve energy efficiency by allowing building occupants to observe their energy use in 'real-time' and manage it more effectively.

2.6 Energy Conclusion

The section describes the Energy Assessment for the new Primary School at One Horton Heath, Eastleigh. It undertakes a detailed analysis of the energy and sustainability strategy proposed by the design team.

The assessment has recommended appropriate measures to incorporate passive, energy-efficient and LZC design measures following the local planning requirements wherever applicable to the Proposed Development.

The calculations undertaken demonstrate that the Proposed Development will successfully exceed the *Building Regulations Part L V2* compliance due to the use of efficient low and zero carbon technology. A TM54 Dynamic Operational Energy Assessment has been undertaken at Stage 3 to further validate energy performance and confirm compliance with regulatory standards.

The following inputs and specifications will be utilised to deliver the Part L and Planning Policy standards as a minimum:

- **Heating and Hot Water System:** Ground Source Heat Pump (GSHP) – Kensa Q80 (SCOP 3.48) with radiators, providing efficient space heating and hot water.
- **Building Fabrics:** All thermal elements exceed Building Regulations Part L standards, reducing overall heating demand.
- **Openings:** Double-glazed windows with a low solar heat gain g-value of 0.4 specified throughout.
- **Lighting Services:** 100% LED lighting with an average efficacy of 120 lm/W.
- **Ventilation:** A combination of natural ventilation and a Natural Ventilation with Heat Recovery (NVHR) system.
- **Photovoltaic System:** A photovoltaic array is proposed and will be sized to target Net Zero Carbon in Operation in line with the DfE Generic Design Brief, with the final system capacity to be confirmed at Stage 3.

The Proposed Development will achieve a site-wide CO₂e emissions improvement of 79.13% over the Baseline, through the use of both active and passive measures as shown in Table 9 and Figure 5. Hence, the development complies with Condition 33 of the Outline Planning Application decision notice, which requires 15% reduction in carbon emission target via low or zero-carbon energy generation on-site.

Energy Hierarchy	CO ₂ e emissions (t/yr)	Improvement over Baseline (%)
Baseline	11.5	
Lean	9.2	20.00
Clean	9.2	20.00

Energy Hierarchy	CO ₂ e emissions (t/yr)	Improvement over Baseline (%)
Green	2.4	79.13

Table 9 - Summary of site-wide CO₂e emissions and improvement over Baseline

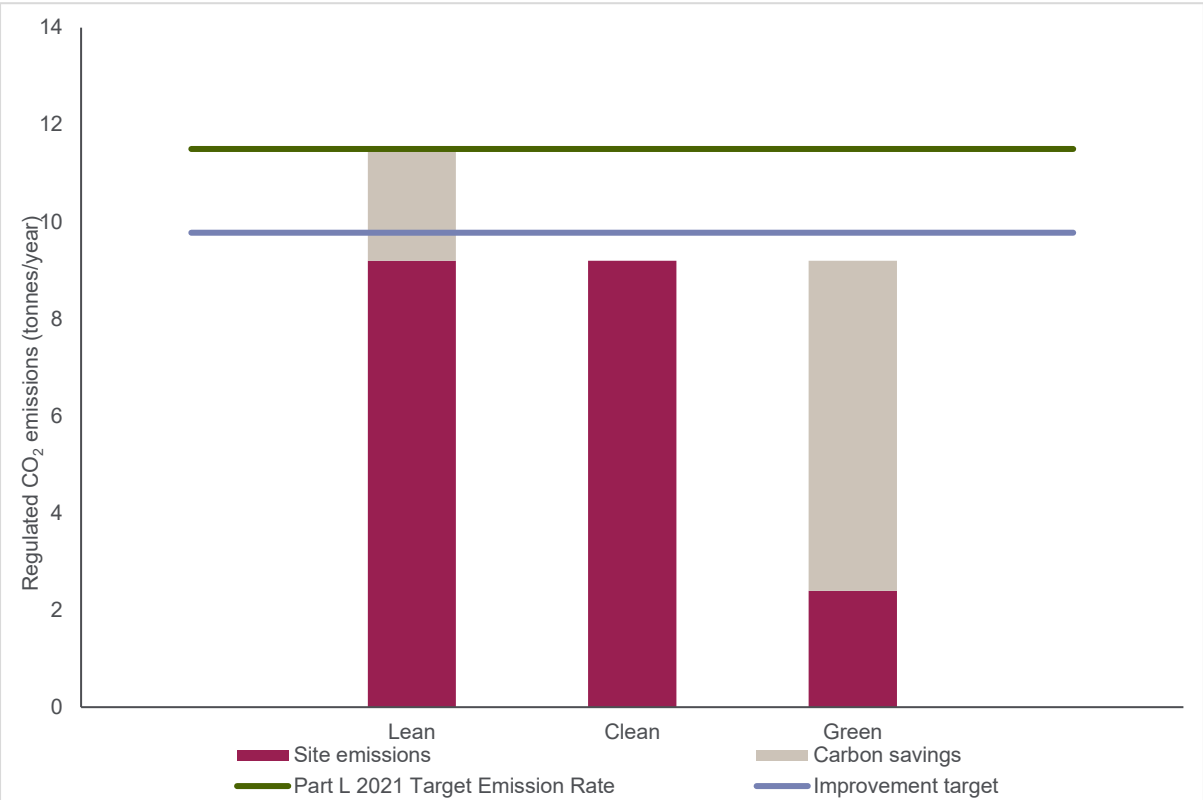
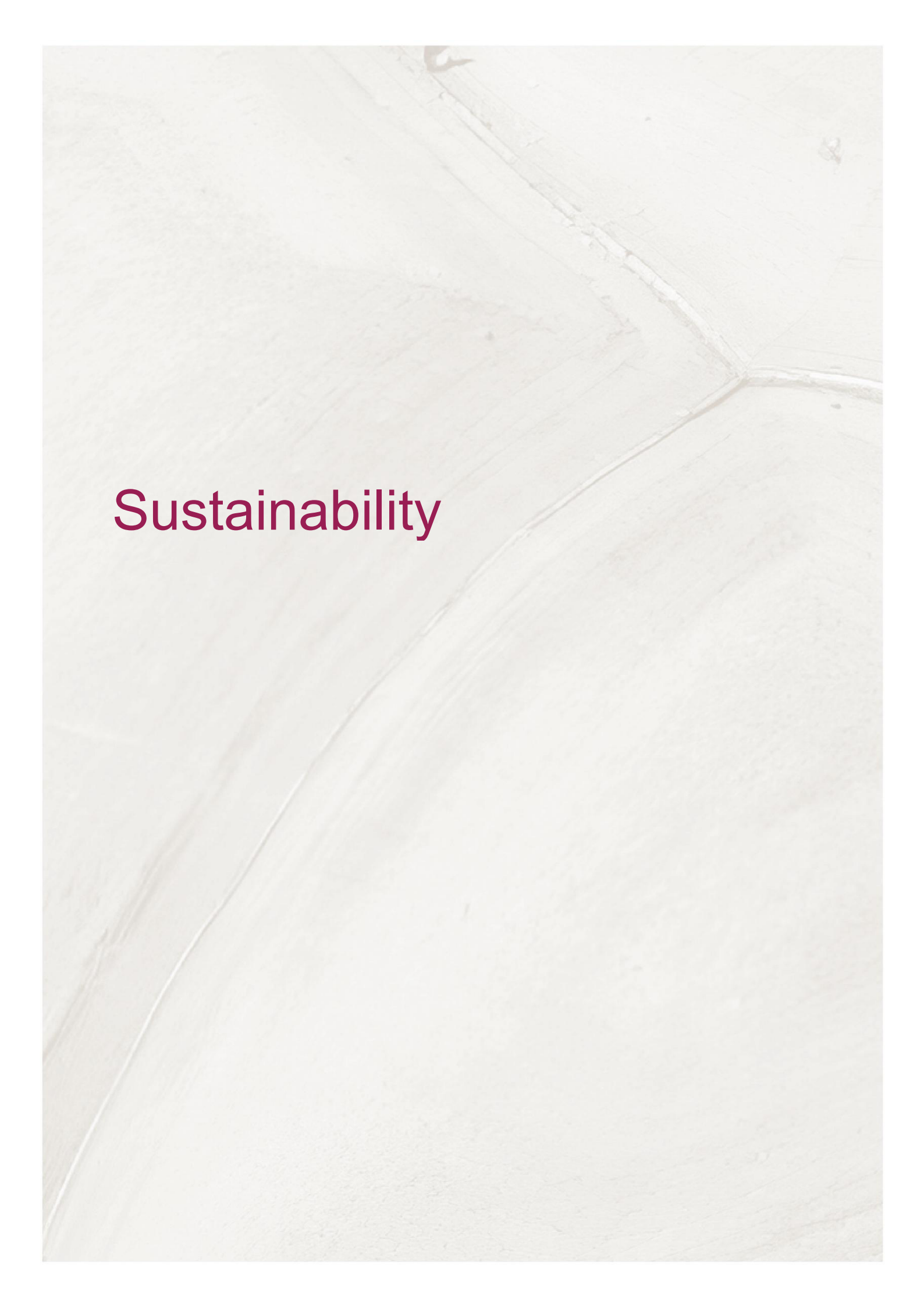


Figure 5 - Energy Hierarchy CO₂e emissions reduction graph - Sitewide

As a result, the Proposed Development meets the planning requirements outlined in the Eastleigh Borough Council Local Plan (2016-2036) and the relevant supporting Supplementary Planning Documents.

An aerial photograph of a dry, cracked landscape. A winding road or path cuts through the parched, light-brown earth, which is covered in a network of deep, irregular cracks. The overall tone is desaturated and somber, emphasizing the arid conditions.

Sustainability

3.0 Sustainability

Sustainable Development – “meets the needs of the present without compromising the ability of future generations to meet their own needs.” (World Commission on Environment and Development: Our Common Future⁵).

The planning system focuses on three objectives to achieve a sustainable development: economic, social, and environmental. These objectives mutually support each other and have been adapted in this statement to meet the objectives of the Eastleigh Borough Council (2016-2036). This planning framework asks that developments make the best use of resources, increase the sustainability of the local communities and are adaptable to climate change. Careful considerations have been taken to ensure the Proposed Development meets these expectations.

3.1 Climate change

The year 2023 was the warmest year since global records began in 1850, with global temperatures reaching 1.18 °C above the century average.⁶ According to the UK Meteorological Office, there is a 98% chance that the next warmest year will be within five years, with there being a two-in-three chance that global average temperature will exceed 1.5°C above pre-industrial levels. Projected annual emissions are only expected to rise, with global temperatures following the same trendline (Figure 6).

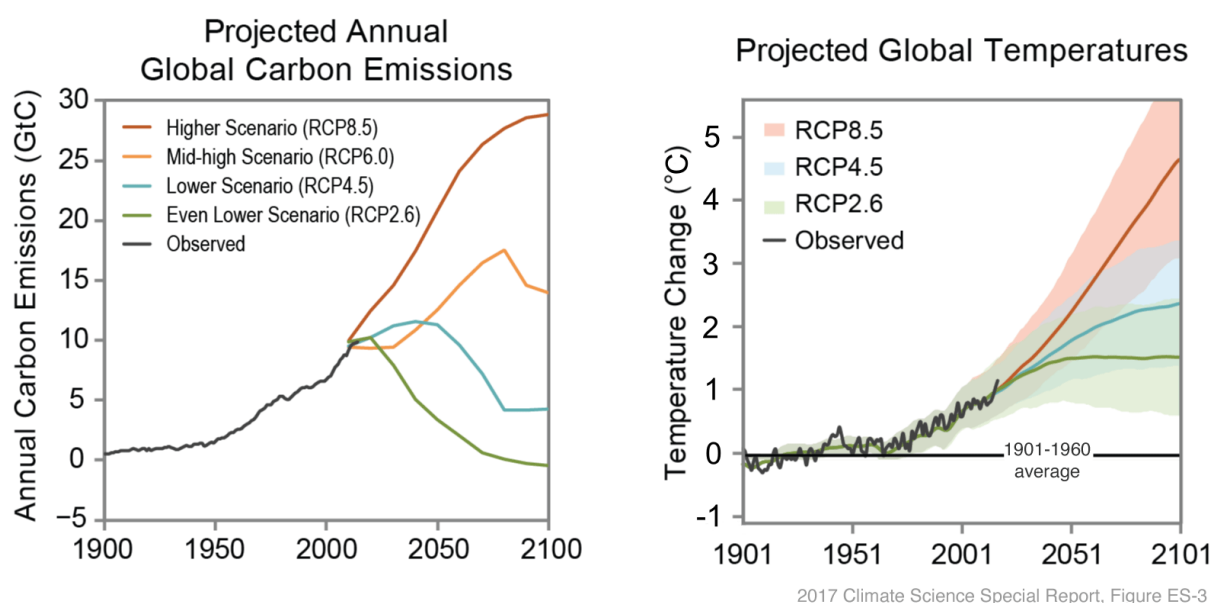


Figure 6 - Project global emissions and temperatures

The UK built environment is one of the largest contributors to greenhouse gas (GHG) emissions, contributing approximately 25% to the total share of UK GHG emissions, according to the UK Green Building Council⁷. For a sustainable future, a clear pathway to reducing emissions in the built environment is no longer a choice but a requirement.

⁵ Report of the World Commission on Environment and Development: Our Common Future

⁶ Annual 2023 Global Climate Report | National Centres for Environmental Information (NCEI) (noaa.gov)

⁷ UKGBC – Climate Change Mitigation

Eastleigh Borough Council planning policy promotes sustainable development that minimises energy demand, responds to climate change and supports efficient use of resources. The Proposed Development has been designed with these principles in mind, incorporating a fabric-first approach, passive design measures to optimise daylight and natural ventilation, and energy-efficient building services to reduce operational energy use. Consideration has also been given to the integration of low- and zero-carbon technologies, water efficiency and sustainable materials, supporting the delivery of an energy-efficient and environmentally responsible primary school development.

3.2 Pollution

3.2.1 Air

Policy DM8 (Pollution) of the Eastleigh Borough Local Plan 2016–2036 seeks to ensure that new development does not give rise to unacceptable impacts on air quality and, where possible, contributes to improvements in environmental conditions.

The Proposed Development is not located within an Air Quality Management Area (AQMA) as the monitoring data for Nitrogen Oxide (NO_x) and Particulate Matter (PM₁₀) annual mean is in compliance with the air quality objectives, as seen in Figure 7 and Figure 8.

Given the nature of the development as a primary school and its location outside designated AQMAs, the proposal is not expected to result in any significant adverse impacts on local air quality. In addition, the design promotes sustainable travel modes and energy-efficient building strategies, which will help to minimise traffic-related and operational emissions, supporting the objectives of Policy DM8 and protecting local air quality.

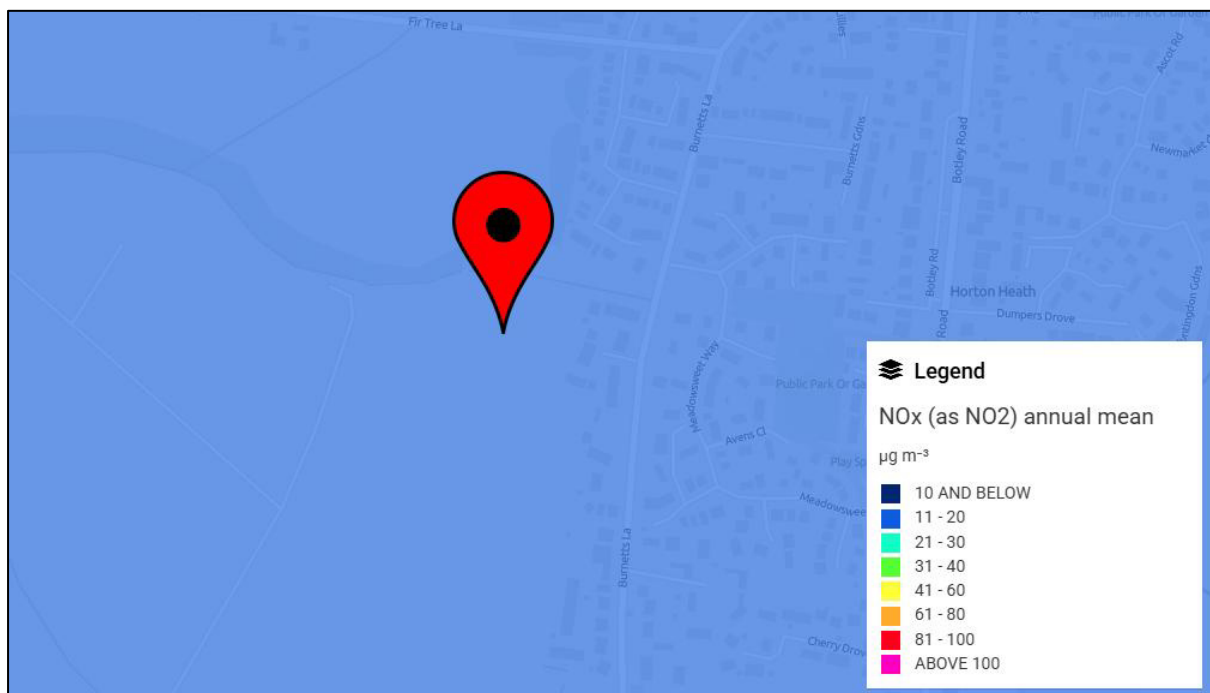


Figure 7 - DEFRA UK Air Pollution Map showing pollution from NO_x as NO₂ (<https://uk-air.defra.gov.uk/data/gis-mapping/>)

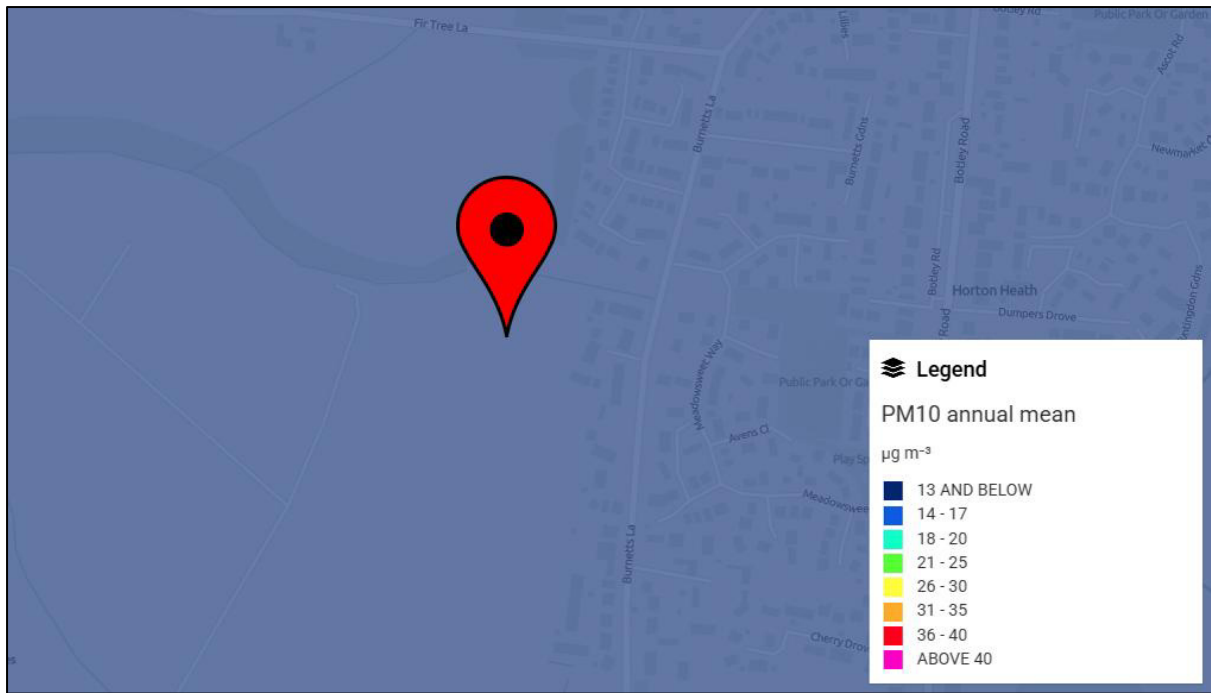


Figure 8 - DEFRA UK Air Pollution Map showing pollution from PM10 (<https://uk-air.defra.gov.uk/data/gis-mapping/>)

It is envisaged that the Proposed Development will further limit its contribution to local air pollution through the following measures:

- Opting for an electric strategy for space heating and DHW, that emits no on-site NO_x or CO₂e emissions.
- PV panels that reduce the consumption of grid electricity.
- A reduction in Volatile Organic Compounds (VOCs) from finishes and furnishings.

3.2.2 Noise and Vibration

Noise and vibration are environmental factors that must be carefully considered as part of new development. Policy DM8 (Pollution) of the Eastleigh Borough Local Plan 2016–2036 seeks to ensure that development does not result in unacceptable noise impacts that could adversely affect residential amenity, educational environments, or the wider surrounding area.

The Proposed Development, comprising a primary school, is not expected to give rise to significant noise or vibration impacts during normal operation. Educational uses are generally compatible with the surrounding context, and the design has been developed to ensure that internal and external noise levels are appropriately controlled. Noise impacts will be mitigated through the incorporation of the following measures:

- A fabric-first design approach, providing good levels of insulation and airtightness to limit noise transmission;
- Careful selection and specification of building services and plant equipment, with low-noise equipment used where required;
- Appropriate layout and siting of plant and servicing areas to minimise noise disturbance to neighbouring receptors; and
- Promotion of sustainable modes of transport, reducing reliance on private vehicles and associated traffic noise.

During the construction phase, potential noise impacts will be managed through best practice measures, including the use of quieter equipment where practicable, control of working hours, and management of construction traffic and on-site activities. All works will be undertaken in accordance with relevant guidance and any agreed Construction Management Plan, ensuring compliance with Policy DM8 and minimising disturbance to nearby receptors.

3.2.3 Light

The site layout and building design of the Proposed Development have been carefully considered to maximise internal daylight levels while avoiding adverse impacts associated with light pollution. The approach reflects good design practice and the principles of Policy DM8 (Pollution) and Strategic Policy S1 of the Eastleigh Borough Local Plan.

Key measures include:

- A building layout and window arrangement that optimises access to natural daylight within teaching and occupied spaces, while minimising glare and light spill to neighbouring receptors;
- Provision of appropriately sized and positioned glazing to ensure well-lit internal environments suitable for educational use;
- Use of internal shading devices, such as light-coloured blinds, to allow effective glare control and visual comfort where required; and
- Specification of low-energy, efficient lighting fittings to reduce energy consumption and limit unnecessary external light emissions.

3.3 Flood Risk

Investigation into the location of the Proposed Development reveals the site is within very low flood risk zone from surface water run-off and from rivers and the sea and as shown in Figure 9 and Figure 10.

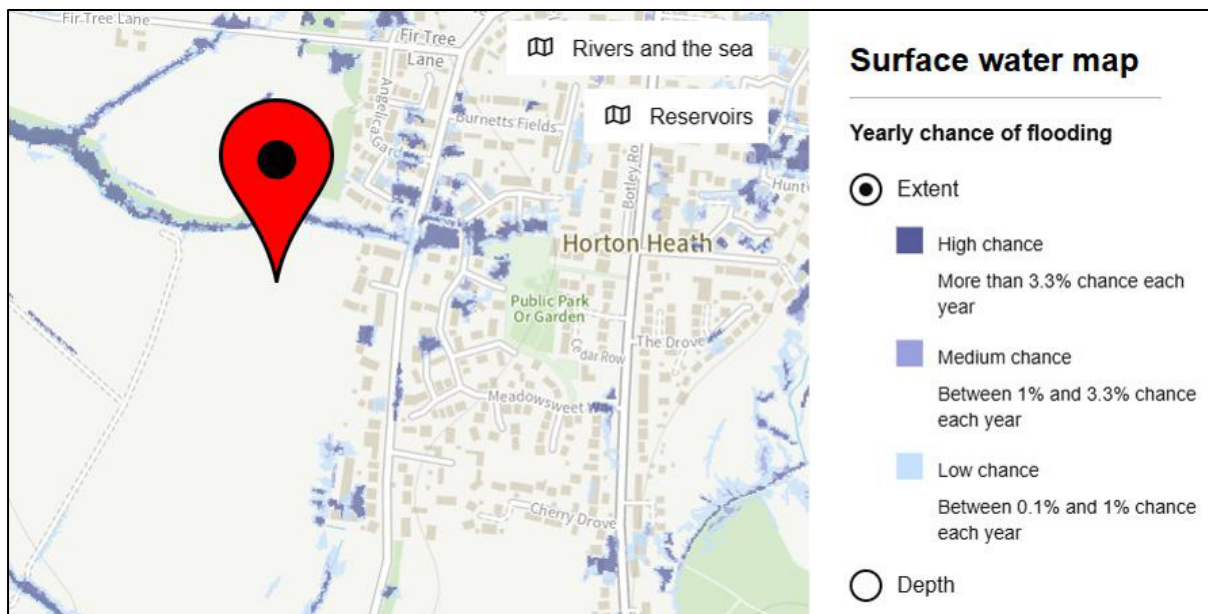


Figure 9 - Flood map showing the risk of flooding from surface water (GOV.UK Environment and countryside: Flooding)

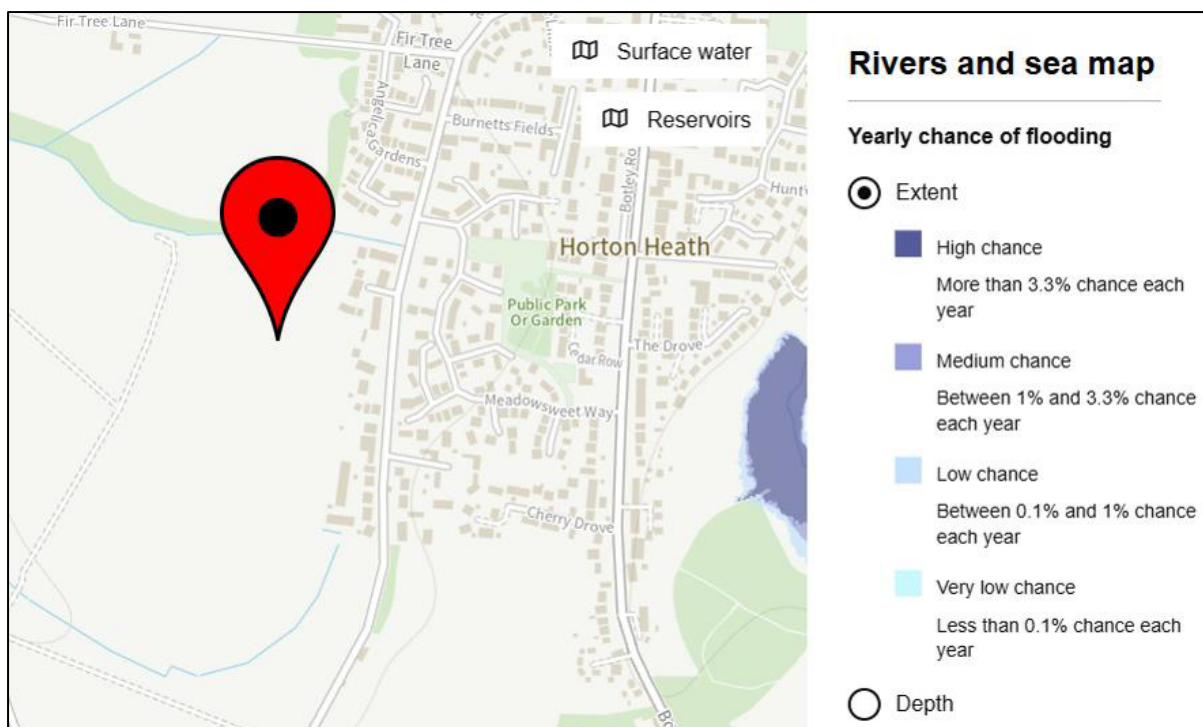


Figure 10 - Flood map showing the risk of flooding from rivers or the sea (GOV.UK Environment and countryside: Flooding)

Eastleigh Borough Council's Local Plan includes policies to manage and mitigate flood risk. Policy DM5 - Managing Flood Risk requires that development in areas at risk of flooding demonstrates through appropriate assessment that it will be safe and not increase flood risk elsewhere, and where possible reduces existing risks. The Proposed Development is located within a very low flood risk zone from surface water, rivers, and tidal sources, and therefore is not expected to be affected by flooding or to increase flood risk elsewhere.

Policy DM6 - Sustainable Surface Water Management and Watercourse Management requires the incorporation of Sustainable Drainage Systems (SuDS) to manage surface water runoff and support water quality. In accordance with that surface water drainage and runoff will be managed through an appropriate SuDS strategy to ensure that the development does not increase flood risk elsewhere.

3.4 Transport

Sustainable Transport – “Any efficient, safe and accessible means of transport with overall low impact on the environment, including walking and cycling, ultra-low and zero emission vehicles, car sharing and public transport.” (National Planning Policy Framework 2021⁸).

The Proposed Development has been designed to facilitate and encourage sustainable travel for pupils, staff, and visitors in line with Eastleigh Borough Council's Local Plan policies (S1, DM1, DM4, DM5, DM8). The site layout and access arrangements prioritise pedestrian and cycling connectivity, with safe routes to nearby residential areas and community facilities. Cycle storage and low-emission vehicle infrastructure will be provided to support active and low-carbon travel.

⁸ National Planning Policy Framework (December 2023)

The site is well connected to public transport: local bus stops within walking distance provide frequent services to Eastleigh, Fair Oak, Bishopstoke, and other surrounding areas, while rail services are accessible from Eastleigh and Hedge End stations, offering links to Southampton, Winchester, and regional destinations. These connections provide sustainable travel options for staff and visitors, reducing reliance on private vehicles.

3.5 Resource Efficiency

In accordance with planning requirements, water and resources used shall be minimised through the implementation of sustainable technologies and design. Furthermore, the Proposed Development will aim to make efficient use of materials, minimise construction waste and maximise the recycling/re-use of materials throughout the construction phase, including low impact materials and use of resources such as the BRE Green Guide⁹.

3.5.1 Waste Management

The Proposed Development will aim to use materials efficiently, minimising waste and promoting the reuse and recycling of materials throughout the construction phase, in line with established best practice. Construction activities will be carried out with reference to the principles of the Waste Hierarchy (shown in Figure 11).

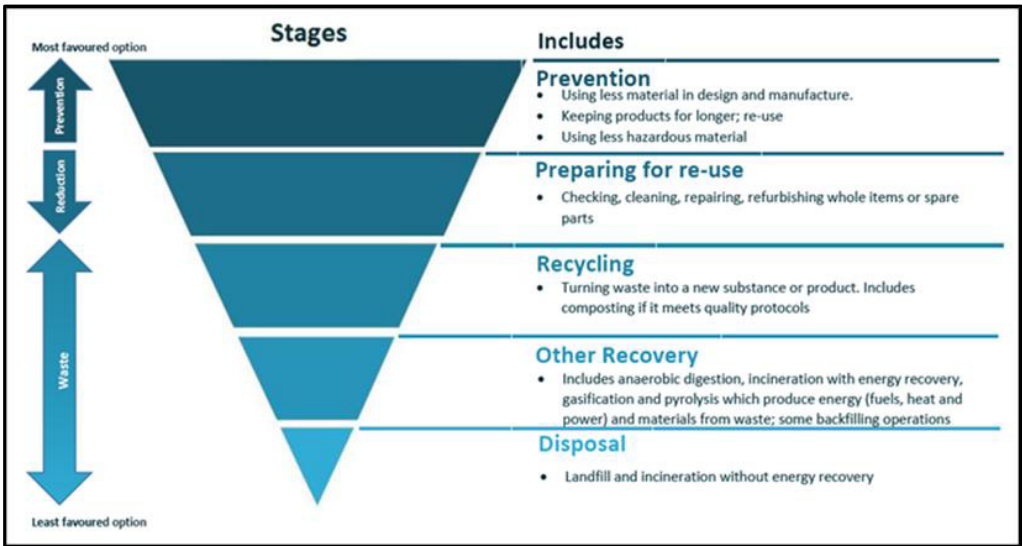


Figure 11 - The Waste Hierarchy

The construction waste generated as part of the redevelopment will be segregated and monitored as per best practice. Suitable materials will be recycled as part of this process, either to be reused on site, if feasible, or introduced back into the supply chain through recycling by a Licensed Contractor. During construction, all waste arisings will be recorded using a waste management tool (e.g. Smart Waste).

New locally sourced materials will be used wherever possible, and transportation to the site will be managed in the most efficient way possible.

Nominal construction waste should be sent to a landfill or for incineration unless this is unavoidable, subject to the nature of materials found on the existing site.

⁹ Materials Passports - BAMB (bamb2020.eu)

Waste should be recycled in accordance with the local authority collection scheme, and suitable space will be provided to store waste until collection.

3.5.2 Materials

The Proposed Development shall aim to use high quality, low impact materials in order to minimise the overall impact on the environment as far as possible. The primary structural frame and superstructure of the building may be constructed using a Cross-Laminated Timber (CLT) system, providing a potential sustainable and low-carbon construction approach, alongside other options under consideration.

The UK Concrete Standards BS 8500 (Part 1 and Part 2) are currently being updated. Compared to the standard CEM I, new ternary blend cement utilising limestone powder offers up to a 65% reduction in embodied carbon (ECO_{2e}) per cubic metre of concrete delivered to the site.

All timber and timber-based products used on-site will be legally sourced from a reputable forest certification scheme, such as the Forest Stewardship Council (FSC), with appropriate Chain of Custody certification.

Steel is predominantly manufactured by either of two process routes, namely the primary or Basic Oxygen steel-making route (BF-BOF) and the secondary, Electric Arc Furnace (EAF) route. Typically, the EAF steel-making process has an ECO_{2e} of around 20% that of BF-BOF steelmaking and utilises up to 100% recycled content, compared to BF-BOF, which incorporates up to 30% recycled content.

As standard industry best-practice, all insulation on the site shall have a GWP of <5. Other ozone depletion materials will be avoided where feasible, including high VOC content paints and sealants, further minimising the Proposed Development's effect on global Climate Change.

All other materials shall be sourced from suppliers who have an accredited Environmental Management System (EMS) certified through ISO 14001 or the Eco-Management and Audit Scheme (EMAS), wherever possible, ensuring that any environmental impacts caused are managed and reduced. In addition, wherever possible, procurement of materials in line with the following responsible sourcing principles will be sought:

- Source materials from suppliers and manufacturers with ISO14001 certification
- Source materials locally and responsibly
- Secure relevant certification and product details from suppliers and manufacturers prior to order
- Maintain records of materials ordered, manufacturer, supplier and certification
- Research each supplier and their credibility to ensure sustainable practices extend beyond the site.

3.5.3 Water

The south of England has been declared an area of 'serious water stress' by the Environment Agency. The Proposed Development has been designed to promote sustainable water use in accordance with Policy DM2 - Environmentally Sustainable Development and Policy DM3 - Adaptation to Climate Change of the Eastleigh Borough Council Local Plan 2016 - 2036.

Although the building is non-residential in nature, the design incorporates measures to minimise water consumption and manage water resources responsibly in accordance with Condition 74 of the Outline Planning Application decision notice, including:

- Specification of water-efficient fixtures and fittings throughout the school buildings;
- Implementation of drought-tolerant and low-maintenance landscaping to reduce irrigation demand;
- Provision of rainwater harvesting systems for non-potable uses, such as WC flushing and/or external irrigation, reducing reliance on mains water supplies;
- Consideration of greywater recycling where feasible;
- Design measures that support long-term resilience to climate change and water scarcity, in line with DM3.

The specification outlined below sets out the maximum flow rates that can be fitted to individual components to meet these requirements in line with BREEAM 'Water' criteria:

- WCs: 3.75 litres effective flush volume
- Wash-hand basin taps: 5 litres/minute
- Urinal (2 or more) – 1.50 litres/bowl/hour
- Commercial dish washer – 5 litres/rack
- Kitchenette taps: 6 litres/minute
- Showers: 6 litres/minute

These strategies will ensure that the development contributes to the efficient use of water resources, reduces environmental impact, and aligns with the Council's objectives for sustainable development.

3.6 Ecology and Biodiversity

Biodiversity is defined as the variety of life forms within an ecosystem and their interactions, up to the global scale. The construction process disrupts flora and fauna, potentially leading to a loss of biodiversity. It is therefore important to protect and enhance biodiversity onsite wherever possible both during and post construction.

The Proposed Development has been designed in accordance with Policy DM11 - Nature Conservation, Strategic Policy S9 - Green Infrastructure, and supporting Supplementary Planning Documents. Measures will be implemented to protect and enhance biodiversity onsite, both during construction and throughout the operational life of the school.

3.7 BREEAM Target

The Proposed Development is targeting an 'Excellent' rating under BREEAM UK New Construction Version 6.1. The scheme has been registered as a 'Fully Fitted' BREEAM assessment, whereby both the building fabric and internal fit-out are assessed as part of a single, integrated approach.

A BREEAM pre-assessment has been undertaken at an early stage of the design process and has informed the development of the scheme, ensuring that sustainability principles are embedded from the outset. The assessment considers a range of key sustainability issues, including energy performance, water efficiency, waste minimisation, responsible sourcing of materials, and the protection and enhancement of local ecology. Please refer to the BREEAM Pre-Assessment report prepared by SRE Ltd for more details.

Collectively, these measures support the delivery of a low-carbon and resource-efficient development, while providing a healthy, comfortable, and safe learning environment for future occupants.

3.8 Sustainability Conclusions

Careful considerations regarding sustainable design and construction shall be made for the Proposed Development by the design. This shall consider the impacts of climate change and result in measures to reduce CO₂e emissions through the use of a highly efficient energy strategy.

Overall, the Proposed Development shall aim to minimise its impact on the environment at both the construction and operational phases and provide a sustainable building which responds positively to the surroundings, and local and regional policy.

The net result of the potential sustainability measures considered shall meet and exceed the targets set out by the Local Authority through the following:

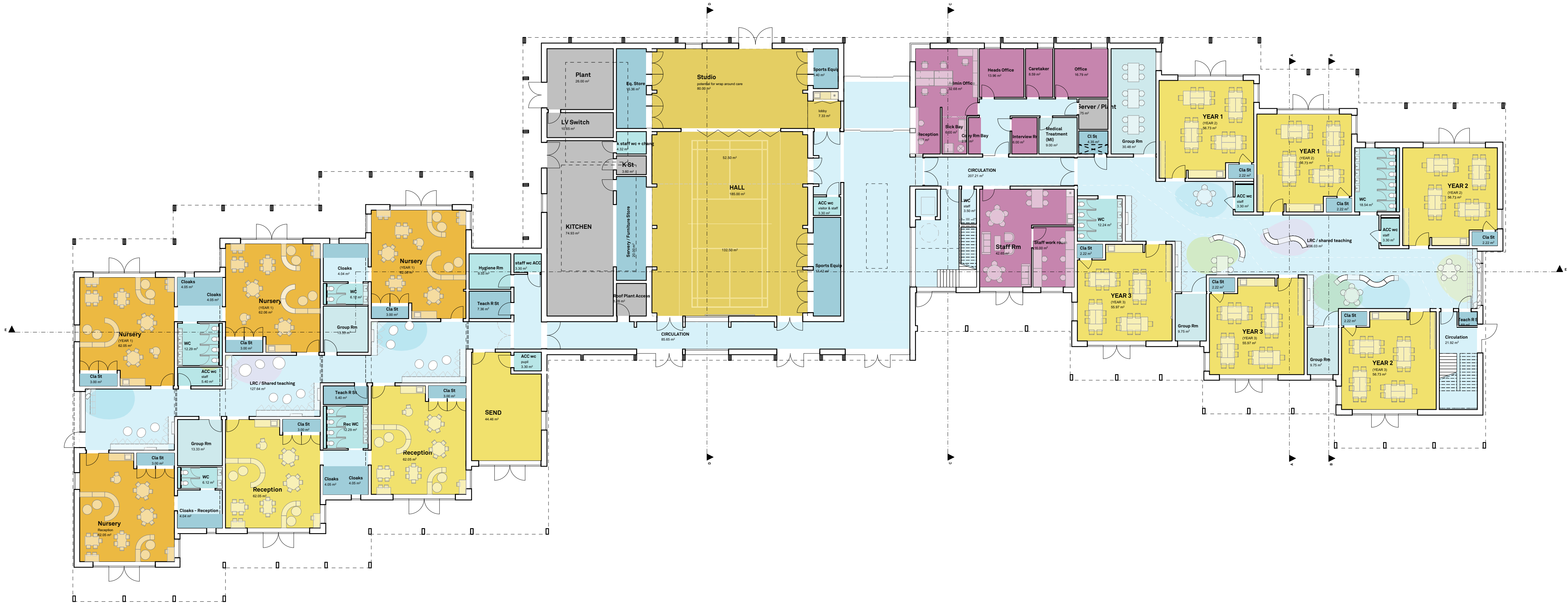
- **Air Quality:** On-site air pollution will be minimised through an all-electric heating & hot water strategy, installation of photovoltaic (PV) panels to reduce grid electricity consumption, and the use of low-VOC finishes and furnishings.
- **Noise:** Noise and vibration will be controlled through a fabric-first design, high insulation and airtightness, quiet plant equipment, and encouragement of sustainable transport. During construction, measures such as acoustic screening and traffic management will be implemented to mitigate impacts.
- **Light Pollution:** Daylight levels will be optimised, low-energy fittings installed, rooflights provided, light-sensitive window treatments used, and security lighting controlled to reduce light pollution for occupants and local wildlife.
- **Flood Risk:** The site is in a very low flood risk zone from surface water and rivers and sea. Appropriate SuDS strategy will be implemented to ensure that the development does not increase flood risk
- **Sustainable Transport:** The Proposed Development will facilitate low-impact transport modes, including walking, cycling, public transport access, and provisions for ultra-low and zero-emission vehicles.
- **Resource Efficiency:** Resource efficiency will be prioritized by minimizing construction waste, maximizing recycling, and using low-impact materials such as FSC-certified timber and EAF steel.
- **Waste Management:** Construction and operational waste will be managed according to the waste hierarchy, maximising reuse and recycling, using locally sourced materials where feasible, and ensuring efficient transport of materials.
- **Water Conservation:** Mains water consumption will be minimised through high-efficiency fittings, flow restrictors, and appliances.
- **Ecology and Biodiversity:** Measures will be implemented to protect and enhance biodiversity, ensuring no net loss and supporting local green infrastructure and habitats.
- **BREEAM Target:** The Proposed Development is targeting a BREEAM UK New Construction Version 6.1 'Excellent' rating and has been registered as a 'Fully Fitted' assessment, with both the building fabric and internal fit-out assessed through a single, integrated approach.

As a result, the Proposed Development aligns with Policies S1, S9, DM2, DM3, DM4, DM5, DM6, DM7, DM8, DM10, and DM11, as well as relevant supporting Supplementary Planning Documents, thereby supporting the Reserved Matters submission and requirements of Eastleigh Borough Council.

Appendices

Appendix A – Floor Plan

rev.	date	changes description	Status	issued by
P03	03/12/2025		S1	MD
P02	27/11/2025		S1	MD
P01	17/11/2025		S1	MD



1:200

GF-Ground Floor



1:200

01-First Floor

2FE with nursery / 3FE Alt Hall				
GF-Ground Floor	GIA	Gross Internal Area	2,437.49	
01-First Floor	GIA	Gross Internal Area	963.09	
				3,400.58 m ³

RE-FORM AT

www.re-format.co.uk mail@re-format.co.uk +44 (0)1730 778778

project title
One Horton Heath School

document title
Floor Plans - 3FE

date created Nov 2025 drawn by MD checked by AS approved by AS

scale at A1 1:200, 1:1

project	originator	volume	level	type	role	number
OHH	RFT	01	ZZ	DR	A	0201

status S1 suitability description Suitable for Coordination revision P03

Appendix B – SBEM Summary

The attached document include:

- SBEM Specification Sheet
- BRUKL Output Document - Green

One Horton Heath Primary School, Eastleigh												sre			
Building Regulations 2021 Volume 2															
Building Type		Address			As-Designed/ As-Built Drawings		SBEM Level	Asset Rating (A-G) (0-150)	BER	TER	BPER/TPER Improvement (%)	BPER	TPER	BPER/TPER Improvement (%)	
D1: Primary or Secondary School (Primary)		One Horton Heath Primary School, Horton Heath, Eastleigh, SO50 7DF			As-Designed (RIBA Stage 2)		5	A (1)	0.55	3.42	83.92%	3.98	36.24	89.02%	
Construction Element		U-Value	Description												
Ground Floor		0.10	300mm Reinforced Concrete Floor Slab, PIR Insulation (Conductivity and Thickness to Achieve the Target U value), 100mm Screed (TBC - OHH-RFT-01-XX-DR-A-0001_S2_P01_Preliminary Build-up Options)												
External Walls		0.12	Facing Brick, 50mm Cavity, Breather Membrane, 12mm Cement Sheathing Board, PIR Insulation (Conductivity and Thickness to Achieve the Target U value), 120mm CLT Structural Panel (TBC - OHH-RFT-01-XX-DR-A-0001_S2_P01_Preliminary Build-up Options)												
Roof		0.10	Single Ply Membrane, Tapered PIR Insulation (Conductivity and Thickness to Achieve the Target U value), VCL, 120mm CLT Structural Panel (TBC - OHH-RFT-01-XX-DR-A-0001_S2_P01_Preliminary Build-up Options)												
Internal Floors/ Ceiling		-	120mm CLT Slab with 420mm Ribs, 50mm Pliteq GenieMat (2x2F25) Acoustic Underlay, Slip Membrane, 75mm Screed (TBC - OHH-RFT-01-XX-DR-A-0001_S2_P01_Preliminary Build-up Options)												
Internal Partitions		-	2 x 12.5mm WallBoard, 146 S 50 °C Stud @ 600mm Centres with Acoustic Insulation, 2 x 12.5mm WallBoard (TBC)												
Construction Element		U-Value	G Value	Frame Factor	Description (manufacturer, make and model)										
Glazed Windows/Doors		1.20	0.40	10%	Double glazed low-E, whole window U-value										
Rooflights		1.20	0.40	10%	Double glazed low-E, whole window U-value										
Door (Personnel)		1.20	n/a	-	Whole door U-value										
Construction Notes		Details													
Air-permeability		3 m³/h.m²													
Heating and Cooling		System Details				Emitter		Location			Controls				
Heating System		Ground Source Heat Pump - Kensa Q80 Assumed (SCOP 3.48)				Radiators		Throughout expect the Stores			Time and Temperature Zone Control, Optimum stop/start				
Hot Water		System Details				Location		Secondary Circulation	Circulation Losses (W/m)	Pump Power (kW)	Loop Length (m)	Cylinder Volume (L)	Standing heat loss (kWh/day)	Delivery Efficiency	
Hot Water System		Ground Source Heat Pump - Kensa Q80 Assumed (SCOP 3.48)				WCs, Staff Room, Classrooms, Kitchen, Studio, Hygiene Room, Send, Food Tech and Medical Treatment		Y	8 (TBC)	0.2 (TBC)	420 (TBC)	800 (As per Filled RFI)	0.00525 (As per Filled RFI)	98%	
Ventilation		System Details				Location		SFP (W/l/s)	Leakage tested ductwork CEN Classification	AHU CEN leakage standards class	Heat Recovery	HR Efficiency	Heat Recovery Type	Variable HR	
Mechanical Ventilation		NVHR - Breathing Buildings NVHR+900 (CO2 Sensor with Speed Control for Classrooms, Group Rooms, Hall, Studio, Send, Food Tech)				Classrooms, Group Rooms, Hall, Studio, Send, Food Tech, Office Spaces, Reception, Activity Area		0.30	n/a	n/a	Y	76% (TBC)	Plate Heat Exchanger	N	
Mechanical Extract System 1		Standard Extracts with Remote Fan				WCs, Medical Treatment, Hygiene Room, Cleaners		0.30	n/a	n/a	N	n/a	n/a	N	
Mechanical Extract System 2		Commercial Kitchen Extract with Grease Filter				Kitchen		1.00	n/a	n/a	N	n/a	n/a	N	
Electrical Flow Control		Description													
Power Correction Factor		Y	>0.95 (As per Filled RFI)												
Separate Metering		Y	Lighting, Heating, Hot Water are all on Separate Meters with a BMS System for Out-of-Range Values												
Renewables		Description													
PV		140 no. Southeast Facing (141 degrees) PV Array with a Total of 280 m² (22% efficiency, 10° Pitch, 2.00m²) (As per Filled RFI)													
Solar Water Heating		N													
Wind Turbine		N													
Lighting		Description													
Lighting		All lights and display lighting with a minimum light efficacy of: 120 Lm/W and LOR=1 (As per Filled RFI)													
Lighting Controls		PIR Sensors - Throughout Daylight Dimming Sensors - In Daylit Spaces (Staffroom, Staff Work Room, Offices, Entrance Lobby, Central Stairs, Group Room, Classrooms, Send, Food Tech, Studio and Daylit Corridors) Auto-on-off controls													
Parasitic Power		0.1 W/m² per individual/combined sensor													
Notes		Spec is indicative to achieve required targets and are TBC													
Sign Off of details	Modeller Name	Alisha Pinheiro		Date	19.01.2026	By signing this document, I declare that the above mentioned details are all correct as per the final "as build" specifications.	Name					Date			
	Model QA Name	Nikolaos Protogeros			11.12.2025		Sign								

Project name

One Horton Heath School

As designed

Date: Fri Jan 16 16:58:05 2026

Administrative information

Building Details

Address: One Horton Heath School, Eastleigh, SO50 7DF

Certifier details

Name: Alisha Pinheiro

Telephone number: 01730710044

Address: SRE Limited, 3 London Square, Cross Lanes,
Guildford, GU1 1UJ

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.30

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.30

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 1590.54The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	3.42
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	0.55
Target primary energy rate (TPER), kWh _{PE} /m ² annum	36.24
Building primary energy rate (BPER), kWh _{PE} /m ² annum	3.98
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.12	0.12	GR000000:Surf[2]
Floors	0.18	0.1	0.1	GR000000:Surf[0]
Pitched roofs	0.16	0.1	0.1	CR000000A:Surf[9]
Flat roofs	0.18	0.1	0.1	CR000002:Surf[6]
Windows** and roof windows	1.6	1.2	1.2	GR000000:Surf[1]
Rooflights***	2.2	1.2	1.2	CR000003:Surf[19]
Personnel doors^	1.6	1.17	1.2	ST000000:Surf[3]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	1.2	1.2	CR000002:Surf[2]

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	3

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- GSHP - Radiators (NVHR)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.48	-	0.6	-	0.76
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

2- GSHP - Radiators (Extract)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.48	-	0.6	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

3- GSHP - Radiators

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.48	-	0.6	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

4- GSHP - Radiators (Kitchen)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.48	-	0.6	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- GSHP - DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3.48	0.005
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
GF_Group Rm 1	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Group Rm 2	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_WC 2	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Group Rm 3	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_CI St 7	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_ACC WC Staff 10	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_WC 1	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_ACC WC Staff 11	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Staff Rm	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Medical Treat	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Staff work room	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Office	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Reception	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Interview Rm	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_WC 3	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Caretaker	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_ACC WC Visitor	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Kitchen	-	-	-	-	-	-	-	-	1	-	N/A
GF_Heads Office	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_K Staff WC + Chang	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Staff WC ACC 9	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Hygiene Rm	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_ACC WC 7	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Send	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Group Rm 4	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Group Rm 5	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_ACC WC 6	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_WC 4	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_Rec WC 6	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_WC 8	-	-	0.3	-	-	-	-	-	-	-	N/A
GF_WC 5	-	-	0.3	-	-	-	-	-	-	-	N/A
FF_Activity 1	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Group Rm 2	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Group Rm 3	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_WC 2	-	-	0.3	-	-	-	-	-	-	-	N/A
FF_ACC WC Staff 3	-	-	0.3	-	-	-	-	-	-	-	N/A
FF_CI St 2	-	-	0.3	-	-	-	-	-	-	-	N/A
FF_WC 1	-	-	0.3	-	-	-	-	-	-	-	N/A
FF_Group Rm	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Hall	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Studio	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Admin Office	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Nursery Year 1_1	-	0.3	-	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
GF_Nursery Year 1_2	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Nursery Recep	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Reception Yr 2	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Reception Yr 1	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Nursery Year 1_2	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Year 1_2	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Year 3_2	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Year 1_1	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Year 3_1	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Year 2_1	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Year 2_2	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Year 4_2	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Year 4_1	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Year 6_2	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Food Tech / Art / Science	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Additional 2FE_1	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Additional 2FE_2	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Year 6_1	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Year 5_1	-	0.3	-	-	-	-	-	-	-	-	N/A
FF_Year 5_2	-	0.3	-	-	-	-	-	-	-	-	N/A
GF_Activity 1 Daylit	-	0.3	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value		95	80	0.3
GF_Group Rm 1		120	-	-
GF_Group Rm 2		120	-	-
GF_WC 2		120	-	-
GF_Group Rm 3		120	-	-
GF_CI St 7		120	-	-
GF_ACC WC Staff 10		120	-	-
GF_WC 1		120	-	-
GF_ACC WC Staff 11		120	-	-
GF_Circulation 2		120	-	-
GF_Staff Rm		120	-	-
GF_Medical Treat		120	-	-
GF_Teach R St		120	-	-
GF_Stair 1		120	-	-
GF_Staff work room		120	-	-
GF_Office		120	-	-
GF_Server		120	-	-
GF_Entance Lobby		120	-	-
GF_Circulation 3		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
GF_Stair 2		120	-	-
GF_Reception		120	120	1.125
GF_Circulation 6		120	-	-
GF_Interview Rm		120	-	-
GF_WC 3		120	-	-
GF_Caretaker		120	-	-
GF_Lobby		120	-	-
GF_Circulation 7		120	-	-
GF_ACC WC Visitor		120	-	-
GF_Sports Equip		120	-	-
GF_Roof Plant Access		120	-	-
GF_Kitchen		120	-	-
GF_Circulation 8		120	-	-
GF_Heads Office		120	-	-
GF_Sports Equip		120	-	-
GF_Eq. Store		120	-	-
GF_K Staff WC + Chang		120	-	-
GF_Servery/Furniture St		120	-	-
GF_K St		120	-	-
GF_Staff WC ACC 9		120	-	-
GF_LV Switch		120	-	-
GF_Hygiene Rm		120	-	-
GF_Teach R St		120	-	-
GF_ACC WC 7		120	-	-
GF_Send		120	-	-
GF_Plant		120	-	-
GF_Group Rm 4		120	-	-
GF_Group Rm 5		120	-	-
GF_ACC WC 6		120	-	-
GF_WC 4		120	-	-
GF_Rec WC 6		120	-	-
GF_Teach R St		120	-	-
GF_WC 8		120	-	-
GF_Cloaks 3		120	-	-
GF_WC 5		120	-	-
GF_Cloaks - Reception		120	-	-
GF_Cloaks 1		120	-	-
GF_Cloaks 2		120	-	-
FF_Activity 1		120	-	-
FF_Group Rm 2		120	-	-
FF_Group Rm 3		120	-	-
FF_WC 2		120	-	-
FF_ACC WC Staff 3		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
FF_CI St 2		120	-	-
FF_WC 1		120	-	-
FF_Circulation 2		120	-	-
FF_Group Rm		120	-	-
FF_Stair 1		120	-	-
FF_Teach R St		120	-	-
FF_Stair 2		120	-	-
GF_Circulation 4		120	-	-
GF_Hall		120	-	-
GF_Studio		120	-	-
GF_Admin Office		120	-	-
GF_Nursery Year 1_1		120	-	-
GF_Nursery Year 1_2		120	-	-
GF_Nursery Recep		120	-	-
GF_Reception Yr 2		120	-	-
GF_Reception Yr 1		120	-	-
GF_Nursery Year 1_2		120	-	-
GF_Year 1_2		120	-	-
GF_Year 3_2		120	-	-
GF_Year 1_1		120	-	-
GF_Year 3_1		120	-	-
GF_Year 2_1		120	-	-
GF_Year 2_2		120	-	-
FF_Year 4_2		120	-	-
FF_Year 4_1		120	-	-
FF_Year 6_2		120	-	-
FF_Food Tech / Art / Science		120	-	-
FF_Additional 2FE_1		120	-	-
FF_Additional 2FE_2		120	-	-
FF_Year 6_1		120	-	-
FF_Year 5_1		120	-	-
FF_Year 5_2		120	-	-
GF_Activity 1 Daylit		120	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Group Rm 1	NO (-41.7%)	NO
GF_Group Rm 2	NO (-39.8%)	NO
GF_Group Rm 3	NO (-79.2%)	NO
GF_Staff Rm	NO (-2.5%)	NO
GF_Staff work room	NO (-47.9%)	NO
GF_Office	NO (-47.7%)	NO
GF_Reception	NO (-78.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Interview Rm	N/A	N/A
GF_Caretaker	NO (-5%)	NO
GF_Heads Office	NO (-37.2%)	NO
GF_Send	NO (-34%)	NO
GF_Group Rm 4	N/A	N/A
GF_Group Rm 5	N/A	N/A
FF_Activity 1	YES (+599.9%)	NO
FF_Group Rm 2	NO (-40.6%)	NO
FF_Group Rm 3	N/A	N/A
FF_Group Rm	NO (-40.7%)	NO
GF_Hall	NO (-29.5%)	NO
GF_Studio	NO (-31.4%)	NO
GF_Admin Office	NO (-52.3%)	NO
GF_Nursery Year 1_1	NO (-9.1%)	NO
GF_Nursery Year 1_2	NO (-13.3%)	NO
GF_Nursery Recep	NO (-5.6%)	NO
GF_Reception Yr 2	NO (-2.9%)	NO
GF_Reception Yr 1	NO (-3.5%)	NO
GF_Nursery Year 1_2	NO (-12.9%)	NO
GF_Year 1_2	NO (-25.7%)	NO
GF_Year 3_2	NO (-29%)	NO
GF_Year 1_1	NO (-32.1%)	NO
GF_Year 3_1	NO (-18.4%)	NO
GF_Year 2_1	NO (-5.9%)	NO
GF_Year 2_2	NO (-45.1%)	NO
FF_Year 4_2	NO (-20.3%)	NO
FF_Year 4_1	NO (-28.4%)	NO
FF_Year 6_2	NO (-40.5%)	NO
FF_Food Tech / Art / Science	NO (-32.8%)	NO
FF_Additional 2FE_1	NO (-47.9%)	NO
FF_Additional 2FE_2	NO (-22.7%)	NO
FF_Year 6_1	NO (-17.9%)	NO
FF_Year 5_1	NO (-18.9%)	NO
FF_Year 5_2	NO (-39.2%)	NO
GF_Activity 1 Daylit	YES (+50.4%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	3376.3	3376.3
External area [m ²]	7346.1	7346.1
Weather	SOU	SOU
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	1634.32	2192.79
Average U-value [W/m ² K]	0.22	0.3
Alpha value* [%]	25.06	10

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces
 Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries

100

Non-residential Institutions: Education

Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	4.55	6.65
Cooling	0	0
Auxiliary	3.3	4.22
Lighting	5	6.92
Hot water	6.35	6.42
Equipment*	17.96	17.96
TOTAL **	19.2	24.21

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	16.85	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>16.85</i>	<i>0</i>

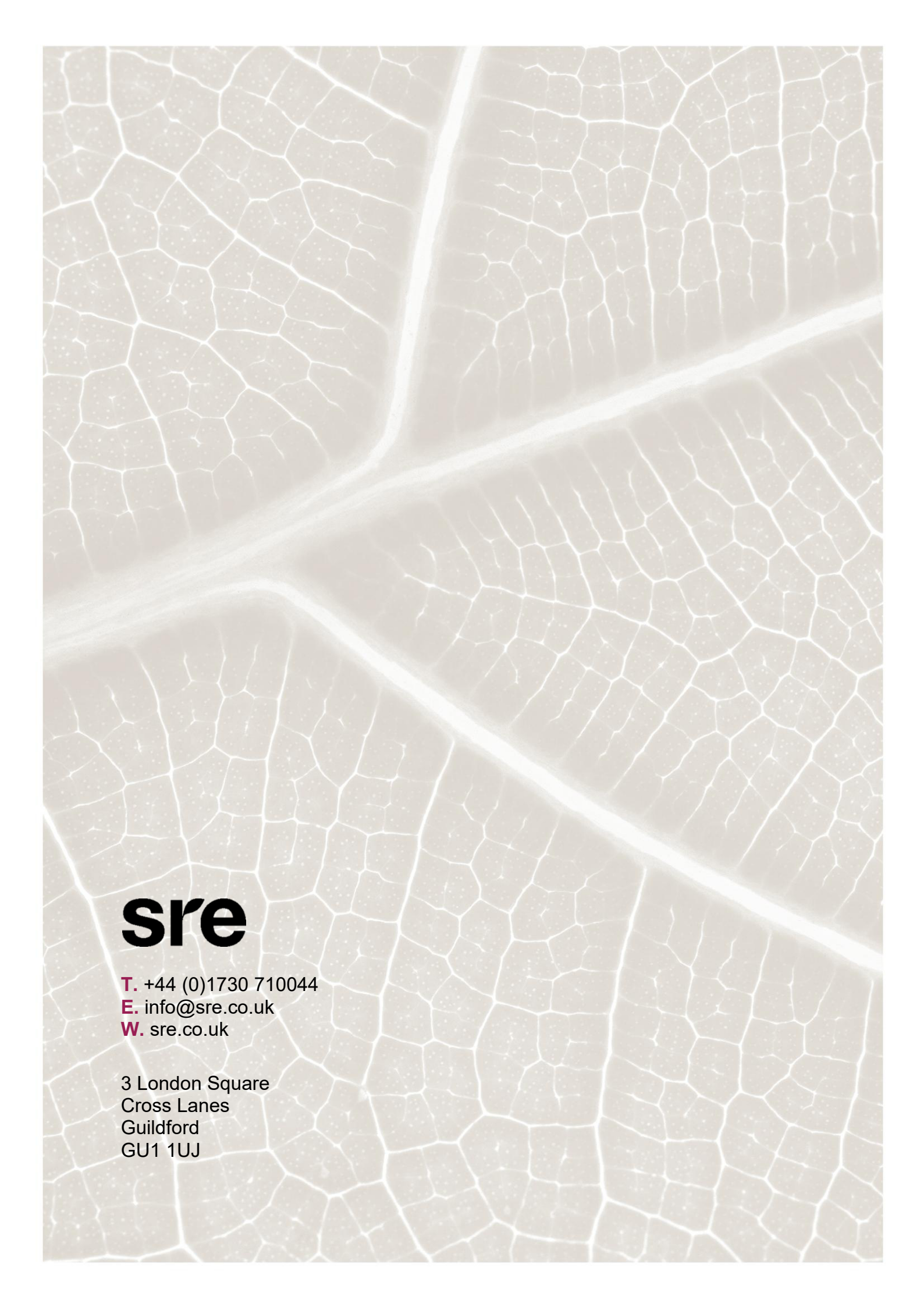
Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	53.55	66.52
Primary energy [kWh _{PE} /m ²]	3.98	36.24
Total emissions [kg/m ²]	0.56	3.42

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Central heating using water: radiators, [HS] GSHP/WSHP, [HFT] Electricity, [CFT] Electricity										
Actual	84.9	0	7.2	0	2.5	3.27	0	3.48	0	
Notional	108.8	0	10.9	0	1.2	2.78	0	----	----	
[ST] Central heating using water: radiators, [HS] GSHP/WSHP, [HFT] Electricity, [CFT] Electricity										
Actual	58.1	0	4.9	0	4.1	3.27	0	3.48	0	
Notional	87.1	0	8.7	0	4.7	2.78	0	----	----	
[ST] Central heating using water: radiators, [HS] GSHP/WSHP, [HFT] Electricity, [CFT] Electricity										
Actual	49.1	0	4.2	0	2.8	3.27	0	3.48	0	
Notional	58.7	0	5.9	0	4.6	2.78	0	----	----	
[ST] Central heating using water: radiators, [HS] GSHP/WSHP, [HFT] Electricity, [CFT] Electricity										
Actual	90	0	7.6	0	9.2	3.27	0	3.48	0	
Notional	117	0	11.7	0	5.5	2.78	0	----	----	
[ST] No Heating or Cooling										
Actual	0	0	0	0	0	0	0	0	0	
Notional	0	0	0	0	0	0	0	----	----	

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type



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