



Roundwood, Stevenage

Energy and Sustainability Statement

On behalf of

croudacehomes

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Contents

1	Executive Summary	1
1.1	Introduction	1
1.2	Energy Strategy	1
1.3	Results	1
1.4	Conclusion	2
2	Introduction.....	3
2.1	Overview.....	3
2.2	The Site	3
2.3	The Proposed Development.....	3
2.4	The Applicant.....	3
3	Legislation and Planning Policy Context.....	6
3.1	Overview.....	6
3.2	National Context.....	6
3.3	Local Policy	7
4	Trends.....	9
4.1	Overview.....	9
4.2	Community and Economy	9
4.3	Transport	11
4.4	Energy Consumption & Sustainable Design	12
5	Methodology	15
5.1	Introduction	15
5.2	SAP Methodology.....	15
6	Energy Statement	17
6.1	Introduction	17
6.2	Fabric-First Approach ('Be Lean')	17
6.3	Use of Energy Efficiently ('Be Clean')	17
6.4	Renewable and Low Carbon Technologies ('Be Green')	18
6.5	Results	18
7	Sustainability Statement.....	21
8	Conclusion	33

Figures

Figure 2.1: Proposed Site Layout Plan..... 5

Tables

Table 1.1: Domestic CO₂ emissions for the Proposed Development..... 2

Table 4.1: Physical Health Baseline Standards 9

Table 4.2: Mental Health and Lifestyle/Behavioural Baseline Standards 10

Table 4.3: GHG Emissions within North Hertfordshire 2005-2021..... 13

Table 4.1: Calculation Information Sources 15

Table 6.1: Feasibility of low carbon and renewable technologies 18

Table 6.2: Domestic CO₂ emissions for the Proposed Development..... 20

Table 7.1: North Herts Local Plan Policies 22

Table 7.2: Sustainability SPD Theme Summary and Design Measures 27

Table 8.1: Predicted Building Performance Metrics and Results 33

Table C.1: Building Energy Performance Specification for Houses..... 41

Table C.2: Building Energy Performance Specification for Apartments..... 42

Table C.3: Results of sample SAP assessments..... 43

Appendices

Appendix A Proposed Site Layout Plan

Appendix B Policy Context

Appendix C Energy Performance Specification

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1 Executive Summary

1.1 Introduction

- 1.1.1 This Energy and Sustainability Statement has been prepared by Stantec on behalf of Croudace Homes Ltd in support of a full planning application for residential-led development at Roundwood, Stevenage (hereafter referred to as the “Proposed Development”). It outlines how the Proposed Development demonstrates sustainability in line with national planning policy and guidance, and the North Hertfordshire Local Plan 2011-2031.
- 1.1.2 This Statement also sets out how the Proposed Development responds to the North Herts Sustainability Supplementary Planning Document¹ (SPD). The SPD was adopted in September 2024 and sets the standards required to ensure that the vision, objectives and policies of the adopted North Hertfordshire Local Plan are met as sustainably as possible.
- 1.1.3 The Proposed Development will be designed with the following key themes central to its design: climate change mitigation and carbon reduction, climate change adaptation, community and economy, transport, sustainable design, waste minimisation and management, and landscaping and biodiversity.
- 1.1.4 The Proposed Development comprises the construction of 281 dwellings and associated roads, parking, drainage, landscaping, open space and servicing facilities.

1.2 Energy Strategy

- 1.2.1 The Energy Strategy 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,
 - 3) Using renewable and low carbon technologies ('Be Green'), where possible.
- 1.2.2 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. The fabric specification exceeds the fabric standards of Building Regulations Part L 2021.
- 1.2.3 The proposed heating strategy adopts an electric-led approach. This includes the use of Air Source Heat Pumps (ASHPs) to all houses which are anticipated to become a primary heating strategy in line with the Future Homes Standard, expected to be introduced by 2025. This approach to create a fossil fuel free development enables an easy transition to net zero operation once the UK's electricity grid decarbonises in 2035.

1.3 Results

- 1.3.1 The Energy Strategy has been prepared using the Design Standard Assessment Procedure (SAP) 10 methodology to calculate predicted energy demand and associated carbon emissions for the dwellings of the Proposed Development. **Table 1.1** shows the overall domestic CO₂ emissions for the baseline scenario (Part L 2021 compliance) and predicted scenarios (the proposed energy strategy).

¹ North Herts Sustainability SPD. Available from https://www.north-herts.gov.uk/sites/default/files/2024-09/Sustainability%20SPD_02SEPT24.pdf

Table 1.1: Domestic CO₂ emissions for the Proposed Development

Annual Performance Measure		Target	Actual	% Reduction
Part L 2021	CO ₂ emissions (kg CO ₂ /m ²)	10.0	3.9	60%
	Primary Energy (kWh/m ²)	52.2	41.8	20%
	Fabric Energy Efficiency (kWh/m ²)	31.9	31.1	3%

1.4 Conclusion

1.4.1 The Proposed Development takes a holistic approach towards sustainability. This approach includes:

- A vision to create a place that is well-designed to be healthy, inclusive and safe;
- A transport strategy which promotes active travel by providing pedestrian routes both through the Site to access existing local amenities as well as around the boundary of the Site to encourage outdoor exercise;
- All houses will be fitted with a 7kW charging point as standard, with shared charging points for all flat units to support the decarbonisation of private travel;
- A contribution to the supply of housing, including 40% affordable housing which will assist in addressing housing need in the area;
- Provision of policy compliant open space provision and high quality landscaping which has been designed to encourage activity from residents, visitors, pedestrians and cyclists;
- Use of high-quality materials throughout the Proposed Development, creating a pleasant, and green new community;
- Deployment of a heat pump-led energy strategy where all heating demand is met by low carbon technology enabling an easy transition to Net Zero operation in line with the Future Homes Standard and the UK's trajectory to Net Zero Carbon by 2050; and
- Passive design measures such as glazing with solar shading, low air permeability, and openable windows will be used wherever possible, to prevent overheating and avoid excessive requirements for heating and cooling.

2 Introduction

2.1 Overview

- 2.1.1 This Energy and Sustainability Statement has been prepared by Stantec on behalf of Croudace Homes Ltd ('the Applicant') in support of a full planning application for the residential-led development (the "Proposed Development") on land at Roundwood, Stevenage ('the Site'). The Site falls within the administrative boundary of North Hertfordshire Council (NHC).
- 2.1.2 This Energy and Sustainability Statement is prepared for submission in support of a full planning application, demonstrating compliance with Part L 2021 of the Building Regulations and North Hertfordshire Local Plan 2011-2031 Policies:
- SP9 Design and Sustainability;
 - SP12 Green Infrastructure, Landscape and Biodiversity; and
 - D1 Sustainable Design.

2.2 The Site

- 2.2.1 The Site comprises a rectangular and flat arable field that measures approximately 10.7 hectares. It adjoins the northwestern boundary of Great Ashby on the edge of Stevenage. Back Lane runs along the eastern and southern boundary of the Site, beyond which are existing residential properties, whilst fields are located beyond the northern and eastern boundary.
- 2.2.2 The northern boundary of the Site comprises a footpath within a developing area of woodland plantation. Back Lane runs along the eastern and southern boundary of the Site. From the southern boundary, Back Lane runs from the junction with Caldar Way westwards to the hamlet of Chesfield, where it becomes Church Lane, which continues into Graveley village. Along most of the western boundary the Site adjoins Round Wood, from which the Site's name is taken. Hedgerows and mature trees follow much of the Site boundary.
- 2.2.3 The residential area of Great Ashby is located to the south and east of the Site. Back Lane links Great Ashby and the villages of Weston and Graveley with each other. To the west of the Site, beyond Round Wood itself is an area of mixed farmland, paddock and parkland, associated with the hamlet of Chesfield, the buildings of which lie about 300m to 400m west of the Site.

2.3 The Proposed Development

- 2.3.1 The full planning application is for 281 dwellings (including 40% affordable housing), and associated roads, parking, drainage, landscaping, open space and servicing facilities.
- 2.3.2 The Proposed Development's dwellings comprise a range of 1-, 2-, 3-, 4- and 5-bedroom dwellings in detached, semi-detached, terraced and apartment typologies.
- 2.3.3 An extract of the Proposed Site Layout Plan is shown in **Figure 2.1**, with the full version shown in **Appendix A**.

2.4 The Applicant

- 2.4.1 Croudace Homes is supported by 75 years of housebuilding experience, which they draw upon to deliver their customers with homes that are comfortable, well-designed, and set in well-laid-out, green and pleasant places.

2.4.2 In 2022² the Applicant established a set of operational sustainability targets and associated metrics aligned to the United Nations Sustainability Development Goals and the work of the Future Homes Hub³. These include:

- providing for a 10% improvement in Biodiversity Net Gain on all sites by the end of 2023;
- complying with the Building for Healthy Life Standard on all new schemes;
- eliminating single-use plastics and reducing the amount of waste sent to landfill;
- designing new homes with a water usage of less than 105 litres per person per day (lpppd);
- delivering high-quality homes that are zero carbon ready and sustainable by 2025;
- creating places and developments that are consistently low carbon, nature rich, resilient, healthy and well designed by 2025;
- introducing production methods that are net zero and sustainable by 2050, with interim targets for 2025 and 2030;
- managing and operating the business with the objective to be net zero by 2050, with a 50% reduction in emissions by 2030; and
- constructing all new homes in line with the Future Homes Standard by 2027.

2.4.3 The above objectives and targets set by the Applicant have informed the design of the Proposed Development, with the Applicant committed to delivering net zero carbon ready homes⁴ on Site in line with the Future Homes Standard. This commitment is being made ahead of both current Building Regulation standards and the targeted 2027 timeframe. Further detail on how this will be achieved is shown in **Section 5**.

² Croudace Homes Sustainability Targets - <https://www.croudacehomes.co.uk/Rebrand>

³ Future Homes Hub - <https://www.futurehomes.org.uk/>

⁴ The Future Homes Standard (FHS) targets the delivery of new “zero carbon ready” building standards in 2025, this standard is defined as one that enables buildings to become zero carbon without the need for retrofit once the power grid achieves zero carbon supply in 2035.



Figure 2.1: Proposed Site Layout Plan

3 Legislation and Planning Policy Context

3.1 Overview

- 3.1.1 A summary of the key legislation and policies relevant to the Statement are outlined below. This includes all policies which interface with climate change and health and wellbeing, given their extensive breadth and scope. This policy context includes those at the national level, such as the National Planning Policy Framework (NPPF).
- 3.1.2 North Herts Council passed a climate emergency motion in May 2019. This declaration asserted the NHC's commitment toward climate action beyond the current government targets and international agreements. This commitment is being pursued through NHC's Climate Change Strategy 2022-2027⁵ which sets out how the council aims to achieve their net zero objectives. The key objectives outlined within the Climate Change Strategy are:
- achieve Carbon Neutrality for the NHC's own operations by 2030;
 - ensure all NHC operations and services are resilient to the impacts of climate change;
 - achieve a Net Zero Carbon district by 2040; and
 - become a district that is resilient to unavoidable impacts of climate change.

3.2 National Context

- 3.2.1 The UK Government has acknowledged that climate change is a threat to our way of life and the natural world. It has also acknowledged that a "green recovery" from the coronavirus pandemic is an opportunity for the UK to boost economic growth, reduce inequality and improve our environment as well as helping to mitigate the effects of climate change. Quantitative targets have been set for reducing greenhouse gas (GHG) emissions in primary legislation, which is summarised below.

Climate Change Act 2008 and 2019 Amendment (Net Zero)⁶

- 3.2.2 The Climate Change Act (2008) sets a legally binding target for reducing greenhouse gas (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.
- 3.2.3 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.

National Planning Policy Framework and Planning Practice Guidance⁷

- 3.2.4 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

⁵ [Climate change | North Herts Council \(north-herts.gov.uk\)](https://www.north-herts.gov.uk/climate-change)

⁶ The Climate Change Act 2008 (2050 Target Amendment) Order 2019.
<https://www.legislation.gov.uk/ukdsi/2019/9780111187654>

⁷ National Planning Policy Framework. <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

coastal change' emphasises the planning system's pivotal role in sustainable development through "minimising vulnerability and improve resilience to the impacts of climate change". Paragraph 162 of the NPPF states:

"Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure."

- 3.2.5 National Planning Practice Guidance (PPG) was published in June 2014 and 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.
- 3.2.6 Paragraph 005 of the PPG puts forwards recommendations for Local Planning Authorities to consider:
- Identifying no or low-cost responses to climate risks that also deliver other benefits, such as green infrastructure that improves adaptation, biodiversity and amenity;
 - Building in flexibility to allow future adaptation if it is needed, such as setting back new development from rivers so that it does not make it harder to improve flood defences in the future; and
 - The potential vulnerability of a development to climate change risk over its whole lifetime.

3.3 Local Policy

North Hertfordshire Local Plan 2011-2031 (NHLP)

- 3.3.1 A detailed summary of the relevant policies is included in Appendix A, with the key Policies of the NHLP listed here:
- Policy SP9: Design and Sustainability sets out the expectations for the Strategic Housing Sites regarding design and the need for comprehensive masterplanning.
 - Policy SP10: Healthy Communities aims to provide and maintain healthy and inclusive communities for residents. The policy seeks to encourage developers to protect, enhance and create new physical and green infrastructure to foster healthy lifestyles.
 - Policy SP12: Green Infrastructure, Landscape and Biodiversity aims to ensure that whilst significant growth is being accommodated during the plan period, the natural environment is also being protected and enhanced.
 - Policy D1: Sustainable Design sets out the key design principles of the Local Plan.

North Hertfordshire Sustainability Supplementary Planning Document (SPD)

- 3.3.2 The Sustainability SPD was adopted in September 2024 and sets the standards required to ensure that the vision, objectives and policies of the adopted North Hertfordshire Local Plan are met as sustainably as possible.
- 3.3.3 The adopted Sustainability SPD does not form part of the North Herts Local Plan, and so cannot introduce new planning policies. However, the information contained within the SPD will be a material consideration in the determination of planning decisions.
- 3.3.4 The SPD is organised by themes, and with a rating system of bronze, silver and gold. Bronze indicates policy compliance, and applicants are expected to select themes on which to target higher levels of silver and gold. It is acknowledged that factors such as location, scale and context of the proposed development will influence the achievement of ratings.
- 3.3.5 The themes of the Sustainability SPD are:
- Optimising Passive Design & Fabric Performance
 - Achieving Low Carbon Energy
 - Minimising Low Carbon Footprint
 - Healthy Placemaking
 - Promoting Biodiversity
 - Sustainable Travel
 - Conserving Water
 - Incorporating Sustainable Drainage
 - Historic Buildings

4 Trends

4.1 Overview

- 4.1.1 This chapter focuses on the trends relating to topics within the NHLP including climate change mitigation, healthy communities, green infrastructure, and sustainable transport that will inform the Strategy.

4.2 Community and Economy

Health Baseline Conditions⁸

- 4.2.1 In order to understand the health and wellbeing aspects of sustainability and climate change, it is essential to recognise the health profiles of the wider community. Through this understanding of the wider area's health status and requirements, the Proposed Development can appropriately address the different needs of the present and future populations.
- 4.2.2 Baseline data from North Hertfordshire has been compiled to identify existing conditions and needs of the wider community so that these can be appropriately addressed in the Proposed Development.

Life Expectancy and Mortality

- 4.2.3 Life expectancy for males and females in North Hertfordshire is higher than the East of England regional average and the England average. Life expectancy at birth for males is 81.1 years in North Hertfordshire, whereas it is 80.2 years in the East of England and 79.4 nationally. For females in North Hertfordshire life expectancy is 84.2 years, compared to 83.8 regionally and 83.1 nationally.
- 4.2.4 The under 75 mortality rates from all causes, all cardiovascular diseases and from cancer is lower in North Hertfordshire compared to the national rates. The under 75 mortality rates from all causes and from cancer is also lower in North Hertfordshire compared to the East of England, but higher than the East of England for under 75 mortality rate for cardiovascular diseases.

Table 4.1: Physical Health Baseline Standards

Indicator	Year	North Hertfordshire	East of England	England
Life Expectancy				
Life expectancy at birth for males	2018-20	81.1	80.2	79.4
Life expectancy at birth for females	2018-20	84.2	83.8	83.1
Morbidity				
Hip fractures in people aged 65 and over	2021/22	555	523	551
Mortality				
Under 75 mortality rate: all causes	2021	307.7	326.9	363.4
Under 75 mortality rate from all cardiovascular diseases	2021	67	65	76
Under 75 mortality rate from cancer	2021	103.9	114	121.5
Infant Mortality Rate	2019-21	2.6	3.4	3.9

⁸ Public Health England, Local Health Profiles, Mole Valley. Link: <https://fingertips.phe.org.uk/profile/health-profiles>

Indicator	Year	North Hertfordshire	East of England	England
Winter Mortality Index	2020-21	69.1%	49.2%	36.2%
Key				
		Better than the England average		
		Similar to the England average		
		Worse than the England average		
		Not Compared		

Mental Health and Behavioural Risk Factors

- 4.2.5 Mental health factors in North Hertfordshire are similar to or lower than the national average. The emergency admissions for intentional self-harm and suicide rate in North Hertfordshire is lower than the regional and national averages, as shown in Table 2.2.
- 4.2.6 Lifestyle risk factors are also better than or similar to the England average. Smoking prevalence amongst adults is similar in North Hertfordshire to the East of England and England averages. More adults in North Hertfordshire are physically active, with less adult and child obesity when compared to the East of England and nationally.

Table 4.2: Mental Health and Lifestyle/Behavioural Baseline Standards

Indicator	Year	North Hertfordshire	East of England	England
Mental health				
Emergency hospital admission rate for intentional self-harm	2021/22	87.5	145.0	163.9
Suicide rate	2019-21	6.5	9.8	10.4
Estimated dementia diagnosis rate (65+ years)	2022	65.5%	N/A	62%
Lifestyle				
Percentage of physically active adults	2021/22	74.2%	68%	67.3%
Percentage of overweight or obese adults	2021/22	61.2%	63.9%	63.8%
Prevalence of obesity in Year 6 children	2021/22	16.4%	21.4%	23.4%
Smoking prevalence in adults - current smokers (APS)	2021	9.5%	12.9%	13%
Admission episodes for alcohol related conditions	2021/22	425	457	494
Key				
		Better than the England average		
		Similar to the England average		
		Worse than the England average		
		Not Compared		

Social Infrastructure

- 4.2.7 In addition, to the above physical and mental health baseline statistics, an audit of the current social infrastructure has been undertaken. A study area of 2km (i.e., within a 30-minute walking distance) was utilised to examine the current level of primary healthcare infrastructure, as well as education facilities and leisure centres.

- 4.2.8 There are two medical facilities located within 2km of the Site. These are Canterbury Way Surgery and St Nicholas Health Centre. Both GP surgeries are accepting new patients⁹.
- 4.2.9 Within a 2km radius of the Site there are four primary schools (Round Diamond Primary School, The Leys Primary and Nursery School, Martins Wood Primary School, and Trotts Hill Primary and Nursery School), one infant school (The Giles Infant and Nursery School), and two junior schools (Giles Junior School and Almond Hill Junior School).

Economy¹⁰

- 4.2.10 As of 2021, 70% of households in North Hertfordshire were considered to be 'working households', higher than the England national average of 58.4% and the East regional average of 62.2%. In North Hertfordshire, 24.5% of households are considered to be 'mixed' (employed and unemployed), which is lower than the national average of 28.1% and the regional average of 28.1%. The percentage of 'workless households' is 5.5% which is lower than the national average of 13.4% and the regional average of 11.2%.
- 4.2.11 As of 2022, the weekly gross pay in North Hertfordshire was £781, higher than the national average of £645.3 and the regional average of £667.6.
- 4.2.12 The higher household employment rates and higher wages in North Hertfordshire indicate better economic conditions within the district than the national and regional averages.

4.3 Transport

Accessibility and Travel Patterns

- 4.3.1 Roundwood is located on the northern boundary of Great Ashby, Stevenage; approximately 3.5km north of Stevenage town centre. Residential development to the east and south and agricultural land use to the north and west make up the local context.
- 4.3.2 In North Hertfordshire, 42% of households have two or more cars or van in their household which is higher when compared to the national average of 35%¹¹. However, there are public transport options close to the Site.
- 4.3.3 The Site is accessible to pedestrians, with a Public Right of Way (PRoW) adjacent to the northern boundary of the Site which runs east-west between Great Ashby and Chesfield Manor Stables. This public footpath continues north from Chesfield Manor Stables, connecting to the village of Weston located approximately 2.3km north of the Site. The nearest bus stop to the Site is on Bray Drive, approximately 235m south of the Site, and is served by the SB7 bus which runs a circular route between Stevenage and Great Ashby and includes a stop at Stevenage train station. Stevenage train station, 3.7km south-west of the Site, is on the East Coast Mainline.
- 4.3.4 The Site is within close proximity of a number of employment locations including Pin Green Industrial Estate, located approximately 750m south-east of the Site and an extensive commercial and business estate to the west of Stevenage. Roundwood is well positioned to provide further work force to serve these employment areas whilst at the same time providing modern and adaptable spaces and homes to support remote working.

⁹ NHS Find a GP. Link: <https://www.nhs.uk/service-search/find-a-gp>

¹⁰ Nomis, official census and labour market statistics. Link: <https://www.nomisweb.co.uk/query/select/getdatasetbytheme.asp?opt=3&theme=&subgrp=>

¹¹ Car or van availability. Link: <https://www.ons.gov.uk/datasets/TS045/editions/2021/versions/1>

4.4 Energy Consumption & Sustainable Design

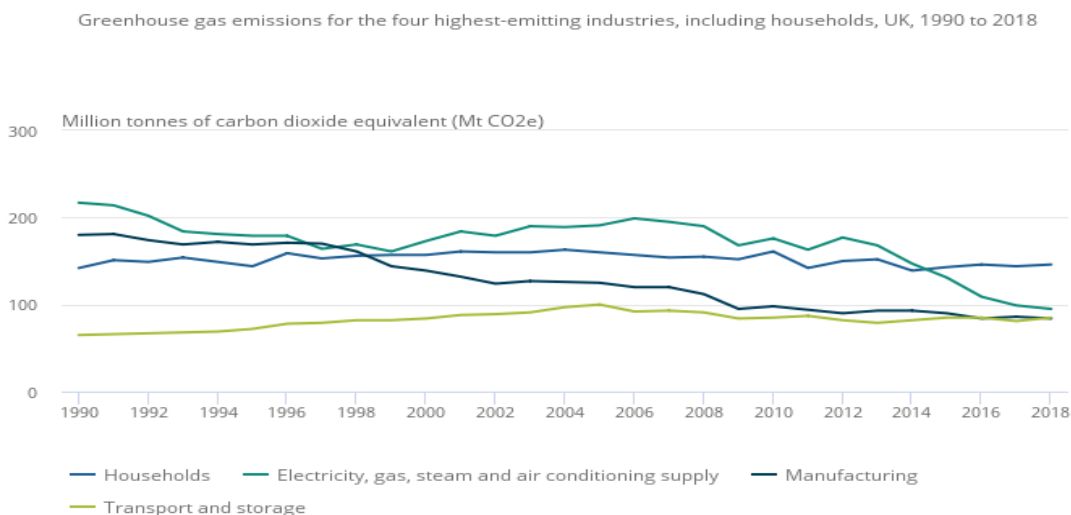
Climate Change Projections

- 4.4.1 The UK Climate Projections 2018 (UKCP18) are based on the latest climate science. They project future temperature change and precipitation for England. By the end of the 21st Century, all areas of the UK are projected to be warmer, more so in summer than in winter. Low, central and high changes across the UK are provided. The range of temperature increase is between 2.0 degrees C to 8.7 degrees C in summer and 0.9 degrees C to 6.3 degrees C in winter, by 2099. Key trends can be summarised as hotter, drier summers, warmer wetter winters, and more extreme and frequent precipitation events (storms) in winter.

Sources of Emissions

- 4.4.2 Emissions have fallen across industry sectors at different rates, as the graph below from the ONS Environmental Accounts (2020) demonstrates, with households contributing the highest proportion of total emissions since 2015. Household emissions includes emissions from domestic travel (i.e., transport by private car etc). Around 46% of greenhouse gas emissions by households in 2018 related to travel, mostly from domestic car use. The transport sector emissions have risen by 30% between 1990 and 2018. Power generation has rapidly decarbonised over the last decade or so, a trend that is set to continue, as discussed below.

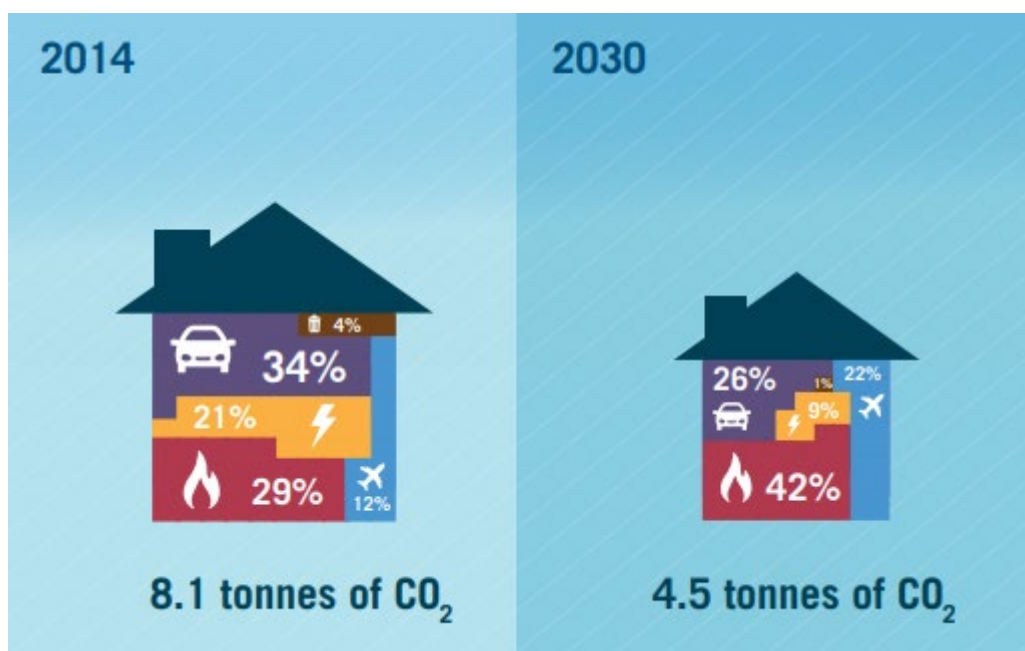
Figure 2.1 - Emissions from Households, Transport, Power generation, Manufacturing and Transport and Storage



Source: Office for National Statistics – UK Environmental Accounts

- 4.4.3 The Committee on Climate Change's (CCC) Fifth Carbon Budget covers the years 2028-2032 and provides an infographic which demonstrates the breakdown of emissions for households in 2014 and 2030 with the total average carbon footprint (as shown below). The emissions sources are heating, electricity, transport, waste and aviation. This is important to setting the objectives for the energy and climate change strategy as tackling these areas will have the most impact in climate change mitigation at Land West of Reigate Road. The CCC's Sixth Carbon Budget (December 2020), supports this infographic and states that 34% of UK emissions occur directly from households – predominantly through driving of cars and the heating of homes. Naturally, there is some year-on-year variation within the specific contributors to climate change, particularly owing to Covid-19, but these figures from the CCC remain a robust baseline to frame the routes to minimising household emissions.

Figure 2.2 - Household Carbon Footprint



Source: Committee on Climate Change: The Fifth Carbon Budget – How every household can help reduce the UK's carbon footprint (but principles are supported by the Sixth Carbon Budget)

Local emissions rates¹²

- 4.4.4 Overall, the carbon emissions have steadily declined in North Hertfordshire between 2005 and 2021. This can be seen in Table 2.3 showing that the emissions produced in all Industrial, Commercial, Domestic and Transport sectors have declined over the 15-year period.
- 4.4.5 Total emissions saw a downward trend between 2005-2021. The reduction in emissions from domestic sources in North Hertfordshire between 2005 and 2021 was approximately 38%. There was also a 22% reduction in transport emissions.

Table 4.3: GHG Emissions within North Hertfordshire 2005-2021

Year	Industry Total (kt CO ₂)	Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total (kt CO ₂)	Population ('000s, mid-year estimate)	Per Capita Emissions (t)
2005	176.8	93.3	320.4	322.2	1,074.2	120.8	8.9
2006	184.4	101.4	319.1	336.1	1,099.1	121.9	9.0
2007	180.2	99.1	312.2	325.9	1,083.8	123.0	8.8
2008	165.0	95.9	312.1	320.3	1,039.9	124.4	8.4
2009	140.7	81.1	286.2	310.8	1,060.8	125.3	8.5
2010	151.6	87.7	308.6	300.0	1,037.3	126.3	8.2
2011	134.8	78.2	270.5	296.6	946.7	127.5	7.4
2012	144.7	88.8	291.0	289.1	980.1	128.4	7.6
2013	136.3	82.9	284.7	286.2	929.6	129.1	7.2
2014	126.1	74.8	242.1	294.2	871.9	130.5	6.7

¹² UK local authority and regional greenhouse gas emissions national statistics. Link <https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics>

Year	Industry Total (kt CO ₂)	Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total (kt CO ₂)	Population ('000s, mid-year estimate)	Per Capita Emissions (t)
2015	118.3	62.7	234.4	302.2	854.2	131.3	6.5
2016	111.5	56.1	224.8	307.0	812.3	132.9	6.1
2017	103.9	42.7	209.1	311.3	776.5	133.9	5.8
2018	110.7	28.0	202.8	300.5	768.1	133.7	5.7
2019	101.4	21.0	194.6	298.4	752.1	134.0	5.6
2020	93.9	16.6	193.2	241.7	660.9	134.2	4.9
2021	104.0	18.9	198.6	251.6	684.2	133.6	5.1

Waste Minimisation and Management

- 4.4.6 The Hertfordshire Minerals and Waste Local Plan 2040¹³ sets the recycling target of 65% by 2035 and a target. This compares to a recycling target of 50% by 2020 set by the UK Government.
- 4.4.7 As of 2019/20 the recycling rate in the Hertfordshire Waste Partnership was 52.3%¹⁴ which exceeds the UK Government target but currently falls short of Hertfordshire's 65% target.

Landscaping and Biodiversity

- 4.4.8 The North Hertfordshire Open Space Assessment 2016¹⁵ finds that there's approximately 18.38 hectares of open space for every 1000 persons in the district which it concludes is a good level of provision. The Assessment recommends that all areas should maintain the quality and quantity of open space in accordance with community needs and new development is to contribute to provision and quality improvements.

¹³ Hertfordshire Minerals and Local Waste Plan: <https://www.hertfordshire.gov.uk/media-library/documents/waste/mwlp/core-document-library/core-documents/cd-01-minerals-and-waste-local-plan-draft-plan-jul-2022.pdf>

¹⁴ Hertfordshire Waste Partnership Report: <https://www.hertfordshire.gov.uk/media-library/documents/waste/hwp-end-destinations-report-2019.20-final.pdf#:~:text=Between%20them%20the%20eleven%20HWP%20authorities%20diverted%20just,best%20annual%20performance%20by%20the%20Partnership%20to%20date.>

¹⁵ North Hertfordshire Open Space Assessment: <https://www.north-herts.gov.uk/sites/default/files/OSC4%20North%20Hertfordshire%20Open%20Space%20Review%20%26%20Standards%202016.pdf>

5 Methodology

5.1 Introduction

- 5.1.1 This Energy and Sustainability Statement outlines how the NHLP policies will be followed in the Proposed Development, organised by key sustainability aspects. The aspects are organised in accordance with the categorisation set out in the NHLP.
- 5.1.2 The Sustainability Statement under **Section 7** considers these key aspects and assesses them against key national and local policy objectives. It is critical that the strategy is kept flexible given the unknowns associated with projecting far ahead into the future.
- 5.1.3 Objectives have been set for the Proposed Development for each of the themes listed in **Section 4**. These objectives relate to the design and construction of the Proposed Development.

5.2 SAP Methodology

- 5.2.1 The Energy Statement under **Section 6** has been prepared using Standard Assessment Procedure (SAP) methodology to calculate predicted energy demand and associated carbon emissions for the Proposed Development.
- 5.2.2 The dwellings modelled have been selected as a representative sample of the Proposed Development. The selection of dwellings has been considered to represent the various dwelling typologies, selecting a range of orientations, house types and apartments.
- 5.2.3 The calculation methodology and information sources that have informed this report are outlined in **Table 4.1**.

Table 4.1: Calculation Information Sources

Information	Source
Geometry	Based on drawings by ECE Architecture.
Building Specification	Based on drawings by ECE Architecture.
Regulated Calculation Methodology	The Government's Standard Assessment Procedure (SAP) for Energy Rating of Dwellings.
Software Used	Elmhurst Energy DESIGN SAP 10.

- 5.2.4 The purpose of the calculations is to demonstrate compliance with planning policy. The approved calculation methodologies prescribe design parameters for inputs such as occupancy, weather, internal temperatures, and equipment usage. Therefore, the calculations presented in this Energy and Sustainability Statement should not be taken as a guarantee of predicted energy consumption and CO₂ emissions.
- 5.2.5 The Building Regulations and planning policies relevant to the Proposed Development are summarised in **Table 5.1**: Planning policy & legislation.
- 5.2.6 **Appendix B** provides further details on the policy and legislative context of the Proposed Development.

Table 5.1: Planning policy & legislation

Planning Policy/Legislation	Requirements/Targets
National Planning Policy Framework ¹⁶ (NPPF, 2024)	The NPPF sets out the Government's overarching policy for England. The NPPF requires development to mitigate and adapt to climate change by reducing greenhouse gas emissions and providing a strategy for the use of renewable and low carbon energy sources.
The Climate Change Act 2008 (2050 Target Amendment) Order 2019	In 2019, the Climate Change Act (2008) was amended to include a revision of the previous aim. It now mandates that <i>"the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline."</i>
UK Net Zero Strategy ¹⁷	The UK Net Zero Strategy states that by 2035, the UK will be powered by clean electricity, subject to security of supply. This brings forward the government's commitment to a decarbonised power system, with measures including the phasing out of the installation of new and replacement gas boilers by 2035.
Building Regulations Approved Document Part L 2021 ¹⁸	Part L 2021 came into effect on 15th June 2022 as an uplift to energy efficiency standards. For new dwellings, an estimated 30% carbon reduction is required above Part L 2013 standards, albeit this varies on a building-by-building basis. Part L 2021 encourages fabric first principles, the selection of efficient energy sources, and the reduction of regulated carbon emissions by the following targets: • Target Emission Rate (kg CO₂/m²); • Target Fabric Energy Efficiency (kWh/m²); and • Target Primary Energy Rate (kWh/m²).
Future Homes Standard (FHS) ¹⁹ (in consultation)	The FHS is expected to be introduced by 2025 and will require new homes to be future proofed with low carbon heating and high levels of energy efficiency. It is expected that the FHS will require dwellings to produce 75-80% less emissions than dwellings built to previous Part L 2013 standards.
North Hertfordshire Local Plan 2011-2031 ²⁰	Policy D1 Sustainable design, point b) subpoint iii) requires new development to take all reasonable opportunities to reduce energy consumption.

¹⁶ National Planning Policy Framework, July 2021. <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

¹⁷ Department for Business, Energy and Industrial Strategy. 2022. Build Back Greener: Net Zero Strategy. Available from: <https://www.gov.uk/government/publications/net-zero-strategy>

¹⁸ Conservation of fuel and power: Approved Document L - GOV.UK (www.gov.uk)

¹⁹ The Future Homes Standard: changes to Part L and Part F of the Building Regulations for new dwellings - GOV.UK (www.gov.uk)

²⁰ North Hertfordshire Local Plan 2011-2031.pdf (north-herts.gov.uk)

6 Energy Statement

6.1 Introduction

- 6.1.1 This Energy Statement has been prepared for submission as part of the full planning application for the Proposed Development to demonstrate how principles concerning the reduction of energy consumption have been incorporated, in line with NHLP Policy D1.
- 6.1.2 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.

6.2 Fabric-First Approach ('Be Lean')

- 6.2.1 Demand reduction is typically a more cost-effective means of reducing energy consumption and 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).
- 6.2.2 The fabric efficiency of the proposed dwellings has been designed to reduce heat demand and energy needs. This includes providing high levels of insulation and low air permeability, with consideration for thermal bridging junctions. The fabric specification exceeds the fabric efficiency requirements of Part L 2021.
- 6.2.3 The full proposed fabric standards are presented in **Appendix C**.

6.3 Use of Energy Efficiently ('Be Clean')

- 6.3.1 The Proposed Development will seek to supply energy efficiently by designing for the use of only electric based heating and hot water systems meaning that the Proposed Development will be designed to be fossil fuel-free.
- 6.3.2 The proposed heating strategy adopts an electric-led approach. This includes the use of Air Source Heat Pumps (ASHPs) to all houses in line with Part L of the Building Regulations.
- 6.3.3 ASHPs extract heat from the external air and condense this energy to heat a smaller space within a dwelling or non-domestic building. A pump circulates a refrigerant through a coil to absorb energy from the air. This refrigerant is then compressed to raise its temperature which can then be used for space heating and domestic hot water. ASHPs can feed either low-temperature radiators or underfloor heating and often have electric immersion heater back-up for the winter months.
- 6.3.4 The decision to use ASHPs has considered the likely implementation of the Future Homes Standard (FHS). The FHS anticipates that heat pumps will become a primary heating technology for new homes, providing a route to net zero homes once the electricity grid is decarbonised.
- 6.3.5 The use of individual ASHPs is not considered practicable for the proposed apartments due to the challenges of locating multiple ASHP in external communal spaces. It is therefore proposed that the apartments will be heated by direct acting electric panel heaters, with a

hybrid heat pump system providing hot water heating. These direct electric systems are 100% efficient and are still able to benefit from the future decarbonisation of the grid.

6.4 Renewable and Low Carbon Technologies ('Be Green')

- 6.4.1 Following the incorporation of the Be Lean and Be Clean measures, a high-level feasibility study has been carried out to assess potentially viable sources of low carbon technology and renewable energy under the Be Green stage of the energy hierarchy. The results are shown in **Table 6.1**.

Table 6.1: Feasibility of low carbon and renewable technologies

Technology	Appropriate	Comments
Heat Recovery	Yes	Heat recovery technology would be appropriate to incorporate into new buildings and can be considered on either the ventilation or wastewater systems.
Heat Pump	Yes	Heat pumps are a suitable technology to meet the hot water and heating demand of new homes and are an appropriate technology to meet the Future Homes Standard.
Photovoltaic (PV) panels	Yes	There is expected to be suitable roof space to accommodate PV to buildings with South facing roofs.
Battery Storage	Potential	Battery storage at building level could reduce peak electrical demands. Domestic battery storage technology is currently expensive, but this is likely to decrease over the next five to ten years. Further investigation at design stage is required to confirm whether this technology would be appropriate.
Solar Thermal	Potential	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 this is more beneficial to support both EV charging and any 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 residents.

- 6.4.2 The Proposed Development will incorporate low carbon and renewable technologies.

- 6.4.3 As well as specifying ASHP to meet the heating and hot water demand of the houses, mechanical ventilation with heat recovery (MVHR) will also be utilised. This technology provides fresh filtered air into a building whilst retaining most of the energy that has already been used in heating the building. This is achieved by use of heat exchange between the warm air being extracted and the fresh air being supplied. By recovering the heat that would otherwise be lost to extraction, the total heat demand of the home reduces.

6.5 Results

- 6.5.1 The Proposed Development incorporates 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;
- Efficient double glazed windows;
- Use of mechanical ventilation throughout with heat recovery to houses;
- Where feasible dwellings have been designed to allow for cross-ventilation to reduce the risk of overheating and help them stay cool in warmer conditions;
- Low energy lighting; and
- Fossil fuel free heating systems using ASHP for houses and a hybrid ASHP and direct electric system for apartments.

6.5.2 **Table 6.2** presents the results of the energy modelling for the Proposed Development. A representative sample of dwellings were modelled using a range of house and apartment types and orientations. The modelling has been scaled up based on the total floor area of the dwellings presented within the accommodation schedule, so it is representative of the overall Proposed Development.

6.5.3 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**.

6.5.4 The results demonstrate that the Proposed Development is predicted to achieve a 3% improvement over the Target Fabric Efficiency Rate, a 20% improvement over the Target Primary Energy Rate and a 60% improvement over the Target Emission Rate for Part L 2021.

6.5.5 Measures have been taken to reduce energy consumption at each stage of the energy hierarchy, and so compliance with NHLP Policy D1 point B) iii has been demonstrated.

Table 6.2: Domestic CO₂ emissions for the Proposed Development

Annual Performance Measure		Target	Actual	% Reduction
Part L 2021	CO ₂ emissions (kg CO ₂ /m ²)	10.0	3.9	60%
	Primary Energy (kWh/m ²)	52.2	41.8	20%
	Fabric Energy Efficiency (kWh/m ²)	31.9	31.1	3%

7 Sustainability Statement

- 7.1.1 The Proposed Development takes a holistic approach towards sustainability. This approach includes:
- A vision to create a place that is well-designed to be healthy, inclusive and safe;
 - A transport strategy which promotes active travel by providing pedestrian routes both through the Site to access existing local amenities as well as around the boundary of the Site to encourage outdoor exercise;
 - All houses will be fitted with a 7kW charging point as standard, with shared charging points for all flat units to support the decarbonisation of private travel;
 - A contribution to the supply of housing, including 40% affordable housing which will assist in addressing housing need in the area;
 - Provision of policy compliant open space provision and high quality landscaping which has been designed to encourage activity from residents, visitors, pedestrians and cyclists;
 - Use of high-quality materials throughout the Proposed Development, creating a pleasant, and green new community;
 - Deployment of a heat pump-led energy strategy where all heating demand is met by low carbon technology enabling an easy transition to Net Zero operation in line with the Future Homes Standard and the UK's trajectory to Net Zero Carbon by 2050; and
 - Passive design measures such as glazing with solar shading, air permeability, and openable windows will be used wherever possible, to prevent overheating and avoid excessive requirements for heating and cooling.
- 7.1.2 **Table 7.1** provides a summary of the NHLP policies relating to sustainable design, and how the Proposed Development demonstrates compliance with each policy.
- 7.1.3 **Table 7.2** sets out the principles, measures and targets for the Proposed Development, organised by SPD themes that are aligned to the scope of the Energy and Sustainability Statement.

Table 7.1: North Herts Local Plan Policies

Policy Name and Aim	Requirements	Details / Evidence	Compliant with National Policy	Compliant with the Local Plan?
Policy SP9: Design and Sustainability sets out the expectations for the Strategic Housing Sites regarding design and the need for comprehensive masterplanning.	Significant developments ²¹ should create integrated, accessible and sustainable transport systems with walking, cycling and public transport designed to be the most attractive forms of transport and effectively linking into the surrounding areas.	The review of baseline trends in Section 4 showed that promotion of local trips by sustainable modes should be a priority for the Proposed Development and will be important to climate change mitigation. Promotion of active travel, public transport and use of existing local facilities also reinforces community cohesion. This has impacts on health and wellbeing by also facilitating healthy and active lifestyles. The Site is within walking distance of the centre of the suburb of Great Ashby and the wider services on offer within Stevenage town centre to the south. The Proposed Development has been designed to promote active travel by providing pedestrian routes through the Site to access existing local amenities. Further details on the proposed modes of transport can be found in the Transport Assessment²².	Yes	Yes
	Significant developments should provide a clear structure and hierarchy of pedestrian friendly streets and well-connected footpaths and cycleways integrate with the wider built and natural environment and communities.	Measures have been taken to provide active and sustainable modes of transport in line with the Stevenage Mobility Strategy. This includes providing multiple pedestrian access routes to the Site, which are safely segregated from the vehicle access routes. These convenient pedestrian access routes encourage active travel by connecting to existing public right of ways (PRoW). A new footpath is proposed around the perimeter of the Site with wider links adjoining the Site's pedestrian footpaths with existing external routes (PRoW to the north and pedestrian routes of back lane in the south-east and south-west corner). The primary spine road through the Site will also feature a pedestrian/cycleway.	Yes	Yes, with demonstration of how compliance has been achieved detailed in the Transport Assessment.

²¹ NHLP states that significant development generally comprises residential development of 100 dwellings or more.

²² Transport Assessment – produced by Transport Planning Associates, dated September 2023.

Policy Name and Aim	Requirements	Details / Evidence	Compliant with National Policy	Compliant with the Local Plan?
		Further details on the hierarchy of streets, footpaths and cycleways can be found in the Transport Assessment.		
	Significant developments should create an accessible multi-functional green infrastructure network.	The Site benefits from a substantial and mature woodland separating it from the heritage assets to the west. Existing trees, hedgerows and woodlands along the perimeter of the Site, will be retained to ensure habitat and species protection. A substantial landscape buffer will be provided on the Site's northern and western boundaries, with the resulting green infrastructure space used to provide the perimeter walking route. This perimeter route incorporates an existing footpath running along the northern boundary (Graveley 010).	Yes	Yes
	Significant developments should plan for integrated and mixed-use communities with walkable locally accessible community, employment and retail facilities.	Roundwood is a residential-led community which will serve to retain journeys within the local area of the proposals or encourage journeys to be made by active modes of travel due to their proximity. Connections to existing PRoWs provide a pedestrian route from the Proposed Development to the local amenity centre of Great Ashby via Saint Nicholas Park. Provision of space for cycle parking will be provided to all dwellings. Apartments have 2 secure spaces allocated per dwelling, whilst all houses have a provision of 2 allocated cycle spaces in secure covered spaces in either the dwellings garden or garage when one is provided. This improves accessibility to employment areas, including access to Stevenage Train Station which is located an 18-minute cycle from the southern Site boundary. The creation of walkable neighbourhoods with connection to neighbouring areas will provide health and wellbeing	Yes	Yes

Policy Name and Aim	Requirements	Details / Evidence	Compliant with National Policy	Compliant with the Local Plan?
		benefits to the new and existing communities. Baseline data shows that the local under 75 mortality rate from cardiovascular diseases is worse than the regional average, highlighting the need to encourage more physical activity.		
	Significant developments should ensure the effective use of sustainable urban drainage and sustainable water management.	The Proposed Development will incorporate SuDS, including the provision of attenuation basins to the southern edge of the Site, along Back Lane. A detailed drainage strategy including the technical specification for the provision and delivery of SuDS, surface water and foul water drainage at the site will be submitted in support of the planning application.	Yes	Yes, with demonstration of how compliance has been achieved detailed in the Flood Risk Assessment ²³ .
Policy SP10: Healthy Communities aims to provide and maintain healthy and inclusive communities for residents.	This policy encourages developers to protect, enhance and create new physical and green infrastructure to foster healthy lifestyles.	The Proposed Development includes the provision of on-site public open space including equipped playgrounds and informal amenity space as well as the new perimeter walking route created to foster healthy lifestyles. The baseline data shows that the local Winter Mortality Index is worse than both regional and national averages, by encouraging outdoor activity with playgrounds and walking routes the health and wellbeing benefits of the Proposed Development is responding to the local context and needs. The Proposed Development also includes a community orchard, further fostering healthy lifestyles by providing food growing opportunities, mitigating against the cost-of-living crisis, and contributing to a sense of wellbeing and open space.	Yes	Yes
Policy SP12: Green Infrastructure, Landscape and Biodiversity aims to ensure that whilst significant	Under this policy NHC states its commitment to protect, enhance and manage biodiversity networks including wildlife corridors, ancient woodlands and	The Proposed Development meets this policy as the existing trees, hedgerows and woodlands will have a 12-metre buffer to ensure habitat protection. Furthermore, the Proposed Development will include new tree and hedgerow planting.	Yes	Yes

²³ Flood Risk Assessment – produced by Vectos, dated September 2023.

Policy Name and Aim	Requirements	Details / Evidence	Compliant with National Policy	Compliant with the Local Plan?
growth is being accommodated during the plan period, the natural environment is also being protected and enhanced.	hedgerows, wetland and riverine habitats, Local Geological Sites, protected species, priority species and habitats, and non-designated sites of ecological value and ensure measurable net gains for biodiversity.	A biodiversity net gain of at least 10% will be achieved.		
Policy D1: Sustainable Design sets out the key design principles of the Local Plan.	New developments should create or enhance public realm.	The tree-lined avenue and central open space provide a focal point for the site and ensure it appears as a self-contained and sensitive edge of settlement site. The landscape masterplan includes the creation of public realm in the form of a LEAP, LAP, incidental play features and other informal open space. This provision of public realm provides health and wellbeing benefits to the new and existing community, it can support the reduction of overweight and obese adults which is identified as an area of focus by the health baseline conditions.	Yes	Yes
	New developments should optimise the potential of the site by incorporating Sustainable Drainage Systems (SuDS).	The Proposed Development will incorporate SuDS, including the provision of attenuation basins to the southern edge of the Site, along Back Lane.	Yes	Yes
	New developments should reduce energy consumption and waste.	Measures have been taken along each stage of the energy hierarchy to reduce energy consumption as detailed in Section 6. The design of the Proposed Development layout ensures that construction waste is kept to minimum by accommodating house types that can be built with standard brick and block sizes. Once occupied, areas of hardstanding will be allocated at the termination between private and adopted surfaces for temporary recycling storage on collection days only. All dwellings will be provided with facilities to effectively separate and store recyclable materials as well as space for the storage of non-recyclable rubbish and food waste.	Yes	Yes

Policy Name and Aim	Requirements	Details / Evidence	Compliant with National Policy	Compliant with the Local Plan?
	New developments should retain existing vegetation and propose appropriate new planting.	The Proposed Development meets this policy as the existing trees, hedgerows and woodlands will be retained and new tree and hedgerow planting will be provided.	Yes	Yes
	New developments should maximise accessibility, legibility and physical and social connectivity both internally and with neighbouring areas.	The Proposed Development will include measures to improve accessibility including pedestrian links to external routes, including PRowWs. The Proposed Development provides a tree-lined avenue and central open space as a focal point for the Site and ensure it appears as a self-contained and sensitive edge of settlement site. At the centre of the Proposed Development, the avenue breaks out into an open space with community play area. This is designed to provide a clearly identified central area, and to connect and encourage use of the many pedestrian links on the Site.	Yes	Yes
	New developments should future proof for changes in technology and lifestyle.	Electric vehicle (EV) charging points will be provided at a rate of one charge point per dwelling. This will help to reduce transport related emissions and will also futureproof against changing technology as petrol and diesel vehicles are phased out. By prioritising passive design principles to reduce energy consumption in homes, the Proposed Development has futureproofed against potential building system technology changes. The Proposed Development will incorporate a proportion of accessible and adaptable housing to M4(2) and M4(3) standards which are futureproofed against potential lifestyle changes of future occupants. In accordance with trends related to home working following the Covid-19 pandemic, properties within the Proposed Development will facilitate home working provision through enhanced telecommunications and the ability to establish appropriate work areas within each property.	Yes	Yes

Policy Name and Aim	Requirements	Details / Evidence	Compliant with National Policy	Compliant with the Local Plan?
	New developments should design-out opportunities for crime and anti-social behaviour.	The Proposed Development is designed to promote walking and cycling throughout the Site, including around the perimeter of the Site on the walking route. By encouraging this active and continual use of public areas crime and anti-social behaviour is discouraged. All proposed courtyard parking areas are overlooked by dwellings, providing natural surveillance to prevent crime opportunities.	Yes	Yes
	Residential schemes should meet or exceed the nationally described space standards and optional water efficiency standards.	The Proposed Development has been designed to ensure that all new dwellings will provide sufficient internal space, in line with the nationally described space standards²⁴. This has been demonstrated in the Design and Access Statement. All dwellings within the Proposed Development will reduce water consumption through meeting the optional Building Regulations Part G²⁵ water efficiency standard of 110 lpppd. This can be achieved with the following specification of water consuming fittings, but performance of each dwelling design will be confirmed with detail calculations at design stage building control sign off. • WC 4/2.6 litres dual flush • Shower 8 l/min • Bath 170 litres • Basin taps 5 l/min • Sink taps 6 l/min • Dishwasher 1.25 l/place setting • Washing machine 8.17 l/kilogram	Yes	Yes, as demonstrated by the Design and Access Statement.

Table 7.2: Sustainability SPD Theme Summary and Design Measures

²⁴ [Technical housing standards – nationally described space standard - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

²⁵ [Sanitation, hot water safety and water efficiency: Approved Document G - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

Theme	Key Requirements	Design Measures	Target Level
Optimising Passive Design & Fabric Performance	<u>Bronze</u> - Achieve an EPC of at least C on all dwellings - Submit a Sustainability and Energy Statement showing compliance with Policy and Building Regulations. <u>Silver</u> - Achieve 80% of EPC ratings of at least B and 20% rating of at least C - Submit a Sustainability and Energy Statement showing: - Maximisation of solar gain through layout, orientation and design - Measures to prevent overheating - Lower carbon alternatives to gas boilers - On site reductions of 50% minimum in CO₂ emissions over and above Part L (including at least 10% reductions through fabric first measures) - Energy Use Intensity (EUI) ≤ 60 kWh/m²/yr (inclusive of estimated unregulated energy) - Space Heating Demand (SHD) ≤ 30 kWh/m²/yr	Through the design measures set out in Section 6, 85% of assessed house types achieve an EPC rating of B with the remaining achieving a C. This Statement has been prepared to demonstrate how solar gain and overheating mitigation have been addressed. No gas boilers are specified with a heat pump led energy strategy proposed. Section 6 sets out the fabric performance design measures incorporated which achieved the following performance metrics: 60% reduction in CO₂ emissions over Part L 2021 - Predicted EUI of 43.6 kWh/m²/yr (inclusive of estimated unregulated energy calculated using BREDEM 2012 methodology²⁶) - Average SHD of 15.2 kWh/m²/yr	Silver
Achieving Low Carbon Energy	<u>Bronze</u> - Ensure policy and building regulations compliance - Larger schemes encouraged to submit a Feasibility Study showing how the most appropriate low or zero carbon technology will be implemented <u>Silver</u> - Show that 75% or more of dwellings' energy demand is supplied from onsite renewables such as PV (assuming low carbon heat/hot water technology is used such as ASHPs)	Section 6 demonstrates the design measures that have been incorporated to achieve policy and building regulations compliance. A Feasibility Study showing how the most appropriate low or zero carbon (LZC) technology has been implemented is shown in Table 6.1. PV is not proposed. Alternative LZC technology has been utilised to achieve (and	Bronze

²⁶ [BREDEM 2012 - 2015 minor update 2015-01-13.docx](#)

	- Show that roof shape and orientation is optimized to maximise solar PV outputs - Show that the Development commits to investigating better uses of PV (if present) and detail what these are. Connecting any array directly to landlord supply should not be allowed.	exceed) policy and building regulations compliance.	
Minimising Low Carbon Footprint: Whole Life Carbon	<u>Bronze</u> - Ensure compliance with policy and building regulations, including Part Z if/when introduced - Discussions around reducing emissions will be required - Applicants are encouraged to consider a Whole Life Carbon (WLC) for major development, and methods for reducing emissions during the technical design stages <u>Silver</u> - Incorporate the findings of pre-demolition audits (where applicable) into the WLC assessment for the Development - Applications must commit to updating the assessments at pre-commencement (Stage 4) and pre-occupation (Stage 5) ensuring alignment with targets. - Ensure the scheme achieves the following: - Embodied Carbon – Product and Construction (A1 to A5) 675 kgCO₂e/m²GIA - Embodied Carbon – maintenance, replacement repair, end of life (B1 – B5, C1 – C4, sequestration) 325 kgCO₂e/m²GIA - Or LETI Band D	Carbon footprint reduction measures have been incorporated in line with policy and building regulation compliance. A WLC has not been carried out at this stage. The Applicant is however progressing an WLC programme to assess standard house types and to identify opportunities to reduce whole lifecycle emissions in their projects. A WLC will be considered at detailed design stage to identify opportunities to reduce the whole lifecycle impact of the Proposed Development.	Bronze
Minimising Low Carbon Footprint: Circular Economy	<u>Bronze</u> - Ensure compliance with policy and building regulations <u>Silver</u> - Ensure a pre-demolition audit is undertaken (where applicable)	Carbon footprint reduction measures have been incorporated in line with policy and building regulation compliance. A Circular Economy Statement has not been carried out at this stage. Targets will be identified during detailed design, following	Bronze

	• Ensure a pre-redevelopment audit is undertaken for brownfield sites • Ensure the proposal demonstrates how excavated materials will be put to beneficial use (e.g. reused/recycled) • Submit a Circular Economy Statement showing a waste hierarchy approach with: ○ A minimum of 30% of construction materials being of reused materials ○ 50% of materials used are designed for re-use ○ 80% of demolition (where applicable) waste materials (non-hazardous) are diverted from landfill for reuse/recycling or recovery ○ 80% of excavation waste materials are diverted from landfill for reuse ○ 80% of construction waste materials are diverted from landfill for reuse, recycling or recovery ○ 80% of materials are sourced from ethical and responsible supply chains	best practice for rates of recycling, reuse and diversion from landfill.	
Healthy Placemaking	<u>Bronze</u> • Ensure compliance with policy and open space standards <u>Silver</u> • Ensure 50% of flat roofs are green or blue roofs • Undertake an overheating risk assessment to assess residential dwellings against CIBSE TM59 and Part O ensuring compliance at planning stage • Ensure the development scheme includes community allotments • Ensure schemes include a multifunctional Urban Greening Factor calculation achieving a minimum of 0.4 (residential) along with a maintenance and management plan	A substantial landscape buffer will be provided on the Site's northern and western boundaries, ensuring open space standards have been met. There are no flat roofs proposed to incorporate green or blue roofs, and there are no community allotments proposed. The Proposed Development has not been assessed against CIBSE TM59 or Urban Greening Factor methodology at this stage.	Bronze

Promoting Biodiversity	<u>Bronze</u> • Achieve at least 10% BNG either onsite or offsite • Submit a Habitat Management and Monitoring Plan (HMMP) • Ensure the scheme includes a 12m buffer for SSSIs <u>Silver</u> • Retain any high value trees onsite (Category A/B or other highest value trees) • Ensure 10% BNG is achieved onsite • Provide on plot ecological enhancements to support wildlife • Ensure the scheme includes a 12m buffer adjacent to Local Wildlife Sites and species rich hedgerows	A 10% BNG will be achieved, and existing trees, hedgerows and woodlands along the perimeter of the Site will be retained to ensure habitat and species protection. Additional trees and hedgerows are being provided which can provide ecological enhancements in the form of housing for bats, birds, bees, hedgehogs etc.	Silver
Sustainable Travel	<u>Bronze</u> • Submit a Transport statement • Ensure the scheme includes segregated cycle ways, pedestrian paths away from traffic and integrated with green infrastructure • Provide EV charging in compliance with policy and building regulations Part S <u>Silver</u> • Ensure the transport statement/ travel plan seeks to achieve 50% of local trips (under 5 miles) by active travel • Provide one 7kW EV charging point per 200 dwellings for a car club, disabled visitor, and other visitor use, evenly distributed throughout the site	Measures have been taken to provide active and sustainable modes of transport. This includes providing multiple pedestrian access routes to the Site, which are safely segregated from the vehicle access routes. These convenient pedestrian access routes encourage active travel by connecting to existing public right of ways (PRoW). A new footpath is proposed around the perimeter of the Site with wider links adjoining the Site's pedestrian footpaths with existing external routes. The primary spine road through the Site will also feature a pedestrian/cycleway. EV charging is being provided at a rate of one per dwelling in line with Part S.	Bronze
Conserving Water	<u>Bronze</u> • Ensure policy compliance requirements of 110 lpppd <u>Silver</u>	The Applicant's Sustainability Targets ensure that dwellings are designed to achieve internal water consumption of not more than	Bronze

	Ensure that internal water consumption can meet the target of < 95lpppd	105 lpppd. Further water efficiency measures will be considered at detailed design stage.	
Incorporating Sustainable Drainage	<u>Bronze</u> - Submit a SuDS strategy and maintenance plan approved by SAB²⁷ ensuring that surface water run-off is managed as close to its source as possible and the scheme will not increase downstream flood risk. Strategy to include a climate change allowance - Ensure that discharge to a combined sewer is avoided unless all other discharge options (infiltration, watercourse, surface water sewer) have been exhausted first, as per the discharge hierarchy - Ensure that the scheme achieves greenfield run-off rates unless this is demonstrably not feasible in which case a minimum of 50% reduction will be required. Brownfield sites will need to achieve run-off rates as close to greenfield as possible <u>Silver</u> - Ensure the SuDS strategy is in accordance with DEFRA's non-statutory SuDS technical standards - Ensure the SuDS strategy also addresses the 4 pillars of SuDS. The scheme must also include SuDS planters, tree pits and rain gardens	The Proposed Development will incorporate SuDS, including the provision of attenuation basins to the southern edge of the Site, along Back Lane. A detailed drainage strategy including the technical specification for the provision and delivery of SuDS, surface water and foul water drainage at the site will be submitted in support of the planning application.	Bronze

²⁷ SuDS Approval Body

8 Conclusion

- 8.1.1 This Energy and Sustainability Statement outlines how the Proposed Development demonstrates sustainable design in line with the national legislation, the NPPF and North Hertfordshire Local Plan 2011-2031.
- 8.1.2 The Proposed Development has the following key themes central to its design: climate change mitigation and carbon reduction, climate change adaptation, community and economy, transport, sustainable design, waste minimisation and management, and landscaping and biodiversity.
- 8.1.3 An analysis has been carried out in **Section 4** of this Statement with regard these themes identified above, and the Statement has been undertaken in conjunction with the priorities for the NHLP, and National Planning Policy, which focus on a healthy lifestyle, housing, the environment and strengthening communities.
- 8.1.4 Section 6 of this Statement comprises the outline energy strategy for the Proposed Development and outlines energy efficiency measures. The Proposed Development has followed the nationally adopted energy hierarchy of reducing energy demands in the first instance, using energy efficiently, and only then, implementing low carbon and renewable sources where appropriate.
- 8.1.5 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. The fabric specification exceeds the fabric standards of Part L 2021.
- 8.1.6 The proposed heating strategy adopts an electric-led approach. This includes the use of Air Source Heat Pumps and Mechanical Ventilation with Heat Recovery to all houses which are anticipated to become a primary heating strategy in line with the Future Homes Standard, expected to be introduced by 2025. This approach to create a fossil fuel free development enables an easy transition to net zero operation once the UK's electricity grid decarbonises in 2035.
- 8.1.7 In **Table 7.1**, this Statement demonstrates that the Proposed Development is compliant with the NHLP and National Policy. The Proposed Development at Roundwood, Stevenage responds to the objectives of the NHLP 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.
- 8.1.8 In **Table 7.2** this Statement demonstrates how the Proposed Development will be able to align to the requirements of the Sustainability SPD. The Proposed Development is expected to target Silver ratings for some themes, including for Passive Design and Fabric Performance, and Promoting Biodiversity.
- 8.1.9 The SAP assessment results demonstrate that the Proposed Development is predicted to achieve improvement over the Target Fabric Efficiency Rate, Target Primary Energy Rate and Target Emission Rate for Part L 2021. The Proposed Development therefore demonstrates compliance with Part L 2021 and Policy D1 Sustainable Design of the NHLP. The SAP assessments also demonstrate that the Proposed Development will achieve the carbon reduction, energy use intensity and space heating demand targets associated with the Silver performance standard of the Sustainability SPD as shown in **Table 8.1**. These performance measures are predictive for the purposes of the planning application. The exact percentage improvement over Part L 2021 will be confirmed at detailed design stage. However, the commitment to meet Part L 2021 and Policy D1 will be maintained.

Table 8.1: Predicted Building Performance Metrics and Results

Performance Measure		Target	Actual	% Reduction
Part L 2021	CO ₂ emissions (kg CO ₂ /m ²)	10.0	3.9	60%
	Primary Energy (kWh/m ²)	52.2	41.8	20%
	Fabric Energy Efficiency (kWh/m ²)	31.9	31.1	3%
Sustainability SPD	CO ₂ reduction (%)	50%	60%	10%
	Space Heating Demand (kWh/m ²)	30.0	15.2	49%
	Energy Use Intensity (kWh/m ²)	60.0	43.6	27%

Appendix A Proposed Site Layout Plan



Appendix B Policy Context

Introduction

- B.1.1 This appendix presents the key energy requirements for the Proposed Development, as defined by national policy, regulation, and local planning policies.

National Policy Context – Climate Change

- B.1.2 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.1.3 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.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

- B.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:
- B.1.6 *“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.*
- B.1.7 *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”.*

National Planning Policy Framework (2024)

- B.1.8 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.
- B.1.9 The NPPF maintains the “presumption of sustainable development”. Paragraph 161 of the NPPF explains that the planning system should help to:
- B.1.10 *“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.”*

B.1.11 Plans should take a proactive approach to mitigating and adapting to climate change and should be planned for in ways that:

- Avoid increased vulnerability to climate change impacts and incorporate adaptation measures such as green infrastructure and sustainable drainage systems
- 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)
- 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.1.12 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.1.13 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.1.14 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. This is seen as a stepping stone to zero carbon and the proposed Future Homes Standard.

Updated – 2021 Edition

B.1.15 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.

B.1.16 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.1.17 Key changes include the requirement for all new buildings to meet a new primary energy target and a carbon emissions rate target.

B.1.18 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.1.19 As part of the journey to net zero by 2050, the Government has committed to introducing a Future Homes Standard by 2025. They expect that an average home built to the FHS will

have 75-80% less carbon emissions than one built to the Part L 2013 energy efficiency requirements.

- B.1.20 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.

Local Policy

North Herts Local Plan 2011-2031 (2022)

- B.1.21 The North Hertfordshire Local Plan 2011-2031 was adopted on 8th November 2022. The following policy is relevant to the Energy and Sustainability Statement.

Policy SP1: Sustainability Development in North Hertfordshire

Proposals will be supported where they:

- *“deliver an appropriate mix of homes, jobs and facilities that contribute towards the targets and aspirations in this Plan;*
- *create high-quality developments that respect and improve their surroundings and provide opportunities for healthy lifestyle choices;*
- *provide the necessary infrastructure required to support an increasing population;*
- *protect key elements of North Hertfordshire’s environment including biodiversity, important landscapes, heritage assets and green infrastructure (including the water environment); and*
- *secure any necessary mitigation measures that reduce the impact of development, including on climate change”*

Policy SP6: Sustainability Transport

- Encourages location of development where sustainable travel is possible, development should ensure a range of transport options are available, implement sustainable travel infrastructure as early as possible and protect existing rights of way, cycling and equestrian routes.

Policy SP9: Design and Sustainability

- The Council will support development where it well located and designed, responding well to the local context.
- Strategic Masterplans are required for Strategic Housing Sites and other significant development (over 100 dwellings) to positively respond to the local context, create integrated, accessible and sustainable transport systems that prioritise walking cycling and public transport, provide mixed-use communities with access to community, employment and retail facilities, create an accessible and multifunctional green infrastructure network, effectively use SuDS and sustainable water management, provide high quality, safe and attractive spaces that encourage social interaction for all ages, design the development for the long term with clear stewardship, management and maintenance strategies.
- Strategic Masterplans should also set out the vision and place-making principles, quantum, scale, type, mix and distribution of land uses, a green infrastructure framework with details, a movement framework and design principles, a sustainability and energy framework identifying site-wide and building scale opportunities for low

and zero carbon, an illustrative masterplan layout and infrastructure delivery, phasing and management strategy.

- Development should adopt the Government's additional standards on new home size, water efficiency and accessibility, where needed.

Policy SP10: Healthy Communities

- Supports the retention of community, cultural, leisure or recreational facilities and requires an appropriate quantity of facilities in new development, ensure the planning system contributes to the provision of sufficient school spaces in suitable and accessible location, ensure appropriate coverage of healthcare facilities across the District, maintain a network of local retail centres and locally-important shops, and protect, enhance and create new physical and green infrastructure to encourage healthy lifestyles.

Policy SP11: Natural Resources and Sustainability

- To meet the challenges of climate change and flooding the Plan supports renewable and low carbon energy development, taking a risk based approach to development location in regards to flood risk and providing SuDS, seek to protect, enhance and manage the water environment, consider land contamination and support remediation of contaminated land and work with relevant bodies to ensure additional wastewater treatment capacity is delivered to protect European sites.

Policy SP12: Green Infrastructure

- Protect, identify, manage and enhance a multi-functional green infrastructure network, consider landscape character, protect, enhance and manage designated sites and biodiversity networks, and protect other open spaces as well as supporting new and improving existing open spaces.

Policy D1: Sustainable Design

- Development should positively respond to the local context and opportunities should be taken to:
 - i. *“create or enhance public realm;*
 - ii. *optimise the potential of the site by incorporating Sustainable Drainage Systems (SuDS);*
 - iii. *reduce energy consumption and waste;*
 - iv. *retain existing vegetation and propose appropriate new planting;*
 - v. *maximise accessibility, legibility and physical and social connectivity both internally and with neighbouring areas;*
 - vi. *future proof for changes in technology and lifestyle;*
 - vii. *design-out opportunities for crime and anti-social behaviour; and*
 - viii. *minimise the visual impact of street furniture and parking provision.”*

- Development should also consider the Design SPD and other relevant guidance and meet or exceed nationally described spaced standards and optional water efficiency standards.

Policy D4: Air Quality

- Development must consider the impact on local air quality, propose mitigation to reduce emissions and carry out air pollution impact assessments.

Appendix C Energy Performance Specification

Table C.1: Building Energy Performance Specification for Houses

Houses		
Element or system	Specification	Notes
Climate data		UK average
Size and opening areas (windows, roof windows and doors)	As designed	Croudace House Type drawings
External walls	$U = 0.17 \text{ W/m}^2\text{K}$	Full Fill Cavity (Drittherm)
Semi-exposed walls Solid	$U = 0.22 \text{ W/m}^2\text{K}$	Integral Garages
Semi-exposed Cavity Wall	$U = 0.17 \text{ W/m}^2\text{K}$	
Dormer walls	$U = 0.19 \text{ W/m}^2\text{K}$	
Party walls	$U = 0.00 \text{ W/m}^2\text{K}$	Fully insulated cavity
Ground Floors	$U = 0.11 \text{ W/m}^2\text{K}$	Varies with plan area / perimeter
Exposed Floors	$U = 0.14 \text{ W/m}^2\text{K}$	Including semi-exposed floors e.g., over garage
Roofs	$U = 0.11 \text{ W/m}^2\text{K}$	400mm Quilt
Opaque door (<30% glazed area)	$U = 1.0 \text{ W/m}^2\text{K}$	
Windows and glazed doors with >60% glazed area	$U = 1.3 \text{ W/m}^2\text{K}$ Frame factor = 0.7 Solar energy transmittance (g-value) = 0.63	Orientation same as designed (actual dwelling) Overshading average or unknown
Thermal mass	Low - Medium	House Type Specific Calc
Allowance for thermal bridging	$Y = 0.25$	Average 'Y' value over 10 varying house-types 0.022 with a high of 0.037 and low of 0.011
Ventilation system	Mechanical Ventilation Heat Recovery System: Vectaire Midi/Maxi BY AT	
Air permeability	$3.5 \text{ m}^3/\text{h.m}^2$ at 50 Pa	
Main heating fuel	Electricity	
Heating system	Air Source Heat Pump: Vaillant Arotherm Plus (indicative system).	
Heating system controls	Programmer and at least two room thermostats.	Time & Temperature Controlled

Table C.2: Building Energy Performance Specification for Apartments

Apartments		
Element or system	Specification	Notes
Climate data		UK average
Size and opening areas (windows, roof windows and doors)	As designed	Croudace House Type drawings
External walls	$U = 0.18 \text{ W/m}^2\text{K}$	Full Filled Cavity (Drittherm)
Dormer walls	$U = 0.19 \text{ W/m}^2\text{K}$	
Party walls	$U = 0.00 \text{ W/m}^2\text{K}$	Fully insulated cavity
Ground Floors	$U = 0.11 \text{ W/m}^2\text{K}$	Varies with plan area / perimeter
Exposed Floors	$U = 0.11 \text{ W/m}^2\text{K}$	Including semi-exposed floors e.g., over garage
Roofs	$U = 0.11 \text{ W/m}^2\text{K}$	400mm Quilt
Opaque door (<30% glazed area)	$U = 1.0 \text{ W/m}^2\text{K}$	
Windows and glazed doors with >60% glazed area	$U = 1.3 \text{ W/m}^2\text{K}$ Frame factor = 0.7 Solar energy transmittance (g-value) = 0.63	Orientation same as designed (actual dwelling) Overshading average or unknown
Thermal mass	Medium (250 kJ/m ² K)	
Allowance for thermal bridging	Y' value of 0.2	Average 'Y' value over 6 flat types (GF, Mid and TF) 0.17 with a high of 0.023 and low of 0.01
Ventilation system	Mechanical Ventilation Heat Recovery System: Vectaire Midi/Maxi BY AT	
Air permeability	3.0 m ³ /h.m ² at 50 Pa	
Main heating fuel (space and water)	Electricity	
Heating system	NIBE Energy Systems F470 exhaust air Heat pump (DB ref 100391)	Radiators
Heating system controls	Heatmiser	
Hot water system	NIBE Energy Systems F470 exhaust air Heat pump (DB ref 100391)	Integral Cylinder

Table C.3: Results of sample SAP assessments

Sample Dwelling	Floor Area (m ²)	TER	DER	TPER	DPER	TFEE	DFEE
Flat - Ground floor flat	72.1	11.6	4.1	61.22	43.49	29.9	25.4
Flat - Mid floor flat	72.1	9.7	3.5	50.62	36.75	20.6	18.4
Flat - Top floor flat	72.1	11.0	4.5	57.9	47.53	27.0	28.3
Harrier - Plot 20	144.0	9.0	3.6	47.13	37.72	32.6	31.7
Heather - Plot 271	188.0	8.3	3.2	43.2	34.15	34.4	33.3
Heron - Plot 34	127.5	9.8	3.9	51.12	41.54	34.9	34.8
Jay - Plot 44	73.8	11.6	5.2	60.44	55.17	34.8	34.1
AVERAGE		10.0	3.9	52.2	41.8	31.9	31.1
% PERFORMANCE			60%		20%		3%

Sample Dwelling	Floor Area (m ²)	SHD	EUI
Flat - Ground floor flat	72.1	9.04	50.2
Flat - Mid floor flat	72.1	3.55	46.0
Flat - Top floor flat	72.1	11.6	52.7
Harrier - Plot 20	144.0	16.46	37.9
Heather - Plot 271	188.0	18.83	33.3
Heron - Plot 34	127.5	18.78	40.8
Jay - Plot 44	73.8	16.07	57.5
AVERAGE		15.2	43.6