

Block 6 (Phase 5), Royal Elm Park

Energy and Sustainability Statement



Stantec UK Limited

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Block 6 (Phase 5), Royal Elm Park
Energy and Sustainability Statement

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Executive Summary

This Energy and Sustainability Statement (the 'Statement') has been prepared by Stantec on behalf of RFC Prop Co Ltd (referred to throughout the document as the 'Applicant') in support of a Reserved Matters Application (RMA) for Block 6 (Phase 5) (the 'Proposed Development') of the development at Royal Elm Park (the 'Site').

The description of the Proposed Development is as follows: *"Reserved Matters application pursuant to outline planning permission 160199 seeking approval for details relating to access, appearance, landscaping, layout, and scale in respect of the development of Phase 5 incorporating 84 residential dwellings, part of Royal Elm Gardens, and all associated engineering works."*

This Energy and Sustainability Statement (the 'Statement') outlines how the Proposed Development demonstrates sustainability in line with the Energy Strategy (Hoare Lea, 2016) and Sustainability Statement (Hoare Lea, 2016) submitted with the Hybrid Planning Application (PL/16/0199) for Royal Elm Park (Land at Madejski Stadium). The Statement will also demonstrate alignment with national planning policy and guidance, and local policy including the Reading Borough Council Local Plan (November 2019) and Reading Borough Council Sustainable Design and Construction Supplementary Planning Document (December 2019). The purpose of the Energy Statement (Section 3) is to satisfy Condition 93 regarding Block 6 (Phase 5).

Energy Statement

The Proposed Development seeks to reduce energy consumption by following the nationally recognised energy hierarchy of:

- 1) Reducing energy demands in the first instance ('Be Lean');
- 2) Before using energy efficiently and cleanly ('Be Clean'), and only then;
- 3) Using renewable and low carbon technologies ('Be Green'), where possible.

This Energy Statement has been prepared using Standard Assessment Procedure (SAP) methodology to calculate predicted energy demand and associated carbon emissions for 10% of dwellings within the Proposed Development. **Table 1** presents the results of the energy modelling of the dwellings. The results for the three stages of the energy hierarchy (Be Lean, Be Clean and Be Green) are presented as a single improvement over Part L 2021.

Table 1: Domestic CO₂ Emissions for Dwellings within the Proposed Development

Annual Performance Measure		Target	Actual	% Reduction
Part L 2021	CO ₂ emissions (kg CO ₂ /m ²)	12.4	3.2	75%
	Primary Energy (kWh/m ²)	66.4	36.1	46%
	Fabric Energy Efficiency (kWh/m ²)	30.2	29.1	4%
Condition 93 (Application Ref. 160199)	Achieve a minimum of a 19% improvement in the dwelling emission rate compared to Part L (2013)	19%	83% ¹	

¹ The Part L 2021 Target Emission Rate (TER) introduced an average 31% reduction in carbon emissions for dwellings over Part L 2013 TER. Therefore, the demonstrated 75% reduction over Part L 2021 TER equates to 83% reduction over Part L 2013 TER.



Sustainability Statement

The Proposed Development will take a holistic approach towards sustainability. This approach will include:

- Provision for car club spaces and EV charging
- Provision of cycle parking, with a central parking area providing spaces for standard bicycles and a selection of spaces for larger bikes such as cargo bikes
- Energy efficient design including highly insulated building fabric with external walls, floors and roofs with low U-Values, reduction of thermal heat loss, double glazed windows and low energy lighting
- Specification of mechanical extract ventilation with heat recovery to assist with providing good air quality and optimising temperatures
- All-electric heating strategy including the specification of Air Source Heat Pumps (ASHP) and community heat pumps to apartments
- Provision of solar PV panels to apartments
- Smart meters within dwellings to enable occupants to adjust energy usage
- Inclusion of ecological enhancements including bird and bat boxes
- Access to public spaces and amenity areas, designed for inclusive access
- Provision of localised rainwater harvesting to provide water for irrigation of planters on the podium level



1 Introduction

1.1 Overview

- 1.1.1 This Energy and Sustainability Statement has been prepared by Stantec on behalf of RFC Prop Co Ltd (referred to throughout the document as the 'Applicant') in support of a Reserved Matters Application (RMA) for Block 6 (Phase 5) (the 'Proposed Development') of the development at Royal Elm Park (the 'Site'). The Site falls within the administrative boundary of Reading Borough Council (RBC).
- 1.1.2 This Energy and Sustainability Statement (the 'Statement') outlines how the Proposed Development demonstrates sustainability in line with the Energy Strategy (Hoare Lea, 2016) and Sustainability Statement (Hoare Lea, 2016) submitted with the Hybrid Planning Application (HPA) (PL/16/0199) for Royal Elm Park (Land at Madejski Stadium). The Statement will also demonstrate alignment with national planning policy and guidance, and local policy including the Reading Borough Council Local Plan (November 2019) and Reading Borough Council Sustainable Design and Construction Supplementary Planning Document (December 2019).
- 1.2 The purpose of the Energy Statement in Section 3 is to satisfy Condition 93 regarding Block 6 (Phase 5). The condition wording is as follows:

"Sustainability

93. No development of any phase or part of a phase shall take place until written documentary evidence has been submitted to, and receipt acknowledged in writing by, the Local Planning Authority demonstrating that 50% of the dwellings hereby permitted achieve a minimum of a 19% improvement in the dwelling emission rate over the target emission rate, as defined in The Building Regulations for England Approved Document L1A: Conservation of Fuel and Power in New Dwellings (2013 edition). Such evidence shall be in the form of a Design Stage Standard Assessment Procedure (SAP) Assessment, produced by an accredited energy assessor.

Reason: To ensure that the development is carried out in accordance with sustainable building standards in accordance with Policy CS1."

- 1.2.1 A broad and holistic appreciation of the factors which contribute to 'sustainable development' has been taken. The Proposed Development provides for positive social, economic and environmental outcomes for the local area, with consideration given to how the Proposed Development will be resilient to future environmental and societal changes, whilst responding to the need for residential dwellings. This includes consideration of community engagement and facilities, health and wellbeing, construction management, responsible use of materials, minimisation of waste, energy and carbon emissions, pollution control, minimising water use, managing flood risk, ecology, and sustainable transport.

1.3 Planning Background

- 1.3.1 A HPA (PL/16/0199) was submitted to RBC on 03/02/2016 and was permitted on 29/11/2018. The approved HPA proposal is as follows:

"Outline application (all matters reserved apart from access to the site) for residential development (Blocks 1 – 6 only) to provide up to 430 residential units, comprising predominantly 1 and 2 bedroom apartments (Use Class C3) along with associated landscaping and car parking;

and

Detailed application for residential and mixed use development comprising:

- *203 residential units (within Block 7) (Use Class C3) including 178 dedicated parking spaces (of which 12 are accessible);*



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- *Convention Centre and ice rink (Use Classes D1/D2), approximately 25,831 m2 GIA;*
- *246 bedroom hotel (Use Class C1) and up to 102 serviced apartments (Use Class C1), approximately 23,605 m2 GIA;*
- *Decked car parking within Convention Centre, approximately 4,981 m2 GIA;*
- *Flexible ancillary retail space (Use Class A1), approximately 471.9 m2 GIA (within Block 7 only);*
- *Flexible ancillary retail space (Use Class A3/A4), approximately 1,456 m2 GIA (within Convention Centre only);*
- *Multi storey car park (17,300 m2) including small scale office provision (1,972 m2);*
- *Public open space (including public square and public park), with associated street furniture and public art and directional signage to form part of wider outline public open space strategy;*
- *Associated access, landscaping, cycle parking, transport interchange and related infrastructure and engineering works;*
- *Ancillary facilities for storage, management facilities and plant;*
- *Vehicular and pedestrian access; and*
- *Demolition of existing indoor training facility and enhancement of existing RFC Garden of remembrance.”*

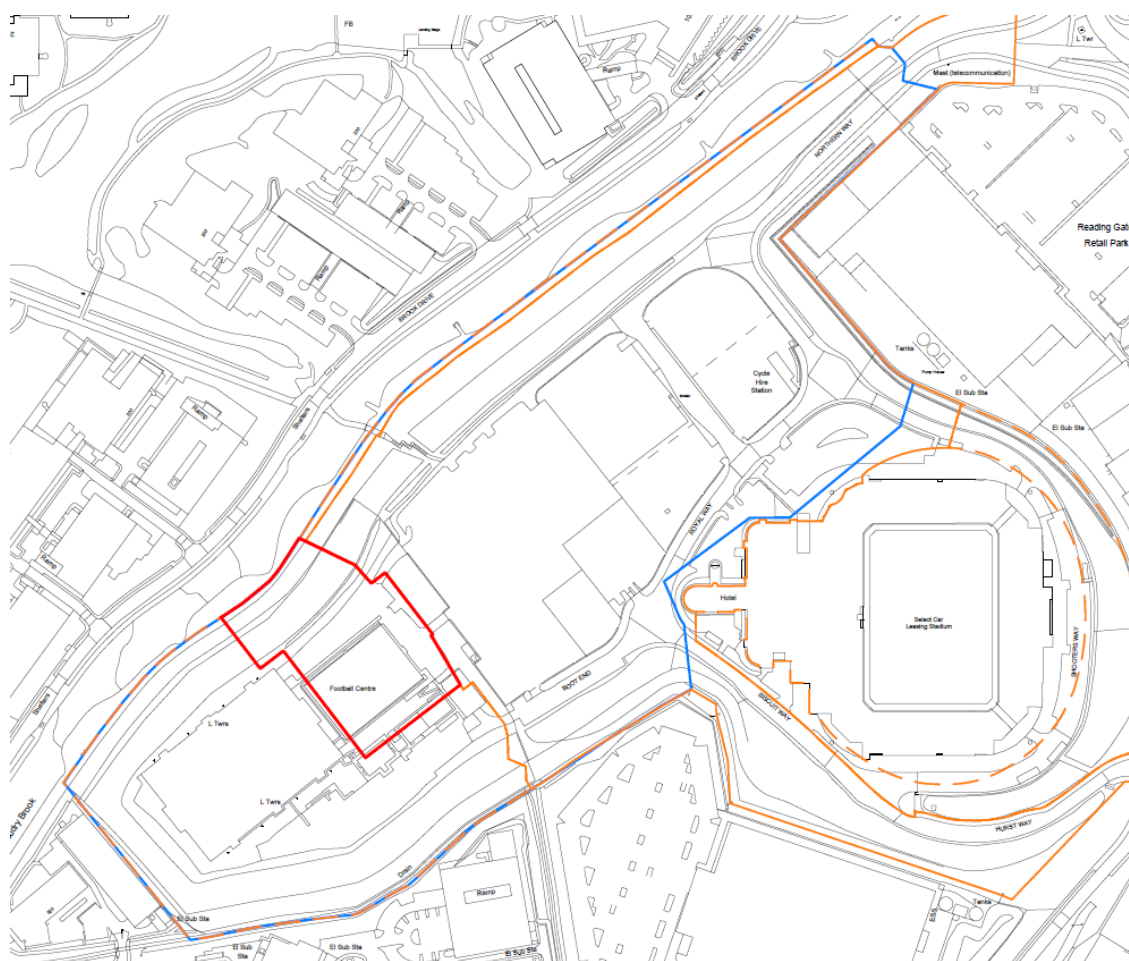
1.3.2 This RMA is for Block 6 (Phase 5) of the development at Royal Elm Park comprising 84 dwellings and detailed information relating to access, appearance, landscaping, layout and scale.

1.4 The HPA Site

- 1.4.1 The HPA Site covers 15.47 hectares of brownfield land surrounding the existing Select Car Leasing Stadium (formerly Madejski Stadium) which consists of Reading Football Club, , and the Voco Reading Hotel. The hotel and stadium are not included in the HPA Site boundary. The HPA Site comprised car parks, Garden of Remembrance, Madejski Training Academy, and landscape embankments.
- 1.4.2 The HPA Site is approximately 5 km south of Reading Town Centre. The HPA Site is currently accessed to Junction 11 of M4 to the south and from the A33 to the east which provides access to Reading Town centre to the north.
- 1.4.3 The west of the HPA Site is adjacent to the multi-storey car park and offices within Green Park, the southern boundary of the HPA Site is adjacent to Green Park office plots, Lime Square, and a large warehouse and car park associated with Costco. To the east the HPA Site adjoins the rear service yards of Reading Gate Retail Park and Foundry Brook is present along the length of the north western boundary of the HPA Site.
- 1.4.4 There are no national landscape or ecological designations impacting the HPA Site or its immediate surroundings and the HPA Site is within Flood Zone 2 as defined by EA flood mapping. There are not any Scheduled Monuments within the HPA Site or within close proximity.
- 1.4.5 An extract of the Site Location Plan is shown in **Figure 1.1** with the full version shown in **Figure A.1, Appendix A.**



Figure 1.1 Site Location Plan



1.5 The Site

- 1.5.1 The Site forms part of the wider HPA Site and comprises the Madejski Training Academy and buildings associated with the facility, such as changing rooms, car parking and hard standing as well as green infrastructure including mown grass, shrubs and trees.
- 1.5.2 To the north is Foundry Brook, a footpath, green infrastructure and Brook Drive, to the east is car parking and hard standing, as well as green infrastructure, to the south is green infrastructure, a footpath, and Green Park Business Park and to the west is a football pitch, hard standing and green infrastructure.
- 1.5.3 There are no national landscape or ecological designations impacting the Site or its immediate surroundings and the Site is within Flood Zone 2 as defined by Environment Agency (EA) flood mapping. There are not any Scheduled Monuments within the Site or within close proximity.

1.6 The Proposed Development

- 1.6.1 The description of the Proposed Development is as follows:

“Reserved Matters application pursuant to outline planning permission 160199 seeking approval for details relating to access, appearance, landscaping, layout, and scale in respect of the development of Phase 5 incorporating 84 residential dwellings, part of Royal Elm Gardens, and all associated engineering works.”

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- 1.6.2 An extract of the Site Layout (Proposed Block Plan) is shown in **Figure 1.2** with the full version shown in **Figure A.2, Appendix A**.

Figure 1.2: Site Layout – Proposed Block Plan



1.7 Purpose of the Report

- 1.7.1 This Energy and Sustainability Statement has been created to detail the sustainability and energy aspirations and goals of the Proposed Development in line with the Design and Access Statement (Barton Willmore, 2016), Energy Strategy (Hoare Lea, 2016) and Sustainability Statement (Hoare Lea, 2016) submitted with the HPA (PL/16/0199) for Royal Elm Park. In addition, the Statement aims to satisfy Condition 93 regarding Block 6 (Phase 5).
- 1.7.2 Sustainable development focuses on enabling a way of life that can be sustained into the future. The Brundtland² definition is the most common: *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*
- 1.7.3 The Energy Statement (Section 3) adopts the nationally recognised Energy Hierarchy of:
- 1) Reducing energy demands in the first instance ('Be Lean');
 - 2) Before using energy efficiently and cleanly ('Be Clean'); and only then,

² United Nations. 1987. Report of the World Commission on Environment and Development. Our Common Future (Brundtland Report).



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3) Using renewable and low carbon technologies ('Be Green'), where possible.

1.7.4 The Sustainability Statement is grouped into the following topics:

- Community engagement and facilities
- Health and wellbeing
- Construction management
- Responsible use of materials
- Minimisation of waste
- Energy and carbon emissions
- Pollution control
- Minimising water use
- Managing flood risk
- Ecology
- Sustainable transport

1.7.5 The Statement is standalone in nature and compliments other technical reports, drawing together policy themes, objectives, and requirements. Requirements are assessed against key national and local policy objectives, whilst recognising the importance of maintaining flexibility given the evolving nature of sustainability and energy policy.

1.7.6 The Statement also draws upon the following associated technical reports:

- Noise Assessment (Sharps Redmore, 2025)
- Ecological Enhancements Plan (Aspect Ecology, 2025)
- Drainage Strategy and Maintenance Statement (Campbell Reith, 2025)
- Transport Statement (Stantec, 2025)
- Compliance Statement (Stantec, 2025)
- Utilities Appraisal (Stantec, 2025)
- Design and Access Statement (Barton Willmore, 2016)
- Design Code (Stantec, 2025)



2 Legislation and Planning Policy Context

2.1 Introduction

- 2.1.1 A summary of the key energy and sustainability policies relevant to the Statement are outlined below with a comprehensive summary provided at **Appendix B**.

National Policy Context

Climate Change Act 2008 and 2019 Amendment (Net Zero)³

- 2.1.2 Climate change is recognised as one of the most immediate global environmental challenges. The Climate Change Act (2008) sets a legally binding target for reducing GHG emissions, in particular carbon dioxide (CO₂), by at least 80% (on 1990 levels) by the year 2050 in the UK, and a requirement that domestic emissions are reduced by no less than 3% each year.
- 2.1.3 In setting these targets, the Act established the Committee for Climate Change (CCC), which is responsible for setting binding interim targets for the Government over five-year periods. In May 2019, the CCC recommend a new emissions target for the UK: a 100% reduction ('net zero') in greenhouse gases by 2050. This change in legislation mandating a 100% reduction in CO₂ emissions by 2050 was approved by the House of Commons on 24th June 2019 and the House of Lords on 26th June 2019.
- 2.1.4 The UK Government's international commitment, transposes into national and local planning policy. The Government has sought to reduce CO₂ emissions associated with new buildings through energy demand reduction and the incorporation of low and zero carbon technologies to deliver electricity and heat.

Net Zero Strategy

- 2.1.5 In October 2021, the UK Government published the Net Zero Strategy, bringing forward the government's commitment to a fully decarbonised power system. The following key policy objectives are relevant to energy:

"To take action so that by 2035, all our electricity will come from low carbon sources, subject to security of supply, bringing forward the government's commitment to a fully decarbonised power system by 15 years."

Powering Up Britain

- 2.1.6 The UK Government's Policy Paper 'Powering Up Britain'⁴, published in March 2023, outlines how the government will deliver net zero commitments, enhance the country's energy security, and seize the economic opportunities of the transition.

National Planning Policy Framework (2024)

- 2.1.7 The National Planning Policy Framework (NPPF) which was revised in December 2024 requires developments to *"take a proactive approach to mitigating and adapting to climate change."* Section 14 of the NPPF 'Meeting the challenge of climate change, flooding and coastal change' emphasises the

³ The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Available from <https://www.legislation.gov.uk/ukdsi/2019/9780111187654>

⁴ Powering Up Britain. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147340/powering-up-britain-joint-overview.pdf



planning system's pivotal role in sustainable development through "*minimising vulnerability and improve resilience to the impacts of climate change*".

Planning Practice Guidance

- 2.1.8 National Planning Practice Guidance (PPG) was originally published in June 2014. Paragraph 001 recognises that the planning system can "*increase resilience to climate change impact through the location, mix and design of development*". The guidance advises how to identify suitable mitigation and adaptation measures in the planning process to address the impacts of climate change.

National Building Regulations – Part L (Conservation of Fuel and Power)

- 2.1.9 The UK's international commitments are integrated into the National Building Regulations, with energy efficiency requirements detailed in Part L (Conservation of Fuel and Power). This section encourages new developments to reduce carbon emissions by following the energy hierarchy: first, reducing energy demands; second, supplying energy efficiently; and finally, incorporating appropriate renewable and low carbon energy technologies.
- 2.1.10 Following consultation beginning in October 2019, the new Part L was published on the 15th of December 2021 announcing changes to the Building Regulations which aim to help the UK deliver net zero.
- 2.1.11 This approved document took effect on 15th June 2022 for use in England. It does not apply to work subject to a building notice, full plans application or initial notice submitted before that date, provided the work for each building is started before 15th June 2023.
- 2.1.12 Therefore, the national target for energy at the Proposed Development is the Part L 2021 Building Regulations. This is subject to further amendments in the future.

2.2 Local Policy Context

- 2.2.1 The HPA (PL/16/0199) was submitted to RBC on 03/02/2016 and was permitted on 29/11/2018. Therefore, local policy adopted at the time of submission informed the Energy Strategy and Sustainability Strategy approved as part of the HPA. This policy position in turn informed Condition 93. Reading BC subsequently adopted a new Local Plan, and the Policies contained within are relevant to this RMA. Therefore, this section summaries policies adopted at the time of the HPA and those that form Reading BC's current Local Plan.

Reading Borough Local Plan (2019-2036)⁵

- 2.2.2 A detailed summary of the relevant Reading Borough Local Plan Policies is included in **Appendix B**. The key Policies of the Reading Borough Local Plan are as follows:
- Policy CC2: Sustainable Design and Construction
 - Policy CC3: Adaptation to Climate Change
 - Policy EN12: Biodiversity and the Green Network
 - Policy TR5: Car and Cycle Parking and Electric Vehicle Charging

⁵ Reading Borough Local Plan. Available from:
https://images.reading.gov.uk/2019/12/Local_Plan_Adopted_November_2019.pdf



Reading Borough Council Core Strategy (January 2008, altered January 2015)⁶

2.2.3 The Reading Borough Council Core Strategy was adopted in January 2008 and the alteration was adopted in January 2015. Relevant policies to the Proposed Development are as follows:

- Policy CS1: Sustainable Construction and Design
- Policy CS2: Waste Minimisation
- Policy CS3: Social Inclusion and Diversity
- Policy CS5: Inclusive Access
- Policy CS7: Design and the Public Realm
- Policy CS20: Implementation of The Reading Transport Strategy (Local Transport Plan 2006-2011)
- Policy CS22: Transport Assessments
- Policy CS23: Sustainable Travel and Travel Plans
- Policy CS24: Car/ Cycle Parking
- Policy CS29: Provision of Open Space
- Policy CS30: Access to Open Space
- Policy CS34: Pollution and Water Resources
- Policy CS35: Flooding
- Policy CS36: Biodiversity and Geology
- Policy CS38: Trees, Hedges and Woodlands

Reading Borough Council Sites and Detailed Policies Document (October 2012, altered January 2015)⁷

2.2.4 The Reading Borough Council Sites and Detailed Policies Document was adopted in October 2012 and the alteration was adopted in January 2015. Relevant policies to the Proposed Development are as follows:

- Policy DM1: Adaptation to Climate Change
- Policy DM2: Decentralised Energy
- Policy DM3: Infrastructure Planning
- Policy DM10: Private and Communal Outdoor Space
- Policy DM11: Development Of Private Residential Garden Land

⁶ Reading Borough Council Core Strategy (January 2008, altered January 2015). Available from: <https://images.reading.gov.uk/2019/12/Core-Strategy-Adopted-Jan08-Altered-Jan15.pdf>

⁷ Reading Borough Council Sites and Detailed Policies Document (October 2012, altered January 2015). Available from: <https://images.reading.gov.uk/2019/12/SDPD-Adopted-Oct12-Altered-Jan15.pdf>



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- Policy DM12: Access, Traffic And Highway-Related Matters
- Policy DM16: Provision of Open Space
- Policy DM17: Green Network
- Policy DM18: Tree Planting
- Policy DM19: Air Quality

Reading Borough Council Sustainable Design and Construction Supplementary Planning Document (December 2019)

- 2.2.5 The Reading Borough Council Sustainable Design and Construction Supplementary Planning Document was adopted in December 2019 and outlines material considerations on which planning applications are decided. The document provides detailed guidance on policies related to sustainable design and construction within the Reading Borough Local Plan (2019).

Reading Borough Council Community Infrastructure Levy – Charging Schedule (January 2015)⁸

- 2.2.6 The Reading Borough Council Community Infrastructure Levy – Charging Schedule was produced in January 2015. The Community Infrastructure Levy (CIL) allows local authorities to fund infrastructure to enhance development and growth. For new developments this is charged at a pre-defined rate, for instance for residential developments this is £120/per m².

⁸ Reading Borough Council Community Infrastructure Levy – Charging Schedule (January 2015). Available from: https://images.reading.gov.uk/2019/12/Community-Infrastructure-Levy-Charging-Schedule-January_2015.pdf

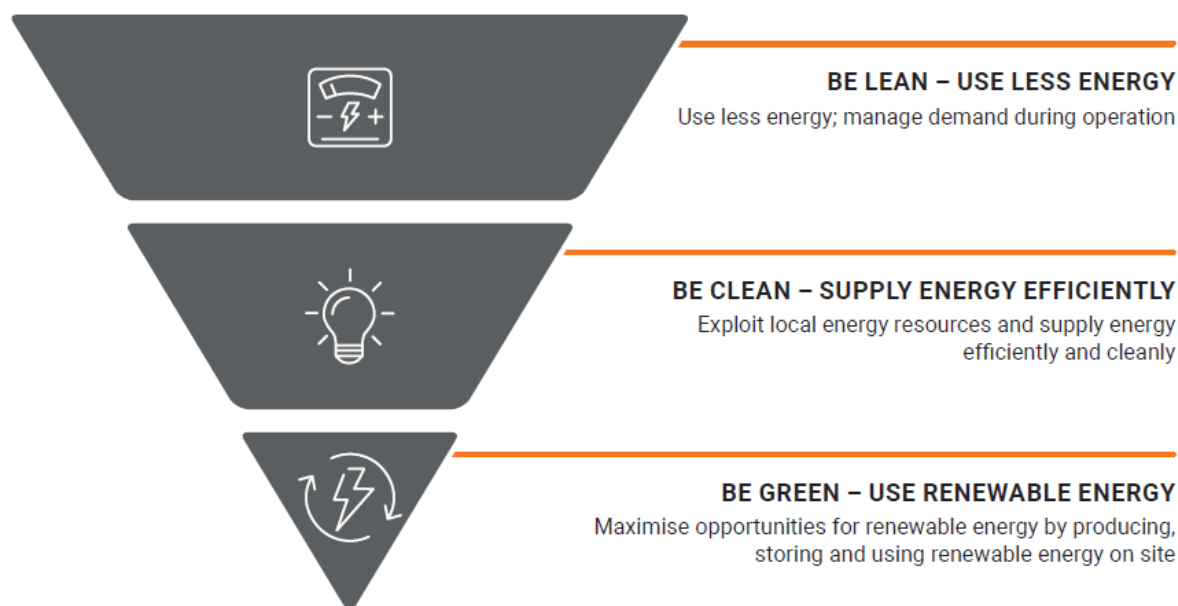


3 Energy Statement

3.1 Introduction

- 3.1.1 This Energy Statement has been prepared to demonstrate the Proposed Development's alignment with the Reading Borough Local Plan (November 2019) and the Reading Borough Council Sustainable Design and Construction Supplementary Planning Document (December 2019) and to satisfy Condition 93 regarding Block 6 (Phase 5).
- 3.1.2 The Energy Strategy adopts the nationally recognised energy hierarchy displayed in Figure 3.1.

Figure 3.1: Energy Hierarchy



- 3.1.3 This Energy Statement has been prepared using Standard Assessment Procedure (SAP) methodology to calculate predicted energy demand and associated carbon emissions for the Proposed Development. The calculation methodology and information sources that have informed this report are outlined in **Table 3.1**.

Table 3.1: Calculation Information Sources

Information	Source
Geometry	Based on drawings provided by the Applicant
Building Specification	Based on drawings provided by the Applicant
Regulated Calculation Methodology	The Government's Standard Assessment Procedure for Energy Rating of Domestic Buildings
Software Used	SAP 10.2 Elmhurst Energy

- 3.1.4 The purpose of the calculations is to demonstrate compliance with Condition 93 and the Building Regulations Part L 2021. However, if the Future Homes Standard comes into force before the Proposed Development is constructed, the building energy specification will be adapted to comply with the required standards.



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- 3.1.5 The approved calculation methodologies prescribe design parameters for inputs such as occupancy, weather, internal temperatures, and equipment usage. Therefore, the calculations should not be taken as a guarantee of predicted energy consumption and CO₂ emissions.
- 3.1.6 The energy modelling calculations cover regulated energy which is accounted for in Building Regulations, such as lighting, heating and hot water. Unregulated energy including energy used for appliances and associated with cooking is not accounted for in Building Regulations and is therefore not included in the energy modelling calculations. Measures which can influence reducing unregulated energy include educating future occupants on how to reduce equipment energy use, such as in building user guides.

Fabric-First Approach ('Be Lean')

- 3.1.7 Demand reduction is typically a more cost-effective means of achieving carbon savings than providing low or zero carbon technologies. This is particularly true of passive measures (the architecture), which are simpler and have greater longevity than active systems (the building services).
- 3.1.8 The fabric energy efficiency of the proposed dwellings has been designed to reduce heat demand and energy needs in line with policy requirements. This includes providing high levels of insulation and low air permeability, with consideration for thermal bridging junctions. Dwelling orientation will be optimised where possible to minimise overshadowing in winter and maximise solar gains.
- 3.1.9 The fabric specification exceeds the fabric standards of Building Regulations Part L 2021. The full Specification is available at Appendix C. The Proposed Development will take into account any required fabric standards within the Future Homes Standard if it should be adopted before the Proposed Development is constructed.
- 3.1.10 Energy demand reduction measures will be put in place and include the following:

Passive Design

- Plot layout will reduce solar heat gain in hot weather and increase solar gain in cold weather
- Deliberation of dwelling orientation to reduce solar heat gain in hot weather and increase solar gain in cold weather
- Attention to internal dwelling layout and use of space prioritising adequate temperatures in the most habitable rooms, such as reducing room depth and increasing floor to ceiling height to maximise daylight penetration
- Placement of windows on opposite sides of a room to allow for cross ventilation
- Optimisation of natural daylight and sunlight to reduce energy needed for heating
- Incorporation of landscaping for shading, for instance trees and shrubs to reduce summer overheating risk
- Consideration of the thermal mass of materials to regulate thermal comfort
- Specification of materials could include increasing lighter colour materials to enhance light reflectance minimising summer overheating risk
- Provision of high levels of insulation to reduce heat loss
- Understanding of thermal bridging junctions to minimise heat loss
- Low air permeability to improve energy efficiency
- Inclusion of high efficiency double windows to improve insulation



Active Design

- Use of low energy lighting to reduce energy use
- Incorporation of smart meters to track and minimise energy use
- Provision of an energy efficient heating system

Efficient Use of Energy ('Be Clean')

- 3.1.11 The second stage of the energy hierarchy seeks to supply energy efficiently, as well as minimising the waste of useful heat wherever possible.
- 3.1.12 The Proposed Development will seek to supply energy efficiently by incorporating efficient ventilation and heating systems which follow an electric-led approach. Apartments and houses are anticipated to utilise mechanical ventilation with heat recovery (potential model: Brookvent Aircycle 1.3+). The heating and hot water system of the apartments is anticipated to be a community heat pump with Heat Interface Units (HIUs). The heating and hot water system of the houses will be air source heat pumps (ASHPs) (potential model: Mitsubishi Electric Ecodan 6kW PUZ-WM60VAA) with hot water cylinders (potential model: Mitsubishi Electric EHPT15-30X-UKHDW).
- 3.1.13 Energy efficiencies will also be gained through specifying 100% low energy lighting (95 Lum/W).

Renewable Energy and Low Carbon Technology ('Be Green')

- 3.1.14 The incorporation of a decentralised heating system has been investigated due to the requirement of Policy CC4 Decentralised Energy (November 2019) which states that opportunities to generate energy through a decentralised energy system such as combined heat and power (CHP) should be explored where feasible and viable. These systems have the potential to provide reductions in CO₂ emissions. A feasibility assessment has been undertaken for the Proposed Development based on the hierarchy for selecting an energy system and is presented in **Table 3.2**.

Table 3.2: Hierarchy for Selecting an Energy System

Connection to an area wide heat network	Where developments are located near to existing or planned networks, connection should be prioritised.	There are currently no known existing or proposed networks located within 1km of the Site as shown in the Heat Networks Planning Database ⁹ .
Site wide communal heating system	Where developments are located in areas of decentralised energy potential, but no networks currently exist, developers should seek to provide a site-wide heat network.	After assessing the feasibility it has been determined that creating a heat network is not viable due to space considerations, such as land take for an energy centre and heat loss due to transmission. Therefore, an alternative solution is deemed more appropriate for the Proposed Development. Communal heating systems are proposed for apartments which saves space as no energy centre is needed and improves efficiency as there would be less heat loss due to transmission.
Building or phase level communal	Appropriate for single building or low-density developments with residential blocks, where no	Whilst a single site wide district heat network may not be viable, smaller communal heating systems would be

⁹ Heat Networks Planning Database. Available from: https://data.barbour-abi.com/smart-map/repd/desnz/?type=heat_network



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heating system	district heat networks exist or are planned.	viable for apartments. However for houses, it is anticipated that individual heating systems utilising ASHPs would be more efficient and have a greater benefit on energy performance.
Individual heating system	Appropriate for low density individual housing where no district heat network exists, is planned, or is feasible. Particularly where evidence shows that a site-wide district heat network is uneconomic. Individual heating systems should still seek to deliver carbon reduction benefits in line with the nationally recognised energy hierarchy.	The Proposed Development will provide highly efficient individual heating systems to houses and a communal heating system to apartments.

- 3.1.15 The feasibility of use of on-site CHP within the Proposed Development was assessed due to approach considered as part of the Hoare Lea Energy & Sustainability Strategy submitted with the HPA. CHP plants commonly burn natural gas which have a high carbon emissions factor versus electricity. The Proposed Development has been designed with sustainability as a key consideration and therefore an electric-led approach is more in line with the UK's net zero commitments and compliance with Part L 2021. The Future Homes Standard building energy specification options presented in the Future Homes and Buildings Standards: 2023 Consultation¹⁰ are based on an electric-led approach. Therefore, to align with the trajectory of national building regulations, the Proposed Development should follow this approach. As the UK grid decarbonises, it is expected that electricity prices will stabilise with renewables growth, whilst gas prices may remain volatile during energy transition, potentially negatively impacting running costs for CHP plants in use. For these reasons a CHP network would not be an appropriate energy strategy for the Site and would not assist with the aspirations of a low carbon future.
- 3.1.16 A high-level feasibility study has been carried out in **Table 3.3** and **Table 3.4** to assess potentially viable sources of district wide and building level low carbon and renewable energy technology under the Be Green stage of the energy hierarchy.

Table 3.3: Feasibility of District Wide Low Carbon and Renewable Technologies

Technology	Appropriate	Comments
Connection to existing offsite district heat network	No	No local heat network in range of Site.
Creation of onsite district heat network	No	Creating a heat network is not viable due to space considerations, such as land take for an energy centre and heat loss due to transmission.
Solar Park (Ground mounted PV)	No	The Site does not provide the potential space for the installation of a large-scale ground mounted PV array.

¹⁰ Future Homes and Buildings Standards: 2023 Consultation. Available from:
<https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation>



Technology	Appropriate	Comments
Battery Storage Network	No	Without the opportunity to generate electricity from a large renewable park the creation of a micro-grid to enable battery storage is not viable. Large scale battery technology is currently expensive and has not been widely tested.
Wind Power	No	A large wind turbine development within the Site boundary would potentially cause a significant noise, visual and wind-flicker disturbance, which would be detrimental to the amenity of residents and other site users.
Hydropower	No	No appropriately sized sources of hydropower located on the Site.

Table 3.4: Feasibility of Building Level Low Carbon and Renewable Technologies

Technology	Appropriate	Comments
Photovoltaic (PV) panels	Yes	Suitable roof space has been provided on apartments to accommodate PV.
Heat Pump	Yes	Heat pumps are a suitable technology to meet the hot water and heating demand of new homes and the Future Homes Standard. The provision of individual ASHPs to houses and community heat pumps to apartments are anticipated to be incorporated.
Heat Recovery	Yes	Heat recovery technology will be present in the Proposed Development as mechanical ventilation with heat recovery will be specified to dwellings.
Battery Storage	No	Battery storage at building level could reduce peak electrical demand but this technology is currently expensive and not widely used.
Solar Thermal	No	There is expected to be roof space available to provide solar thermal technology, however it may be considered more appropriate to provide PV instead of solar thermal to meet electricity demand as PV is more beneficial to support both EV charging and any potential heat pumps.
Wind	No	Building-integrated wind turbines and wind turbines sited in urban areas perform poorly due to unfavourable wind microclimate.
Biomass	No	Unlikely to comply with the Future Homes Standard and there may be concerns regarding the delivery of biomass fuel to the occupiers.

3.2 Results

3.2.1 **Table 3.5** presents the results of the energy modelling of the dwellings. The results for the three stages of the energy hierarchy (Be Lean, Be Clean and Be Green) are presented as a single improvement over Part L 2021. The full energy performance specification is shown in **Appendix C**.



Table 3.5: Domestic CO₂ Emissions for Dwellings within the Proposed Development

Annual Performance Measure		Target	Actual	% Reduction
Part L 2021	CO ₂ emissions (kg CO ₂ /m ²)	12.4	3.2	75%
	Primary Energy (kWh/m ²)	66.4	36.1	46%
	Fabric Energy Efficiency (kWh/m ²)	30.2	29.1	4%
Condition 93 (Application Ref. 160199)	Achieve a minimum of a 19% improvement in the dwelling emission rate compared to Part L (2013)	19%	83% ¹¹	

- 3.2.2 The results demonstrate that the dwellings within the Proposed Development will exceed Part L 2021 Building Regulations in relation to CO₂ emissions, primary energy, and fabric energy efficiency. The Proposed Development is predicted to achieve a 75% improvement over the Target Emission Rate for Part L 2021.
- 3.2.3 In addition to demonstrating an improvement over Part L 2021, these indicative results exceed the target outlined in Condition 93 of “50% of the dwellings hereby permitted achieve a minimum of a 19% improvement in the dwelling emission rate over the target emission rate, as defined in *The Building Regulations for England Approved Document LIA: Conservation of Fuel and Power in New Dwellings (2013 edition)*.” The condition’s reason is to ensure compliance with Policy CS1 of the Reading Borough Council Core Strategy (January 2008, altered January 2015) which requires the Proposed Development to off-set at least 20% of emissions from renewable or low energy efficiency design measures. This Policy has since been updated with the Reading Borough Local Plan (November 2019) Policy H5 Standards for New Housing.
- 3.2.4 **Table 3.5** shows that this target is significantly exceeded as 71% of predicted emissions are anticipated to be offset through renewable sources and energy efficiency measures.
- 3.2.5 The Proposed Development is high performing in relation to energy with a fabric first approach to reduce energy demand coupled with energy efficient measures and low carbon and renewable energy technologies including mechanical ventilation with heat recovery, ASHPs, and solar PV specified to approximately 15% of apartment roof space.

3.3 Summary

- 3.3.1 The Proposed Development will incorporate energy consumption reduction measures including the following:
- Highly insulated building fabric with external walls, floors and roofs of low U-Values to reduce heat loss
 - Strong continuity of insulation at building junctions to reduce thermal bridging heat loss with thermal bridging guidance
 - Cross-ventilation where possible to allow for through-flow of air

¹¹ The Part L 2021 Target Emission Rate (TER) introduced an average 31% reduction in carbon emissions for dwellings over Part L 2013 TER. Therefore the demonstrated 75% reduction over Part L 2021 TER equates to 83% reduction over Part L 2013 TER.



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- Double glazed windows with suitable glazing ratio and g-value to balance heat gains and losses and daylight ingress
- Low energy lighting (efficacy 95 lm/W) with external and communal lighting with daylight and presence detection sensors to reduce lighting use and lighting pollution
- Efficient mechanical extract ventilation with heat recovery (potential model: Brookvent Aircycle 1.3+) to assist with providing good air quality and optimising temperatures
- ASHPs specified to houses (potential model: Mitsubishi Electric Ecodan 6kW PUZ-WM60VAA) with hot water cylinders (potential model: Mitsubishi Electric EHPT15-30X-UKHDW)
- Community heat pumps with HIUs specified to apartments with 350% efficiency
- PV specified to apartments
- Smart meters within dwellings to enable occupants to adjust energy usage



4 Sustainability Statement

4.1 Introduction

- 4.1.1 This section sets out the approach taken and design commitments of each aspect of sustainability. The location, layout and design means that the Proposed Development can take a holistic approach towards sustainability, with many features delivering co-benefits across a range of sustainability aspects. The aspects are organised in accordance with the Design and Access Statement (Barton Willmore, 2016) Sustainability Statement (Hoare Lea, 2016) submitted with the HPA (PL/16/0199) for Royal Elm Park.

4.2 Community Engagement and Facilities

- 4.2.1 The Proposed Development will be designed with community in mind, ensuring that there is access to open space, and green infrastructure to foster community cohesion and boost wellbeing. The local community will be engaged with throughout the design process as well as during construction and operation to ensure their perspectives are accounted for to deliver a sustainable development satisfying the needs of local people.
- 4.2.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) and Reading Borough Council Sustainable Design to community engagement and facilities are as follows:
- Policy EN11: Water Spaces
 - Policy EN15: Air Quality
 - Policy EN16: Pollution and Water Resources

Design Commitments

- 4.2.3 Throughout the planning application process a consultation and engagement process has been carried out to understand the perspectives of local people.
- 4.2.4 The Proposed Development will be constructed on underused brownfield land improving the public realm and will provide housing which assists with meeting the housing needs of the local area.
- 4.2.5 The Proposed Development will use local suppliers where possible to boost the local economy and provide jobs throughout the construction phase in accordance with S106 obligations concerning employment and skills plans.

4.3 Health and Wellbeing

- 4.3.1 The World Health Organisation defines health as *“a is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”*¹².
- 4.3.2 The Proposed Development has an opportunity to improve quality of life, health, and wellbeing of residents through providing safe and comfortable homes for people to live, open space for people to spend time in nature and sustainable transport opportunities to encourage people to engage in physical activity. The Proposed Development should mitigate any negative impacts in relation to noise, air quality, and overheating.
- 4.3.3 Relevant policies within the Reading Borough Council Local Plan (November 2019) to health and wellbeing are as follows:
- Policy H5: Standards for New Housing

¹² Constitution. Available from: <https://www.who.int/about/governance/constitution>



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- Policy H6: Accommodation for Vulnerable People

Design Commitments

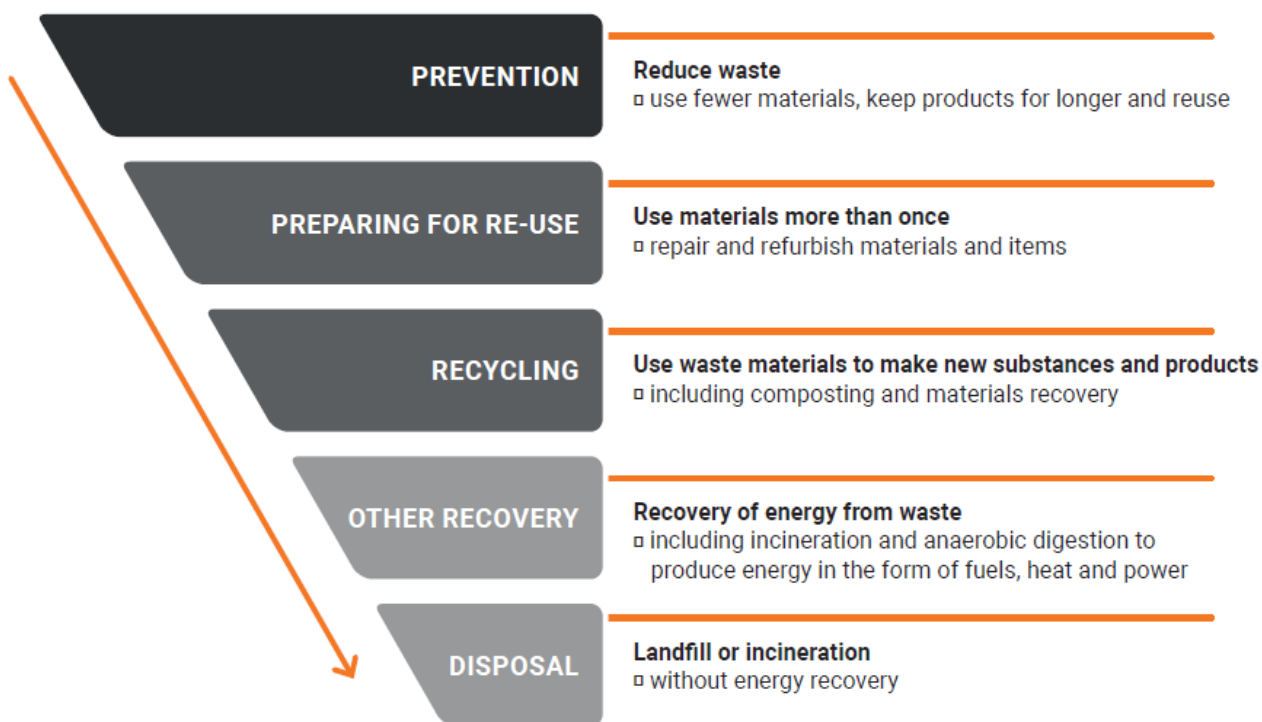
- 4.3.4 The Proposed Development will include measures to increase the uptake of active travel, such as providing safe and attractive routes. Engaging in active travel can improve wellbeing as there are physical and mental health benefits associated with exercise.
- 4.3.5 The Proposed Development will include a clear hierarchy of connected places to ensure spaces are attractive and useable. The Proposed Development will be legible and permeable making it easy to navigate and a movement hierarchy will be present.
- 4.3.6 The Proposed Development will be designed to minimise crime with passive surveillance and appropriate lighting throughout. The layout of the Proposed Development has been designed to promote a light and visible permeability without dark corners or dead ends. Elements of 'Secured by Design' principles will be incorporated into the design of the Proposed Development and submitted to RBC in accordance with Condition 91 prior to commencement. These measures will ensure residents and visitors feel safe at all times within the Proposed Development.
- 4.3.7 Public open space will be provided within the Proposed Development to encourage residents to spend more time outdoors and connect with others. The public open space has been designed to be both attractive and useable with a variety of diverse greenery.
- 4.3.8 The dwellings within the Proposed Development will be designed to reduce overheating risk through being designed for cross ventilation where possible, and the inclusion of mechanical ventilation with heat recovery.
- 4.3.9 Energy efficient lighting with a low heat output will be specified in the Proposed Development with the potential for dimmable lights and those linked to daylight sensors to reduce glare discomfort.

4.4 Construction Management

- 4.4.1 The Proposed Development aims to reduce waste during construction phase by following the waste hierarchy presented in **Figure 4.1** which promotes a more sustainable approach to waste management such as reuse, and recycling of waste. Furthermore, in accordance with condition 65 a scheme for recycling waste resulting from the construction works will be included into the Construction Environmental Management Plan that will be submitted RBC prior to commencement.



Figure 4.1: Waste Hierarchy



4.4.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) to construction management are as follows:

- Policy CC5: Waste Minimisation and Storage

Design Commitments

4.4.3 It is anticipated that the contractors for the Proposed Development will sign up to the Considerate Constructors Scheme (CCS) and will produce a Construction Environment Management Plan in line with condition 65 to ensure that the construction phase achieves at least a 'good practice' score under the CCS.

4.4.4 Other considerations to reduce waste during the construction phase include utilising equipment and machinery which is less carbon intensive over its lifetime and purchasing renewable energy for use on site during construction.

4.5 Responsible Use of Materials

4.5.1 The Proposed Development will select materials sustainably to reduce the overall environmental impact of dwellings. Final details of materials will be submitted prior to commencement in accordance with condition 75.

4.5.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) to responsible use of materials are as follows:

- Policy CC1: Presumption in Favour of Sustainable Development
- Policy CC2: Sustainable Design and Construction
- Policy CC3: Adaptation to Climate Change



- Policy CC5: Waste Minimisation and Storage

Design Commitments

4.5.3 The Proposed Development will strive to minimise the quantities of resources, materials, and products used. This could be achieved through:

- Optimising the design of infrastructure so less materials are required
- Using products with reduced material content
- Planning detailed material quantities to minimise over ordering

4.5.4 The Proposed Development will seek to specify and source resources, materials, and products responsibly and sustainably, potentially by:

- Sourcing materials that have a high percentage of recycled content and secondary products reducing the demand for virgin material
- Acquiring materials from local sources and suppliers where possible, storing materials so vehicle movements off-site can be minimised, and using transportation modes which produce less greenhouse gas emissions to reduce transportation impacts
- Obtaining materials which have a low carbon impact throughout their lifecycle including those produced using renewable energy and manufactured with low waste generation
- Use of the BRE Green Guide to Specification¹³ to assist with selecting construction materials and components with lower environmental impacts or choosing products with an Environmental Product Declaration (EPD). Where possible, ensure materials are responsibly sourced/have a certified Environmental Management System or BES 6001 accreditation for the key process and/or supply chain
- Prioritise products registered under recognised responsible certification schemes, e.g., timber compliant with the FSC scheme or products with labels such as Cradle to Cradle (C2C) and Natureplus¹⁴

4.6 Minimisation of Waste

4.6.1 The Proposed Development aims to reduce waste during both construction and operation over its lifetime adhering to the waste hierarchy. The Waste Regulations¹⁵ set a range of targets designed to achieve a more sustainable approach to waste minimisation and management. A key principle is to reduce the amount of waste created, through waste minimisation practices, before ensuring best practice waste management to collect, process and dispose safely of waste.

4.6.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) to minimisation of waste are as follows:

- Policy CC5: Waste Minimisation and Storage

¹³ Green Guide to Specification. Available from: <https://tools.bregroup.com/greenguide/podpage.jsp?id=2126>

¹⁴ Natureplus is an eco-label for building products based on criteria in relation to clean and efficient production, protection of the environment and people's health and sustainability of resources.

¹⁵ The Waste (England and Wales) Regulations 2011. Available from: <https://www.legislation.gov.uk/uksi/2011/988/contents/made>



Design Commitments

- 4.6.3 During construction the Proposed Development will utilise resources efficiently and minimise waste where possible. This will include minimising the quantities of resources, materials, products, machinery and equipment used, specifying and sourcing resources, materials, products, machinery and equipment responsibly and sustainably, and designing out and managing demolition, excavation and construction waste arisings.
- 4.6.4 The Proposed Development will design out and manage demolition, excavation and construction waste arisings in line with Condition 65 through:
- Considering off-site manufacture, precision manufacture, just-in-time delivery and secure on-site storage to minimise packaging, off cuts, damage and rework
 - Where possible materials produced from demolition on site will be reused in the construction phase. The use of recycled material, such as aggregates will be incorporated where possible
 - Diversion of excavation and construction waste from landfill through following the waste hierarchy (see **Figure 4.1**)
- 4.6.5 A waste management strategy for each phase will be submitted prior to occupation, in line with Condition 99.
- 4.6.6 During the operation phase sufficient bin storage capacity will be provided to enable storage of recyclable and non-recyclable waste streams. Space will be present within the kitchens of apartments for general and recyclable waste. The residents will need to deliver waste manually to the refuse storage area present on the ground floor.

4.7 Energy and Carbon Emissions

- 4.7.1 The Proposed Development will reduce energy demand, incorporate energy efficiency measures and implement low and zero carbon technologies where possible to reduce CO₂ emissions associated with energy use in dwellings.
- 4.7.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) to energy and carbon emissions are as follows:
- Policy CC1: Presumption in Favour of Sustainable Development
 - Policy CC2: Sustainable Design and Construction
 - Policy CC3: Adaptation to Climate Change
 - Policy CC4: Decentralised Energy

Design Commitments

- 4.7.3 The Proposed Development will follow the energy hierarchy as displayed in **Figure 3.1**. Following the energy hierarchy enables the Proposed Development to reduce greenhouse gas emissions assisting with climate change mitigation. Examples of these measures include: highly insulated building fabric with external walls, floors and roofs of low U-Values to reduce heat loss, low energy lighting, ASHPs specified to houses and community heat pumps specified to apartments. Refer to **Section 3** for additional detail.
- 4.7.4 The results of the energy modelling calculations presented in **Section 3** demonstrate that the dwellings within the Proposed Development will exceed Part L 2021 Building Regulations in relation to CO₂ emissions, primary energy, and fabric energy efficiency. The Proposed Development is predicted to achieve a 75% improvement over the Target Emission Rate for Part L 2021.



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- 4.7.5 The results show that the requirement to achieve a minimum of a 19% improvement in the dwelling emission rate compared to Part L (2013) as required by Condition 93 are exceeded, with a 83% reduction demonstrated.
- 4.7.6 The dwellings within the Proposed Development will be designed with consideration of the impacts associated with climate change, such as warmer temperatures. For example, dwellings will be designed with cross-ventilation where possible to allow for the through flow of air helping to cool temperatures creating a comfortable living environment.

4.8 Pollution Control

- 4.8.1 Pollution is the introduction of contaminants into the environment with the potential to cause harm. Examples of pollution include noise, air, odour, water, light and vibration. In the Proposed Development, potential sources of pollution during the construction and operation phase, and sensitive receptors will be determined and management measures put in place to mitigate adverse impacts.
- 4.8.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) to pollution control are as follows:
- Policy EN16: Pollution and Water Resources
- 4.8.3 Pollution control measures will be implemented in line with the following Conditions: 47, 50, 58, 65, 69, 70, 72, 73, 77, 78, 80, 83, 89.

Design Commitments

- 4.8.4 During construction mitigation measures will be implemented to minimise pollution in line with conditions 7, 34, 70 and 73. These measures could include the following:
- Restricting working hours to reduce noise pollution
 - Using dust suppression measures, such as water spraying to minimise air pollution, in accordance with a Dust Management Plan (DMP)
 - Incorporating erosion and sediment control measures to prevent run off and eliminate water pollution
 - Considering the placement of lighting to minimise glare and light pollution
 - Water to damp down material and reduce runoff to nearby watercourses
- 4.8.5 During operation mitigation measures will be put in place to reduce pollution. These measures could include the following:
- Increasing distances between noise sources and sensitive receptors
 - Encouraging the use of sustainable travel modes to minimise air pollution
 - Incorporating Sustainable Drainage Systems (SuDS) to maintain water quality
 - Using lower light intensity lighting with reduced brightness and directional lighting to minimise light spill

4.9 Minimising Water Use

- 4.9.1 Managing water is crucial to prevent overextraction and pollution of ground and surface water bodies. Water is a resource that is being and will continue to be affected by the changing climate with hotter, drier summers, warmer wetter winters, and an increased frequency of extreme weather events.



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Therefore, the Proposed Development will implement measures to reduce potable water consumption where possible.

4.9.2 Relevant policies within Reading Borough Council Local Plan (November 2019) to minimising water use are as follows:

- Policy EN11: Waterspaces
- Policy EN16: Pollution and Water Resources

Design Commitments

- 4.9.3 Water efficiency measures will be implemented within the Proposed Development including the specification of water efficient low flow devices, such as dual flush toilets with guidance/symbols to inform the user on how to operate them. Taps and showers will also have low flow rates.
- 4.9.4 Potable water consumption within dwellings is anticipated to be limited to 125 litres per person per day which is in line with the requirements of Part G Building Regulations. The aspirational target of 110 litres per person per day will be considered for dwellings where possible. Water meters will be provided to enable users to monitor water usage and reduce water use where possible.
- 4.9.5 Leak detection systems are anticipated to be present to detect major water leaks in the water supply enabling any leaks to be sorted quickly and effectively.

4.10 Managing Flood Risk

- 4.10.1 New development on a previously undeveloped site will increase the amount of hard standing (for example roofs, roads, and pavements) and therefore increase the amount of surface water run-off. In addition, rainfall levels and patterns are predicted to change during the lifetime of the Proposed Development. The Proposed Development will be designed to comply with the requirements set out in the NPPF, including requirements to be adaptable and resilient to climate change impacts over the Proposed Development's lifetime, and with Conditions 80 and 82.
- 4.10.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) to managing flood risk are as follows:
- Policy EN11: Waterspaces
 - Policy EN16: Pollution and Water Resources

Design Commitments

- 4.10.3 The Proposed Development will mitigate flood risk through providing SuDS which will reduce surface water run off acting as a climate change adaptation measure. SuDS will be incorporated into the landscaping strategy to retain water during periods of rainfall to mitigate flood risk to dwellings. SuDS features will include green roofs, permeable paving, rain gardens, basins and exocellular attenuation tanks. Blue roofs are also anticipated to be located on the roofs of apartment blocks to collect rainwater temporarily helping to manage run off.
- 4.10.4 The finished floor levels of dwellings across the Site will be raised to safeguard the Proposed Development from flooding.
- 4.10.5 Water quality will be safeguarded during the construction and operation phases of the Proposed Development. For instance, during the construction phase, materials will be stored securely and waste will be disposed of safely and promptly. During the operation phase, SuDS will be designed with consideration of water quality.



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- 4.10.6 The above design commitments are in line with conditions 80 and 82 as the Proposed Development will reduce risk of flooding and manage flood risk sustainably.

4.11 Ecology

- 4.11.1 Biodiversity is defined as the variety of living organisms and habitats and ecosystem services are the benefits derived from nature. Efforts will be undertaken in the Proposed Development to conserve and enhance biodiversity and habitats for the intrinsic value of nature and also for the benefits they bring people, such as recreation and aesthetic benefit, climate regulation and supporting the water and nutrient cycle.
- 4.11.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) to ecology are as follows:
- Policy EN12: Biodiversity and the Green Network
 - Policy EN13: Trees, Hedges and Woodlands
 - Policy EN16: Pollution and Water Resources

Design Commitments

- 4.11.3 During construction measures will be put in place to protect species, this includes but is not limited to: making sure construction takes place outside of bird nesting seasons and covering or fencing off excavations and pits to prevent animal access. Measures will be in line with the requirements of Condition 65.
- 4.11.4 During the construction and operation phase the incorporation of sensitive lighting design will minimise potential adverse impacts on species.
- 4.11.5 Existing trees, hedgerows and vegetation will be safeguarded where possible and the Proposed Development will include a variety of new green infrastructure, such as trees and shrubs providing habitats for species. Condition 52 and 56 shall be complied with in regards to tree planting and landscaping.
- 4.11.6 Wildlife planting may include street lined trees and herbaceous planting which will benefit ecology within the Proposed Development. This planting will assist with connecting green spaces. Climate-appropriate planting will be selected where possible, designed to support biodiversity and create a low-maintenance, immersive environment.
- 4.11.7 Green infrastructure sequesters CO₂ emissions through photosynthesis. Therefore, as the Proposed Development will protect and enhance green infrastructure where possible, including trees and hedgerows, this will assist with climate change mitigation. Measures relating to biodiversity will satisfy Condition 43 (d).
- 4.11.8 A variety of green infrastructure will be present within the Proposed Development and can reduce overheating through providing a shading and cooling effect. Trees provide shade giving relief from heat and vegetation undergoes evapotranspiration which helps to cool surrounding air. In addition, where possible climate-resilient planting will be selected in the Proposed Development.
- 4.11.9 In addition to green infrastructure, the Proposed Development will also include blue infrastructure. Blue infrastructure provides habitats for species enhancing biodiversity within the Proposed Development.

4.12 Sustainable Transport

- 4.12.1 The Proposed Development will incorporate measures to facilitate sustainable journeys that will reduce emissions. Measures include the provision of sustainable travel infrastructure and initiatives to



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encourage behaviour change. Consideration of the impact on traffic and local infrastructure such as parking is essential.

4.12.2 Relevant policies within the Reading Borough Council Local Plan (November 2019) to sustainable transport are as follows:

- Policy TR5: Car and Cycle Parking and Electric Vehicle Infrastructure

Design Commitments

4.12.3 The Proposed Development has good access to existing walking, cycling and bus routes meaning occupants can connect to facilities and amenities in the surrounding area using sustainable modes of travel.

4.12.4 Pedestrian and cycle routes will be designed to be safe and accessible and there will be space for secure cycle parking within the ground floor of apartments. This increases the convenience of cycling and walking making it a more appealing option for occupants.

4.12.5 A Travel Plan will be provided to encourage the use of sustainable modes of transportation as required in condition 89.



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Table 4.1: Compliance with Relevant Policies Detailed within the Reading Borough Council Local Plan (November 2019) and Reading Borough Council Sustainable Design and Construction Supplementary Planning Document (December 2019).

Policy Name	Objective	Details / Evidence	Compliant with National Policy	Compliant with the adopted Local Plan?
Reading Borough Local Plan (November 2019)				
Policy CC2: Sustainable Design and Construction	All new developments must achieve high standards of new buildings in regard to energy, water, minerals, materials and natural resources with care to the effects of climate change.	Energy efficient design including highly insulated building fabric with external walls, floors and roofs with low U-Values, reduction of thermal heat loss, double glazed windows and low energy lighting. Specification of mechanical extract ventilation with heat recovery to assist with providing good air quality and optimising temperatures All-electric heating strategy including the specification of Air Source Heat Pumps (ASHP) and community heat pumps to apartments Provision of solar PV panels to apartments Smart meters within dwellings to enable occupants to adjust energy usage The Energy Strategy exceeds the requirements of condition 93, with modelling demonstrating that 71% of predicted emissions are anticipated to be offset through renewable sources and energy efficiency measures Localised rainwater harvesting will be provided to enable irrigation of landscaping The Courtyard space will mix open areas with shaded spots for comfort in warmer temperatures. Planting will be selected for climate-resilient characteristics.	Yes, the NPPF Chapter 2 Achieving Sustainable Development, Chapter 14 Meeting the Challenge of Climate Change, Flooding and Coastal Change, and Chapter 15 Conserving and Enhancing the Natural Environment will be adhered to. Low and zero carbon technology will be provided to exceed Part L 2021.	Yes
Policy CC3: Adaptation to Climate Change	Developments must incorporate measures to adapt to climate change, such as designing developments with measures such as solar shading, thermal mass, heating and ventilation and appropriately coloured materials. Developments are required to include Sustainable Drainage Systems (SuDS) to account for increased flooding caused by climate change.	The Development incorporates measures for dwellings and public spaces to support climate change adaptation and resilience. Dwellings will be designed to comply with the requirements set out in the Overheating Analysis (Cudd Bentley, 2025)	Yes, the NPPF Chapter 14 Meeting the Challenge of Climate Change, Flooding and Coastal Change and Chapter 15 Conserving and Enhancing the Natural Environment will be adhered to.	Yes



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Policy Name	Objective	Details / Evidence	Compliant with National Policy	Compliant with the adopted Local Plan?
Policy CC4: Decentralised Energy	Any development of more than 20 dwelling should consider the inclusion of decentralised energy provision.	All-electric heating strategy including the specification of Air Source Heat Pumps (ASHP) and community heat pumps to apartments Provision of solar PV panels to apartments	Low and zero carbon technology will be provided to exceed Part L 2021.	Yes
Policy CC5: Waste Minimisation and Storage	Developments should minimise waste and promote sustainable approaches to waste management.	The Development will seek to reduce the quantity of waste sent to landfill, both during construction phase and during operation. It is intended that at least 80% of construction and demolition waste is diverted from landfill. Dwellings will be provided with space to allow storage of non-recyclable and recyclable waste. A Construction Method Statement, in line with condition 65, will govern construction practices.	Yes, the NPPF Chapter 2 Achieving Sustainable Development will be adhered to.	Yes
Policy EN16: Pollution and Water Resources	Developments should not damage the environment and place adequate mitigation measures for land, noise, water or light pollution.	Pollution control mitigations are set out in documents relating to the approved application, including Exterior Lighting Strategy (Hoare Lea, 2016) and Air Quality Assessment in line with conditions 7, 70 and 73. Noise pollution will be minimised as detailed in the Noise Assessment in accordance with condition 34. Measures relating to land remediation and environmental monitoring will be managed in line with conditions 47, 50, 69, 70, 72, 73. Can Lighting will be planned in accordance with condition 58.	Yes, the NPPF Chapter 8 Promoting Health and Safe Communities and Chapter 15 Conserving and Enhancing the Natural Environment will be adhered to.	Yes
Policy EN18: Flooding and Drainage	All developments of 10 or more dwelling must incorporate SuDS.	The Proposed Development will be designed in accordance with conditions 80 and 82 to reduce flood risk and incorporate SuDS. Such SuDS features will include green roofs, permeable paving, rain gardens, basins and exocellular attenuation tanks.	Yes, the NPPF Chapter 15 Meeting the Challenge of Climate Change, Flooding and Coastal Change.	Yes



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Policy Name	Objective	Details / Evidence	Compliant with National Policy	Compliant with the adopted Local Plan?
Policy H5 Standards for New Housing	New build housing to be built to the following standards unless it can be demonstrated that this would render a development unviable. All new build housing must be built to higher water efficiency standard under Regulation 36(3) of the Building Regulations. All major new-build residential development should be designed to achieve zero carbon emissions All new building housing will achieve a minimum 19% improvement in dwelling emission rate over the target emission rate as defined by the 2013 Building Regulations All new build housing must be in line with M4(2) of the Building Regulations and 5% of developments with 20 or more dwellings must be built in line with M4(3) of the Building Regulations	As set out in Section 1.2, the Development is required to meet Condition 93 from the HPA, in relation to energy. The target required by Condition 93 requires a minimum of a 19% improvement in the dwelling emission rate compared to Part L (2013). Compliance with the condition is demonstrated in Section 3, where the results of energy modelling are presented with an 83% improvement. This is achieved through an Energy Strategy including an electric-led strategy, with the deployment of community heat pumps, air source heat pumps, mechanical ventilation with heat recovery and solar PV panels. Potable water consumption within dwellings is anticipated to be limited to 125 litres per person per day which is in line with the requirements of Part G Building Regulations. The aspirational target of 110 litres per person per day will be considered for dwellings where possible. Water meters will be provided to enable users to monitor water usage and reduce water use where possible. Refer to the Accommodation Schedule for details on M4(2) and M4(3) requirements.	Yes, energy modelling demonstrates compliance with current policy and with Building Regulations (Part L) 2021. Water efficiency is in line with Building Regulations. Building Regulations requirements for accessibility will be complied with – Accommodation Schedule provides details.	Yes, the energy assessment demonstrates results that comply with the Condition regarding energy. Water efficiency is in line with the approved Design Code and with Building Regulations.



5 Summary

- 5.1.1 This Energy and Sustainability Statement outlines how the Proposed Development demonstrates sustainability in line with the approved Design and Access Statement (Barton Willmore, 2016, Energy Strategy (Hoare Lea, 2016) and Sustainability Statement (Hoare Lea, 2016) submitted with the Hybrid Planning Application (HPA) (PL/16/0199) for Royal Elm Park and associated planning consent.
- 5.1.2 The Statement, where not guided by the approved planning consent, also demonstrates alignment with national planning policy and guidance, and local policy including Reading Borough Council Local Plan (November 2019) and Reading Borough Council Sustainable Design and Construction Supplementary Planning Document (December 2019).
- 5.1.3 The Energy Statement in **Section 3** shows how the Proposed Development will reduce energy demand, incorporate energy efficiency measures and implement low and zero carbon technologies where possible. This section also demonstrates compliance with Condition 93 in regard to Block 6 (Phase 5). Energy modelling calculations demonstrate the Proposed Development will exceed Part L 2021 Building Regulations in relation to CO₂ emissions, primary energy and fabric energy efficiency.
- 5.1.4 The Sustainability Statement in **Section 4** evidences the sustainability approach of the Proposed Development in the context of the broader hybrid planning consent with design commitments grouped into the themes of community engagement and facilities, health and wellbeing, construction management, responsible use of materials, minimisation of waste, energy and carbon emissions, pollution control, minimising water use, managing flood risk, ecology, and sustainable transport.
- 5.1.5 The Proposed Development responds to the objectives of Reading Borough Council and contributes towards a sustainable lifestyle by providing opportunities for a balanced community, healthy lifestyle opportunities, efficient transport options as well as efficient homes and low carbon energy.



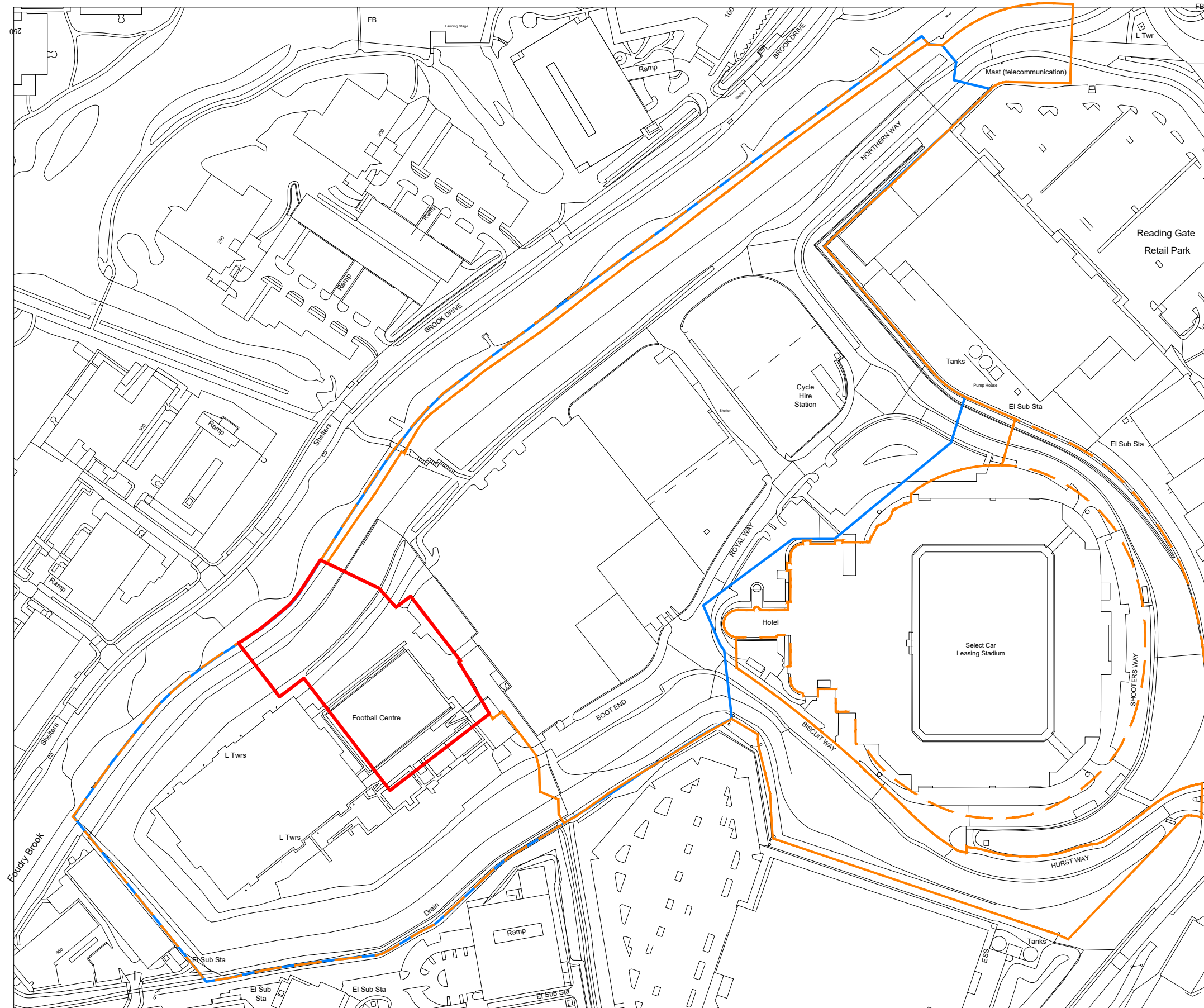
Appendix A Site Plans





LEGEND

-  Site Application Boundary (Area: 0.99 ha)
-  RFC Prop Co Ltd Ownership Boundary
-  Hybrid Application Boundary - Detail (ref 160199)
-  Hybrid Application Boundary - Outline (ref 160199)

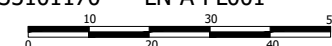


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PLANNING

Project
Royal Elm Park
Block 6, Phase 5
Drawing Title
Site Location Plan

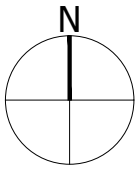
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03.10.25	1:2500	CB	MK
Project No	Drawing No	Revision	
333101170	LN-A-PL001	P1	



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Proposed Block Plan in context of Hybrid Planning Application PA160199. Context shown illustratively only.

PLANNING

Project
**Royal Elm Park
Block 6**
Drawing Title
Proposed Block Plan

Date	Scale	Drawn by	Check by
23.10.25	1:500 @A1	mk	pj
Project No	1:xx @A3		Revision
333101170	LN-A-PL110		P1



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Appendix B Policy and Legislative Context

B.1 Introduction

- B.1.1 This appendix details national policy, regulation, and local planning policies which are relevant to the Proposed Development.

B.2 National Policy Context

- B.2.1 Climate change is recognised as one of the most immediate global environmental challenges. In May 2019, the Committee on Climate Change published the Net Zero Report, recommending that the UK Government introduce a target of at least a 100% reduction of greenhouse gas (GHG) emissions by 2050.
- B.2.2 In 2019, the Climate Change Act (2008) was amended to include a revision of the previous aim of an 80% reduction of GHG emissions compared to 1990 levels by 2050. The Act now mandates that *“the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline”*.
- B.2.3 The UK Government’s international commitment, transposes into national and local planning policy. The Government has sought to reduce CO₂ emissions associated with new buildings through energy demand reduction and the incorporation of low and zero carbon technologies to deliver electricity and heat.

Net Zero Strategy

- B.2.4 In November 2021, the UK Government published the Net Zero Strategy, bringing forward the government’s commitment to a fully decarbonised power system. The following key policy objectives are relevant to energy:

“To take action so that by 2035, all our electricity will come from low carbon sources, subject to security of supply, bringing forward the government’s commitment to a fully decarbonised power system by 15 years.

Aiming to phase out the installation of new and replacement natural gas boilers by 2035 in line with the natural replacement cycle, once costs of low carbon alternatives have come down, including any hydrogen-ready boilers in areas not converting to hydrogen, to ensure that all heating systems used in 2050 are compatible with net zero”.

Powering Up Britain

- B.2.5 The UK Government’s Policy Paper ‘Powering Up Britain’¹⁶, published in March 2023, outlines how the government will deliver net zero commitments, enhance the country’s energy security, and seize the economic opportunities of the transition. The document combines the Energy Security Plan and Net Zero Growth Plan detailing how the supply of renewable energy will be increased including information on emerging technologies such as Carbon Capture Utilisation and Storage and hydrogen. The priorities are to domesticate, diversify and decarbonise energy production.

National Planning Policy Framework (2024)

- B.2.6 The National Planning Policy Framework (NPPF, 2024) sets out the Government’s overarching planning policy for England. In order to transpose national legislation into local policy, local planning authorities must take into account the NPPF when developing their planning policies.

¹⁶ Powering Up Britain. Available from:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147340/powering-up-britain-joint-overview.pdf



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- B.2.7 The National Planning Policy Framework (NPPF) which was revised in December 2024 requires developments to *“take a proactive approach to mitigating and adapting to climate change.”*
- B.2.8 Section 14 of the NPPF ‘Meeting the challenge of climate change, flooding and coastal change’ emphasises in paragraph 161 that the planning system should *“support the transition to net zero by 2050 and take full account of all climate impacts including overheating, water scarcity, storm and flood risks and coastal change”*. It should help to *“shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.”* It sets out the planning system’s pivotal role in sustainable development as written in paragraph 163: *“The need to mitigate and adapt to climate change should also be considered in preparing and assessing planning applications, taking into account the full range of potential climate change impacts.”*
- B.2.9 Plans should take a proactive approach to mitigating and adapting to climate change and should be planned for in ways that:
- Can help to reduce greenhouse gas emissions, such as through its location, orientation, and design;
 - Provide a positive strategy for renewable and low carbon energy sources, that maximises the potential for sustainable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts); and
 - Consider suitable areas for renewable and low carbon energy sources, and opportunities for development to draw its energy supply from decentralised, renewable, or low carbon energy supply systems.
- B.2.10 When determining planning applications, local planning authorities should expect new development to comply with any development plan policies on local requirements for decentralised energy supply (unless demonstrated to be unfeasible or unviable). Development should take account of landform, layout, building orientation, massing, and landscaping to minimise energy consumption.

National Building Regulations – Part L (Conservation of Fuel and Power)

- B.2.11 The UK’s international commitments are transposed into National Building Regulations. The energy efficiency requirements of the Building Regulations are set out in Part L (Conservation of Fuel and Power) which states that new development is encouraged to reduce carbon emissions in accordance with the energy hierarchy of reducing energy demands in the first instance, supplying energy efficiently, and finally the provision of appropriate renewable and low carbon energy technologies.
- B.2.12 Changes to the Building Regulations Part L include a significant tightening of standards to better equip buildings for a low and zero carbon future with consideration of thermal comfort in modern buildings.

Updated – 2021 Edition

- B.2.13 Following consultation beginning in November 2019, the new Part L was published on the 15th of December 2021 announcing changes to the Building Regulations which aim to help the UK deliver net zero.
- B.2.14 This approved document took effect on 15th June 2022 for use in England. It does not apply to work subject to a building notice, full plans application or initial notice submitted before that date, provided the work for each building is started before 15th June 2023.
- B.2.15 Key changes include the requirement for all new buildings to meet a new primary energy target and a carbon emissions rate target.
- B.2.16 The changes to Approved Document L enhance the performance requirements for compliance. For new dwellings, 30% carbon reduction is expected for compliant buildings in contrast with Part L 2013.



For new non-domestic buildings, on average, 27% carbon reduction is expected for compliant buildings in contrast with the previous Part L 2013.

- B.2.17 The national target for energy at the Proposed Development is the Part L 2021 Building Regulations. This is subject to further amendments in the future.

B.3 Local Policy Context

Reading Borough Local Plan (November 2019)

- B.3.1 The Reading Borough Council Core Strategy was adopted in November 2019. Relevant policies to the Proposed Development, energy and sustainability are as follows:

- Policy CC1: Presumption in Favour of Sustainable Development
 - Applications will be determined in accordance with the NPPF and the Local Plan.
- Policy CC2: Sustainable Design and Construction
 - This policy requires that all new developments achieve high standards of energy efficiency and sustainable construction.
 - All major non-residential developments or conversions to residential are required to meet the most up-to-date BREEAM 'Excellent Standards' and all minor applications are expected to meet the most up-to-date BREEAM 'Very Good'
- Policy CC3: Adaptation to Climate Change
 - Developments must incorporate measures to adapt to climate change, such as sustainable drainage systems (SuDS), green roofs, and other features that enhance biodiversity and manage flood risk.
- Policy CC4: Decentralised Energy
 - Any development of more than 20 dwellings or non-residential development of over 1,000 sqm shall consider the inclusion of decentralised energy provision unless it is demonstrated that the scheme is not suitable.
 - Where there is existing decentralised energy provision within proximity of the application site of non-residential development of over 1,000 sqm or residential developments of 10 dwellings or more, the development will be expected to link into the existing network or demonstrate why this is not feasible.
- Policy CC5: Waste Minimisation and Storage
 - Developments should minimise the generation of waste in construction, use and life of buildings and promote more sustainable approaches to waste management.
 - Waste management should include reduction or recycling of construction waste, promotion of layout and design, well-designed space to facilitate waste storage and composting.
- Policy EN1: Protection and Enhancement of the Historic Environment
 - Historic features and the historic environment, as well as their settings should be preserved and enhanced where possible.
 - Developments should ensure impacts to the historic environment are avoided where possible.
- Policy EN11: Waterspaces



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- Reading's waterspaces should be protected and enhanced so that waterspaces can continue to contribute to biodiversity, ecology, flood mitigation and local character.
- When developments are within vicinity of the watercourse there should be an enhanced relationship, provide access to the watercourse and be set at least ten metres back where practicable.
- Policy EN12: Biodiversity and the Green Network
 - This policy emphasises the protection and enhancement of biodiversity. Hotel extensions should contribute to the green network by incorporating green infrastructure, such as green walls and roofs.
- Policy EN13: Trees, Hedges and Woodlands
 - Individual trees and groups of trees will be protected from damage or removal where they are identified as important. The goal is to extend Reading's vegetation cover.
- Policy EN15: Air Quality
 - Developments should improve air quality and reduce the effects of poor air quality.
- Policy EN16: Pollution and Water Resources
 - Developments should not be damaging to the environment, specifically land, noise or light pollution. Adequate mitigation measures should be implemented if potential damages are identified.
 - Ground and surface water quality should not be deteriorated.
- Policy EN18: Flooding and Drainage
 - All major developments or 10 dwellings or equivalent non-residential must incorporate SuDS.
- Policy H5: Standards for New Housing
 - All new build housing must be built to higher water efficiency standard under Regulation 36(3) of the Building Regulations.
 - All major new-build residential development should be designed to achieve zero carbon emissions
 - All new building housing will achieve a minimum 19% improvement in dwelling emission rate over the target emission rate
 - All new build housing must be in line with M4(2) of the Building Regulations and 5% of developments with 20 or more dwellings must be built in line with M4(3) of the Building Regulations
- Policy TR5: Car and Cycle Parking and Electric Vehicle Charging
 - This policy sets targets for the provision of electric vehicle charging points and adequate cycle parking in new developments and extensions.

Reading Borough Council Core Strategy (January 2008, altered January 2015)

B.3.2 The Reading Borough Council Core Strategy was adopted in January 2008 and the alteration was adopted in January 2015. Relevant policies to the Proposed Development are as follows:



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- Policy CS1: Sustainable Construction and Design
 - Developments should be designed to use materials, water, energy and natural resources efficiently and account for climate change. Developments should implement energy efficiency and energy conservation measures to reduce energy demand. Developments over 10 dwellings should incorporate energy from renewable technologies and energy efficiency demand measures to offset at least 20% predicted carbon dioxide emissions from estimated energy usage of completed and occupied development
 - Developments should implement water conservation measures and reduce water use, Sustainable urban drainage techniques should be incorporated to reduce surface water runoff ensuring runoff is not greater than the existing site runoff
- Policy CS2: Waste Minimisation
 - Waste should be minimised in developments during construction and operation to reduce waste and sustainable waste management techniques should be implemented, such as reuse and recycling. There should be adequate space for operational waste storage and recycling
- Policy CS3: Social Inclusion and Diversity
 - Developments should enhance social inclusion in relation to access to housing, employment, services, leisure, health, education and community facilities
- Policy CS5: Inclusive Access
 - Within developments buildings should be located, sited and designed to provide suitable access to facilities for all so that they can be used easily and safely
- Policy CS7: Design and the Public Realm
 - Developments should be designed to a high quality standard and be visually attractive which enhances and maintains the character and appearance of Reading. Developments should create safe and accessible environments where crime is minimised and does not negatively impact community cohesion and quality of life. Developments should have a positive contribution to character, diversity, continuity and enclosure, quality of the public realm, adaptability, legibility, and ease of movement and permeability
- Policy CS20: Implementation of The Reading Transport Strategy (Local Transport Plan 2006-2011)
 - Developments should contribute to a balanced transport network including encouraging the use of sustainable modes of transport through improving accessibility and transport safety
- Policy CS22: Transport Assessments
 - Developments should ensure that they are accessible safely by a range of transport modes, in particular sustainable travel in accordance with a submitted transport assessment
- Policy CS23: Sustainable Travel and Travel Plans
 - Developments should implement measures to increase the uptake of sustainable travel through travel plans, and safe routes to green infrastructure and schools
- Policy CS24: Car/ Cycle Parking
 - Developments should comply with minimum car and cycle parking requirements
- Policy CS29: Provision of Open Space



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- Developments should make space for provision of open space
- Policy CS30: Access to Open Space
 - Developments with poor access to open space facilities should contribute to or make provision for improvements to road and other crossings to enhance access to green space
- Policy CS34: Pollution and Water Resources
 - Development should not damage the environment through pollution including noise, light, land and air
- Policy CS35: Flooding
 - Development should not be located in areas of high flood risk or where it could increase risks to property and life through flooding
- Policy CS36: Biodiversity and Geology
 - Developments should retain, incorporate and protect geological or biodiverse features and should not negatively impact the integrity of an established wildlife link
- Policy CS38: Trees, Hedges and Woodlands
 - Developments should protect trees and hedges from removal or damage

Reading Borough Council Sites and Detailed Policies Document (October 2012, altered January 2015)

B.3.3 The Reading Borough Council Sites and Detailed Policies Document was adopted in October 2012 and the alteration was adopted in January 2015. Relevant policies to the Proposed Development are as follows:

- Policy DM1: Adaptation To Climate Change
 - Developments should incorporate measures to adapt to climate change including orientating buildings to maximise opportunities for natural heating and ventilation as well as reducing exposure to wind and reducing the impact of surface water runoff through drainage design. In addition, developments should maximise resistance and resilience to climate change and use planting and trees
- Policy DM2: Decentralised Energy
 - Developments should consider generating energy through a decentralised energy system, such as CHP
- Policy DM3: Infrastructure Planning
 - Developments should provide infrastructure, resources, services and amenities such as transport infrastructure, open space and green infrastructure, education space and economic development infrastructure and services
- Policy DM10: Private And Communal Outdoor Space
 - Dwellings should have functional private or communal open space which should respect the character and size of similar spaces in the vicinity
- Policy DM12: Access, Traffic And Highway-Related Matters



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- Developments should consider the impact on congestion, the environment, and safety and it will only be permitted where the development would not have a detrimental impact on the functioning of the transport network or safety of users of the transport networks and accesses. Highway works should comply with the Transport Authority's adopted standards
- Policy DM16: Provision of Open Space
 - Developments should provide public open space as outlined in the Open Spaces Strategy. Open space should be useable not fragmented, be safe, be accessible and provide informal landscaping for recreational, wildlife and aesthetic purposes
- Policy DM17: Green Network
 - Green links should be maintained, protected, enhanced, consolidated and extended within developments demonstrating how green infrastructure which will be provided will link into the existing green network helping to enhance and maintain it
- Policy DM18: Tree Planting
 - Developments should plant trees to improve tree coverage as well as to maintain and enhance appearance and character, increase biodiversity and act as a climate mitigation and adaption measure
- Policy DM19: Air Quality
 - Developments should improve air quality and reduce impacts of poor air quality

Reading Borough Council Sustainable Design and Construction Supplementary Planning Document (December 2019)

B.3.4 The Sustainable Design and Construction Supplementary Planning Document (SPD) for Reading provides detailed guidance on implementing the sustainability policies outlined in the Local Plan. Key points from the SPD are as follows:

1. Energy Efficiency:

- BREEAM Rating: New non-residential buildings, including commercial properties and their extensions, must achieve a minimum BREEAM 'Excellent' rating. This ensures high standards of energy efficiency and sustainable construction practices.
- Carbon Reduction: The Carbon Plan 2020-2025 aims to **reduce carbon emissions by 85% by 2025**, with a goal of becoming a **net-zero carbon organization by 2030**. This target applies to all developments.
- Energy Performance: The Sustainable Design and Construction SPD emphasises achieving high energy performance standards. This includes using renewable energy sources, improving insulation, and incorporating energy-efficient systems and technologies.

2. Climate Change:

- Flood Risk Management: Commercial developments must incorporate sustainable drainage systems (SuDS) to manage surface water and reduce flood risk. This includes features like permeable surfaces and rainwater harvesting.
- Green Infrastructure: The SPD encourages the integration of green roofs, green walls, and other green infrastructure to enhance biodiversity and provide cooling effects. This helps mitigate the urban heat island effect and supports local wildlife.



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- **Heat Resilience:** Buildings should be designed to cope with higher temperatures. This includes measures such as improved insulation, natural ventilation, and shading to maintain comfortable indoor environments during heatwaves.

3. Water Management:

- **Water Efficiency:** New developments must achieve a water efficiency standard of 110 litres per person per day. This target is set to reduce water consumption and promote sustainable water use. Buildings are required to implement water-saving measures to reduce consumption. This includes the use of water-efficient fixtures and fittings, as well as systems for recycling greywater.
- **Permeable Surfaces:** The SPD encourages the use of permeable surfaces in new developments to allow rainwater to infiltrate the ground, reducing surface water runoff and improving groundwater recharge.

4. Waste Reduction:

- **Site Waste Management Plans (SWMPs):** Developments are required to prepare and implement SWMPs. These plans should detail how waste will be managed during construction and operation, aiming to minimise waste generation and maximise recycling and reuse.
- **Waste Segregation:** The SPD emphasises the importance of segregating waste at the source. Commercial properties must provide adequate facilities for separating recyclable materials from general waste.
- **Construction Waste:** The SPD encourages the use of sustainable construction practices to reduce waste. This includes using materials efficiently, prefabrication, and designing for deconstruction and reuse.

5. Decentralised Energy and District Heating:

- **Connection to District Heating Networks:** Where feasible, new developments should connect to existing or planned district heating networks. This helps to improve energy efficiency and reduce carbon emissions.

6. Submission Requirements:

- For submitting a planning application for a residential development in Reading, the Sustainable Design and Construction SPD outlines several key requirements, the two in focus include:
- **Sustainability Statement:** A detailed sustainability statement must be submitted, demonstrating how the development meets the sustainability policies outlined in the Local Plan and SPD. This includes energy efficiency, water management, waste reduction, and climate change adaptation measures.
- **Energy Strategy:** An energy strategy must be provided, outlining how the development will achieve high energy performance standards. This includes the use of renewable energy sources, improved insulation, and energy-efficient systems and technologies.

Reading Borough Council Community Infrastructure Levy – Charging Schedule (January 2015)

- B.3.5 The Reading Borough Council Community Infrastructure Levy – Charging Schedule was produced in January 2015. The Community Infrastructure Levy (CIL) allows local authorities to fund infrastructure to enhance development and growth. For new developments this is charged at a pre-defined rate, for instance for residential developments and student accommodation this is £150/per m².



Appendix C Energy Performance Specification

Table C.1: Building Energy Performance Specification

Dwellings		
Element or system	Specification	Notes
Climate data		UK average
Size and shape	As designed Apartments Assumed concrete frame, top floor steel frame Houses Assumed concrete frame	Specification as per drawings provided by Stantec
Opening areas (windows, roof windows and doors)	As designed	Specification as per drawings provided by Stantec
External walls	$U = 0.15 \text{ W/m}^2\text{K}$	
Party walls	$U = 0.00 \text{ W/m}^2\text{K}$	Fully insulated cavity
Ground floor	$U = 0.18 \text{ W/m}^2\text{K}$	
Roof	$U = 0.18 \text{ W/m}^2\text{K}$	
Opaque door (<20% glazed area)	$U = 1.2 \text{ W/m}^2\text{K}$	Overshading average or unknown Orientation as per drawings
Patio door/windows (>60% glazed area)	Double glazed $U = 1.4 \text{ W/m}^2\text{K}$ Frame factor = 0.7 Minimum solar energy transmittance (g-value) = 0.76	Overshading average or unknown Orientation as per drawings
Thermal mass	Precise calculation	
Allowance for thermal bridging	Apartments Based on psi Values from Acceptable Construction Details Part L 2021 Steel Frame Hybrid Insulation and Recognised Construction Details. Needs bespoke calculation at detailed design Houses Based on psi Values from Recognised Construction Details. Needs bespoke calculation at detailed design	Psi values need bespoke calculation at detailed design
Ventilation system	Mechanical Ventilation with Heat Recovery	Model such as Brookvent Aircycle 1.3+
Duct Installation Specification	Level 1	For supply (or extract, whichever is longer) duct lengths less than or equal to 2m, the duct system must be continuously insulated throughout to a minimum depth of 25mm with an insulant thermal conductivity of 0.04 W/m. K or less. For supply (or extract, whichever is longer) duct lengths greater than 2m, the duct system must be continuously insulated throughout to a minimum depth of 50mm with an insulant thermal conductivity of 0.04 W/mK or less. Should this not be obtainable then level 2 must be used.
Air permeability	$3 \text{ m}^3/\text{h.m}^2 \text{ at } 50 \text{ Pa}$	



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Dwellings		
Element or system	Specification	Notes
Main heating fuel (space and water)	Apartments Community heat pump Houses Air Source Heat Pump	Apartments Air Source Heat Pumps Efficiency 350% Houses Model such as Mitsubishi Electric Ecodan 6kW PUZ-WM60VAA
Hot water system	Apartments Community heat pump Houses Air Source Heat Pump	
Showers	Vented hot water system, flow rate 7L/min	
Hot water cylinder	Apartments HIU Houses Hot water cylinder	Apartments Loss: 1.44 kwh/day Houses Volume: 170.0 L Loss: 1.23 kwh/day Model such as Mitsubishi Electric EHPT15-30X-UKHDW
Secondary space heating	None	
Lighting	Power 8W Efficacy 95 lm/W	100% Low Energy
Air conditioning	Air conditioning present in apartments on 6 th floor only	Minimum energy class A rated for cooling
Renewables	Solar PV	Apartments

Table C.2: Results of SAP Assessment

Sample Dwelling Type	TER	DER	TPER	DPER	TFEE	DFEE
1 Block 6A-2B4P-GF-NE	13.94	4.12	74.92	43.63	35.75	35.96
2 Block 6A-2B4P-1F-SW	12.13	3.51	65.22	37.45	27.74	27.85
3 Block 6A -2B3P-4F-SW	11.56	3.34	62.29	35.92	21.18	19.87
4 Block 6A-2B3P-6F-NE	14.84	4.16	79.89	44.45	37.67	32.82
5 Block 6B-2B4P M4(3)-GF-SW	14.04	4.06	75.31	42.74	40.22	39
6 Block 6B-1B1P-GF-NE	16.43	4.7	89.24	50.33	27.7	28.57
7 Block 6B-2B4P-2F-NE	10.05	3.01	54.08	32.38	17.09	14.41
8 Block 6B-3B5P-6F-SW	14.72	-6.15	78.92	-7.74	43.88	41.81
9 Block 6-4B6P Townhouse-SE	11.86	3.58	62.16	37.84	44.03	41.05
TOTAL/AVERAGE	12.4	3.2	66.4	36.1	30.2	29.1
% PERFORMANCE		75%		46%		4%

