



Sutton High Street

Sustainability Statement

For Reid Capital

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Introduction

Hydrock SES has been appointed by prepare a Sustainability Statement for the proposed development at 219-227 Sutton High Street, in the London Borough of Sutton.

1. PUPOSE OF REPORT

This document forms part of the planning submission for the development and will inform the Council of the proposed sustainability strategy for the proposals.

The sustainability strategy provided within this report follows the guidance set out by national legislation and the requirements of local planning policy. Development proposals

1.1 Site Context

Sutton High Street is approximately 11 miles south of London. The site it currently with a three-storey building with a small Argos store at ground level. Sutton High Street is pedestrianised and within walking distance to a number of key transport links into London.

The site itself is bounded by Sutton High Street to the east, the ASDA superstore to the north, and existing high street buildings to the south. There is a new development under construction to the southwest of the proposed development.

1.2 Development Details

The proposed development includes 36 no. units with a mix of one- and two-bedroom apartments.

The development is split across 9 storeys plus a basement, with a communal roof garden at fourth floor level.

The ground floor proposals consist of three small A1/A3 use commercial units, and apartment concierge spaces.

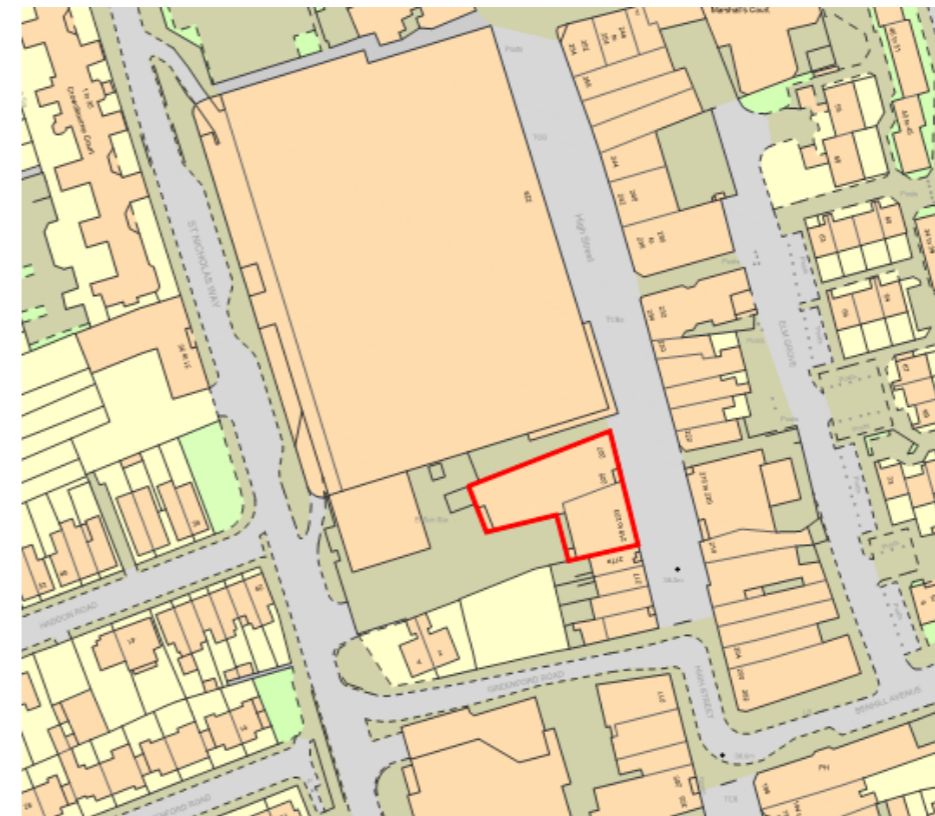


Figure 1 - Site location plan

Policy Context

This section outlines the national, regional and local level energy and sustainability policies as relevant to the development at 219-227 Sutton High Street.

2. NATIONAL POLICY

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was first published on 27 March 2012 to set out government planning policy for England, removing all regional level planning policy at this time in favour of ‘a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.’

All Local and Neighbourhood Plans must therefore align with the policies of the NPPF.

The NPPF states clearly that the purpose of planning is to help deliver sustainable development and defines three mutually dependent pillars that must be equally considered in order to achieve this:

- Economic
- Social
- Environmental

A revised NPPF was published in July 2018, focusing on the following key areas:

- Promoting high-quality design for new homes and places.
- Offering stronger protection for the environment.
- Constructing the right number of homes in the right places.
- Focusing on greater responsibility and accountability of councils and developers for housing delivery.

In terms of the environment, the revised NPPF seeks to further protect biodiversity by aligning the planning system with Defra's 25-year Environment Plan. Not only does this protect habitats, it also emphasises air quality protection in relation to development proposals.

The revised NPPF was updated again on 19 February 2019 but this update included only minor changes to the text to provide additional clarity in some areas.

2.2 Building Regulations (Part L)

All areas of the proposed development will need to meet Energy Performance standards are set for dwellings/non-dwellings by Building Regulations Approved Document Part L1A/L2A, Conservation of Fuel and Power in Dwelling/New Buildings other than Dwellings.

It is the role of Part L of the Building Regulations to include a minimum level for regulated carbon emissions defined by the Target Emission Rate (TER) which relates to a ‘Notional Building’, automatically generated as part of the SAP and Simplified Building Energy Model (SBEM) toolkits.

The resulting Dwelling Emission Rate (DER) and Building Emission Rate (BER), must be less than the TER in order to comply. A benchmark Energy Performance Certificate (EPC), rated A (most efficient) through G (least efficient) will also be calculated as part of this assessment via comparison of each building assessed to a ‘Reference Building’, also automatically generated as part of the SAP and SBEM toolkits.

These changing national regulations will drive energy efficiency and carbon reduction improvements in new buildings. It was the intention via progressive changes to Part L to require zero carbon homes by 2016. However, in July 2015 the Government Productivity Plan (“Fixing the Foundations”) announced that it would not proceed with the zero-carbon allowable solutions carbon offsetting scheme, or the proposed 2016 increase in on-site energy efficiency standards, committing instead to keeping standards ‘under review’.

Recently, consultation began on a 2020 update to Part L to precede a national 'Future Homes Standard' to come into effect in 2025.

On this basis, an update to Part L for new homes is proposed for 2020 with the preferred options for the update undergoing consultation until mid-January. A consultation to make similar updates to Part L 2A for new non-domestic buildings is also expected in early 2020 and developments should be aware of proposed changes and any transitional arrangements that may come into effect before works have started on site.

Also important is the changes to the carbon emissions within the new SAP10 which will replace the existing figures in SAP 2012. The emissions emission factors demonstrate the significant decarbonisation of the national grid and confirm that natural gas will have a higher carbon factor than electricity going forward.

3. REGIONAL POLICY

3.1 The London Plan

The London Plan is the Mayor of London's statement on London planning policy and provides ‘regional’ level material considerations when determining planning applications in London Boroughs.

The development falls into the Category 3D which means that it will be referable to the GLA:

The development is:

- on land allocated as Green Belt or Metropolitan Open Land in the development plan, in proposals for such a plan, or in proposals for the alteration or replacement of such a plan;
- which would involve the construction of a building with a floorspace of more than 1,000 square metres or a material change in the use of such a building.

Updated London Plan Energy Assessment Guidance

For referable developments from January 2019, applicants are encouraged by the GLA to use the updated SAP 10 emission factors. Applicants are advised to continue to use the current Building Regulations methodology for estimating energy performance against Part L 2013 requirements but with the outputs manually converted for the SAP 10 emission factors.

Table 1 SAP10 carbon factors

Fuel	SAP 2012 Carbon Factor (kgCO ₂ /kWh)	SAP10 Carbon Factor (kgCO ₂ /kWh)
Grid Electricity	0.519	0.233
Gas	0.216	0.210

The updated Energy Hierarchy no longer adopts CHP as a recommended solution. The new order is as follows:

1. Connection to an area wide heat network
2. Communal heating system
3. Individual heating system

Emerging London Plan

Following Examination, an ‘Intent to Publish’ version of the new London Plan was released upon at the end of 2019 and the Mayor is now taking the statutory steps to finalise and adopt the Plan which will replace the existing London Plan policies in its entirety. In planning terms, the emerging plan is at a very late stage of preparation and prior to adoption should remain a ‘material consideration’ when determining planning applications in the London Boroughs in 2020.

Key policies for energy and sustainability include:

3.1.1 Policy GG6: Increasing energy efficiency and resilience

The policy updates the strategic position of the previous London Plan (Policy 5.1) by requiring development proposals to move towards a low

carbon circular economy contributing towards London becoming a zero-carbon city by 2050.

Buildings and infrastructure must be designed to adapt to a changing climate, making efficient use of water, reducing impacts from natural hazards like flooding and heatwaves, while mitigating and avoiding contributing to the urban heat island effect.

Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.

3.1.2 Policy G1 Green Infrastructure

Development proposals should incorporate appropriate elements of green infrastructure that are integrated into London’s wider green infrastructure network.

3.1.3 Policy SI1 Improving Air Quality

The policy aims to reduce emissions from development, including during the demolition and construction phases and seeks new development to be at least ‘air quality neutral’ as demonstrated by an Air Quality Assessment for major development proposals.

Where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development.

3.1.4 Policy SI 2 Minimising Greenhouse Gas Emissions

The previous London Plan (Policy 5.2) set out an energy hierarchy to follow when designing schemes which has been updated within the new plan as follows:

1. Be Lean – use less energy and manage demand during operation.
2. Be Clean – exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly.
3. Be Green – maximise opportunities for renewable energy by producing, storing and using renewable energy on-site.
4. Be Seen - monitor, verify and report on energy performance.

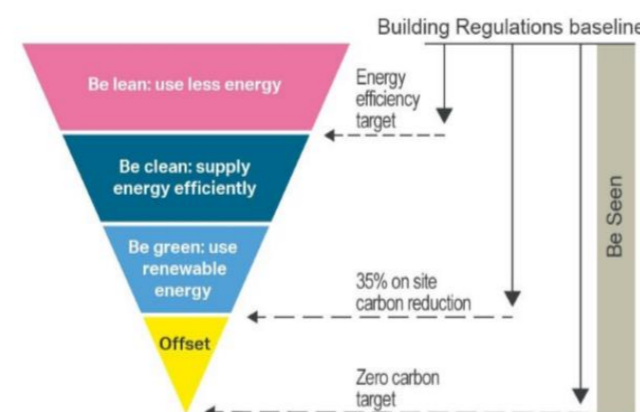


Figure 2- GLA Energy Hierarchy (2020)

The priority is to minimise energy demand, and then address how energy will be supplied and renewable technologies incorporated. An important aspect of managing demand will be to reduce peak energy loadings.

The policy also sets out the updated carbon dioxide emissions reduction targets for new buildings:

- Major development should be net zero-carbon, providing an on-site carbon reduction of at least 35% beyond Part L Building Regulation compliance.

The above requirement must be demonstrated by an Energy Statement which provides the relevant energy assessment and associated outputs in relation to the on-site carbon reduction targets of the London Plan and within the framework of the energy hierarchy.

It is noted by Policy SI 2 that where the specific targets cannot be fully achieved on-site, any shortfall may be provided off-site or through a

cash in lieu contribution to the relevant borough council to secure delivery of other CO₂ reduction projects.

Development proposals referable to the Mayor should calculate whole life-cycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

3.1.5 Policy SI3 Energy Infrastructure

Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system, evaluating and selecting the heat source in accordance with the following principles:

- a. connection to local existing or planned heat networks
- b. use of zero-emission or local secondary heat sources (in conjunction with heat pump, if required)
- c. use of low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development’s electricity demand and provide demand response to the local electricity network)
- d. use of ultra-low NO_x gas boilers

The design of such systems should also seek to minimise impacts on air quality (as per Policy SI 1).

3.1.6 Policy SI4 Managing Heat Risk

The policy states that developments should be designed to limit their contribution to the heat island effect and encourages spaces to be designed to avoid overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

1. Minimise internal heat generation through energy efficient design;

2. Reduce the amount of heat entering a building in summer through orientation, shading, albedo, fenestration, insulation and green roofs and walls;
3. Manage the heat within the building through exposed internal thermal mass and high ceilings;
4. Passive ventilation;
5. Mechanical ventilation;
6. Active cooling systems (ensuring they are the lowest carbon options).

3.1.7 Policy S15 Water Infrastructure

Development should minimise the use of mains water by:

- incorporating water saving measures and equipment to demonstrate BREEAM 'Excellent' level performance under the Wat 01 credit.
- designing residential development so that mains water consumption meets the optional requirement of Building Regulations for consumption of 105 litres or less per head per day.

New development should also seek to improve the water environment and ensure the provision of adequate waste water infrastructure. This includes minimising potential for misconnections between foul and surface water networks.

3.1.8 Policy S13 Sustainable Drainage

Development should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible.

There should be a preference for green over grey features in line with the following drainage hierarchy:

1. storing rainwater for later use;
2. use of infiltration techniques at ground or close to source;

3. rainwater attenuation in green infrastructure feature for gradual release;
4. discharge of rainwater direct to a watercourse;
5. controlled discharge of rainwater to a surface water sewer/drain; and
6. controlled rainwater discharge to a combined sewer.

4. LOCAL POLICY

The London Borough of Sutton Local Plan was adopted on 26 February 2018 and provides a strategic policy framework to guide development in the area up to 2031. The Local Plan replaces the Core Strategy (2009) and the Site Development Policies DPD (2012).

In addition to the Local Plan document the Council prepared a Technical Guidance Note to provide further detail on the Carbon Offset Fund, Biodiversity Accounting and Green Space Factor.

Key Policies of the adopted Local Plan for the London Borough of Sutton and the Building a Sustainable Sutton Technical Guidance Note are detailed below.

4.1 Sutton Local Plan (2018)

The Sutton Local Plan sets out the planning strategy and policies for the borough. It deals with a wide range of subjects including: major new regeneration areas, new housing development, retail, office and industrial development, infrastructure provision, the protection of green space, character and design, cutting pollution, climate change and transport.

The following adopted policies are of relevance in relation to energy and sustainability and the proposals for the proposed care home:

4.1.1 Policy 31 – Carbon and Energy

Proposed major non-residential developments should meet a minimum 35% reduction in CO₂ emissions expressed as a percentage

improvement over Part L of the 2013 Building Regulations.

In seeking to minimise CO₂ emissions in line with the above targets, all proposed developments will apply the London Plan energy hierarchy.

Major developments will be expected to achieve at least a 20% reduction in total CO₂ emissions (regulated and unregulated) through renewables though guidance suggests that offset payments to reach the 35% target will be permissible.

All planning applications should be supported by an Energy Statement incorporating 'as-designed' Building Regulations Part L (BRUKL) outputs to demonstrate how the relevant targets for reducing CO₂ emissions will be met.

The Energy Statement should include calculations of energy demand and emissions at each stage of the Mayor's energy hierarchy for both regulated and non-regulated elements in line with GLA 'Guidance on Preparing Energy Assessments'.

In addition, Policy 31 includes a requirement for all major non-residential development to demonstrate BREEAM 'Excellent' via a pre-assessment to be included as part of the planning submission.

4.1.2 Policy 33 – Climate Change Adaptation

Development proposals should minimise vulnerability of people and property and be fully adapted and resilient to the future impacts of climate change by minimising overheating and contribution to the urban heat island effect.

The above may be achieved by permeating the development with blue and green spaces and by incorporating a range of natural cooling measures as part of the design and layout, including passive design measures (e.g. building orientation), shading, planting and soft landscaping, trees, ponds and SuDS. Policy

requirements include consideration of the following:

- Compliance with cooling hierarchy in Policy 5.9 of the (previous) London Plan;
- Use of green roofs or green walls (where feasible);
- for previously developed sites - Increase in overall green space coverage of at least 10% compared to baseline conditions prior to development.
- for previously developed sites - Improved Green Space Factor (GSF) score of at least +0.2 compared to the baseline GSF score prior to re-development.

4.2 Building a Sustainable Sutton: Technical Guidance Note for Developers (2018)

A Technical Guidance note was finalised in April 2018 in support of the new Local Plan to provide more detailed guidance on three key aspects of local policy:

- Carbon Offset Fund
- Biodiversity Accounting
- Green Space Factor

Major developments are expected to achieve at least a 20% reduction in total CO₂ emissions (regulated and unregulated) through renewables though offset payments to reach the 35% target are permitted by the Council.

The Technical Guidance Note confirms the current carbon offset rate is £60/tonneCO₂/year over 30 years.

The Guidance on Biodiversity Accounting is less relevant to these proposals given that the site is previously developed land.

The Green Space Factor (GSF) is used in relation to local Policy 33 to help determine the appropriate level of urban greening in new developments. Urban greening measures including soft landscaping, tree planting, green roofs, sustainable drainage (SuDS) measures and open water features are not only highly

effective in counteracting overheating and the 'urban heat island' (UHI) effect during summer heatwaves, but also achieve a range of other important benefits for people and wildlife.

Sutton's GSF scoring system is set out within the Technical Note. The overall GSF score for both existing conditions on the site prior to development (baseline) and for the proposed development should be calculated using the methodology provide and reported in the Energy and Sustainability Statement and/or Overheating Report.

An initial assessment from the project team should provide as the basis for discussions with the council at the pre-application stage.

Energy Strategy

The Sutton High St development has been designed in accordance with the energy hierarchy and will seek to reduce carbon emissions as far as practicable. For full details of the energy strategy for the development, please see accompanying report 16336-HYD-XX-XX-RP-Y-5002.

5. CARBON REDUCTION

The carbon emissions at each stage of the Energy Hierarchy are summarised in the following table and figure 3 provides an overview of the buildings current predicted energy performance and associated CO₂ emissions when compared against the current Building Regulations Part L baseline in accordance with GLA guidance.

The full report demonstrates that the development can achieve a 73% reduction in carbon emissions through the implementation of passive design measures, and communal air source heat pumps providing heating and domestic hot water.

6. CARBON OFFSET

In order to meet the London Plan requirement of zero carbon via offsetting, a carbon offset payment of approximately £18,426 will be required. This is based on the rate of £60/tCO₂/yr for a period of 30 years.

Energy Hierarchy Stage	Carbon Emissions kgCO ₂ /yr	Carbon Reduction kgCO ₂ /yr	Percentage Reduction
Baseline Carbon Emissions	38,300	NA	NA
After Be Lean	36,300	1,900	5%
After Be Clean	36,300	0	0%
After Be Green	10,200	26,100	68%
After Offsetting	0	10,200	32%
Total		38,300	100%

Table 2 - carbon emissions at each stage of the energy hierarchy

7. COOLING AND OVERHEATING

As part of the GLA's guidance on preparing energy assessments, residential developments

are required to undertake an analysis of the risk of overheating. At Stage 2 this includes undertaking dynamic thermal modelling in line with the guidance and data set in CIBSE TM59.

In order to provide acceptable levels of thermal comfort, the development will utilise MVHR with a cooling coil on the fresh air supply.

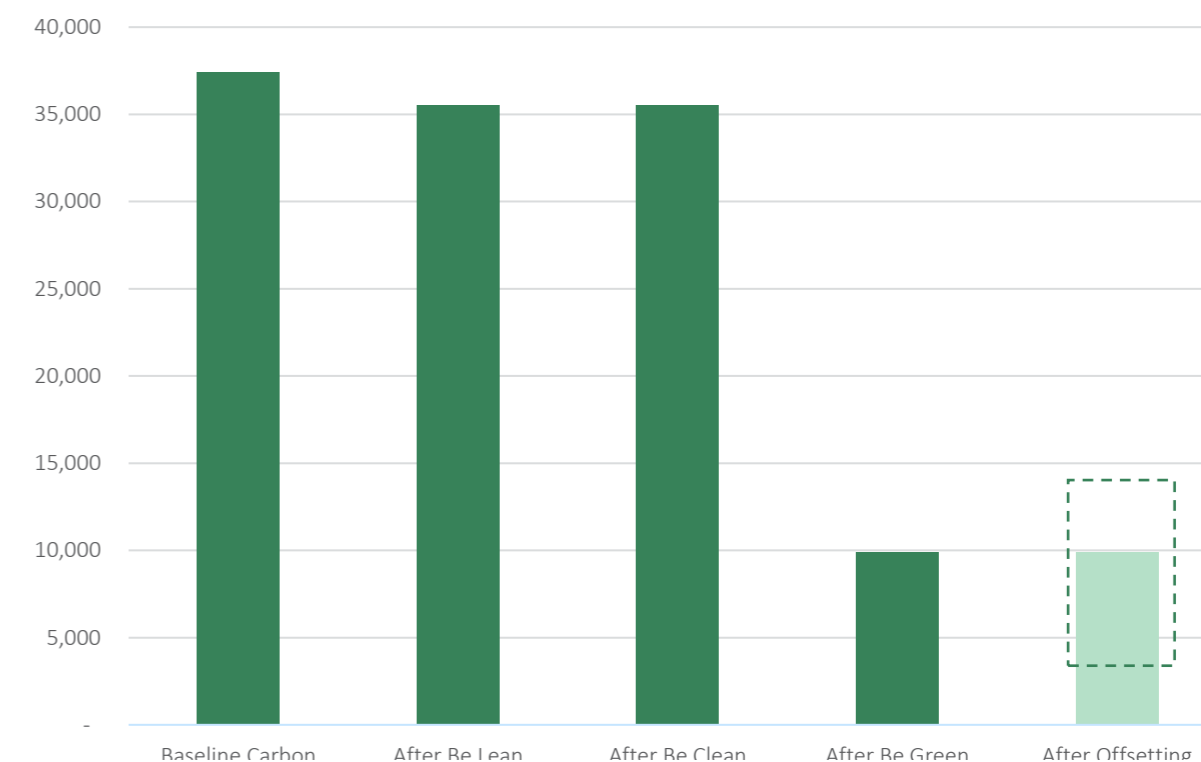


Figure 3 - Carbon emissions at each stage of the energy hierarchy

Materials, Water and Waste

The development will seek to reduce the environmental impact of construction materials, reduce the generation of waste and preserve local water resources. Measures that will be implemented to help achieve this are detailed in the following paragraphs.

8. MATERIALS

The total embodied carbon of the development can be influenced the design and choice of materials. Building materials will be selected for the scheme in accordance with a standard specification to ensure, where feasible, that they:

- Have a low embodied energy;
- Are sustainably sourced;
- Are durable to cater for their level of use and exposure; and
- Will not release toxins into the internal and external environment.

To reduce unnecessary transport, materials will be sourced locally where possible. All timber used on site and in the construction of the building will be FSC certified (or equivalent) and 100% of the timber will be from legally certified sources in accordance with BREEAM pre-requisite requirements.

Materials from manufacturers who participate in responsible sourcing scheme such as BES 6001:2008 will be given preference to minimise environmental impact throughout the supply chain and achieve at least one credit under the Mat03 credit issue.

Further consideration will also be given to pre-fabricated elements with the aim to reduce the generation of waste due to the controlled manufacturing process.

This will be appropriately assessed using the revised methodology for Life Cycle Assessment under Mat01 and compared against a BREEAM LCA benchmark during Technical Design.

9. WASTE

9.1 Construction Waste

Waste throughout the construction process will be kept to a minimum through the implementation of the waste hierarchy. This hierarchy promotes the reuse and recycling of materials, with disposal being the final option.

A Waste Management Strategy will be prepared by the principal contractor to ensure appropriate segregation and storage of non-hazardous waste on site and a high proportion of construction waste (circa 80%) diverted from landfill either through re-use or recycling as per the expectations of the BREEAM Wst01 credit.

9.2 Operational Waste

Dedicated recyclable and non-recyclable storage facilities will be provided for use during operation. These will be in an accessible location to ensure that regular collections can be made.

Waste storage will be provided in line with London Borough of Sutton requirements.



Figure 4 - Waste hierarchy

10. WATER USE AND FLOOD RISK

10.1 Potable Water Use

The quality and availability of potable water resources are under increasing pressure as a result of population growth and a changing climate.

The development will seek to reduce water use where possible in line with the water consumption levels of 105l/p/d targeted. Water saving initiatives that will be implemented include:

- Low and dual flush WC's – Dual flush cisterns with low effective flush volume (6/4 litre, 4.5/3 litre or 4/2.6 flush)
- Taps – Wash hand basins and sinks will be WRAS approved and water efficient to comply with DEFRA WTL scheme in terms of flow performance (4litres per minute).
- Showers – Aerated or low flow shower heads will be included to help reduce water consumption.

Further to this, the development will collect rainfall in water butts on the roof terrace to provide water for irrigation. This will reduce the use of potable water further and reduce stress on local water resources.

10.2 Flood Risk

The development is located in Environment Agency Flood Zone 1. This is classified as having a low risk of flooding - less than 1 in 1,000 annual probability of river or sea flooding. The EA flood map for the surrounding area is shown in Figure 5.

The site is situated south of Pyl Brook, which is classified as a small stream. There is a low risk of the stream affecting the site, due to the high stream banking and water levels being regularly monitored.

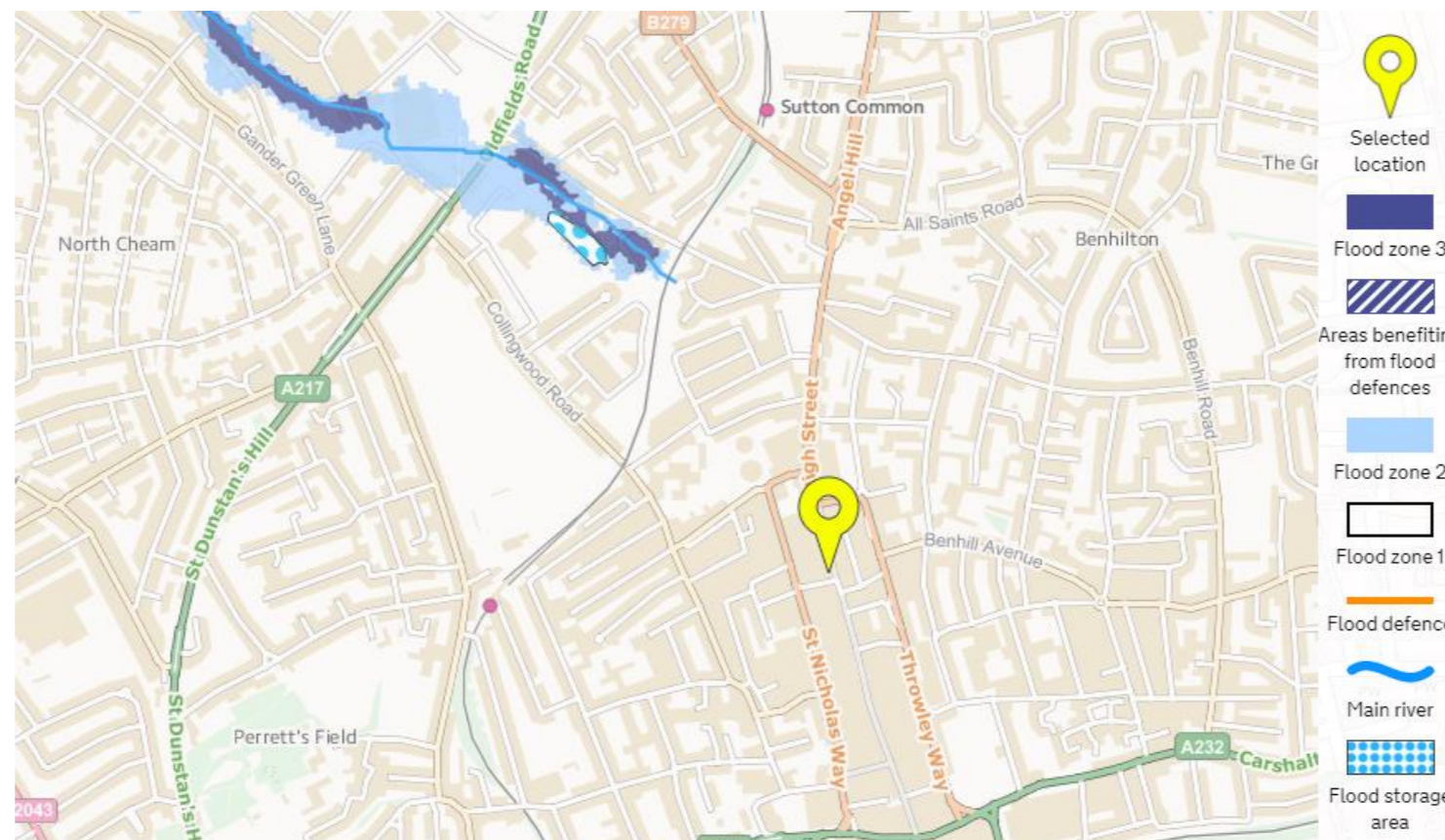


Figure 5 - Environment Agency flood map for the area

Land, Air, Water and Noise Pollution

This section of the report details the work done to minimise the pollution created from the Sutton High St development.

11. AIR POLLUTION

As the site falls within the Sutton Air Quality Management Area (AQMA) significant work has been undertaken to ensure no negative impact upon local air quality as a result of the development proposals.

During construction, strategies will be adopted to minimise dust and vehicle exhaust fumes. The strategies that will be adopted by the contractor are:

- The name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.

For the development in-use, the inclusion of air source heat pumps will significantly reduce gas consumption and associated emissions. Particular care will be taken in the operation and maintenance of any boilers which are utilised for DHW.

Further details are provided within the Air Quality Assessment report produced in support of the planning application.

12. WATER POLLUTION

On-site sustainable urban drainage systems (SUDs) are incorporated to address surface water management via an attenuation basin and geo-cellular storage to filter and attenuate run-off from the car parking area on site. Soakaways were found to be unsuitable for the site during initial testing by Geotechnics in March 2019.

The drainage infrastructure will be designed to avoid surface water flooding at a 1 in 100-year storm event plus 40% allowance for climate change.

All areas of the development will connect to the public foul sewer network.

Further details are provided in the drainage strategy that supports the planning application.

13. NOISE

Internal noise will be controlled to provide a comfortable environment for the desired use and if required, attenuation measures will be specified.

14. LIGHT POLLUTION

Light pollution can result from any adverse effect of artificial lighting and includes the following:

- Glare – the uncomfortable brightness of a light source when viewed against a dark sky;
- ‘Light trespass’ – light that spills over the boundary of the property or area which is being lit; and
- ‘Sky glow’ – the orange glow seen around urban areas caused by a scattering of artificial light by dust particles and water droplets in the sky.

The external lighting scheme of the development will be designed to minimise light pollution, taking into account the following design measures feasible, in accordance with

guidance from the Institute of Lighting Engineers (ILE, 2005):

- Directed downwards where possible to illuminate its target
- Designed to minimise the spread of light near to, or above, the horizontal
- Designed to the correct standard for the task to avoid over-lighting
- Directed to minimise and preferably avoid light spillage onto neighbouring properties
- Selected to be the most energy efficient, while taking into account cost, energy use, and the purpose of the lighting scheme required

In general, lighting will be sited in an appropriate location, to cause minimal disturbance to occupiers and wildlife, while still meeting the relevant illuminance and uniformity design standards.

Hours of lighting will be considered to ensure that usage is limited to the times of need, and restricted in the form of timing clocks or daylight sensors as appropriate and in accordance with BREEAM requirements.

Health and Wellbeing

The design focus within a residential setting is upon creating the best possible living spaces for users and a sense of community via amenities and communal areas.

A number of design initiatives have been included within the development to ensure a high quality internal (and external) environment including good levels of natural light, access to direct sunlight and detailed consideration of thermal comfort and air quality within the building.

15. FLEXIBLE AND SECURE SPACES

Inclusion of adaptive spaces within the building allows the changing care and support needs of the residents to be catered for.

16. NATURAL DAYLIGHT AND ARTIFICIAL LIGHTING

Exposure to natural daylight and sunlight can help to keep the body's circadian rhythm in sync, and can reduce the buildings reliance on artificial lighting. Furthermore, the provision of natural light can increase productivity within the workplace, and increase wellbeing of building users.

All internal and external lighting will be in accordance with the appropriate maintained illuminance (lux) levels as recommended by CIBSE guidelines.

17. THERMAL COMFORT

Although thermal comfort is highly subjective, with different people having their own expectations on what is considered comfortable. This can be affected by a number of environmental factors such as clothing, air speed, dry bulb and radiant temperature, and humidity. A number of these can be controlled within the building to help minimise any thermal comfort issues.

Overheating risk has been minimised through the use of thermal modelling utilising the guidelines set by CIBSE Guide A: Environmental Design, and CIBSE TM59.

In order to comply with the requirements of CIBSE TM59, the building needs to meet two of the three criteria below:

Hours of exceedance – the number of hours during with the temperature is greater than or equal to the set point during May – September shall not be more than 3% of occupied hours.

For bedrooms only: to guarantee comfort during the sleeping hours the operative

temperature in the bedroom from 10 pm to 7 am shall not exceed 26°C for more than 1% of annual hours. (1% of the annual hours between 22:00 and 07:00 for bedrooms is 32 hours)

Further details on the design in relation to overheating is provided in the separate TM59 Overheating Report produced by Hydrock in support of the planning application.

18. BIOPHILIC DESIGN

Biophilic design is a concept aimed at increasing occupant connectivity to the natural environment through the use of nature. It is argued that this idea has health, and environmental benefits for building occupants.

The development will incorporate rooftop gardens, giving residents access to nature. Amenity space on the roof will be used to collect rain water. This water will then be used to water the plants.

Transport

This Residential Travel Plan aims to ensure the success of the ‘car-free’ nature of the site by encouraging the use of sustainable modes of transport through implementing a range of measures to facilitate travel by walking, cycling, bus and rail links. This will reduce the environmental impact of travel to and from site by removing ease of car use, and the associated air pollution issues.

For full details of the Travel Plan for the development, please see accompanying report 16336-HYD-XX-XX-RP-RTP-6001-P01.3 Travel Plan

19. CAR

The residential area will be a car-free development and therefore there will be no vehicular access or car parking provided. On-street parking within the surrounding area is restricted to permit holders only or pay and display with a maximum stay of 2 hours, and High Street is pedestrianised. Being car free will promote the use of more sustainable transport modes such as cycling, walking and public transport.

This will contribute to the GLA requirement for developments to be air quality neutral by reducing air pollution from vehicle exhausts.

20. WALKING AND CYCLING

Pedestrian and cycle access to the apartments will be from High Street. The retail unit will be accessed directly from High Street for pedestrians and cyclists.

Both formal and informal cycle routes surround the site, providing an attractive, safe cycling environment for non-motorised users.

21. PUBLIC TRANSPORT

The public transport links to an area is important for reducing emissions and increasing sustainability of a development. The PTAL (Public Transport Accessibility Level) helps to show how accessible an area is to transport links. It works by awarding a number to an area based on the distance to the nearest public transport stop. A PTAL of 1a indicates extremely poor access to public transport, and a PTAL of 6a indicates excellent access by public transport. Figure 6 shows the area has been awarded a PTAL of 6a which shows excellent access to public transport.

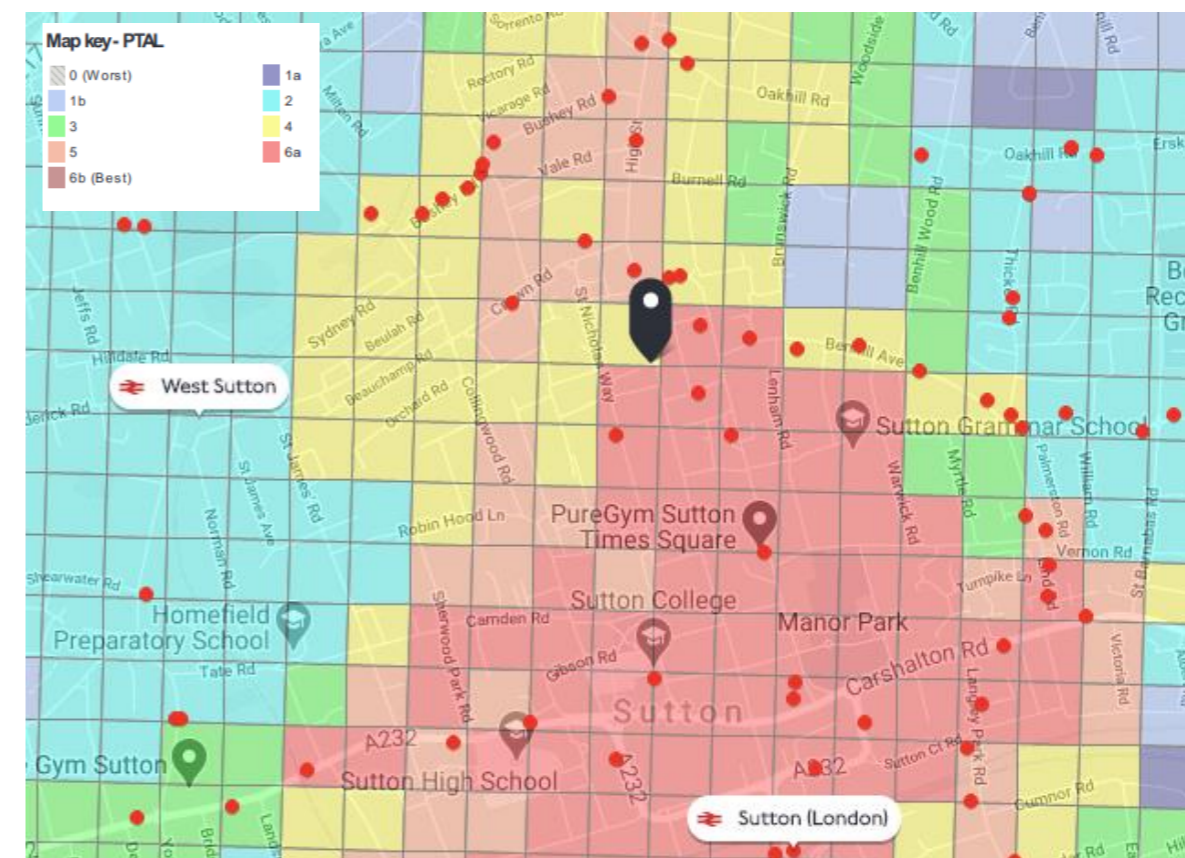


Figure 7 - PTAL rating for the site

Nature Conservation and Biodiversity

The development is committed to preserving and enhancing the ecology of the site.

22. PRELIMINARY ECOLOGICAL ASSESSMENT

To ascertain the level of biodiversity at the site, a preliminary ecological assessment has been carried out by CSA Environmental.

This preliminary assessment found that the site is of low ecological value, however there may be some nesting birds. To reduce the impact on any nesting bird species on site, demolition of the existing building will take place out side of nesting season, or following a nest check.

No overriding ecological constraints to development have been identified.

22.1 Enhancing Site Biodiversity

The site will seek to enhance biodiversity through the provision of significant landscaping at the fourth floor roof terrace. This will include a variety of planting and hard and soft landscaped areas. This is shown in Figure 8.

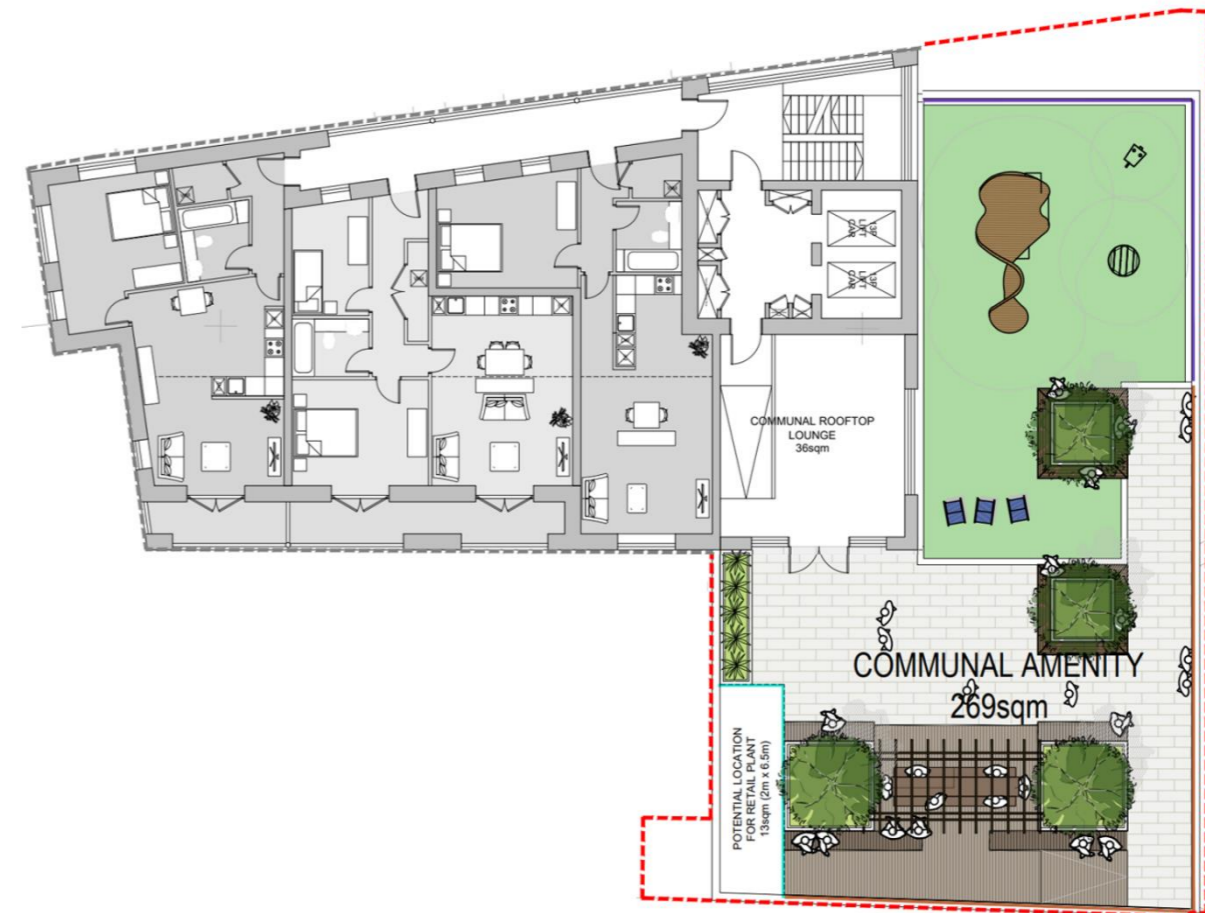


Figure 8 - Proposed fourth floor roof terrace

Adaptation to Climate Change

The development has also been designed to adapt to the effects of climate change.

23. INTRODUCTION

The major effects of climate change in England include:

- Increased frequency of extreme weather events.
- Heavier rainfall events with increased risk of flooding.
- Higher sea levels with larger storm waves putting a strain on the UK's coastal defences.
- Increased frequency and prolonged heatwaves.

In addition to impacts on the regional and national weather events, the changing rainfall patterns will affect the availability of Britain's water supplies, along with impacts on global food production and ecosystems.

23.1 Site Layout and Design Approach for Development Resilience

The site has been designed to withstand the future effects of climate change. The site lies within an area of low flood risk, however all habitable spaces are above ground floor level to reduce the impacts of any future flooding.

To respond to the increased frequency of heatwaves, low solar coefficient glazing has been specified, this along with the MVHR cooling specified will reduce the risk of overheating during these events.

23.2 Green Infrastructure/ Green Space Factor

The inclusion of external and transitional spaces is a key element of climate change adaptation to reduce internal temperatures and provide outdoor shelter. This can take the form of covered walkways or shaded areas of the external courtyard which will buffer occupants using the external space from high wind speeds whilst also contributing to development climate resilience.

Planting once confirmed may also contribute to:

- Provision of shade and passive cooling during summer months;
- Provision of outdoor accessible seating areas outside of direct sunlight;
- Management of surface water run-off to aid flood prevention measures.

Conclusions

The development proposals will deliver a sustainable new residential apartments and retail area incorporating measures to adapt to the effects of climate change whilst delivering a high-quality internal environment for residents.

24. ENERGY AND CARBON EMISSIONS

A fabric first approach to design and construction is promoted in accordance with the energy hierarchy. A significant carbon saving will be achieved via 'fabric first' which over the lifetime of the building will deliver significant carbon savings.

Demand reduction measures for the proposals include:

- Improved U-values for the floor, roof and glazing;
- Prioritisation of natural ventilation where possible, striking a suitable balance between low energy use and high internal air quality;
- Carefully considered building orientation and layout and specification of glazing to reduce the risk of overheating (see also Overheating assessment report);
- Efficient LED lighting and control system;
- External lighting designed to minimise impact on the surrounding areas and any potential effects on wildlife or the local environment.
- Building management system to provide accurate billing and metering in addition to energy monitoring capability.

25. SUSTAINABLE DESIGN AND CONSTRUCTION

Sustainable design and construction has been integral to the design process at Sutton High Street. The development will follow the principles of the waste hierarchy throughout the construction and operational phases to reduce the amount of waste produced and sent to landfill.

Materials will be selected to have a low embodied energy, in line with the Life Cycle Carbon Assessment carried out for the site's BREEAM certification.

In addition, the use of potable water will be reduced through the specification of low flow sanitaryware and appliances. The development will also include water collection and storage at the fourth floor roof terrace, this water will be used for irrigation purposes.

26. ADAPTATION TO CLIMATE CHANGE

The development has been designed to be flexible in adapting for future climate change.

To mitigate against the higher temperatures that will come with Earth's changing climate, the dwellings will be mechanically ventilated with the addition of openable windows for purge ventilation.

All lighting will be specified to be low energy which will reduce internal heat gains within the building itself.