Ham Close Regeneration

Planning Application:

Sustainability Statement

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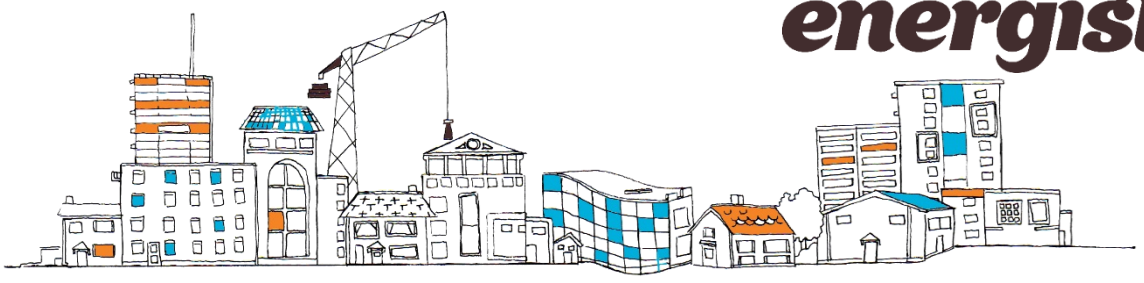
Sustainability Statement

Ham Close Regeneration, Richmond

On behalf of Hill Residential

R02

Date: April 22



REVISION HISTORY

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R00	03/02/22	First Issue - DRAFT	JA	TW
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Calculations contained within this report have been produced based on information supplied by the Client and the design team. Any alterations to the technical specification on which this report is based, will invalidate its findings.

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EXECUTIVE SUMMARY

This Sustainability Statement outlines how Hill Residential ('the Applicant') will design and construct the scheme Ham Close Regeneration ("the Development") as a sustainable development. It supports a planning application submitted to the London Borough of Richmond upon Thames and meets the requirements of the Local Plan (2018) and Sustainable Construction Checklist Guidance Document (2020). The key sustainability features outlined within the Sustainability Statement are:

Climate Change and Energy: The Applicant is committed to a design approach that aligns with the principles of the energy hierarchy. The Site will achieve a total reduction in regulated CO_2 emissions in exceedance of the Target Emission Rate (TER) Approved Document Part L (AD L) 2013 through fabric-first, demand reduction and low carbon and renewable energy measures and will successfully deliver and significantly exceed the minimum on-site reduction target in regulated CO_2 emissions over AD L 2013 for domestic and non-domestic elements of the Site separately.

Water Usage: All new dwellings included in the application proposals will be designed to meet a maximum water consumption rate of 105 litres per person per day, in line with the latest GLA guidelines. Furthermore, the BREEAM minimum standards in the water section for a minimum 'Excellent' rating will be met, by way of a minimum 40% water use reduction. Assisting in the reduction of water usage and the effectiveness of the installed water systems, the Applicant has included within their proposals and will be installing green and blue roofs wherever possible across the scheme.

Cooling & Heat Generation: The impact of overheating has been investigated, with a focus on passive design solutions. Overheating has been analysed using the Chartered Institute of Building Services Engineers (CIBSE) TM52 and TM59 methodology. The Applicant incorporates the passive and active design measures to address and successfully mitigate for the risk of overheating, including improved building fabric, natural ventilation through fully openable windows, mechanical ventilation with heat recovery (MVHR) in all habitable rooms, and balconies and overhangs which can create shading. The Applicant proposes an all-electric heating solution, utilising heat pump technology to ensure futureproofing of the Development. This shall primarily be delivered via a communal heat network.

Pollution: Air & Noise Quality: An air quality and acoustic assessment has been produced in support of the planning application and, where necessary, appropriate mitigation measures have been incorporated within the Development proposals. Light pollution will be minimised and artificial lights will be positioned in the most suitable locations across the Development and public realm, carefully tailored to the use it supports.

Transport: Investigation into more sustainable travel within the area will be carried out in order for the Development to influence sustainable local travel choices. Furthermore, Delivery, Servicing and Construction Logistics will be investigated and where required, plans for which will be developed to mitigate any impact of vehicle activities during the operational and build stages.

Flooding and Drainage: Full consideration has been given to the Site vulnerability to fluvial and tidal flooding, surface water flooding, groundwater flooding and drainage and infrastructure flooding through a Flood Risk Assessment (FRA). According to the FRA the Site is in Flood Zone 1. The Applicant's drainage strategy will ensure that appropriate measures for the management of surface water run-off and the protection of water quality in the receiving water environment, have been fully considered and incorporated within the Development scheme. Sustainable Urban Drainage Systems (SuDS) are required and will be designed to contain the 1 in 100 (1%) rainfall event with an increase in peak rainfall intensity of 40% to allow for the currently predicted effects of climate change. The SuDS features will be multi-functional and have been blended into the landscape design to maximise amenity and biodiversity value.

Ecology & Biodiversity: Detailed ecological assessments will be completed to inform the Applicant's development proposals. An initial survey and review have been undertaken and has concluded that the site has negligible potential to support all protected/notable species with the exception of low potential for badger, low potential for roosting bats, moderate potential for hedgehog and high potential to support nesting birds.

Incorporating the recommended mitigation measures in tandem with landscaping improvements and a biodiversity net gain, ecology and biodiversity will not pose a constraint to the redevelopment of the site.

Improving Resource Efficiency: The Applicant is committed to prioritising steps of the waste hierarchy by implementing a strategy for: prevention; preparing for re-use; recycling; other

recovery; and disposal. A sustainable and environmentally-responsible approach will be taken to the management of domestic waste and waste during the design and construction process of the Development. In support of this, the Applicant has completed workshops to facilitate a circular economy, and undertaken a Whole Life-Cycle Carbon assessment.

The potential environmental effects of the proposal have been considered through a series of studies which, in combination, will contribute to the overall long-term sustainability of the Development.

To this end, specialist consultant reports have been completed and supplement the Sustainability Statement by considering, in greater depth, the following issues for a sustainable development: Energy, Overheating, Flood Risk and Sustainable Drainage, Air Quality, Acoustics and Ecology. Individual reports may be referred to in support of the planning application for Ham Close regeneration.

1. INTRODUCTION

This Sustainability Statement has been produced by Energist UK on behalf of Hill Residential ('the Applicant'). It will set out the positive measures being implemented by the Applicant to achieve a sustainable regeneration of Ham Close ('the Development') within the London Borough of Richmond upon Thames.

For the purposes of this Statement, sustainable development is defined as:

> *"Development that meets the needs of the present without compromising the needs of future generations to meet their own needs."*
> *Source: Brundtland (1987)*

This definition addresses the idea that limitations can be imposed by development and on the environment's ability to meet present and future needs. The Applicant demonstrates their commitment to designing a sustainable regeneration of Ham Close by:

- Addressing key environmental issues.
- Responding to planning policies specific to these environmental issues.
- Delivering actions and standards of environmental performance demonstrating all measures being taken to embed sustainability.

The way in which the Applicant delivers their Strategy for a sustainable development is set out using the following headings:

- Climate Change and Energy
- Water Usage
- Cooling, Heat Generation, and Pollution
- Transport
- Flooding and Drainage
- Ecology & Biodiversity
- Improving Resource Efficiency

This Statement will set out how the Applicant will address and positively integrate measures that ensure an environmentally responsible approach to the Development and construction of Ham Close, addressing each of the above issues in turn.

The Applicant commits to delivering the following specific standards of environmental performance:

- Achieve a c.66% site-wide improvement in CO_2 emissions over Approved Document Part L (AD L) of the Building Regulations, 2013 using SAP10 emission factors, bettering the 35% minimum requirement under the London Plan.
- Achieving Zero Carbon target for residential and non-residential elements through on-site measures and a carbon off-set payment, detailed within the accompanying energy statement.
- Achieve a total water consumption of 105 litres per person per day.
- Wherever possible ensure building materials are responsibly sourced and minimise environmental impact.
- Demonstrate on-site waste management including evidence of waste reduction, use of recycled materials and dedicated recyclable waste storage space.
- Enhance biodiversity consistent with the London Plan and Local Plan policy requirements.

Each standard has been assessed for the purposes of the Development proposals and evidence presented explaining how the Applicant has considered each issue.

2. THE DEVELOPMENT

This Statement relates to the regeneration of Ham Close, which falls under the jurisdiction of the London Borough of Richmond upon Thames as the Local Planning Authority (LPA).

The site is located on Ham Close, between St Richard's CE Primary School and Ham Street/Wiggins Lane, in a predominantly residential setting. The site has 14 existing residential blocks, plus some ancillary uses including garages. The site is allocated in the local plan for redevelopment.

The proposed regeneration consists of the demolition of existing buildings on-site and phased mixed-use development comprising 452 residential homes (Class C3) up to six storeys; a Community/Leisure Facility (Class F2) of up to 3 storeys in height, a “Maker Labs” (sui generis) of up to 2 storeys together with basement car parking and site wide landscaping.

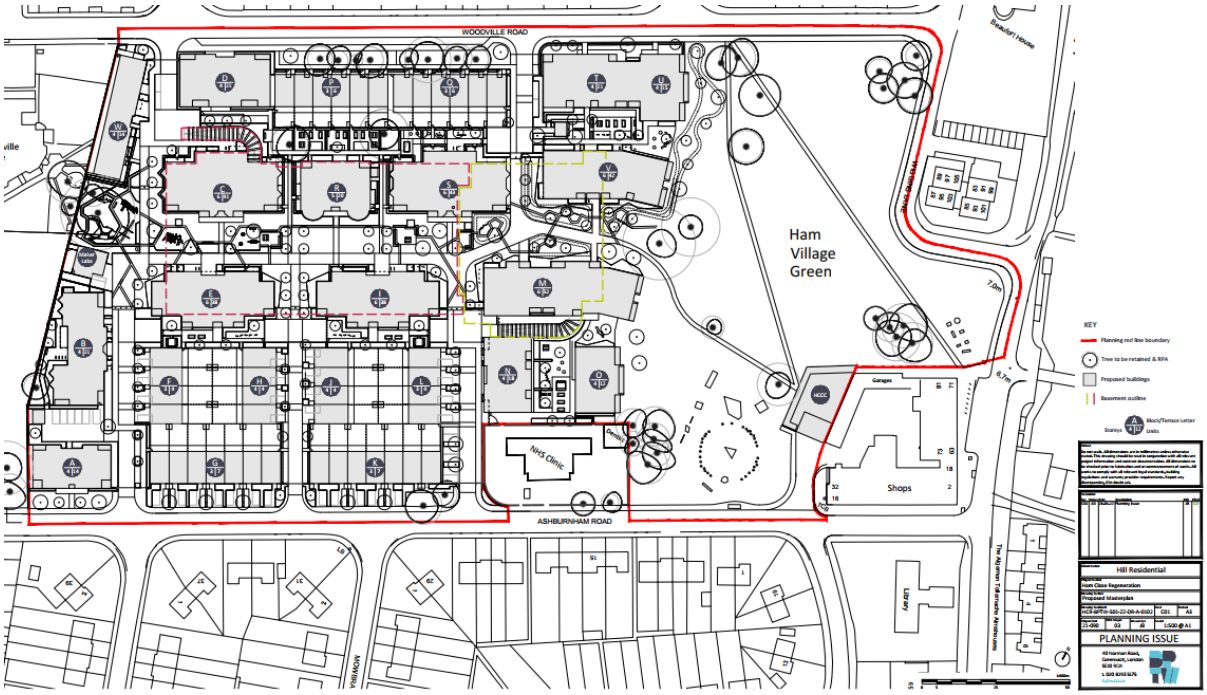


Figure 1 - Masterplan providing an overview of the site layout (BPTW drawing HCR-BPTW-S01-ZZ-DR-A-0102-C01)

3. CLIMATE CHANGE AND ENERGY

Policy Drivers	Richmond Local Plan (2018) Policy LP 20: Climate Change Adaption. Policy LP 22: Sustainable Design and Construction London Plan (2021) Policy SI 2: Minimising Greenhouse Gas Emissions. National Planning Policy Framework (2021) Approved Document Part L (2013)

3.1 Overview

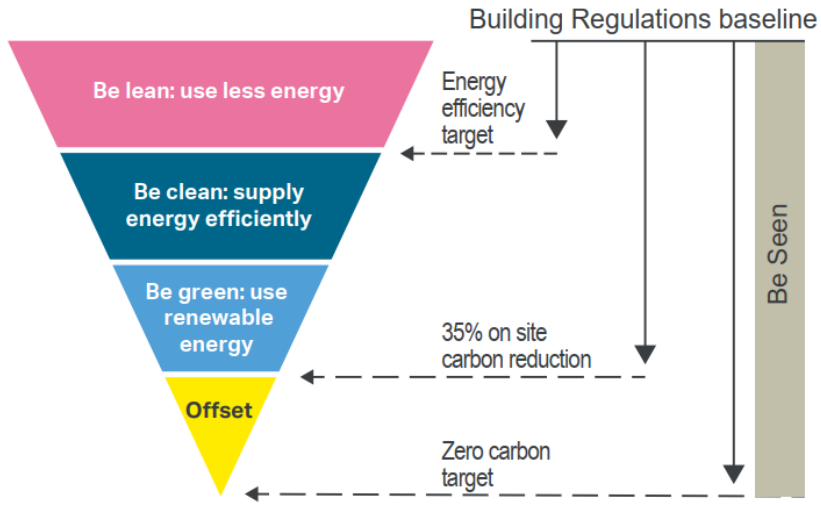
The Applicant has incorporated the following energy standards for the Development:

- Achieve a c. 66% on-site reduction in CO_2 emissions over Approved Document Part L (AD L) 2013, using SAP10 carbon emission factors, significantly above the minimum 35% reduction stated within London Plan Policy SI 2.
- Achieve zero-carbon and where this cannot be achieved on site, a commitment to offset the shortfall in CO_2 emissions through a carbon-offset payment.

The Energy Strategy is written in accordance with the new AD Opted London Plan (2021) and in accordance with *Energy Assessment Guidance. Greater London Authority guidance on preparing energy assessments as part of planning applications* (2020).
The Local Plan states that all developments must meet the following policy:

- *Policy LP 20 - The Council will promote and encourage development to be fully resilient to the future impacts of climate change in order to minimise vulnerability of people and property.*
- *Policy LP 22 - Developers are required to incorporate measures to improve energy conservation and efficiency as well as contributions to renewable and low carbon energy generation.*

Energist UK has produced an Energy Strategy which describes how the Applicant will deliver the energy standard and planning policy targets through demand-reduction and energy-efficiency measures; and Low- and Zero-Carbon (LZC) technologies. This is demonstrated in direct relation to the objectives of the energy hierarchy: Be Lean, Be Clean and Be Green.



Source: Greater London Authority

Figure 2 - Energy hierarchy

3.2 Energy Strategy

The Energy Strategy concludes that the following combination of measures, summarised below, are included in the design of the Development. Refer to Appendix 3 for a detailed Energy Strategy design specification.

Table 1 - Energy design measures incorporated

Be Lean	Energy-efficient building fabric and insulation to all heat loss floors, walls and roofs; and highly efficient double-glazed windows throughout. Quality of build will be confirmed by achieving good air-tightness results throughout. Efficient-building services including high-efficiency mechanical ventilation systems. Low-energy lighting throughout the buildings.
Be Clean	The feasibility of supplying decentralised energy to the Development has been assessed in accordance with the heating hierarchy.
Be Green	Opportunities to maximise LZC technologies have been assessed and options reviewed for their practical, financial and technical viability in relation to the Development scheme. Solar PV and a communal air source heat pump heating system has been selected as the preferred strategy.

Through considered and intelligent design, the scheme has significantly gone beyond policy requirements to achieve a **66% reduction** in emissions on site. The Development then achieves the zero-carbon homes standard in full through a carbon-offset payment which offsets the shortfall in regulated CO_2 emissions reduction. The total CO_2 emissions to offset the regeneration of Ham Close have been calculated as 181.7 t.CO_2/yr. Based on a carbon price of £95 t.CO_2/yr over a 30-year period (in-line with the LBRuT Sustainable Construction Checklist Guidance Document, June 2020), this is equivalent to a cash-in-lieu contribution of £517,978.

4. WATER USAGE

Policy Drivers	Richmond Local Plan (2018) Policy LP 22: Sustainable Design and Construction London Plan (2021) Policy SI 5: Water infrastructure Approved Document Part G

4.1 Overview

A Part G water calculation has been carried out by Energist for this development. It sets out the Applicant's commitment to:

- Greater London Authority's planning policy requirements for a total water consumption of 105 litres per person per day (excluding allowance of up to five litres for external water consumption)

4.2 Strategy for Delivery

The Applicant is committed to conserving water and efficient water use and will:

- Have a leak detection mechanism in place capable of identifying a major leak on the mains-water supply within the building.
- Require that the main contractor on-site monitors water consumption during the construction process.

The water consumption of a dwelling has a significant impact on not only direct operational running costs (i.e., water consumption charges), but also indirectly through additional energy usage and the heating of water for domestic use. This is, in part, reflected in SAP 2012 methodology which assumes reduced energy consumption should a dwelling be compliant with Approved Document Part G 2013.

The standard of 105 litres of water per person per day can be met using the following specification as set out below.

Table 2 - Water calculations for new dwellings

Element	Performance
Kitchen Taps flow rate	5 Litres per minute
Other basin Taps flow rate	5 Litres per minute
WCs Flush Volume	4/2.6 Litres
Shower Flow rate	8 Litres per minute
Bath Volume	160 Litres
Dishwasher water consumption	1.3 litres per place setting
Washing-machine water consumption	8.2 litres per Kg

The non-domestic elements of the Ham Close regeneration are being assessed against the BREEAM New Construction 2018 criteria, and is targeting a BREEAM 'Excellent' rating in accordance with the Richmond Local Plan Policy LP 22 Sustainable Design and Construction '*New non-residential buildings over 100sqm will be required to meet BREEAM 'Excellent' standard'*. Furthermore, London Plan Policy SI 5 Water Infrastructure requires development proposals achieve at least the BREEAM excellent standard for the 'Wat 01' water category.

A BREEAM pre-assessment has been carried out by Energist for this development, which shows the following water credits are being targeted within the design:

WAT01 – Targeting a 40% water demand reduction over the BREEAM baseline through water efficient sanitaryware.
WAT02 – Water monitoring to reduce the consumption of potable water in new buildings through the effective management and monitoring of water consumption.
WAT03 – Have a leak detection mechanism in place capable of identifying a major leak on the mains-water supply within the building.
WAT04 – specification of plant species which predominantly rely on rain and/or manual irrigation.

5. COOLING & HEAT GENERATION

Policy Drivers	Richmond Local Plan (2018) Policy LP20: Climate Change Adaptation. Policy LP22: Sustainable Design and Construction London Plan (2021) Policy SI 3: Energy infrastructure. Policy SI 4: Managing Heat Risk. Energy Assessment Guidance, Greater London Authority guidance on preparing energy assessments as part of planning applications (2020).

5.1 Overheating

Overheating has become a common issue in recent years due to climate change and stricter national and regional policies for energy efficient buildings, improved building fabrics and airtight buildings. Furthermore, in urban centres, especially in the South and Southeast of the UK, the Urban Heat Island (UHI) effect is exacerbating the consequences of the already intense and frequent hot summer events to the building industry. Therefore, it becomes of significant importance to assess the risk of overheating at the early stages of the design process to avoid any expensive modifications to the design at later stages of the Development process.

London Plan Policy SI 4 states that major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

1) Reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation, and the provision of green infrastructure.
2) Minimise internal heat generation through energy efficient design.
3) Manage the heat within the building through exposed internal thermal mass and high ceilings.
4) Provide passive ventilation.
5) Provide mechanical ventilation.
6) Provide active cooling systems.

In accordance with the GLA's cooling hierarchy, the Applicant has completed an overheating risk assessment with a focus on passive design solutions. Overheating has been analysed using the Chartered Institute of Building Services Engineers (CIBSE) TM52 and TM59 methodology. The performance of sample dwellings and corridors has been assessed against the required standards of CIBSE TM59: '*Design methodology for the assessment of overheating risk in homes (2017)'*. The performance of non-domestic areas has been assessed against the required standards of CIBSE TM52: '*The limits of thermal comfort: avoiding overheating in European buildings (2013)*'.

An overheating assessment is submitted in support of the planning application and sets out the results of the CIBSE assessment in alignment with the GLA Energy Assessment Guidance (2020). The Overheating Assessment follows the cooling hierarchy measures for the proposed development. The Applicant incorporates the following passive and active design measures to address and successfully mitigate for the risk of overheating:

- Improved Building Fabric
- Natural Ventilation through Fully Openable Windows
- Mechanical Ventilation with Heat Recovery (MVHR) in all habitable rooms
- Balconies and overhangs which can create shading

5.2 Heat Generation

The London Heat Map has been consulted to establish whether the Development lies within proximity of an existing or proposed area-wide DHN. The site is located outside of a Heat Network Priority Area and there are no existing or proposed heat networks within the vicinity of the site. The site has not been identified in the *Heat Mapping Study – London Borough of Richmond upon Thames* (Policy LP 22). In order to future proof the Development the Applicant proposes a phased site-wide communal network comprised of 1 no. energy centre serving Phase 1 apartments, and 1 no. energy centre serving Phase 2 & 3 apartments, capable of connecting to any future District Heat Network should one become available. The communal network shall be an all-electric ASHP led system serving the heating and hot water demands for each of the apartment blocks. It is proposed to serve the houses with individual ASHPs, with justification provided within the submitted Energy Strategy. The non-domestic buildings shall be served via VRF heat pumps.

6. POLLUTION: AIR & NOISE QUALITY

Policy Drivers	Richmond Local Plan (2018) Policy LP 10: Local Environmental Impacts, Pollution and Land Contamination. London Plan (2021) Policy SI1: Improving Air Quality. Policy D14: Noise.

6.1 Overview

The Applicant has considered the impact of the Development on local air quality and noise pollution and will provide as required both air quality and noise impact assessments which will identify steps to mitigate any impact as follows:

- Comply with Local planning policy for air quality.
- Develop a Travel Plan to identify sustainable-travel initiatives.
- Take steps to mitigate the noise impact within the habitable spaces which face the road.
- Ensure that the principal contractor, and other contractors and workers on site during the construction process, are all aware of and follow the sustainability requirements in order to minimise the effects of construction, such as air pollution, noise and vibration, traffic congestion, dust and contamination of land and water.

6.2 Strategy for Delivery

The Applicant will minimise the impact of construction on local air quality and noise pollution by carrying out a series of proactive measures.

Air Quality

An air quality impact assessment has been carried out to assess both construction and operational impacts of the proposed development.

An assessment of the potential impacts during the construction phase has been carried out. This has shown that during this phase of the proposed development releases of dust and PM_{10} are likely to occur during site activities, particularly during demolition activities. Through good site practice and the implementation of suitable mitigation measures, the impact of dust and

PM_{10} releases may be effectively mitigated, and the resultant impacts are considered to be negligible.

An assessment of operational impacts associated with the proposed development has shown that operational traffic associated with the development would have a negligible impact on local air quality.

Future occupants of the proposed development would not be exposed to pollutant concentrations above the relevant objective levels, therefore the impact of the proposed development with regards new exposure to air quality is considered to be negligible.

Traffic generated by the proposed development is predicted to have an insignificant impact on nitrogen deposition rates and airborne NO_x concentrations within the Richmond Park SSSI.

The assessment has taken into account the cumulative effects of other committed developments in the area. The cumulative impacts are therefore negligible.

Noise Pollution

A noise and vibration assessment has considered the likely effects of the proposed development. These include the effects of existing conditions on the proposed development and the effects of noise and vibration generated from demolition and construction activities pertaining to the proposed development on surrounding properties. Limits have been specified for the operational phases. The detailed design of the proposed development will ensure that noise emissions from the site would remain below the specified background sound levels.

The impact of noise and vibration during construction of the proposed development has been predicted and assessed in accordance with BS 5228. Generic mitigation measures have been recommended, which when implemented are capable of ensuring that the impact of noise and vibration during the construction of the proposed development is adequately controlled. Construction noise and vibration effects are likely to be ‘moderate adverse’ in the short term with the majority of activities being negligible.

An assessment has been carried out in accordance with the adopted criteria to determine the suitability of the site for residential accommodation. The assessment has been based on a computer noise model, informed, and validated using environmental noise measurements and

traffic data provided for the adjacent road links. Noise levels at the residential dwellings associated with the proposed development are likely to be sufficiently mitigated with the implementation of typical insulated double glazing and attenuated ventilation. The residual noise effect is considered to be negligible with the incorporation of typical insulated double glazing and attenuated trickle ventilation.

The impact of the increase in road traffic associated with the proposed development has been calculated as negligible.

7. TRANSPORT

Policy Drivers	Richmond Local Plan (2018) Policy LP 44: Sustainable Travel Choices. Policy LP 45: Parking Standards and Servicing. London Plan (2021) Policy T3: Transport capacity, connectivity and safeguarding. Policy T4: Assessing and mitigating transport impacts. Policy T5: Cycling. Policy T6: Parking.

The Ham Close regeneration scheme has been designed to facilitate sustainable transport measures across the site. The scheme has been designed to increase permeability across the site, with shared space access provided from both Woodville Road and Ashburnham Road. Pedestrian and cycle links to the site are also provided across Ham Village Green along the desire lines.

The site has been designed to promote local access to low-carbon transport modes, including the following:

- The Development would provide car parking spaces at ground level and within an underground car park in accordance with London Plan and LBRuT requirements, with blue badge parking provided for the initial 3% of the units.
- All parking spaces will provide either active or passive Electric Vehicle Charging Point (EVCP) provision in accordance with the London Plan.
- Reviewing incorporation of car club scheme on the site to promote car sharing and reduce reliance on car ownership. Every Zipcar (a potential car club operator for the Development) takes an average of 23.5 privately owned cars off the roads of the UK, because members often sell (or don't replace) a car when they join.
- Long stay cycle parking facilities are provided within the basement/ground floor of each block, providing a secure location for bike storage. Long stay cycle parking stores designed in accordance with London Cycle Design Standards (LCDS) Chapter 8, and would provide a mix of Sheffield, two-tier and enlarged accessible bays. Short stay cycle parking spaces would be provided in line with London Plan standards and integrated into the public realm.

8. FLOOD RISK & SUSTAINABLE DRAINAGE

Planning Policy	Richmond Local Plan (2018) Policy LP 21: Flood Risk and Sustainable Drainage. Policy LP 23: Water Resources and Infrastructure. London Plan (2021). Policy SI12: Flood Risk Management. Policy SI13: Sustainable Drainage.

8.1 Overview

The Development has been considered for its exposure to flooding. To inform this process, the Applicant has completed a Flood Risk Assessment and Drainage Strategy, prepared by Jubb Consulting Engineers, which assesses whether the Development is at risk of any form of flooding. Sustainable Drainage Systems (SuDS) are appropriately considered and measures put forward as part of a Drainage Strategy for the scheme.

8.2 Assessment of Flood Risk

The FRA concludes the following for the Ham Close regeneration:

8.2.1 Fluvial and tidal flood risk

The Environment Agency's Flood Map for Planning indicates the site to be wholly located within Flood Zone 1 (Low Probability) and therefore defined as having less than a 1 in 1,000 annual probability of river flooding. Table 2 of the NPPF Planning Practice Guidance for Flood Risk and Coastal Change states in terms of flood risk vulnerability, that all types of development are suitable within this flood zone. Sequential and exception tests are not required. The risk of fluvial and tidal flooding to the Development is low.

8.2.2 Overland (Surface Water) Flooding

While the FRA indicates there are a number of flood risk areas within the site, these locations correspond to topographical low points, which as shown on the topographical survey, have gullies to ensure that these areas are drained during rainfalls.

In addition, the proposed development will provide suitable drainage arrangements for all areas within the site boundary, with the onsite drainage designed to accommodate all storms up to and including 1 in 100 year + 40% climate change allowance. The runoff rates from site will also be reduced, as a result helping with any existing sewer capacity concerns.

The risk of surface water flooding to the Development is low.

8.2.3 Groundwater flooding

The site is susceptible to groundwater flooding and mitigation measures will be required to ensure that the proposals are sufficiently protected from groundwater ingress.

The Geo-Environmental Report prepared by Enzygo Geoenvironmental Ltd (Aug 2021) states that the groundwater onsite was encountered at depths of between 2.2m and 4.3m below ground level. Further groundwater monitoring is being undertaken and will be used to inform any further design.

Groundwater will be considered during construction, especially during excavations and will have an impact on the below ground design, such as the drainage strategy. Additionally, all basements onsite will be designed to be safe from groundwater, a specialist waterproofing design will be implemented, to ensure that the required level of protection is achieved.

In terms of risk, the basements onsite are proposed to be used for ‘less vulnerable’ uses, such as car parking and plant. Therefore, in the unlikely event of the waterproofing measures failing, the consequences will be minimised. A separate Basement Impact Assessment has been provided as part of the planning application.

Given the mitigation measures above, groundwater flooding is considered low risk.

8.2.4 Flooding from Sewers

The drainage strategy for the Development aims to reduce the surface water runoff from site to greenfield. This will increase the capacity within the neighbouring sewer network – reducing any potential risk of surface water sewers flooding.

Thames Water have been consulted via a pre-development application and confirmed that the neighbouring sewer network has sufficient capacity.

The risk of flooding from sewers is low.

8.2.5 Flooding from Artificial Sources

The Environment Agency's Long-Term Flood Risk Information mapping indicates the potential extent of flooding from reservoir breach/failure. The site is safe from reservoir flooding while the river levels are normal.

Risk of flooding from reservoirs is very low, as in line with the Reservoirs Act 1975, reservoirs need to be regularly inspected and maintained, therefore reservoir flooding is unlikely.

Flood risk from artificial sources is considered to be low risk.

8.3 Sustainable Urban Drainage

New surface water drainage will be required to drain surface water runoff from the proposed buildings. In line with the London Borough of Richmond Upon Thames Local Plan and the London Plan, the runoff from the proposed development will aim to restrict runoff rates to greenfield rates and the SuDS measures and discharge methods have been evaluated in accordance with the hierarchy, as shown below.

Hierarchy	Method	Feasibility	Comment
1	Rainwater use as a resource (rainwater harvesting / blue roofs).	✓	It is proposed to utilise green and blue roofs wherever possible across the scheme.
2	Rainwater infiltration	X	Infiltration is not suitable for this site, due to minimum space requirements for soakaways to be positioned away from structures and the underlaying clay ground conditions.
3	Rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)	✓	Green roofs, raingardens and permeable paving will be utilised across the scheme.
4	Rainwater discharge direct to a watercourse (unless not appropriate)	X	There is no suitable watercourse near the site.
5	Controlled rainwater discharge to a surface water sewer or drain	✓	It is proposed to discharge towards the neighbouring surface water sewers at greenfield runoff rates.
6	Controlled rainwater discharge to a combined sewer	X	There are no combined sewers in the area.

Table 5, Surface Water Discharge Hierarchy

Figure 3 - Proposed SuDS hierarchy measures (taken from Jubb Flood Risk Assessment & Drainage Strategy)

9. ECOLOGY & BIODIVERSITY

Planning Policy	Richmond Local Plan (2018) Policy LP 12: Green Infrastructure. Policy LP 15: Biodiversity. LP 16: Trees, Woodlands and Landscape. Policy LP 17: Green roofs and walls. The London Plan (2021) Policy G1: Green Infrastructure. Policy G5: Urban Greening. Policy G6: Biodiversity and Access to Nature. Policy G7: Trees and Woodlands.

9.1 Introduction

The Applicant has completed a Preliminary Ecological Appraisal (PEA) for the Ham Close regeneration site to consider the potential impact of the Development on ecology. The PEA (Greengage) concludes that the site has negligible potential to support all protected/notable species with the exception of low potential for badger, low potential for roosting bats, moderate potential for hedgehog and high potential to support nesting birds. A Bat Survey (Greengage) has since been conducted, which concludes that there was no evidence of roosting observed during the emergence / re-entry survey visits. Roosting bats can therefore be confirmed as likely-absent from the site; however, recommendations are made concerning suitable landscaping and the provision of bat boxes. The PEA provides mitigation recommendations for badger, hedgehog and nesting birds.

9.2 Ecologically Sensitive Landscaping

The Development will be designed with biodiversity in mind. In particular, the following improvements are proposed as part of the application:

- Richly planted public and communal landscapes promote biodiversity net gain, urban greening, and living streets. Planting will reference the context, with uses of wildflowers, ornamental grasses, and trees such as Birch, Willow, Maple and Lime, all prevalent across Ham.
- Provision of features for the sustainable conveyancing of surface water. Richly planted swales, biodiverse roofs, and native planting will maximise surface water storage and biodiversity.

- It is proposed that the quality of the open space provided be of a greater quality than the current provision in comparison to the existing network of amenity lawns. The central Linear Park and the communal open spaces offer a variety of opportunities for formal and informal recreation and opportunities for residents to positively engage with their outdoor space. Seating and play opportunities are located within a framework of lawns and naturalistic planting linked by a legible network of pedestrian routes which are integrated into the spaces enhancing natural surveillance. The planting proposals will greatly increase the site biodiversity and create a green corridor east west across the site. Therefore, though the proposed amount of Amenity Green Space is lower than the current site, the quality and variety of open spaces provided is greater than the current situation and will benefit the proposed residents and local community
- Biodiverse roofs are proposed for all the flat blocks and cover more than 70% of the available roof plate for those areas over 100sqm in line with policy LP17. A lightweight substrate with a minimum of 85mm depth will be overseeded with a Native British seed mix and will be supplemented by rubble and log piles to support a biodiverse habitat. Where biodiverse roofs cannot be provided on the private housing climbers are proposed to flank walls to provide vertical greening elements. Maintenance on private roofscapes will be reliant on the homeowners whereas maintenance of the vertical greening can be facilitated form public space at ground floor.

Green landscaping will form an integral part of the Development proposals in accordance with the Urban Greening Factor criteria as laid out in the London Plan Policy G5. An assessment has been completed, which shows an UGF of 0.5192 is being achieved.

Biodiversity Net Gain Calculations have also been completed for the proposed landscaping strategy. Based on the emerging masterplan drawings, the proposed development has potential to increase net biodiversity by 30.6%.

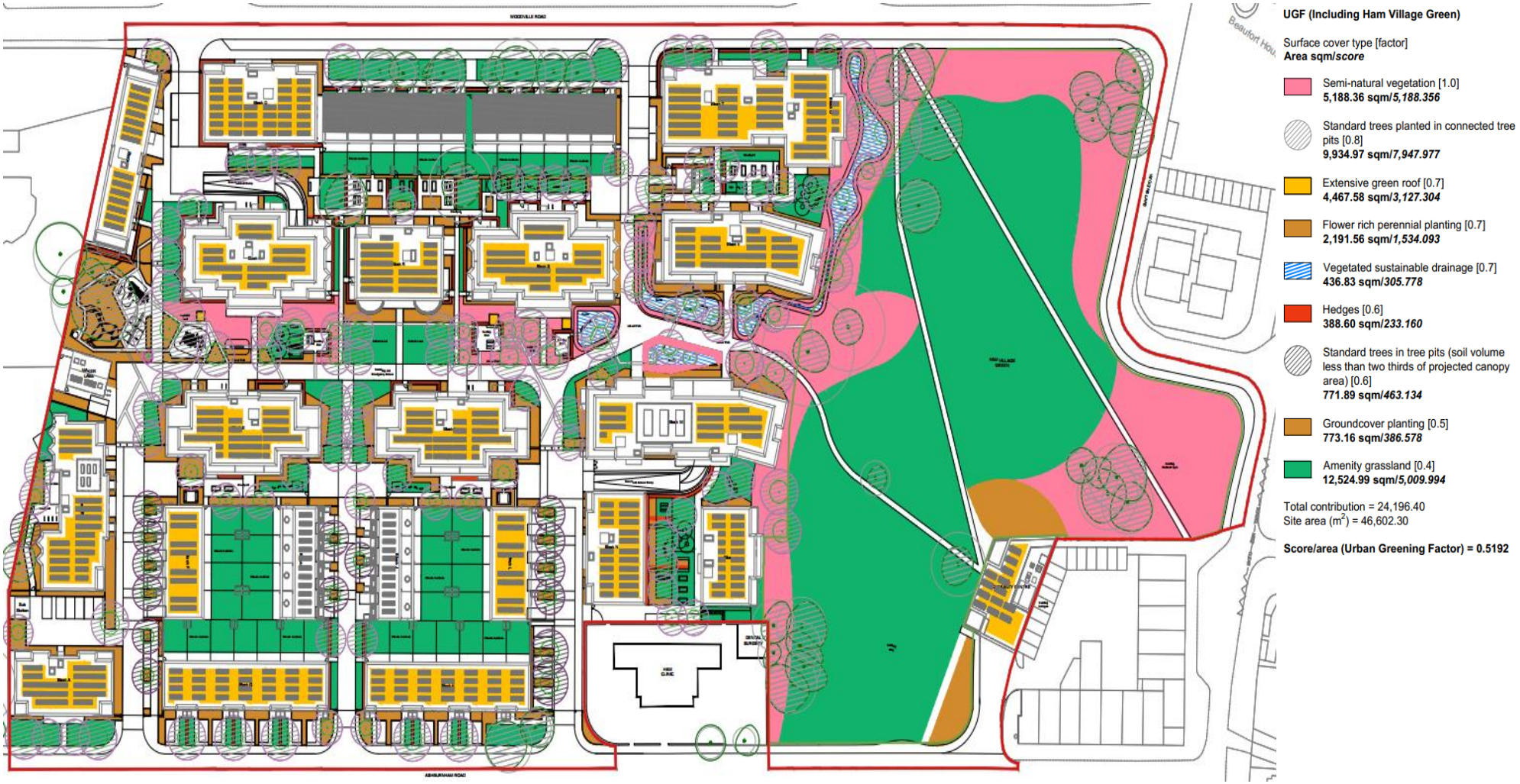


Figure 4 - Proposed Urban Greening Factor calculation (LUC)

Table 3 - Proposed post-development biodiversity units

Broad Habitat	Habitat Type	Area (Hectares)	Distinctiveness	Condition	Biodiversity Units
Grassland	Lowland grassland	0.1335	Very High	Moderate	0.49
Urban	Urban Tree*	0.4373	Medium	Moderate	1.34
Urban	Extensive green roof	0.5624	Medium	Moderate	2.52
Urban	Introduced shrub	0.1499	Low	Poor	0.29
Urban	Rain garden	0.0727	Low	Moderate	0.26
Urban	Urban Tree**	0.18115	Medium	Moderate	0.55
Urban	Introduced shrub	0.0749	Low	Poor	0.14
Grassland	Modified grassland	0.5065	Low	Poor	0.98
Urban	Urban Tree***	0.16	Medium	Moderate	1.28
				TOTAL	7.86

*Standard trees planted in connected tree pits

**Standard trees planted in tree pits (soil volume less than two thirds the projected volume)

***Existing trees retained

10. IMPROVING RESOURCE EFFICIENCY

Planning Policy	London Plan (2021). Policy D6: Housing Quality and Standards. Policy SI7: Reducing waste and supporting the circular economy. Richmond Local Plan (2018) Policy LP 22 Sustainable Design and Construction. Policy LP 24 Waste Management

10.1 Overview

Waste reduction and recycling is a focus within the London Plan, 2021. The waste hierarchy illustrates the importance of a waste management decisions in the context of their wider impact on the natural environment.

The waste hierarchy (London Plan, 2021, Policy SI7) identifies the following steps:

- Prevention
- Preparing for re-use
- Recycling
- Other recovery
- Disposal.

The Applicant is committed to prioritising steps of the waste hierarchy and implements the following Strategy to ensure a sustainable and environmentally-responsible approach is taken to the management of domestic waste and waste during the construction process. Furthermore, the Applicant is undertaking an embodied carbon assessment (Whole Life-Cycle Carbon) and circular economy statement which aim to address material use, waste generation, and embodied carbon within the proposed design.

In line with London Plan Policy SI 2, a comprehensive Whole Life-Cycle Carbon Assessment (WLC) has been conducted to assess the embodied carbon of the building design. This includes a benchmarking exercise and recommendation for further carbon reductions.

In line with London Plan Policy SI 7, a Circular Economy Statement has been developed which addresses waste arisings and aims to retain the value of materials at their highest value for as long as practicable. This includes commitments to 95% diversion from landfill for all construction, demolition and excavation waste, and a minimum 20% recycled or reused

materials target. As far as practicable, the Applicant will look to maximise the use of recycled content within the Development where feasible. The use of pre-fabricated elements shall be prioritised, as these reduce construction waste, and include the use of precast floors and stairs.

10.2 Domestic Waste

The Applicant will support future occupants in making their own environmentally friendly decisions, by providing internal and external, communal space for recycling facilities.

Furthermore, information will be provided to all new occupants which will highlight the importance of recycling domestic waste, including location and details of the nearest local authority recycling centre.

10.3 Construction Waste

The Applicant will implement guidance on sustainable waste management. As a primary objective, and in accordance with the waste hierarchy, the Applicant will seek to prevent waste in the first instance. This will be achieved through a site waste management plan that begins with the planning and design process and filters down through the management of the construction process and across the lifetime of the Development. The Applicant is committed to evolving new systems and products to help improve the efficiency of the construction process.

The Applicant will deliver the objective of reducing the proportion of waste diverted to landfill. The Applicant will monitor and review this commitment by defining the following:

- Waste minimisation actions to be undertaken
- Procedures for minimising hazardous waste
- Procedures for sorting, reusing, and recycling construction waste into defined waste groups, either on-site or through a licensed external contractor. The delivery of this target will be managed through the effective implementation of an on-site plan that will focus on steps in the waste hierarchy.

These approaches will ensure that waste from the site is minimised, and environmental impact is reduced.

10.4 Sustainable Materials

The impact of materials selection is an important consideration when designing a new development. The energy and natural resources consumed over the course of extraction or procurement, processing and manufacturing can be significant.

The Applicant will implement an environmentally responsible approach to the procurement of construction materials and supply chain management for the Development.

Through the mechanism of a Resource Management Plan, the Applicant will consider the origin of materials chosen in the design and construction of the Development and, wherever possible, will select materials to minimise the local and wider negative impact to the natural environment.

The Development will be designed to incorporate sustainably sourced materials and where possible, these will have:

- Low embodied impact
- High recycled content where possible
- High durability
- A sustainable source with appropriate certification. For example, Forestry Stewardship Council (FSC), Environmental Management Systems (EMS), PEFC, ISO 14001 (International Organisation for Standardisation).

11. CONCLUSION

The Applicant is committed to designing an exemplary, new build regeneration development at Ham Close, Richmond, which will contribute to the sustainable development of the London Borough of Richmond upon Thames.

The measures planned by the Applicant to deliver their commitment to a sustainable development have been summarised within this Sustainability Statement. The key sustainability features outlined within this report are:

Climate Change and Energy: The Applicant is committed to a design approach that aligns with the principles of the energy hierarchy. The Site will achieve a total reduction in regulated CO_2 emissions in exceedance of the Target Emission Rate (TER) Approved Document Part L (AD L) 2013 through fabric-first, demand reduction and low carbon and renewable energy measures and will successfully deliver and significantly exceed the minimum on-site reduction target in regulated CO_2 emissions over AD L 2013 for domestic and non-domestic elements of the Site separately.

Water Usage: All new dwellings included in the application proposals will be designed to meet a maximum water consumption rate of 105 litres per person per day, in line with the latest GLA guidelines. Furthermore, the BREEAM minimum standards in the water section for a minimum 'Excellent' rating will be met, by way of a minimum 40% water use reduction. Assisting in the reduction of water usage and the effectiveness of the installed water systems, the Applicant has included within their proposals and will be installing green and blue roofs wherever possible across the scheme.

Cooling & Heat Generation: The impact of overheating has been investigated, with a focus on passive design solutions. Overheating has been analysed using the Chartered Institute of Building Services Engineers (CIBSE) TM52 and TM59 methodology. The Applicant incorporates the passive and active design measures to address and successfully mitigate for the risk of overheating, including improved building fabric, natural ventilation through fully openable windows, mechanical ventilation with heat recovery (MVHR) in all habitable rooms, and balconies and overhangs which can create shading. The Applicant proposes an all-electric heating solution, utilising heat pump technology to ensure futureproofing of the Development. This shall primarily be delivered via a communal heat network.

Pollution: Air & Noise Quality: An air quality and acoustic assessment has been produced in support of the planning application and, where necessary, appropriate mitigation measures have been incorporated within the Development proposals. Light pollution will be minimised and artificial lights will be positioned in the most suitable locations across the Development and public realm, carefully tailored to the use it supports.

Transport: Investigation into more sustainable travel within the area will be carried out in order for the Development to influence sustainable local travel choices. Furthermore, Delivery, Servicing and Construction Logistics will be investigated and where required, plans for which will be developed to mitigate any impact of vehicle activities during the operational and build stages.

Flooding and Drainage: Full consideration has been given to the Site vulnerability to fluvial and tidal flooding, surface water flooding, groundwater flooding and drainage and infrastructure flooding through a Flood Risk Assessment (FRA). According to the FRA the Site is in Flood Zone 1. The Applicant's drainage strategy will ensure that appropriate measures for the management of surface water run-off and the protection of water quality in the receiving water environment, have been fully considered and incorporated within the Development scheme. Sustainable Urban Drainage Systems (SuDS) are required and will be designed to contain the 1 in 100 (1%) rainfall event with an increase in peak rainfall intensity of 40% to allow for the currently predicted effects of climate change. The SuDS features will be multi-functional and have been blended into the landscape design to maximise amenity and biodiversity value.

Ecology & Biodiversity: Detailed ecological assessments will be completed to inform the Applicant's development proposals. An initial survey and review have been undertaken and has concluded that the site has negligible potential to support all protected/notable species with the exception of low potential for badger, low potential for roosting bats, moderate potential for hedgehog and high potential to support nesting birds.

Incorporating the recommended mitigation measures in tandem with landscaping improvements and a biodiversity net gain, ecology and biodiversity will not pose a constraint to the redevelopment of the site.

Improving Resource Efficiency: The Applicant is committed to prioritising steps of the waste hierarchy by implementing a strategy for: prevention; preparing for re-use; recycling; other

recovery; and disposal. A sustainable and environmentally-responsible approach will be taken to the management of domestic waste and waste during the design and construction process of the Development. In support of this, the Applicant has completed workshops to facilitate a circular economy, and undertaken a Whole Life-Cycle Carbon assessment.

The potential environmental effects of the proposal have been considered through a series of studies which, in combination, will contribute to the overall long-term sustainability of the Development.

Steps will be taken by the Applicant to ensure that sustainable construction practices are considered in the early stages to manage the construction process in an environmentally, socially responsible, and accountable manner.

To this end, specialist consultant reports have been completed and supplement the Sustainability Statement by considering, in greater depth, the following issues for a sustainable development: Energy, Overheating, Flood Risk and Sustainable Drainage, Air Quality, Acoustics and Ecology. Individual reports may be referred to in support of the planning application for Ham Close regeneration.

12. APPENDICES

APPENDIX 1: LIST OF ABBREVIATIONS

AD L 2013	Approved Document Part L of Buildings Regulations 2013
ASHP	Air Source Heat Pump
BMS	Building Management Systems
DHW	Domestic Hot Water
LPA	Local Planning Authority
PV	Photovoltaics
SAP	Standard Assessment Procedure.
AQMA	Air Quality Management Area
BRE	Building Research Establishment
FSC	Forest Stewardship Council
FRA	Flood Risk Assessment
LPA	Local Planning Authority
LZC	Low and Zero Carbon
PEA	Preliminary Ecology Assessment
PEFC	Programme for the Endorsement of Forest Certification
VFR	Variable Refrigerant Flow

APPENDIX 2. PLANNING POLICY AND DESIGN GUIDANCE

The Climate Change Act (2008)

Passed in November 2008, the Climate Change Act mandated that the UK would reduce emissions of six keys greenhouse gases, including Carbon Dioxide, by 80% by 2050.

As a consequence, the reduction of carbon dioxide emissions is at the forefront of National, Regional and Local Planning Policy, along with continuing step changes in performance introduced by the Building Regulations Approved Document L (2013).

Approved Document L (2013)

This development is subject to the requirements of Approved Document L (2013). AD L 2013 represented an approximate reduction of 6% in the Target Emission Rate (kilograms CO_2/m2/year) over the requirements of Approved Document L (2010) for residential development and an aggregate 9% reduction for non-residential development. AD L (2013) also sees the introduction of a Fabric Energy Efficiency Target, a measure of heating demand (kWhrs/M2/Year) to ensure new build dwellings with low carbon heating systems, still meet satisfactory energy efficiency standards.

National Planning Policy (2021)

The National Planning Policy Framework encourages Local Planning Authorities to 'support the transition to a low carbon future in a changing climate, taking full account of flood risk and costal change' (NPPF paragraph 152), 'whilst taking a proactive approach to mitigating and adapting to client change, taking into account the long-term implication for flood risk, costal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures'. (NPFF Paragraph 153).

Paragraph 155, upholds the requirement for Local Plans to: 'To help increase the use and supply of renewable and low carbon energy and heat, plans should: a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts); b) consider identifying suitable areas of renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for collocating potential heat customers and suppliers.'

In paragraph 157, NPPF stipulates that local planning authorities should take account of the benefits of decentralised energy and passive design measures as a means of energy efficiency in new development: 'In determining planning applications, local planning authorities should expect new development to: a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the Applicant, having regard to the type of development involved and its

design, that this is not feasible or viable; and b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.'

The London Plan (2021)

Policy D6 Housing quality and standards

A Housing development should be of high quality design and provide adequately-sized rooms (see Table 3.1) with comfortable and functional layouts which are fit for purpose and meet the needs of Londoners without differentiating between tenures.

B Qualitative aspects of a development are key to ensuring successful sustainable housing. Table 3.2 sets out key qualitative aspects which should be addressed in the design of housing developments.

C Housing development should maximise the provision of dual aspect dwellings and normally avoid the provision of single aspect dwellings. A single aspect dwelling should only be provided where it is considered a more appropriate design solution to meet the requirements of Part B in Policy D3 Optimising site capacity through the design-led approach than a dual aspect dwelling, and it can be demonstrated that it will have adequate passive ventilation, daylight and privacy, and avoid overheating.

D The design of development should provide sufficient daylight and sunlight to new and surrounding housing that is appropriate for its context, whilst avoiding overheating, minimising overshadowing and maximising the usability of outside amenity space.

E Housing should be designed with adequate and easily accessible storage space that supports the separate collection of dry recyclables (for at least card, paper, mixed plastics, metals, glass) and food waste as well as residual waste.

F Housing developments are required to meet the minimum standards below which apply to all tenures and all residential accommodation that is self-contained.

Private internal space

1) Dwellings must provide at least the gross internal floor area and built-in storage area set out in Table 3.1.
2) A dwelling with two or more bedspaces must have at least one double (or twin) bedroom that is at least 2.75m wide. Every other additional double (or twin) bedroom must be at least 2.55m wide.

3) A one bedspace single bedroom must have a floor area of at least 7.5 sq.m. and be at least 2.15m wide.

4) A two bedspace double (or twin) bedroom must have a floor area of at least 11.5 sq.m..

5) Any area with a headroom of less than 1.5m is not counted within the Gross Internal Area unless used solely for storage (If the area under the stairs is to be used for storage, assume a general floor area of 1 sq.m. within the Gross Internal Area).

6) Any other area that is used solely for storage and has a headroom of 0.9-1.5m (such as under eaves) can only be counted up to 50 per cent of its floor area, and any area lower than 0.9m is not counted at all.

7) A built-in wardrobe counts towards the Gross Internal Area and bedroom floor area requirements, but should not reduce the effective width of the room below the minimum widths set out above. Any built-in area in excess of 0.72 sq.m. in a double bedroom and 0.36 sq.m. in a single bedroom counts towards the built-in storage requirement.

8) The minimum floor to ceiling height must be 2.5m for at least 75 per cent of the Gross Internal Area of each dwelling.

Private outside space

9) Where there are no higher local standards in the borough Development Plan Documents, a minimum of 5 sq.m. of private outdoor space should be provided for 1-2 person dwellings and an extra 1 sq.m. should be provided for each additional occupant, and it must achieve a minimum depth and width of 1.5m. This does not count towards the minimum Gross Internal Area space standards required in Table 3.1

G The Mayor will produce guidance on the implementation of this policy for all housing tenures.

Policy D14 Noise

A In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:

1) avoiding significant adverse noise impacts on health and quality of life

2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change

3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses

4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)

5) separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation

6) where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles

7) promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

B Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations.

Policy G1 Green infrastructure

A London's network of green and open spaces, and green features in the built environment should be protected and enhanced. Green infrastructure should be planned, designed and managed in an integrated way to achieve multiple benefits.

B Boroughs should prepare green infrastructure strategies that identify opportunities for cross-borough collaboration, ensure green infrastructure is optimised and consider green infrastructure in an integrated way as part of a network consistent with Part A.

C Development Plans and area-based strategies should use evidence, including green infrastructure strategies, to:

1) identify key green infrastructure assets, their function and their potential function

2) identify opportunities for addressing environmental and social challenges through strategic green infrastructure interventions.

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

Policy G5 Urban greening

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

B Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in Table 8.2, but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses).

C Existing green cover retained on site should count towards developments meeting the interim target scores set out in (B) based on the factors set out in Table 8.2.

Policy G6 Biodiversity and access to nature

A Sites of Importance for Nature Conservation (SINCs) should be protected.

B Boroughs, in developing Development Plans, should:

1) use up-to-date information about the natural environment and the relevant procedures to identify SINCs and ecological corridors to identify coherent ecological networks

2) identify areas of deficiency in access to nature (i.e. areas that are more than 1km walking distance from an accessible Metropolitan or Borough SINC) and seek opportunities to address them

3) support the protection and conservation of priority species and habitats that sit outside the SINC network, and promote opportunities for enhancing them using Biodiversity Action Plans

4) seek opportunities to create other habitats, or features such as artificial nest sites, that are of particular relevance and benefit in an urban context

5) ensure designated sites of European or national nature conservation importance are clearly identified and impacts assessed in accordance with legislative requirements.

C Where harm to a SINC is unavoidable, and where the benefits of the development proposal clearly outweigh the impacts on biodiversity, the following mitigation hierarchy should be applied to minimise development impacts:

1) avoid damaging the significant ecological features of the site

2) minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site

3) deliver off-site compensation of better biodiversity value.

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

E Proposals which reduce deficiencies in access to nature should be considered positively.

Policy G7 Trees and woodlands

A London's urban forest and woodlands should be protected and maintained, and new trees and woodlands should be planted in appropriate locations in order to increase the extent of London's urban forest – the area of London under the canopy of trees.

B In their Development Plans, boroughs should:

1) protect 'veteran' trees and ancient woodland where these are not already part of a protected site[139]

2) identify opportunities for tree planting in strategic locations.

C Development proposals should ensure that, wherever possible, existing trees of value are retained.[140] If planning permission is granted that necessitates the removal of trees there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT or another appropriate valuation system. The planting of additional trees should generally be included in new developments – particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy.

Policy G9 Geodiversity

A In Development Plans, boroughs should:

1) establish clear goals for the management of identified sites to promote public access, appreciation and interpretation of geodiversity

2) ensure geological sites of European, national or regional conservation importance are clearly identified.

B Development proposals should:

1) make a positive contribution to the protection and enhancement of geodiversity

2) protect Regionally Important Geological Sites (RIGS)

3) give Locally Important Geological Sites (LIGS) the level of protection commensurate with their importance.

Policy SI 1 Improving air quality

A Development Plans, through relevant strategic, site-specific and area-based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.

B To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:

1) Development proposals should not:
   a) lead to further deterioration of existing poor air quality
   b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits
   c) create unacceptable risk of high levels of exposure to poor air quality.
2) In order to meet the requirements in Part 1, as a minimum:
   a) development proposals must be at least Air Quality Neutral
   b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures
   c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1
   d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.

C Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:

1) how proposals have considered ways to maximise benefits to local air quality, and
2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.

D In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.[147]

E Development proposals should ensure that 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.

Policy SI 2 Minimising greenhouse gas emissions

A Major development should be net zero-carbon.[151] This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

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.

B Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy.

C A minimum on-site reduction of at least 35 per cent beyond Building Regulations[152] is required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:

1) through a cash in lieu contribution to the borough's carbon offset fund, or
2) off-site provided that an alternative proposal is identified and delivery is certain.

D Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver carbon reductions. The operation of offset funds should be monitored and reported on annually.

E Major development proposals should calculate and minimise carbon emissions from any other part of the development, including plant or equipment, that are not covered by Building Regulations, i.e. unregulated emissions.

F 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.

Policy SI 3 Energy infrastructure

A Boroughs and developers should engage at an early stage with relevant energy companies and bodies to establish the future energy and infrastructure requirements arising from large-scale development proposals such as Opportunity Areas, Town Centres, other growth areas or clusters of significant new development.

B Energy masterplans should be developed for large-scale development locations (such as those outlined in Part A and other opportunities) which establish the most effective energy supply options. Energy masterplans should identify:

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

C Development Plans should:

1) identify the need for, and suitable sites for, any necessary energy infrastructure requirements including energy centres, energy storage and upgrades to existing infrastructure
2) identify existing heating and cooling networks, identify proposed locations for future heating and cooling networks and identify opportunities for expanding and inter-connecting existing networks as well as establishing new networks.

D Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system:

1) the heat source for the communal heating system should be selected in accordance with the following heating hierarchy:
   a) connect to local existing or planned heat networks
   b) use zero-emission or local secondary heat sources (in conjunction with heat pump, if required)
   c) use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network)
   d) use ultra-low NOx gas boilers
2) CHP and ultra-low NOx gas boiler communal or district heating systems should be designed to ensure that they meet the requirements in Part B of Policy SI 1 Improving air quality
3) where a heat network is planned but not yet in existence the development should be designed to allow for the cost-effective connection at a later date.

E Heat networks should achieve good practice design and specification standards for primary, secondary and tertiary systems comparable to those set out in the CIBSE/ADE Code of Practice CP1 or equivalent.

Policy SI 4 Managing heat risk

A Development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.

B Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

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

Policy SI 5 Water infrastructure

A In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner.

B Development Plans should promote improvements to water supply infrastructure to contribute to security of supply. This should be done in a timely, efficient and sustainable manner taking energy consumption into account.

C Development proposals should:

1) through the use of Planning Conditions minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)
2) achieve at least the BREEAM excellent standard for the 'Wat 01' water category[160] or equivalent (commercial development)
3) incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future-proofing.

D In terms of water quality, Development Plans should:

1) promote the protection and improvement of the water environment in line with the Thames River Basin Management Plan, and should take account of Catchment Plans
2) support wastewater treatment infrastructure investment to accommodate London's growth and climate change impacts. Such infrastructure should be constructed in a timely and sustainable manner taking account of new, smart technologies, intensification opportunities on existing sites, and energy implications. Boroughs should work with Thames Water in relation to local wastewater infrastructure requirements.

E Development proposals should:

1) seek to improve the water environment and ensure that adequate wastewater infrastructure capacity is provided

2) take action to minimise the potential for misconnections between foul and surface water networks.

F Development Plans and proposals for strategically or locally defined growth locations with particular flood risk constraints or where there is insufficient water infrastructure capacity should be informed by Integrated Water Management Strategies at an early stage.

Policy SI 7 Reducing waste and supporting the circular economy

A Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:

1) promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible
2) encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products
3) ensure that there is zero biodegradable or recyclable waste to landfill by 2026
4) meet or exceed the municipal waste recycling target of 65 per cent by 2030[163]
5) meet or exceed the targets for each of the following waste and material streams:
   a) construction and demolition – 95 per cent reuse/recycling/recovery
   b) excavation – 95 per cent beneficial use[164]
6) design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

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

1) how all materials arising from demolition and remediation works will be re-used and/or recycled
2) how the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life
3) opportunities for managing as much waste as possible on site
4) adequate and easily accessible storage space and collection systems to support recycling and re-use
5) how much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy
6) how performance will be monitored and reported.

C Development Plans that apply circular economy principles and set local lower thresholds for the application of Circular Economy Statements for development proposals are supported.

Policy SI 12 Flood risk management

A Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.

B Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.

C Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.

D Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.

E Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

F Development proposals adjacent to flood defences will be required to protect the integrity of flood defences and allow access for future maintenance and upgrading. Unless exceptional circumstances are demonstrated for not doing so, development proposals should be set back from flood defences to allow for any foreseeable future maintenance and upgrades in a sustainable and cost-effective way.

G Natural flood management methods should be employed in development proposals due to their multiple benefits including increasing flood storage and creating recreational areas and habitat.

Policy SI 13 Sustainable drainage

A Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.

B Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:

1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
2) rainwater infiltration to ground at or close to source
3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
4) rainwater discharge direct to a watercourse (unless not appropriate)
5) controlled rainwater discharge to a surface water sewer or drain
6) controlled rainwater discharge to a combined sewer.

C Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.

D Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

Policy T1 Strategic approach to transport

A Development Plans should support, and development proposals should facilitate:

1) the delivery of the Mayor's strategic target of 80 per cent of all trips in London to be made by foot, cycle or public transport by 2041
2) the proposed transport schemes set out in Table 10.1.

B All development should make the most effective use of land, reflecting its connectivity and accessibility by existing and future public transport, walking and cycling routes, and ensure that any impacts on London's transport networks and supporting infrastructure are mitigated.

Policy T2 Healthy Streets

A Development proposals and Development Plans should deliver patterns of land use that facilitate residents making shorter, regular trips by walking or cycling.

B Development Plans should:

1) promote and demonstrate the application of the Mayor's Healthy Streets Approach to: improve health and reduce health inequalities; reduce car dominance, ownership and use, road danger, severance, vehicle emissions and noise; increase walking, cycling and public transport use; improve street safety, comfort, convenience and amenity; and support these outcomes through sensitively designed freight facilities.

2) identify opportunities to improve the balance of space given to people to dwell, walk, cycle, and travel on public transport and in essential vehicles, so space is used more efficiently and streets are greener and more pleasant.

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

D Development proposals should:

1) demonstrate how they will deliver improvements that support the ten Healthy Streets Indicators in line with Transport for London guidance

2) reduce the dominance of vehicles on London's streets whether stationary or moving

3) be permeable by foot and cycle and connect to local walking and cycling networks as well as public transport.

Policy T3 Transport capacity, connectivity and safeguarding

A Development Plans should develop effective transport policies and projects to support the sustainable development of London and the Wider South East as well as to support better national and international public transport connections.

B Development Plans and development decisions should ensure the provision of sufficient and suitably-located land for the development of the current and expanded public and active transport system to serve London's needs, including by:

1) safeguarding existing land and buildings used for public transport, active travel or related support functions (unless alternative facilities are provided to the satisfaction of relevant strategic transport authorities and service providers that enable existing transport operations to be maintained and expanded if necessary)
2) identifying and safeguarding new sites/space and route alignments, as well as supporting infrastructure, to provide necessary strategic and local connectivity and capacity by public transport, walking and cycling, as well as to allow for sustainable deliveries and servicing
3) safeguarding London's walking and cycling networks

C Development Plans should appropriately safeguard the schemes outlined in Table 10.1. Development proposals should provide adequate protection for and/or suitable mitigation to allow the relevant schemes outlined in Table 10.1 to come forward. Those that do not, or which otherwise seek to remove vital transport functions or prevent necessary expansion of these, without suitable alternative provision being made to the satisfaction of transport authorities and service providers, should be refused.

D In Development Plans and development decisions, particular priority should be given to securing and supporting the delivery of upgrades to Underground lines, Crossrail 2, the Bakerloo line extension, river crossings and an eastwards extension of the Elizabeth line.

E Development proposals should support capacity, connectivity and other improvements to the bus network and ensure it can operate efficiently to, from and within developments, giving priority to buses and supporting infrastructure as needed.

Policy T4 Assessing and mitigating transport impacts

A Development Plans and development proposals should reflect and be integrated with current and planned transport access, capacity and connectivity.

B When required in accordance with national or local guidance,[179] transport assessments/statements should be submitted with development proposals to ensure that impacts on the capacity of the transport network (including impacts on pedestrians and the cycle network), at the local, network-wide and strategic level, are fully assessed. Transport assessments should focus on embedding the Healthy Streets Approach within, and in the vicinity of, new development. Travel Plans, Parking Design and Management Plans, Construction Logistics Plans and Delivery and Servicing Plans will be required having regard to Transport for London guidance.[180]

C Where appropriate, mitigation, either through direct provision of public transport, walking and cycling facilities and highways improvements or through financial contributions, will be required to address adverse transport impacts that are identified.

D Where the ability to absorb increased travel demand through active travel modes has been exhausted, existing public transport capacity is insufficient to allow for the travel generated by proposed developments, and no firm plans and funding exist for an increase in capacity to cater for the increased demand, planning permission will be contingent on the provision of necessary public transport and active travel infrastructure.

E The cumulative impacts of development on public transport and the road network capacity including walking and cycling, as well as associated effects on public health, should be taken into account and mitigated.

F Development proposals should not increase road danger.

Policy T5 Cycling

A Development Plans and development proposals should help remove barriers to cycling and create a healthy environment in which people choose to cycle. This will be achieved through:

1) supporting the delivery of a London-wide network of cycle routes, with new routes and improved infrastructure
2) securing the provision of appropriate levels of cycle parking which should be fit for purpose, secure and well-located. Developments should provide cycle parking at least in accordance with the minimum standards set out in Table 10.2 and Figure 10.3, ensuring that a minimum of two short-stay and two long-stay cycle parking spaces are provided where the application of the minimum standards would result in a lower provision.

B Cycle parking should be designed and laid out in accordance with the guidance contained in the London Cycling Design Standards.[182] Development proposals should demonstrate how cycle parking facilities will cater for larger cycles, including adapted cycles for disabled people.

C Development Plans requiring more generous provision of cycle parking based on local evidence will be supported.

D Where it is not possible to provide suitable short-stay cycle parking off the public highway, the borough should work with stakeholders to identify an appropriate on-street location for the required provision. This may mean the reallocation of space from other uses such as on-street car parking. Alternatively, in town centres, adding the required provision to general town centre cycle parking is also acceptable. In such cases, a commuted sum should be paid to the local authority to secure provision.

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

F Where the use class of a development is not fixed at the point of application, the highest potential applicable cycle parking standard should be applied.

Policy T6 Car parking

A Car parking should be restricted in line with levels of existing and future public transport accessibility and connectivity.

B Car-free development should be the starting point for all development proposals in places that are (or are planned to be) well-connected by public transport, with developments elsewhere designed to provide the minimum necessary parking ('car-lite'). Car-free development has no general parking but should still provide disabled persons parking in line with Part E of this policy.

C An absence of local on-street parking controls should not be a barrier to new development, and boroughs should look to implement these controls wherever necessary to allow existing residents to maintain safe and efficient use of their streets.

D The maximum car parking standards set out in Policy T6 .1 Residential parking to Policy T6 .5 Non-residential disabled persons parking should be applied to development proposals and used to set local standards within Development Plans.

E Appropriate disabled persons parking for Blue Badge holders should be provided as set out in Policy T6 .1 Residential parking to Policy T6 .5 Non-residential disabled persons parking.

F Where provided, each motorcycle parking space should count towards the maximum for car parking spaces at all use classes.

G Where car parking is provided in new developments, provision should be made for infrastructure for electric or other Ultra-Low Emission vehicles in line with Policy T6 .1 Residential parking, Policy T6 .2 Office Parking, Policy T6 .3 Retail parking, and Policy T6 .4 Hotel and leisure uses parking.

All operational parking should make this provision, including offering rapid charging. New or re-provided petrol filling stations should provide rapid charging hubs and/or hydrogen refuelling facilities.

H Where electric vehicle charging points are provided on-street, physical infrastructure should not negatively affect pedestrian amenity and should ideally be located off the footway. Where charging points are located on the footway, it must remain accessible to all those using it including disabled people.

I Adequate provision should be made for efficient deliveries and servicing and emergency access.

J A Parking Design and Management Plan should be submitted alongside all applications which include car parking provision, indicating how the car parking will be designed and managed, with reference to Transport for London guidance on parking management and parking design.

K Boroughs that have adopted or wish to adopt more restrictive general or operational parking policies are supported, including borough-wide or other area-based car-free policies. Outer London boroughs wishing to adopt minimum residential parking standards through a Development Plan Document (within the maximum standards set out in Policy T6 .1 Residential parking) must only do so for parts of London that are PTAL 0-1. Inner London boroughs should not adopt minimum standards. Minimum standards are not appropriate for non-residential use classes in any part of London.

L Where sites are redeveloped, parking provision should reflect the current approach and not be re-provided at previous levels where this exceeds the standards set out in this policy. Some flexibility may be applied where retail sites are redeveloped outside of town centres in areas which are not well served by public transport, particularly in outer London.

London Borough of Richmond upon Thames Adopted Local Plan (2018)

Policy LP 10

Local Environmental Impacts, Pollution and Land Contamination

A. The Council will seek to ensure that local environmental impacts of all development proposals do not lead to detrimental effects on the health, safety and the amenity of existing and new users or occupiers of the development site, or the surrounding land. These potential impacts can include, but are not limited to, air pollution, noise and vibration, light pollution, odours and fumes, solar glare and solar dazzle as well as land contamination.

Developers should follow any guidance provided by the Council on local environmental impacts and pollution as well as on noise generating and noise sensitive development. Where necessary, the Council will set planning conditions to reduce local environmental impacts on adjacent land uses to acceptable levels.

Air Quality

B. The Council promotes good air quality design and new technologies. Developers should secure at least 'Emissions Neutral' development. To consider the impact of introducing new developments in areas already subject to poor air quality, the following will be required:

1. an air quality impact assessment, including where necessary, modelled data;
2. mitigation measures to reduce the development's impact upon air quality, including the type of equipment installed, thermal insulation and ducting abatement technology;
3. measures to protect the occupiers of new developments from existing sources;
4. strict mitigation for developments to be used by sensitive receptors such as schools, hospitals and care homes in areas of existing poor air quality; this also applies to proposals close to developments used by sensitive receptors.

Noise and Vibration

C. The Council encourages good acoustic design to ensure occupiers of new and existing noise sensitive buildings are protected. The following will be required, where necessary:

1. a noise assessment of any new plant and equipment and its impact upon both receptors and the general background noise levels;
2. mitigation measures where noise needs to be controlled and managed;
3. time limits and restrictions for activities where noise cannot be sufficiently mitigated;
4. promotion of good acoustic design and use of new technologies;
5. measures to protect the occupiers of new developments from existing sources.

Light Pollution

D. The Council will seek to ensure that artificial lighting in new developments does not lead to unacceptable impacts by requiring the following, where necessary:

1. an assessment of any new lighting and its impact upon any receptors;
2. mitigation measures, including the type and positioning of light sources;
3. promotion of good lighting design and use of new technologies.

Policy LP 12

Green Infrastructure

Green infrastructure is a network of multi-functional green spaces and green features, which provides multiple benefits for people, nature and the economy.

A. To ensure all development proposals protect, and where opportunities arise enhance, green infrastructure, the following will be taken into account when assessing development proposals:

a. the need to protect the integrity of the green spaces and features that are part of the wider green infrastructure network; improvements and enhancements to the green infrastructure network are supported;

b. its contribution to the wider green infrastructure network by delivering landscape enhancement, restoration or re-creation;

c. incorporating green infrastructure features, which make a positive contribution to the wider green infrastructure network.

B. The hierarchy of open spaces, as set out in the table below, will be protected and used in accordance with the functions shown.

Public Open Space Hierarchy:

Type and size	Main function
Regional Parks (400 ha+)	Large areas, corridors or networks of open space, the majority of which will be publicly accessible and provide a range of facilities and features offering recreational, ecological, landscape, cultural or green infrastructure benefits. Offer a combination of facilities and features that are unique within London, are readily accessible by public transport and are managed to meet best practice quality standards.
Metropolitan parks (60 – 400 ha)	Large areas of open space that provide a similar range of benefits to Regional Parks and offer a combination of facilities at a sub-regional level, are readily accessible by public transport and are managed to meet best practice quality standards.
District parks (20 – 60 ha)	Large areas of open space that provide a landscape setting with a variety of natural features providing a wide range of activities, including outdoor sports facilities and playing fields, children's play for different age groups and informal recreation pursuits as well as visual amenity.
Local parks (2 – 20 ha)	Providing for court games, children's play, sitting out areas, visual amenity and nature conservation areas.
Small local parks and open spaces (less than 2 ha)	Gardens, sitting out areas, children's play spaces or other areas of a specialist nature, including nature conservation areas as well as visual amenity.
Pocket Parks (under 0.4 ha)	Small areas of open space that provide natural surfaces and shaded areas for informal play and passive recreation that sometimes have seating and play equipment as well as visual amenity.
Linear open spaces (variable)	Open spaces and towpaths alongside the Thames and other waterways; paths, disused railways; nature conservation areas; and other routes that provide opportunities for informal recreation. Often characterised by features or attractive areas which are not fully accessible to the public but contribute to the enjoyment of the space and visual amenity.

Policy LP 15

Biodiversity

A. The Council will protect and enhance the borough's biodiversity, in particular, but not exclusively, the sites designated for their biodiversity and nature conservation value, including the connectivity between habitats. Weighted priority in terms of their importance will be afforded to protected species and priority species and habitats including National Nature Reserves, Sites of Special Scientific Interest (SSSI) and Other Sites of Nature Importance as set out in the Biodiversity Strategy for England, and the London and Richmond upon Thames Biodiversity Action Plans. This will be achieved by:

1. protecting biodiversity in, and adjacent to, the borough's designated sites for biodiversity and nature conservation importance (including buffer zones), as well as other existing habitats and features of biodiversity value;
2. supporting enhancements to biodiversity;
3. incorporating and creating new habitats or biodiversity features, including trees, into development sites and into the design of buildings themselves where appropriate; major developments are required to deliver net gain for biodiversity, through incorporation of ecological enhancements, wherever possible;
4. ensuring new biodiversity features or habitats connect to the wider ecological and green infrastructure networks and complement surrounding habitats;
5. enhancing wildlife corridors for the movement of species, including river corridors, where opportunities arise; and
6. maximising the provision of soft landscaping, including trees, shrubs and other vegetation that support the borough-wide Biodiversity Action Plan.

B. Where development would impact on species or a habitat, especially where identified in the relevant Biodiversity Action Plan at London or local level, or the Biodiversity Strategy for England, the potential harm should:

1. firstly be avoided (the applicant has to demonstrate that there is no alternative site with less harmful impacts),
2. secondly be adequately mitigated; or
3. as a last resort, appropriately compensated for.

Policy LP 16

Trees, Woodlands and Landscape

A. The Council will require the protection of existing trees and the provision of new trees, shrubs and other vegetation of landscape significance that complement existing, or create new, high quality green areas, which deliver amenity and biodiversity benefits.

B. To ensure development protects, respects, contributes to and enhances trees and landscapes, the Council, when assessing development proposals, will:

Trees and Woodlands

1. resist the loss of trees, including aged or veteran trees, unless the tree is dead, dying or dangerous; or the tree is causing significant damage to adjacent structures; or the tree has little or no amenity value; or felling is for reasons of good arboricultural practice; resist development that would result in the loss or deterioration of irreplaceable habitat such as ancient woodland;
2. resist development which results in the damage or loss of trees that are considered to be of townscape or amenity value; the Council will require that site design or layout ensures a harmonious relationship between trees and their surroundings and will resist development which will be likely to result in pressure to significantly prune or remove trees;
3. require, where practicable, an appropriate replacement for any tree that is felled; a financial contribution to the provision for an off-site tree in line with the monetary value of the existing tree to be felled will be required in line with the 'Capital Asset Value for Amenity Trees' (CAVAT);
4. require new trees to be of a suitable species for the location in terms of height and root spread, taking account of space required for trees to mature; the use of native species is encouraged where appropriate;
5. require that trees are adequately protected throughout the course of development, in accordance with British Standard 5837 (Trees in relation to design, demolition and construction – Recommendations).

The Council may serve Tree Preservation Orders or attach planning conditions to protect trees considered to be of value to the townscape and amenity and which are threatened by development.

Landscape

1. require the retention of important existing landscape features where practicable;
2. require landscape design and materials to be of high quality and compatible with the surrounding landscape and character; and
3. encourage planting, including new trees, shrubs and other significant vegetation where appropriate.

Policy LP 17

Green roofs and walls

Green roofs and/or brown roofs should be incorporated into new major developments with roof plate areas of 100sqm or more where technically feasible and subject to considerations of visual impact. The aim should be to use at least 70% of any potential roof plate area as a green / brown roof.

The onus is on an applicant to provide evidence and justification if a green roof cannot be incorporated. The Council will expect a green wall to be incorporated, where appropriate, if it has been demonstrated that a green / brown roof is not feasible.

The use of green / brown roofs and green walls is encouraged and supported in smaller developments, renovations, conversions and extensions.

Policy LP 20

Climate Change Adaption

A. The Council will promote and encourage development to be fully resilient to the future impacts of climate change in order to minimise vulnerability of people and property.

B. New development, in their layout, design, construction, materials, landscaping and operation, should minimise the effects of overheating as well as minimise energy consumption 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 shading, reducing solar reflectance, 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).

C. Opportunities to adapt existing buildings, places and spaces to the likely effects of climate change should be maximised and will be supported.

Policy LP 21

Flood Risk and Sustainable Drainage

A. All developments should avoid, or minimise, contributing to all sources of flooding, including fluvial, tidal, surface water, groundwater and flooding from sewers, taking account of climate change and without increasing flood risk elsewhere. Development will be guided to areas of lower risk by applying the 'Sequential Test' as set out in national policy guidance, and where necessary, the 'Exception Test' will be applied. Unacceptable developments and land uses will be refused in line with national policy and guidance, the Council's Strategic Flood Risk Assessment (SFRA) and as outlined in the table below.

In Flood Zones 2 and 3, all proposals on sites of 10 dwellings or more or 1000sqm of non-residential development or more, or on any other proposal where safe access/egress cannot be achieved, a Flood Emergency Plan must be submitted.

Where a Flood Risk Assessment is required, on-site attenuation to alleviate fluvial and/or surface water flooding over and above the Environment Agency's floodplain compensation is required where feasible.

	Land uses and developments – restrictions	Sequential Test	Exception Test	Flood Risk Assessment
Zone 3b	The functional floodplain as identified in the Council's Strategic Flood Risk Assessment will be protected by not permitting any form of development on undeveloped sites unless it: • is for Water Compatible development; • is for essential utility infrastructure which has to be located in a flood risk area and no alternative locations are available and it can be demonstrated that the development would be safe, without increasing flood risk elsewhere and where possible would reduce flood risk overall. Redevelopment of existing developed sites will only be supported if there is no intensification of the land use and a net flood risk reduction is proposed; any restoration of the functional floodplain will be supported. Proposals for the change of use or conversion to a use with a higher vulnerability classification will not be permitted.	Required for essential utility infrastructure	Required for essential utility infrastructure	Required for all development proposals
Zone 3a	Land uses are restricted to Water Compatible, Less Vulnerable and More Vulnerable development. Highly Vulnerable developments will not be permitted. Self-contained residential basements and bedrooms at basement level will not be permitted.	Required for all developments unless exceptions outlined in the justification apply	Required for more vulnerable development	Required for all development proposals
Zone 2	No land use restrictions Self-contained residential basements and bedrooms at basement level will not be permitted.	Required for all developments unless exceptions outlined in the justification apply	Required for highly vulnerable development	Required for all development proposals unless for change of use from water compatible to less vulnerable
Zone 1	No land use restrictions	Not applicable	Not applicable	A Drainage Statement is required for sites all major developments. Required for all other development proposals where there is evidence of a risk from other sources of flooding, including surface water, ground water and sewer flooding.

Policy LP 22

Sustainable Design and Construction

A. Developments will be required to achieve the highest standards of sustainable design and construction to mitigate the likely effects of climate change. Applicants will be required to complete the following:

1. Development of 1 dwelling unit or more, or 100sqm or more of non-residential floor space (including extensions) will be required to complete the Sustainable Construction Checklist SPD. A completed Checklist has to be submitted as part of the planning application.
2. Development that results in a new residential dwelling, including conversions, change of use, and extensions that result in a new dwelling unit, will be required to incorporate water conservation measures to achieve maximum water consumption of 110 litres per person per day for homes (including an allowance of 5 litres or less per person per day for external water consumption).
3. New non-residential buildings over 100sqm will be required to meet BREEAM 'Excellent' standard.
4. Proposals for change of use to residential will be required to meet BREEAM Domestic Refurbishment 'Excellent' standard (where feasible).

Reducing Carbon Dioxide Emissions

B. Developers are required to incorporate measures to improve energy conservation and efficiency as well as contributions to renewable and low carbon energy generation. Proposed developments are required to meet the following minimum reductions in carbon dioxide emissions:

1. All new major residential developments (10 units or more) should achieve zero carbon standards in line with London Plan policy.
2. All other new residential buildings should achieve a 35% reduction.
3. All non-residential buildings over 100sqm should achieve a 35% reduction. From 2019 all major non-residential buildings should achieve zero carbon standards in line with London Plan policy.

Targets are expressed as a percentage improvement over the target emission rate (TER) based on Part L of the 2013 Building Regulations.

C. This should be achieved by following the Energy Hierarchy:

1. Be lean: use less energy
2. Be clean: supply energy efficiently
3. Be green: use renewable energy

Decentralised Energy Networks

D. The Council requires developments to contribute towards the Mayor of London target of 25% of heat and power to be generated through localised decentralised energy (DE) systems by 2025. The following will be required:

1. All new development will be required to connect to existing DE networks where feasible. This also applies where a DE network is planned and expected to be operational within 5 years of the development being completed.
2. Development proposals of 50 units or more, or new non-residential development of 1000sqm or more, will need to provide an assessment of the provision of on-site decentralised energy (DE) networks and combined heat and power (CHP).

Policy LP 23

Water Resources and Infrastructure

A. The borough's water resources and supplies will be protected by resisting development proposals that would pose an unacceptable threat to the borough's rivers, surface water and groundwater quantity and quality. This includes pollution caused by water run-off from developments into nearby waterways.

Water Quality

B. The Council encourages proposals that seek to increase water availability or protect and improve the quality of rivers or groundwater.

The development or expansion of water supply or waste water facilities will normally be permitted, either where needed to serve existing or proposed new development, or in the interests of long term water supply and waste water management, provided that the need for such facilities outweighs any adverse land use or environmental impact.

Where rivers have been classified by the Environment Agency as having 'poor' status, any development affecting such rivers is encouraged to improve the water quality in these areas.

Water and sewerage provision

C. New major residential or major non-residential development will need to ensure that there is adequate water supply, surface water, foul drainage and sewerage treatment capacity to serve the development.

Planning permission will only be granted for developments which increase the demand for off-site service infrastructure where:

1. sufficient capacity already exists, or
2. extra capacity can be provided in time to serve the development, which will ensure that the environment and the amenities of local residents are not adversely affected.

Applicants for major developments will be required to provide evidence in the form of written confirmation as part of the planning application that capacity exists in the public sewerage and water supply network to serve their development.

Any new water supply, sewerage or waste water treatment infrastructure must be in place prior to occupation of the development. Financial contributions may be required for new developments towards the provision of, or improvements to, such infrastructure.

Policy LP 24

Waste Management

The Council will ensure that waste is managed in accordance with the waste hierarchy, which is to reduce, reuse or recycle waste as close as possible to where it is produced. The Council will require the following:

1. All developments, including conversions and changes of use are required to provide adequate refuse and recycling storage space and facilities, which allows for ease of collection and which residents and occupiers can easily access, in line with the guidance and advice set out in the Council's SPD on Refuse and Recycling Storage Requirements.
2. All developments need to ensure that the management of waste, including the location and design of refuse and recycling facilities, is sensitively integrated within the overall design of the scheme, in accordance with policies on Local Character and Design.
3. Development proposals, where appropriate, should make use of the rail and the waterway network for the transportation of construction, demolition and other waste. Development proposals in close proximity to the river should utilise the river for the transport of construction materials and waste where practicable.
4. All major developments, and where appropriate developments that are likely to generate large amounts of waste, are required to produce site waste management plans to arrange for the efficient handling of construction, excavation and demolition waste and materials.

Proposals affecting existing waste management sites, as well as proposals for new or additional waste management facilities, will be assessed against the policies of the West London Waste Plan (2015).

Policy LP 44

Sustainable Travel Choices

The Council will work in partnership to promote safe, sustainable and accessible transport solutions, which minimise the impacts of development including in relation to congestion, air pollution and carbon dioxide emissions, and maximise opportunities including for health benefits and providing access to services, facilities and employment. The Council will:

A. Location of development

Encourage high trip generating development to be located in areas with good public transport with sufficient capacity, or which are capable of supporting improvements to provide good public transport accessibility and capacity, taking account of local character and context.

B. Walking and cycling

Ensure that new development is designed to maximise permeability within and to the immediate vicinity of the development site through the provision of safe and convenient walking and cycling routes, and to provide opportunities for walking and cycling, including through the provision of links and enhancements to existing networks.

C. Public transport

Ensure that major new developments maximise opportunities to provide safe and convenient access to public transport services. Proposals will be expected to support improvements to existing services and infrastructure where no capacity currently exists or is planned to be provided.

Protect existing public transport interchange facilities unless suitable alternative facilities can be provided which ensure the maintenance of the existing public transport operations. Applications will need to include details setting out how such re-provision will be secured and provided in a timely manner.

D. The road network

Ensure that new development does not have a severe impact on the operation, safety or accessibility to the local or strategic highway networks. Any impacts on the local or strategic highway networks, arising from the development itself or the cumulative effects of development, including in relation to on-street parking, should be mitigated through the provision of, or contributions towards, necessary and relevant transport improvements.

In assessing planning applications the cumulative impacts of development on the transport network will be taken into account. Planning applications will need to be supported by the provision of a Transport Assessment if it is a major development, and a Transport Statement if it is a minor development.

E. River transport

Encourage the use of the River Thames for passenger and freight transport through the protection of, improvement to, and provision of new relevant infrastructure including wharves, slipways and piers.

F. Safeguarding of routes and facilities

Land required for proposed transport schemes as identified in the London Plan and the Council's Local Implementation Plan for Transport will be protected from developments which would prevent their proper implementation.

Local filling stations and supporting services such as car repair facilities will be protected from redevelopment for alternative uses unless exceptional circumstances can be demonstrated that warrant their loss.

Policy LP 45

Parking Standards and Servicing

Parking standards

The Council will require new development to make provision for the accommodation of vehicles in order to provide for the needs of the development while minimising the impact of car based travel including on the operation of the road network and local environment, and ensuring making the best use of land. It will achieve this by:

1. Requiring new development to provide for car, cycle, 2 wheel and, where applicable, lorry parking and electric vehicle charging points, in accordance with the standards set out in Appendix 3. Opportunities to minimise car parking through its shared use will be encouraged.
2. Resisting the provision of front garden car parking unless it can be demonstrated that:
   a. there would be no material impact on road or pedestrian safety;
   b. there would be no harmful impact on the character of the area, including the streetscape or setting of the property, in line with the policies on Local Character and Design; and
   c. the existing on-street demand is less than available capacity.
3. Car free housing developments may be appropriate in locations with high public transport accessibility, such as areas with a PTAL of 5 or 6, subject to:
   a. the provision of disabled parking;
   b. appropriate servicing arrangements; and
   c. demonstrating that proper controls can be put in place to ensure that the proposal will not contribute to on-street parking stress in the locality.

   All proposals for car free housing will need to be supported by the submission of a Travel Plan.
4. Managing the level of publicly available car parking to support the vitality and viability of town and local centres within the borough whilst limiting its impacts on the road network.

Freight and Servicing

New major development which involves freight movements and has servicing needs will be required to demonstrate through the submission of a Delivery and Servicing Plan and Construction and Logistics Plan that it creates no severe impacts on the efficient and safe operation of the road network and no material harm to the living conditions of nearby residents.

The Housing Standards Review and implications on Local Planning Policy

On March 25th, 2015, the Government confirmed its policy to limit energy efficiency targets that can be imposed on a development as a result of the outcome of the Housing Standards Review. New developments should not be conditioned to achieve a reduction in Carbon Emissions exceeding a 19% improvement over the requirements of Approved Document L (2013) – the equivalent energy performance of a Code for Sustainable Homes Level 4 dwelling.

In addition, the Government confirmed that the Code for Sustainable Homes is no longer an applicable standards for planning permissions granted on or after March 26th, 2015. If a Local Planning Authority has an existing policy requirement for the CSH it may still condition the Ene 1 and Wat 1 requirements for CSH Level 4, but cannot require assessment against the remaining categories and full CSH Certification.

Sites with planning permission granted prior to March 25th, 2015, can still be assessed, and certified against the Code for Sustainable Homes, where there is a requirement to do so (known as legacy sites).

A CSH requirement can also apply where a previously approved Outline Planning Permission has been granted prior to March 25th, 2015.

APPENDIX 3. DESIGN STAGE SAP SPECIFICATION

Element	BE LEAN Design Specification
Ground Floor U-Value (W/m^2.K)	Domestic: 0.10 Non-domestic: 0.12
External Wall U-Value (W/m^2.K)	Domestic: 0.16 Non-domestic: 0.15
Party Wall U-Value (W/m^2.K)	Domestic: 0 (fully filled and sealed)
Roof (Flat) U-Value (W/m^2.K)	Domestic: 0.10 Non-domestic: 0.12
Door U-Value (W/m^2.K)	Domestic: 1.0 Non-domestic: 1.2
Glazing U-Value (W/m^2.K)	Domestic: 1.2 (double-glazed units) Non-domestic: 1.1
Glazing G-Value	0.5
Design Air Permeability	Domestic: 4 Non-domestic: 3
Thermal Bridging	Bespoke PSI values
Ventilation	Domestic: MVHR MRXBOXAB-ECO3 or similar Non-domestic: MVHR 80% eff., 0.5 W/(l/s)
Cooling	Domestic: natural ventilation Non-domestic: VRF SEER 4.0
Lighting	Domestic: 100% low energy Non-domestic: 100 lm/W
Space Heating	Domestic: 95% efficient communal gas boiler Non-domestic: 96% efficient gas boiler
Space Heating controls	Charging system linked to use, programmer, and at least two thermostats.
Domestic Hot water	Domestic: from main heating system Non-domestic: electric point of use

APPENDIX 4. APPROVED DOCUMENT PART G WATER CALCULATION

energist®

Water efficiency calculator for Ham Close - House / flat type - 2B4P, London , London Borough of Richmond , TW10 (HI.HC.TW10)

This calculation complies with the methodology used under 'Part G (2015) Enhanced' for use in England.

Table A1: The water efficiency calculator

Installation type	Unit of measure	Capacity / Flow rate	Use factor	Fixed use litres/person/day	Litres per person per day
WC (single flush)	Flush volume (litres)	0.0	4.42	0	0.00
WC (dual flush)	Full flush volume (litres)	4.0	1.46	0	5.84
	Part flush volume (litres)	2.6	2.96	0	7.70
WCs (multiple fittings)	Average effective flushing volume (litres)	0.0	4.42	0	0.00
Taps (excluding kitchen / utility room taps)	Flow rate (litres per minute)	5.0	1.58	1.58	9.48
Bath (where shower also present)	Capacity to overflow (litres)	160.0	0.11	0	17.60
Shower (where bath also present)	Flow rate (litres per minute)	8.0	4.37	0	34.96
Bath only	Capacity to overflow (litres)	0.0	0.50	0	0.00
Shower only	Flow rate (litres per minute)	0.0	5.60	0	0.00
Kitchen / utility room sink taps	Flow rate (litres per minute)	5.0	0.44	10.36	12.56
Washing machine	Litres/kg of dry load	8.2	2.10	0	17.16
Dishwasher	Litres/place setting	1.3	3.60	0	4.50
Waste disposal unit	Litres/use	0.0	3.08	0	0.00
Water softener	Litres/person/day	0.0	1.00	0	0.00
				Total calculated use	109.79
		Contribution from greywater (litres/person/day) from Table 4.6			0.00
		Contribution from rainwater (litres/person/day) from Table 5.5			0.00
		Normalisation factor			0.91
		Total water consumption			99.91
		External water use			5.00
		Total water consumption (litres/person/day)			104.91
		Target			105.00

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Figure 5 - Example Part G water calculation for a typical apartment