AUGUST 2023

Sustainability & Energy Statement

Land South of Snarlton Farm, Melksham, Wiltshire, SN12 7QP

ICENI PROJECTS LIMITED
ON BEHALF OF CATESBY
ESTATES PROMOTIONS
LIMITED

Iceni Projects Limited on behalf of

Catesby Estates Promotions Limited

August 2023

Iceni Projects
Birmingham: The Colmore Building, 20 Colmore Circus Queensway, Birmingham B4 6AT
Edinburgh: 11 Alva Street, Edinburgh, EH2 4PH
Glasgow: 177 West George Street, Glasgow, G2 2LB
London: Da Vinci House, 44 Saffron Hill, London, EC1N 8FH
Manchester: WeWork, Dalton Place, 29 John Dalton Street, Manchester, M2 6FW

t: 020 3640 8508 **| w:** iceniprojects.com | **e:** mail@iceniprojects.com
linkedin: linkedin.com/company/iceni-projects | **twitter**: @iceniprojects

CONTENTS

1. EXECUTIVE SUMMARY 1
2. INTRODUCTION 3
3. PLANNING AND REGULATORY CONTEXT 5
4. SUSTAINABILITY STATEMENT 13
5. ENERGY STRATEGY 25
6. SUMMARY 34

APPENDICES

A1. SITE LOCATION PLAN

A2. WATER USAGE CALCULATOR

A3. GENERAL NOTES

1. EXECUTIVE SUMMARY

1.1 Iceni Projects Ltd has been commissioned by Catesby Estates Promotions Limited to produce a Sustainability & Energy Statement to support the proposed residential development of the Land South of Snarlton Farm, Melksham, Wiltshire, SN12 7QP.

1.2 This outline application proposes the provision of up to 300 homes, local community use, open space and associated infrastructure.

1.3 Sustainability is a core consideration of the application and has been incorporated from the project outset. Energy and water efficiency have been maximised, whilst the production of waste and pollution is to be minimised, thus ensuring the impact of the proposals on its immediate surroundings and the environment as a whole is minimised.

1.4 Consideration has been given to the Wiltshire Core Strategy in the overall formulation of this strategy, with two key elements proposed for the approach to the scheme's sustainability proposals, as follow:

- The overall development has been assessed using the Wiltshire Core Strategy policies relating to sustainability to demonstrate that the proposed dwellings will maximise resource efficiency, minimise the generation of waste and pollution, and ensure the risk of flooding on-site is mitigated during both construction and in operation, to provide dwellings that meet the recommended standards for well-being of future occupants; and

- The carbon dioxide (CO_2) emissions reduction strategy for the proposals is based on the energy hierarchy to provide a rigorous methodology, which aims to reduce the carbon dioxide emissions from the development as far as possible. This is intended to be achieved through the employment of highly efficient building fabric components to reduce energy demand, and the potential inclusion of renewable technologies to deliver further carbon dioxide emissions reductions. It is anticipated that the proposed carbon dioxide emissions reduction strategy will facilitate a minimum 100% reduction in carbon dioxide over the Part L:2021 Building Regulations baseline for all proposed dwellings and non-domestic spaces. This is in exceedance of the current requirements set out within the Wiltshire Council policies. This also exceeds the anticipated requirements of the upcoming Future Homes Standard, which is to come into force in 2025.

1.5 The outline nature of this application means that the strategies contained within this statement will inform the detailed design of the proposed development, which will be determined at a later date as part of Reserved Matters applications.

1.6 The proposed strategy has been based around the objectives of the Wiltshire Core Strategy Policy 41 and the Joint Melksham Neighbourhood Plan 2020 – 2026 Policies 1, 3, 4, 11, 12, 13 and 18. In summary, based on this strategy, the proposed development;

- will make efficient use of land;
- will incorporate low-impact materials, according to the BRE Green Guide to Specification;
- will minimise internal water consumption to 105 litres per person per day;
- will incorporate measures to improve site biodiversity, including biodiverse planting;
- will ensure air, light, ground and water pollution are minimised as far as possible;
- will provide access to areas of green and open space;
- will minimise waste production during construction and maximise the proportion of waste to be diverted from landfill;
- will minimise energy demand through the specification of low U-values, low air permeability and low thermal bridging to reduce heat loss;
- will be fossil fuel free, utilising electric-only systems, such as air source heat pumps (ASHPs) to serve the space and water heating demands of the proposed dwellings and non-domestic space(s);
- will utilise renewable technology, such as rooftop photovoltaic panels, to provide renewable electricity; and
- will achieve a significant reduction in CO_2 emissions for the proposed dwellings, following the Energy Hierarchy methodology.

1.7 Overall, the proposals constitute sustainable development in accordance with national and local policy requirements and will provide a development that seeks to promote these principles in operation.

2. INTRODUCTION

2.1 Iceni Projects Ltd was commissioned by Catesby Estates Promotions Limited to produce a Sustainability & Energy Statement to support the application for the proposed development at the Land South of Snarlton Farm, Snarlton Lane, Melksham, Wiltshire, SN12 7QP.

Report Objective

2.2 This document details the sustainable design and construction measures adopted by the proposed development and gives an overview of the design proposals that will ensure the development operates in a sustainable manner over the lifespan of the scheme. The Sustainability & Energy Statement report headlines will provide a framework for the project team to operate consistently within sustainability guidelines set out by Wiltshire Council.

- The report is structured to meet these guidelines as follows:
- Section 3 discusses the planning context and policies which are relevant to sustainability;
- Section 4 discusses the development response to the policy drivers for sustainability;
- Section 5 sets out the development's energy strategy to minimise CO_2 emissions; and
- Section 6 summarises the development's design response.

Site and Surroundings

2.3 The application site (Appendix A1) is located on the eastern edge of Melksham, Wiltshire, approximately 1.4 miles to the southeast of Melksham train station. The site is bounded by Snarlton Farm and associated agricultural land to the north, whilst the eastern boundary is formed by open agricultural land, and the western boundary by Eastern Way. Melksham Rugby and Football Club is located to the south of the site, beyond which lies further agricultural land.

2.4 The application site itself currently comprises arable and pasture land, hedgerows, and the Clacker's Brook watercourse. The surrounding area is predominantly rural in nature to the east, and residential in nature to the west, with the site located at the eastern edge of the main built-up area of the town of Melksham.

The Proposed Development

2.5 The description of development is as follows:

"*Outline planning application with all matters reserved except for two pedestrian and vehicle accesses (excluding internal estates roads) from Eastern Way, for the erection of up to 300 dwellings (Class C3); land for local community use or building (incorporating Classes E(b), E(g) and F2(b) and (c)); open space and dedicated play space and service infrastructure and associated works on land South of Snarlton Farm, Snarlton Lane, Melksham, Wiltshire, SN12 7QP".*

2.6 The image below shows the illustrative masterplan, whilst a site location plan is provided in Appendix A1.

Figure 2.1 Illustrative Masterplan



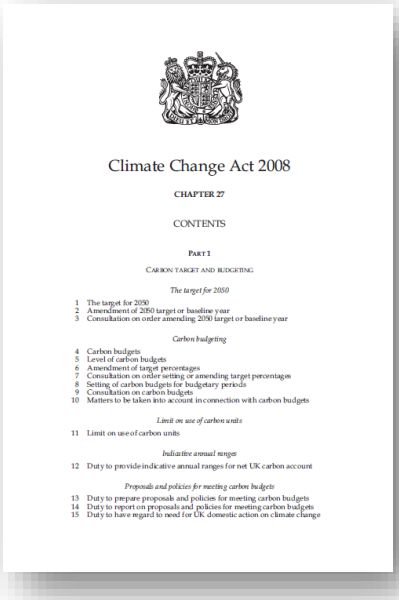
3. PLANNING AND REGULATORY CONTEXT

3.1 Built environment sustainability is incorporated within policy and regulation at a national and local level, as set out below.

National

Climate Change Act 2008

3.2 On 26th November 2008, the UK Government published the Climate Change Act 2008; the world's first long-term legally binding framework to mitigate against climate change. Within this framework, the Act sets legally binding targets to increase greenhouse gas emission reductions through action in the UK and abroad from the 60% target set out in the Energy White Paper, to 80% by 2050.



Climate Change Act 2008

CHAPTER 27

CONTENTS

PART 1

CARBON TARGET AND BUDGETING

The target for 2050

1 The target for 2050
2 Amendment of 2050 target or baseline year
3 Consultation on order amending 2050 target or baseline year

Carbon budgeting

4 Carbon budgets
5 Level of carbon budgets
6 Amendment of target percentages
7 Consultation on order setting or amending target percentages
8 Setting of carbon budgets for budgetary periods
9 Consultation on carbon budgets
10 Matters to be taken into account in connection with carbon budgets

Limit on use of carbon units

11 Limit on use of carbon units

Indicative annual ranges

12 Duty to provide indicative annual ranges for net UK carbon account

Proposals and policies for meeting carbon budgets

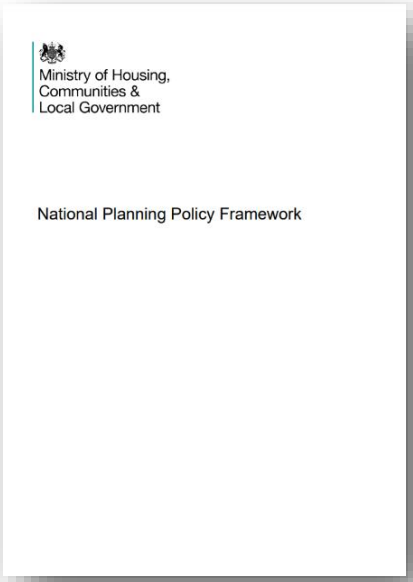
13 Duty to prepare proposals and policies for meeting carbon budgets
14 Duty to report on proposals and policies for meeting carbon budgets
15 Duty to have regard to need for UK domestic action on climate change

3.3 As required under Section 34 of the Climate Change Act, the Sixth Annual Carbon Budget was accepted by the Government in April 2021. This sets out a budget for UK emissions for the period 2033 – 2037.

3.4 Following a commitment in June 2019, the Climate Change Act has been amended to target net zero carbon emissions by 2050.

National Planning Policy Framework

3.5 The Ministry of Housing, Communities & Local Government determines national policies on different aspects of planning and the rules that govern the operation of the system. Accordingly, the National Planning Policy Framework (NPPF), which came into force in March 2012 and was updated in February 2019, aims to strengthen local decision making. Additional updates have since been made through the latter half of 2020 and in January and July 2021 to reflect changes related to use classes, permitted development rights, the calculation of housing need, and requirements to achieve beauty alongside sustainability.



Ministry of Housing, Communities & Local Government

National Planning Policy Framework

3.6 Paragraphs 10 and 11 of the NPPF confirm that at the heart of this document is a "*presumption in favour of sustainable development*", and that development proposals that accord with an up-to-date development plan should be approved without delay.

3.7 Paragraph 7 states that the purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.

3.8 Achieving sustainable development means that the planning system has three overarching activities, which are interdependent and need to be pursued in mutually supportive ways, so that opportunities can be taken to secure net gains across each of the different objectives:

- **An Economic Role –** ensuring the provision of land and infrastructure needed to help build a *strong, responsive and competitive economy.*

- **A Social Role –** supplying the required amount of housing while at the same time ensuring and building *strong, vibrant and healthy communities.* Ensuring that the built environment is sited around accessible local services which help support a community's *health, social and cultural well-being.*

- **An Environmental Role –** ensuring development contributes to the protection and enhancement of the *natural, built and historic environment* through the improvement of biodiversity, minimising the use of natural resources and production of pollution / waste, and guaranteeing sufficient adaptation to climate change.

Future Homes Standard 2025 (March 2019)

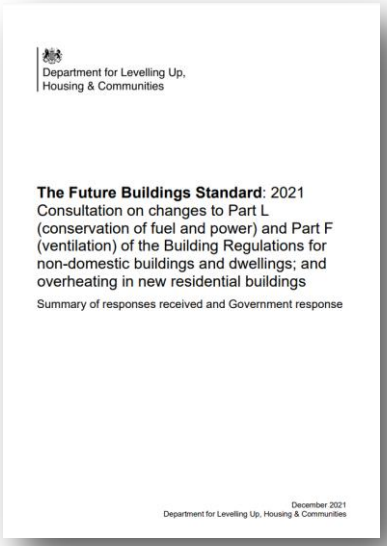
3.9 Within the Spring Statement 2019, the Chancellor announced the future introduction of the Future Homes Standard 2025. The Standard will mandate the end of fossil fuel heating systems in new homes from 2025, and target "world-leading levels of energy efficiency". In doing this, the Standard aims to utilise green technology to reduce environmental impacts, as well as reducing consumer energy bills.



3.10 This Standard is expected to build on the Prime Minister's Clean Growth Grand Challenge missions, which aims to at least halve the energy usage of new build properties by 2030. It also looks to halve the costs of renovating existing buildings to achieve a similar standard of energy efficiency as new buildings, whilst improving their quality and safety.

Future Buildings Standard

3.11 On 19th January 2021, the government announced the future introduction of the Future Buildings Standard. The Standard will deliver new non-domestic buildings that are zero-carbon ready from 2025 onward, which use low-carbon heat, and which have the best fabric standards possible. As the electricity grid continues to decarbonise, homes built to the Standard will become net zero carbon over time, with no need for further energy efficiency retrofit work as they will rely on fossil fuels for heating and hot water.



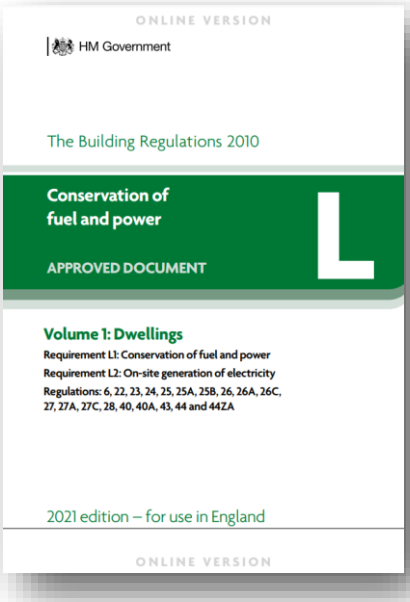
3.12 This Standard is expected to build on the Prime Minister's Clean Growth Grand Challenge mission, which aims to at least halve the energy usage of new buildings by 2030. It also looks to halve the costs of renovating existing buildings to achieve a similar standard of energy efficiency as new buildings, whilst improving their quality and safety.

Part L:2021 of the Building Regulations

Part L of the Building Regulations relates to the conservation of fuel and power, and applies to both new and existing buildings. The current edition covers the energy efficiency requirements of the building regulations as set out in Part L of Schedule 1 to the Building Regulations. Technical guidance is contained in two Part L Approved Documents.

3.13 The documents of relevance to this scheme include:

- **Approved Document L Volume 1: Dwellings.** This provides the methodology for new build, domestic buildings to meet current energy efficiency standards, including backstop U-values, carbon dioxide emissions calculations and minimising the risk of overheating. Carbon dioxide emissions reductions are prescribed for 'regulated' emissions only, and relate to heating, hot water, lighting, auxiliary and cooling (where specified). Emissions from domestic appliances (cooking, for example) are considered to be unregulated emissions, and are excluded from the analysis.



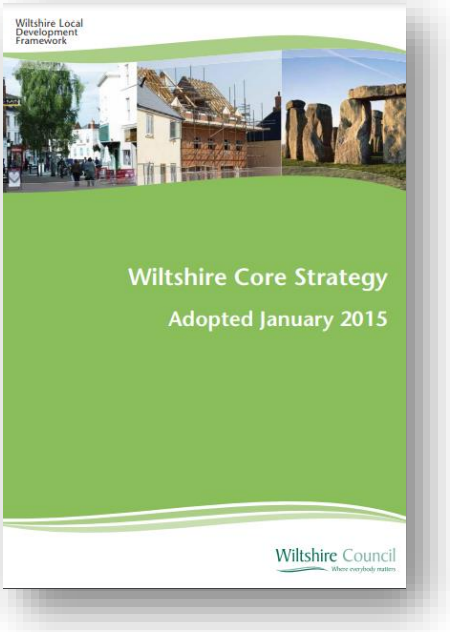
- **Approved Document L Volume 2: Buildings other than dwellings.** This provides the methodology for new build, non-domestic buildings to meet current energy efficiency standards, including backstop U-values, carbon dioxide emissions calculations and minimising the risk of overheating. Carbon dioxide emissions reductions are prescribed for 'regulated' emissions only, and relate to heating, hot water, lighting, auxiliary and cooling (where specified). Emissions from other equipment (computers, for example) are considered to be unregulated emissions, and are excluded from the analysis.



Local

3.14 In determining the local context, the Wiltshire Core Strategy (January 2015) sets out policy relevant to sustainability.

Wiltshire Core Strategy (January 2015)



3.15 The Core Strategy sets out the strategic vision for Wiltshire to create stronger, more resilient communities, through the embedding of principles that seek to manage future development to ensure communities have an appropriate balance of jobs, services, facilities and homes. It is envisaged that this will support a more sustainable pattern of development within Wiltshire. The policies set out in the Core Strategy demonstrate how this will be achieved. Policies of relevance to this project in the context of sustainability and energy are as follows:

- **Strategic Objective 2: addressing climate change** states that climate change is possibly the greatest long-term challenge facing the world today. Tackling climate change is therefore a key Government priority for the planning system. Local authorities are uniquely placed to act on climate change and the planning system can help by contributing to delivering the most sustainable development and shaping communities that are resilient to the unavoidable consequences of a changing climate.

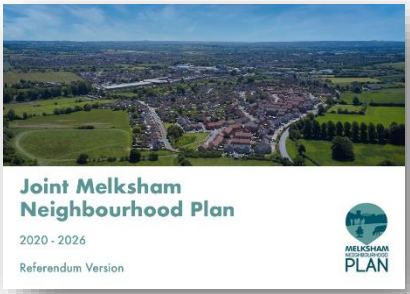
- **Core Policy 41: Sustainable Construction and Low Carbon Energy** states that:

  Climate change adaptation: new development, building conversions, refurbishments and extensions will be encouraged to incorporate design measures to reduce energy demand. Development will be well insulated and designed to take advantage of natural light and heat from the sun and use natural air movement for ventilation, whilst maximising cooling in the summer.

  Sustainable construction: new homes (excluding extensions and conversions) will be required to achieve at least Level 4 (in full) of the Code for Sustainable Homes.

  Renewable and low-carbon energy: all proposals for major development will be required to submit a Sustainable Energy Strategy alongside the planning application outlining the low-carbon strategy for the proposal.

Joint Melksham Neighbourhood Plan 2020 – 2026 (July 2021)



3.16 The Joint Melksham Neighbourhood Plan 2020 – 2026 focuses on shaping the future use and development of land within Melksham. It identifies a vision and a number of goals for the neighbourhood, as well as setting out a number of planning policies related to: climate change; future housing and infrastructure need; town centre, employment and travel; open spaces and community facilities; and built and natural environment. Policies of relevance to the proposed development at the Land South of Snarlton Farm include:

- **Policy 1: Sustainable Design and Construction** states that, within the constraints of scale and viability, development and infrastructure proposals that contribute to Wiltshire becoming carbon neutral by 2030 will be supported. Proposals should therefore address sustainable design and construction which includes:

  - Maximising green infrastructure to sequester carbon and provide other benefits such as shade;

  - Demonstrating good connections to existing services and facilities, or a mix of uses in the proposed development that minimises the need to travel by private vehicle;

  - Demonstrating mitigation of green house gases and adaptation to a changing climate; and

  - Illustrating application of the Energy Hierarchy principle of reducing energy demand, producing, supplying and using energy efficiently and generating energy through zero or low carbon means (through, for example maximising south facing areas of roof space to collect solar energy onsite or nearby).

  For major applications, applicants are encouraged to use appropriate sustainability assessment tools such as the Building Research Establishment's Environmental Assessment Method (BREEAM), Home Quality Mark for residential development and/or CEEQUAL (or equivalent) for infrastructure development.

  Innovative approaches to the construction of low carbon homes which demonstrate sustainable use of resources and high energy efficiency levels, such as Passivhaus, are encouraged.

- **Policy 3: Flood Risk and Natural Flood Management** states that, particularly in the South Brook catchment area, natural flood management works to conserve and enhance the ecological flood storage value of the water environment, including watercourse corridors and catchments, are supported.

Where development proposals are in areas with known surface water flooding issues, they should include appropriate mitigation and construction methods, including where appropriate, contributions towards wider catchment projects.

Major development should include provision of Sustainable Drainage Systems (SuDS), where appropriate, as part of the Natural Flood Management approach and wider Greener Infrastructure networking.

- **Policy 11: Sustainable Transport and Active Travel** states that all developments must be planned in line with the Sustainable Transport Hierarchy. Applications for major development must demonstrate through an effective Travel Plan (in accordance with Wiltshire Core Strategy Core Policy CP61) how sustainable transport modes are maximised and that safe and suitable movement can be achieved for all people.

  As a key element in the local sustainable transport network, proposals that would achieve further improvements to the accessibility and quality of the links between the wider town and Melksham Railway Station will be supported. Improvements to the quality of the public realm around the station will also be supported.

- **Policy 12: Green Infrastructure** states that development that will result in the creation of new Green Infrastructure (GI) and/or contribute to the protection, management, enhancement and connectivity of existing GI will be supported. Proposals for major development must:

  - Identify the existing GI within and around the development site;
  - Demonstrate how GI has been incorporated into the proposal; and
  - Assess and address how the proposal will benefit the function and connectivity of GI through the site and beyond.

- **Policy 13: Biodiversity** states that development proposals, including those for field based solar farms, will be expected to deliver at least a 10% improvement in “biodiversity value” within and, where appropriate, beyond the site in order to deliver tangible benefits for biodiversity, including specific attention for protected species.

  Protection and enhancement of statutory and non-statutory nature conservation sites is a priority for the Neighbourhood Area and development proposals must demonstrate sensitive responses to these sites where necessary, such as accommodating a buffer zone.

- **Policy 18: Locally Distinctive, High Quality Design** states that development proposals that contribute positively to the conservation, enhancement and extension of the quality and local distinctiveness of Melksham and Melksham Without will be supported.

In addition to having regard to the National Design Guidance and Wiltshire Council design policy, development proposals must demonstrate how they have been informed by the Melksham Rapid Community Character and Distinctiveness Statement and therefore how they have responded positively to the history and character of the area in which the site is located.

Proposals for major development must demonstrate through a masterplan how the proposed development layout, density, access proposals and building design approach complement and extend the positive characteristics of Melksham and Melksham Without's settlements and landscape, both historic and topographic.

Other Considerations

3.17 On the 26th February 2019, Wiltshire Council declared a climate emergency, and set a target to reduce its carbon emissions to net zero by 2030. In doing so, the Council passed the following Motion:

- Acknowledge that there is a 'Climate Emergency'.
- Seek to make the County of Wiltshire carbon neutral by 2030.
- Requests and supports the work of Overview and Scrutiny to set up a task group of the Environment Select Committee to develop recommendations and a plan to achieve this pledge along with undertaking a carbon / renewables audit.
- Call on Westminster to provide the powers and resources to make the 2030 target possible.
- Work with other local government authorities (both within the UK and internationally) to determine and implement best practice methods to limit Global Warming to less than 1.5°C.
- Continue to work with partners in the private sector and civil society across the County and region to deliver this new goal through all relevant strategies and plans.
- Report to Full Council on a six-monthly basis with the actions the Council is taking and will take to address this emergency and reporting these against the Carbon / Renewables Baseline audit.

4. SUSTAINABILITY STATEMENT

4.1 The Sustainability & Energy Statement for the proposed development is divided into two main parts.

4.2 The sustainability strategy for the proposed development has been assessed in line with the guidance set out within relevant policies of Wiltshire Core Strategy (2015). This enables a holistic sustainability approach to be set out for the proposed development. The Wiltshire Core Strategy encourages new development to incorporate high-quality design measures, and therefore represents best practice guidance to meet high standards of sustainable design and construction.

4.3 The carbon dioxide (CO_2) emissions reduction strategy for the proposed building to be delivered as part the development is based on the energy hierarchy to provide a rigorous methodology, which maximises cost-effective opportunities for emissions reduction, as detailed in Section 5.

Sustainable Design and Construction

4.4 In line with the guidance provided in the Wiltshire Core Strategy (2015), the sustainability features of the proposed development are outlined below.

4.5 Issues related to energy conservation, renewables and reducing greenhouse gases follow in a dedicated section.

Making Effective Use of Land

4.6 Figure 4.1 below shows the location of the development site with respect to its surroundings.

Figure 4.1 Current site

Approximate site boundary



4.7 As shown above, the proposed development site is located at the edge of an existing settlement, with residential properties located to the west of the site. The town of Melksham is located to the west, and the village of Bowerhill is located to the south. These areas offer a wide range of community facilities and amenities, including primary schools, a secondary school, a community hospital, shops, restaurants and areas of public open space, all within walking distance of the application site.

4.8 The proposed development is therefore considered to be an extension of the existing town of Melksham, and therefore makes effective use of land, located within an established settlement.

Location and Transport

4.9 Accessibility to public transport connections contributes to the sustainability of a site's location. Melksham railway station is located approximately 3.1km to the northwest of the site. This station provides frequent access between Swindon, Westbury, Southampton and Cheltenham Spa via Great Western Railway services.

4.10 The nearest bus stops are located on Eastern Way, approximately 180m to the northwest of the site. These stops are served by a number of services, including the following:

- Route 14, which runs between Melkhsam Asda and Melksham nr Bud's Bar, approximately every hour on Mondays to Saturdays; and
- Route 15, which runs between Melsham Sainsbury's and Melksham o/s Asda, twice per day on Mondays to Saturdays.

4.11 A footway / cycleway is present along the northern side of Eastern Way, as well as the majority of the neighbouring roads in the area. In addition, there are two National Cycle Network (NCN) routes that run close to the site: NCN 4, which runs from central London to west Wales, and NCN 403, which starts in Great Bedwyn and joins NCN 4 at Melksham. In addition, due to the site's location at the edge of the town of Melksham, there is good access to a range of services and amenities, including shops, schools and public open spaces.

4.12 As detailed within the Transport Assessment, prepared by DTA Transportation, the internal layout of the proposed development will ensure future residents and site users will be able to easily walk and cycle within the local community. The site access road will be provided with a 3m footway/cycle way, which will connect to the existing provision on Eastern Way. Whilst a reserved matter at this stage, it is proposed that cycle parking will be provided within garages or shed within rear gardens for the proposed houses. It is also intended that car parking be determined during a Reserved Matters Application, however car parking provision will be in compliance with the standards set out within Wiltshire Council's Local Transport Plan (2011 – 2026). It is also intended that electric vehicle (EV) charging facilities and infrastructure be delivered as part of the proposed development, to encourage future residents to adopt more sustainable modes of transport.

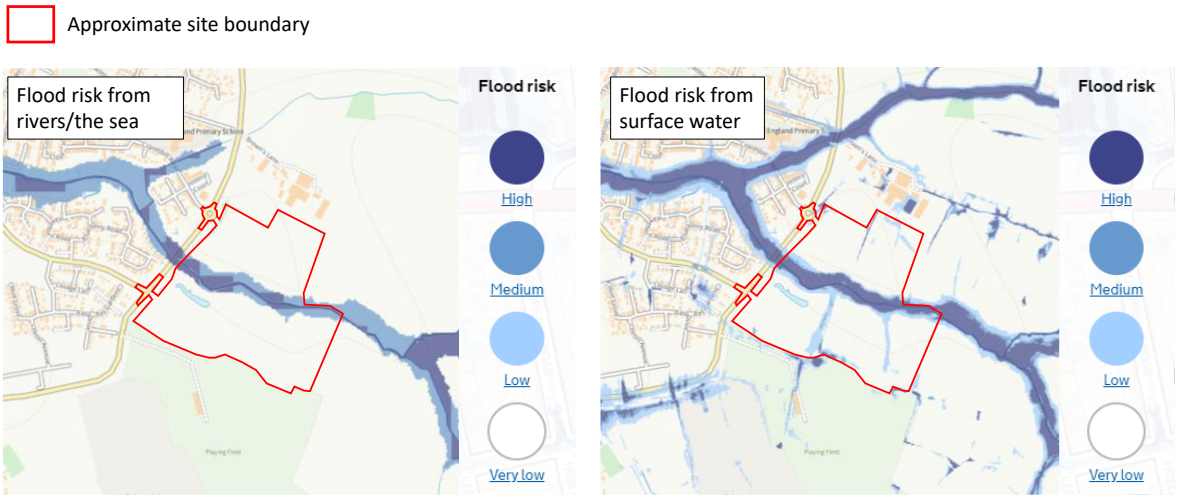
4.13 A Travel Plan, which aims to promote sustainable transport options and reduce reliance on single occupancy vehicles, has also been prepared by DTA Transportation. Measures proposed within the Travel Plan to encourage sustainable travel include:

- The delivery of an internal layout that enables future residents and site users to cycle and walk safely within the proposed development and the surrounding area. Cycle storage facilities will also be provided, and a number of additional potential measures are recommended to further encourage walking and cycling, including:
    - Formation of a residents' Bicycle Users Group (BUG);
    - Provision of free cycle training for children and adults; and
    - Promotion of national campaigns, such as Walk to School Week and National Bike Week.
- The raising awareness of the available travel and access options at the site for future prospective residents, with the accessibility benefits of the site and its proximity to facilities being actively marketed.
- The provision of a Sustainable Transport Pack for each household, which will promote the use of local sustainable travel networks, with information provided on bus network routes and timetables, rail services and timetables, pedestrian and cycle routes within the local area, car sharing information, and details of walking and cycling websites.
- The provision of a travel voucher for each household that may be used, for example, to purchase a bus pass or cycle equipment.
- The provision of broadband connections for all new households, to enable home working and online shopping. It is considered that these practices help to save money on fuel and parking, prevent wear and tear on vehicles, and save time on travelling.

Reducing Flood Risk and Surface Water Run-off

4.14 Information contained within the Flood Risk Assessment (FRA), prepared by RSK Land and Development Engineering Ltd, confirms that the site falls within Flood Zones 1, 2, and 3. As shown in Figure 4.2 below, the central portion of the site, which is at the lowest elevations, lies within Flood Zones 2 and 3. This is due to the presence of the Clackers Brook watercourse, which runs through the centre of the site. The proposed development areas are to be located to the north and south of Clackers Brook, entirely within Flood Zone 1, ensuring that the built-form of the proposed development will be at low risk of fluvial or tidal flooding, with a less than 1 in 1,000 annual probability of river or sea flooding. The areas of the site which fall within Flood Zones 2 and 3 are at a medium to high risk of flooding, potentially with a greater than 1 in 100 annual probability of river flooding, however it is not anticipated that any development will be delivered within these areas.

Figure 4.2 Extract from the Environment Agency's online flood map



4.15 In addition, Figure 4.2 below indicates that the areas either side of Clackers Brook are at medium to high risk of surface water flooding, similar to those areas demonstrated to be at risk of fluvial flooding. There are also areas shown to be at low to medium risk of surface water flooding along the boundary between the two fields that divide the northern and southern portions of the site. Additional areas within the south-eastern and north-eastern areas of the site are also demonstrated to be at low risk of flooding from surface water runoff. It is noted within the FRA that, due to the topography of the site, which falls towards Clackers Brook at the centre, runoff generated on the site is likely to fall to the south within the northern portion, and to the north within the southern portion. It is noted that, surface water runoff generated by the proposed development will need to be managed in order to minimise the risk to future residents and site-users, and to the surrounding area. In particular, the offsite overland flow paths that enter the site from the south will need to be maintained in the post-development context, which will be facilitated through the proposed layout of the scheme, as well as the incorporation of a sustainable drainage system (SuDS). Further details of the mitigation measures proposed to mitigate the risk of flooding are provided within the FRA submitted in support of this application.

4.16 Information contained within the FRA also demonstrates that the proposed development site is at low risk from groundwater, sewer and reservoir flooding.

4.17 The proposed surface water drainage assessment, also prepared by RSK Land and Development Engineering Ltd, splits the development site into four catchment areas: North-West, North-East, South-West and South-East. The proposed strategy will seek to restrict surface water runoff rates from these catchments to 3.9 l/s, 5.7 l/s, 6.1 l/s and 9.1 l./s, respectively, for storm events of magnitude up to and including the 1 in 100-year return period plus a 40% climate change allowance. This is in line with the requirements of Wiltshire Council, which requires post-development discharge rates to represent a 20% betterment over the pre-development case.

4.18 The proposed runoff rate is to be achieved through the incorporation of on-site, including permeable paving along private roads and car parking areas, attenuation basins strategically located within the proposed area of open space, and roadside swale features implemented along the southern edge of each development parcel. It is intended that attenuated water will then be discharged to the Clackers Brook watercourse, which runs through centre of the site, at restricted rates, as detailed above. Details on the treatment of attenuated surface water runoff and the maintenance of the proposed SuDS features are provided in the Flood Risk Assessment, which accompanies this submission.

Reducing Water Consumption

4.19 The majority of England is under water stress, with more water often being consumed than is available during dry weather. As the population continues to grow, and with changes to the frequency of rainfall events projected as a result of climate change, this situation will be further exacerbated, with even greater pressure exerted on the supply of potable water.

4.20 In order to actively mitigate against this, it is intended that water efficient fittings and appliances shall be installed to target a maximum internal water consumption target of 105 litres per person per day, based on the DCLG water efficiency calculator. Full details of the water consumption calculations are provided in Appendix A2.

4.21 Table 4.1 forms a basis for the residential element of the proposals, subject to changes at later detailed design stages.

Table 4.1 Proposed water use

Fitting	Consumption
Low volume dual flush toilets	6 litres (full) / 3 litres (part)
Wash hand basin tap	3 litres per minute
Kitchen sink tap	4 litres per minute
Bath (where fitted)	180 litres capacity (to overflow)
Shower	8 litres per minute
Washing machine	Recommended – 17 litres/kg
Dishwasher	Recommended – 4.5 litres/place setting

4.22 To aid in reducing potable water consumption for external uses, it is recommended that water butts, or similar, be provided for each dwelling to enable rainwater harvesting for irrigation purposes. It is

also recommended that drought-resistant and drought-tolerant species be incorporated within the proposed Landscape Strategy to reduce external water demand.

Materials and Waste

4.23 Materials should be responsibly sourced by the main contractor, and be specified to have a low embodied impact. Materials with a low embodied impact, as defined within the BRE Green Guide to Specification, should be selected for use in the building design and construction.

4.24 The selection of materials is determined by a variety of factors, such as the architectural context, design rationale, embodied carbon and maintenance requirements. For the proposed development, consideration will be given to the lifecycle environmental performance with materials selected in consideration of the BRE's Green Guide to Specification, aiming for A or B rated materials wherever possible.

4.25 The use of locally sourced materials will be prioritised wherever possible to reduce the impacts associated with the transportation of materials. Using materials produced in the local area will also aid in developing the identity of the development, by ensuring it is in line with the local character and context. For the proposed development, there will be a focus on sustainable design, with materials selected that are in keeping with the local vernacular and landscape character, aiming for locally sourced materials where possible.

4.26 During detailed design of the building fabric, consideration will be given to minimising the environmental impact of materials, by selecting non-toxic and robust materials to ensure longevity and a minimal impact on the health of occupants.

4.27 Timber will be selected and purchased in consideration of sustainability certification. It is intended that all structural timber elements along with any timber used for temporary uses, such as scaffolding, will be sustainably sourced, e.g. from FSC and/or PEFC sources.

4.28 Consideration has been given to the reduction and recycling of waste during both the construction and operation phases.

4.29 During the construction phase, the principal contractor will be required to implement a Site Waste Management Plan (SWMP), which will detail who will be responsible for resource management, which types of waste will be generated, how the waste will be managed (e.g. reduced, reused or recycled), which contractors will be used, and how the quantity of waste generated by the project will be measured. Should any demolition be required on the site, demolition contractors will incorporate best practice measures to maximise the recovery of materials from the demolition site for reuse or recycling, in line with the guidance set out by the Institute of Civil Engineers' (ICE) "Demolition Protocol".

4.30 To encourage a greater proportion of the operational waste to be diverted from landfill, it is proposed to provide dedicated spaces of sufficient size and within convenient locations for each of the new dwellings. All waste collection and storage facilities will be considerate of Building Regulations and Council requirements. A dedicated external waste storage area for refuse and recycling will also be allocated for each house and non-residential space to be delivered as part of the proposed development.

Tackling Increased Temperatures and Drought

4.31 In order to protect the development against overheating in the future, a number of key design features have been proposed to ensure the proposals are resilient to increased temperatures, which may be experienced as a result of climate change. The following measures are deemed to contribute to the mitigation of the effects of climate change:

- The dwellings' facades will have a balanced amount of glazing to mitigate direct solar heat gain whilst optimising daylight penetration.
- Openable windows on multiple aspect spaces will be integrated to provide a passive ventilation strategy that utilises crossflow ventilation to maximise the potential for natural ventilation within the dwellings.
- Internal heat gains will be minimised through the use of energy efficient lighting and equipment, the anticipated employment of air source heat pump (ASHP) technology, and the insulation of hot water distribution pipework to prevent heat loss into the dwelling spaces.

Ecology and Landscape

4.32 The Ecological Appraisal Report, prepared by BSG Ecology, confirms that no statutory or non-statutory nature conservation designations are present within the site. The site falls within the Impact Risk Zone (IRZ) of Spye Park Site of Special Scientific Interest (SSSI), which is 3.2 km north of the Site. A number of non-statutory nature conservation designations also fall within a 2km radius of the site, including: Eighteen Acre Plantation (930m north-east); Prickly Sevens Meadow (1.1km east); Morass Wood (1.3km north-east); Kennet & Avon Canal (1.5km south); Hanging Wood (1.7km north-east); Bristol Avon River (1.7km west); and Conigre Mead Wiltshire Wildlife Trust (WWT) Reserve (1.8km west). It is considered that the development is unlikely to impact any statutory or non-statutory designated sites due to its location, and the nature of the proposed scheme. Thus, no direct or indirect effects are anticipated, and no mitigation measures are required.

4.33 The site is dominated by arable land and field margins, with areas of semi-improved grassland and ditches also present. Clackers Brook flows through the centre of the site, from the east to the west, with the banks supporting a number of trees and tall ruderal vegetation. None of these habitats are considered to qualify as Habitats of Principal Importance. A mix of species rich and species poor native hedgerows also intersect the site, and a number of ponds are located on-site and within a

250m radius of the site. Both the hedgerows and one identified pond meet criteria that would qualify them as Habitats of Principal Importance. The proposed development will result in the loss of arable land, and the creation of areas of neutral grassland, which it is noted should be implemented in such a way as to ensure a net gain in biodiversity. Hedgerows will be retained where possible, however the removal of some areas will be required to facilitate new access routes within the site. Whilst the amount of hedgerow removal is unlikely to significantly impact on their functionality, it is intended that this loss be mitigated for through the provision of new hedgerow planting and the enhancement of the existing hedgerows. The proposed development provides opportunities for habitat creation and enhancement, in particular within the buffers and green space areas that are to be delivered outside of the built-form of the proposed scheme, in line with the enhancement measures to be delivered as part of the proposed Landscape Strategy.

4.34 The site provides suitable habitat for three species of breeding birds protected under Schedule 1 of the Wildlife and Countryside Act (1981, as amended): kingfisher, red kite and barn owl. Of particular importance to these species are the habitats present along the banks of Clackers Brook, and the trees present within the site, including those present within the hedgerows. The site also presents opportunities for other protected species, such as house sparrow, cuckoo and swift. To ensure the impacts of the proposed development on nesting birds is suitably mitigated, the existing hedgerows present on the site will be retained and enhanced to ensure nesting and foraging opportunities remain. The proposed conversion of the existing hedgerow margins to grassland with increased floral diversity is also expected to provide additional secondary benefits to bird species through increased foraging opportunities. Further to this, in order to ensure any birds nesting on the site are protected, the removal of habitat with the potential to support these species should be undertaken outside of the breeding bird season (generally March to August), or under the supervision of an ecologist where this is not possible.

4.35 The presence of ponds both on-site and in the immediate surrounding area presents opportunities for Great Crested Newt (GCN). Surveys undertaken at the site indicate that this species is present, with additional suitable habitat also available on the site in the form of scrub and hedgerow. In order to mitigate potential impacts on this species, it is recommended that the pond within which a population of GCN were recorded is enhanced, through the clearing of the surrounding scrub to allow for more natural light to reach the water. It is also noted that the proposed habitat creation and enhancement to be delivered as part of the scheme will benefit GCN, through the provision of increased shelter and foraging opportunities.

4.36 Bat surveys undertaken at the site indicate the presence of bats, in particular along Clackers Brook, as well as along the network of hedgerows within the site. It is noted that the ponds, Clackers Brook and the associated bank-side vegetation, and the hedgerows present within the site provide a suitable habitat for foraging and commuting bats within the site, in addition to connections to the wider landscape. Further to this, whilst there are no buildings present on the site in the existing case,

seven trees present within the boundaries have been identified as having the potential to support roosting bats. The habitats associated with Clackers Brook, the existing hedgerow network and the boundary habitats are to be retained as part of the proposed development, which will ensure opportunities associated with these habitats are maintained in the post-development context. Similarly, it is expected that all trees currently present at the site will be retained. These opportunities will be further enhanced through the planting of native hedgerows and trees, the provision of meadow grassland planting, and the creation of a dark corridor along the brook. It is also recommended that bat roosting features be included within the design of a proportion of the new dwellings, with additional installations within suitable existing trees at the site boundaries and that a sensitive lighting strategy be implemented, further details of which are provided below.

4.37 Other species of note which may be supported by habitats present at the site include otter and water vole. For these species, the retaining and enhancement of Clackers Brook and associated bank-side vegetation will ensure opportunities are maintained in the post-development context. It is recommended that habitat creation be designed to reduce footfall along Clackers Brook to ensure disturbance of otter and water vole populations is minimised. Tall vegetation will also be encouraged along the brook margins, as well as the maintenance of a mown footpath to encourage pedestrians to use a demarcated route. During the construction phase of the proposals, it is recommended that Clackers Brook be placed within a protective buffer, with no vehicle movements permitted. Where small works are to be undertaken, such as the improvement of the existing bridge access, this should be undertaken in line with a method statement, to be detailed within a Construction Environmental Management Plan (CEMP).

4.38 There is also potential for badgers to utilise the site for foraging and sett creation, particularly with respect to the arable fields, grassland and hedgerows. To ensure this species is protected during the construction of the proposals, it is recommended that buffers be implemented around any existing setts, and that no excavations are left uncovered overnight, or that ramps or other means of escape are provided should this not be possible. Pre-construction badger surveys should also be undertaken prior to commencement on-site to ensure records of badger are up-to-date in order to inform any mitigation measures that may be required. Similarly, as the site contains grassland and hedgerows that have the potential to support reptile species and dormice, respectively, it is recommended that a working method statement for reptiles be put in place during the construction phase, and that Dormouse surveys be undertaken prior to commencement.

4.39 The proposed Landscape Strategy, prepared by LDA Design, includes the following key principles:

- Provision of wildflower grassland within areas of green space to reflect the rural character of the surroundings and deliver biodiversity value.

- Planting of new trees and scrub along the Clackers Brook corridor to enhance its character and biodiversity interest, whilst also maintaining some open views to the water course.

- Planting of larger tree species within the more open sections of the Clackers Brook corridor to provide a variety of tree sizes and types, and to create visual interest.

- Incorporation of a variety of street trees throughout the development to create an attractive public realm and to provide additional screening beyond the outer boundaries.

- Retention and enhancement of all internal and boundary field hedgerows to improve landscape and biodiversity structure.

- Retention of veteran trees along Clackers Brook.

- Planting of new native, species-rich hedgerow to define the norther boundary of the site, to deliver a degree of screening, and to enhance habitat connectivity.

- Incorporation of pockets of shrub and tree planting adjacent to the outer field boundaries to provide screening potential and create habitat diversity.

- Retention of the Public Right of Way (PRoW) MELW22 along Clackers Brook and part retention of PRoW MELW 23 to the south of the site, as mown routes.

- Creation of permissive routes within the site to enhance access and to provide recreational opportunities.

- Creation of a central play area, adjacent to the Clackers Brook corridor.

4.40 Further details on the proposed Landscape Strategy are provided within the Landscape and Visual Impact Assessment, prepared by LDA Design, and submitted in support of this application.

Air Pollution

4.41 The Environment Act 1995 requires all Local Authorities to review air quality within the districts. If it appears that any air quality 'Objective' prescribed in the regulations, and in the National Air Quality Strategy, is not likely to be achieved, then the local authority must designate the affected area as an Air Quality Management Area (AQMA).

4.42 As highlighted within the Air Quality Assessment prepared by RSK, the site location is not specified as an AQMA. It is noted that there are five AQMAs, declared due to the exceedance of annual mean nitrogen dioxide (NO_2) levels, within the administrative boundary of Wiltshire Council, the closet of which is located in excess of 8km from the proposed development site.

4.43 The Air Quality Assessment concludes that, during the construction phase, impacts on local air quality have the potential to occur, due to exhaust emissions associated with construction vehicles and plant, as well as the generation of dust and particulate matter from earthworks, construction and trackout activities. In order to mitigate potential impacts on local air quality during the construction

phase, it is recommended that a dust management plan (DMP) or a dust and air quality-related contribution to a construction environmental management plan (CEMP) be prepared and agreed with the local authority. The DMP or CEMP should include details of measures to be incorporated to control dust and general pollution from the site, as well as details of any monitoring schemes that may be implemented, where appropriate. Recommended best practice mitigation measures may include: mechanisms to minimise the number of vehicle movements to and from the site; discouragement of on-site vehicle idling; minimisation of on-site parking; and the provision of secure cycle parking and encouragement of the use of public transport. Through the implementation of the mitigation measures outlined within the Air Quality Assessment, the residual impacts of the proposals on local air quality during construction will be negligible.

4.44 Due to the outline nature of the proposed development, detailed traffic data is not yet available. Therefore, an Air Quality Screening has been undertaken, in line with the criteria set out within the Environmental Protection UK (EPUK) – Institute of Air Quality Management (IAQM) Guidance. The Screening indicates that the majority of the criteria set out will not be exceeded as a result of the proposed development. However, as there is potential for some exceedances to occur, in particular where there may be a change in the number of light duty vehicle (LDV) movements and as a result of the proposed introduction of a new junction, it is recommended that further assessment of the operational phase traffic be undertaken once additional details are available. It is noted, however, that as the proposed development site is not located within an AQMA, it is not expected that future occupants and site visitors would be exposed to unacceptable levels of air pollution once the scheme is operational.

Light Pollution

4.45 As outlined in the Ecology Appraisal Report prepared by BSG Ecology, a sensitive lighting strategy designed in accordance with the recommendations of the NPPF and Institute of Lighting Professionals Guidance Note (2018), should be implemented during the operation of the proposed development. In addition, a Lighting Impact Assessment has been undertaken by RSK, to assess the existing levels of artificial light, and to predict the impacts that proposed external lighting may have on existing sensitive receptors. This Assessment concludes that, whilst the proposed development will result in an increase in light spill within some areas of the site, the impact will be negligible. Furthermore, it is anticipated that the luminaires to be installed at the site will be provided within housings that will direct light downwards, and minimise unwanted sideways illumination. It is therefore concluded that the proposed development will not have a significant impact on the surrounding area with respect to light pollution.

Ground and Water Pollution

4.46 The implementation of the proposed sustainable drainage strategy (SuDS), outlined in the Flood Risk Assessment prepared by RSK Land and Development Engineering Ltd, will include appropriate pollution control measures to minimise the risk of pollution entering the ground and surface water

bodies from surface water runoff from the development. An appropriate SuDS treatment train, consisting of an attenuation basin, permeable paving systems and a network of roadside swales, has been incorporated within the design to treat surface water before it is discharged to Clackers Brook, which runs through the centre of the site.

4.47 Additional measures will also be adopted during construction to minimise the risk of ground and surface water pollution, including:

- Oil separators;
- Clear marking and signage of drainage stems;
- Full bunding of on-site fuel or oil delivery areas;
- Bunding of areas to be used for cleaning activities; and
- Best practice measures, implemented as part of a Construction Environmental Management Plan (CEMP), to mitigate the impacts of construction-related dust and emissions.

5. ENERGY STRATEGY

5.1 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, a comprehensive energy and carbon dioxide (CO_2) emissions assessment has been carried out for the proposed development. The energy performance of the scheme has been analysed and evaluated against the most up-to-date iteration of Part L of the Building Regulations and pertinent Wiltshire Council policies.

5.2 It should be noted that, due to the outline nature of the application, there are no detailed designs currently available for the proposed dwellings. Therefore, in order to maintain a degree of flexibility in complying with and exceeding the national standards set out in the Building Regulations on carbon and energy performance, as required by Wiltshire Council, the measures outlined below describe a potential means of achieving this. Therefore, the final dwelling specifications may be subject to change during subsequent design, with additional detail to be provided as part of a Reserved Matters application.

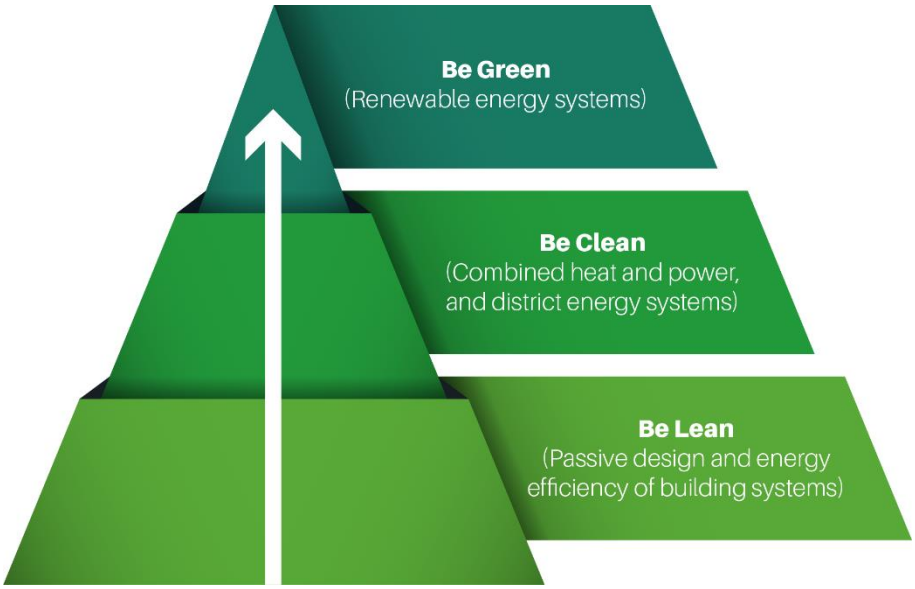
The Energy Hierarchy

5.3 The proposed strategy is based upon the principles of the Energy Hierarchy on the basis that it is preferable to reduce carbon dioxide emissions through reduced energy consumption above decarbonisation through alternative energy sources.

5.4 The tiers of the Energy Hierarchy are:

- Be Lean Use less energy
- Be Clean Supply energy efficiently
- Be Green Use renewable energy

Figure 5.1 The Energy Hierarchy



'Be Lean' (Use Less Energy)

5.5 Within the first stage of the energy hierarchy, it is proposed to incorporate high levels of passive and energy efficient design measures in order to reduce the development's energy consumption and associated CO_2 emissions, utilising a 'fabric first' approach to reduce energy demand.

5.6 Details of the passive design and indicative energy efficiency measures proposed have been detailed below.

Domestic

5.7 Passive design utilises daylight, solar energy, shading and stack or wind driven ventilation to illuminate, heat, shade where necessary and ventilate/cool the building, thus requiring less (mechanical) energy to achieve the performance standards for health and wellbeing of the residents.

5.8 Site characteristics relating to local climate, surroundings, scale and size of the development therefore passively influence the potential energy requirement and savings that can be achieved through the consideration of these aspects. The parameters that most influence the potential to utilise sunlight and solar gains are the orientation and layout of buildings, however these are typically driven by various factors other than energy efficiency or bioclimatic design considerations (e.g. aesthetics, function, etc.).

5.9 The orientation of the dwellings will be dictated by the plot orientation in order to give the overall scheme a cohesive design approach. The distances between buildings will be optimised to ensure sufficient access to natural daylight and passive solar gains to the dwellings. Light and solar gain will

also be influenced by the fenestration and the selection of glazing with a high degree of light transmittance.

5.10 The following U-values are proposed as an indicative guide for the building elements and will be further evaluated during detailed design, to best minimise heat loss or gain, depending on the time of year. The table demonstrates the compliant performance of the building fabric with the Building Regulations requirements for domestic uses.

Table 5.1 Proposed domestic building fabric U-values

Building Fabric Element	Part L1:2021 backstop U-values (W/m²K)	Proposed U-values (W/m²K)
Ground floor	0.18	0.10
External wall	0.26	0.15
Roof	0.16	0.10
Windows	1.60 (including frame)	1.40 (including frame)
Doors	1.60	1.00

5.11 Subject to confirmation, it is proposed that glazing will be double or triple glazed, argon filled with a low emissivity coating. Although this has yet to be formally specified, it is expected that thermally efficient glazing will be employed, with window U-values of 1.4 W/m²K or better (including frame), a g-value of 0.63 and light transmission of ~70% to improve natural daylight penetration.

5.12 A high level of air tightness is proposed, where a level equal to or below 5 $m^3/h/m^2$ shall be targeted, meaning that air infiltration between the internal and the external environment will be largely controlled, and space heating/cooling demand further reduced.

5.13 The other significant means of heat loss from dwellings is due to thermal (or cold) bridging. This is typically a construction detail which has higher thermal conductivity than the surrounding materials, creating a path of least resistance for heat transfer. Thermal bridges result in an overall reduction in thermal resistance of the building elements and should be designed out where possible to minimise unwanted heat loss. In order to minimise heat loss through thermal bridges it is intended that an equivalent y-value of 0.05 W/m^2K will be targeted for each dwelling.

5.14 High efficiency plant, equipment and controls are proposed to limit the energy consumed in order to provide the required level of indoor environmental performance and control. Performance efficiency values have been specified in line with the requirements of the Building Regulations in order to minimise carbon dioxide emissions as far as possible through the 'Be Lean' stage.

- Low energy LED lighting will be installed throughout the residential units.
- In order to remove the need for fossil fuel combustion on-site, it is intended that space and water heating will be provided by air source heat pump (ASHP) systems. This is addressed in more detail in the renewable energy technology section below.
- All residential units will be provided with opening windows to enable a natural ventilation strategy that utilises cross ventilation where feasible to provide fresh air to habitable spaces, without increasing the risk of overheating.
- Energy management systems, such as smart meters, will be installed in all dwellings to enable future residents to monitor their energy usage, and therefore aid in reducing their energy consumption.
- All future residents will be provided with a Home User Guide, to ensure all plant and equipment provided is used correctly and to enable efficiency of use to be maximised.
- Time and temperature zones will be employed in all dwellings and will be controlled by the suitable arrangement of plumbing and electrical systems.
- There is potential for Waste Water Heat Recovery (WWHR) technology to be incorporated within all residential dwellings to extract heat from the water used within the dwellings, such as in baths or showers. This will aid in pre-heating incoming mains water, thus reducing the energy required to heat domestic hot water.

Non-Domestic

5.15 Similarly to the domestic element of the proposed development, the non-domestic component should include a wide range of energy efficiency measures, intended to reduce energy demand.

5.16 The exact nature of the proposed non-domestic space is not confirmed at this stage, however it is intended that the scheme will deliver a local community use or building. The building fabric specification has therefore been driven by the energy demand profile associated with community uses.

5.17 The passive design of the non-domestic buildings will, where practicable, include a number of specific energy efficiency features.

5.18 The following U-values provide an indicative guide as a means of limiting heat loss through the non-domestic units' building elements and will be further evaluated during detailed design.

Table 5.2 Proposed non-domestic building fabric U-values

Building Fabric Element	Part L2:2021 backstop U-values (W/m²K)	Proposed U-values (W/m²K)
Ground floor	0.18	0.10
External wall	0.26	0.15
Roof	0.16	0.10
Windows	1.60 (including frame)	1.40 (including frame)
Doors	1.60	1.20

5.19 Subject to confirmation, it is proposed that glazing will be double or triple glazed with a low emissivity coating. Although this is yet to be formally specified, it is expected that centre pane U-values will be 1.4 W/m^{2}K or better, with a g-value of 0.64 and a light transmission of 78% to maximise natural daylight penetration.

5.20 A high level of air tightness is proposed, where a level equal to or below 3 m^3/h/m^2 shall be targeted, meaning that air infiltration between the internal and the external environment will be largely controlled, and space heating/cooling demand further reduced.

5.21 High efficiency plant, equipment and controls are proposed where practicable to limit the energy consumed in order to provide the required level of indoor environmental performance and control. Performance efficiency values have been specified in line with the requirements of the Building Regulations in order to minimise carbon dioxide emissions as far as possible through the 'Be Lean' stage.

- Low energy LED lighting will be installed throughout the non-domestic space. Lighting power densities of 3.0 W/m^2 per lux are recommended, with daylight dimming and presence detection controls to be applied where practicable to reduce operational lighting energy consumption.

- It is recommended that outside air be provided to the non-domestic space(s) via mechanical ventilation with heat recovery (MVHR), with a recommended specific fan power (SFP) of 0.7 W/l/s. This efficiency is improved over that specified in Part L of the Building Regulations.

- Where required, it is recommended that cooling be provided to the non-domestic space(s) using variable refrigerant flow (VRF) systems, with a cooling seasonal energy efficiency ratio of at least 5.0.

- Energy usage will be metered to ensure that charging for energy is linked to usage.

- Where relevant, the electricity power factor should be greater than 0.95, and light metering with warnings about out of range values will be utilised as part of the building management system.

'Be Clean' (Supply Energy Efficiently)

5.22 The potential for the proposed development to incorporate a low carbon heating system has been reviewed for the scheme.

5.23 Local heat and power sources minimise distribution losses and achieve greater efficiencies when compared to a separate energy system. This in turn reduces the site-wide energy consumption and associated carbon dioxide emissions.

5.24 The potential integration of a district heating network or a conventional gas-fired combined heat and power (CHP) plant to provide low carbon heat and power on-site has been evaluated for the development, in compliance with industry best practice and appropriate planning policies.

District Heating Feasibility

5.25 The feasibility of a district heating network is heavily dependent on a location's heat demand. In turn, heat demand in the locality is dependent on building usage and the surrounding area heat demand density.

5.26 Figure 5.2 below displays the development site within its proposed surroundings. From this, it can be concluded that the site itself is undeveloped, with low-density residential settlement to the west. The surrounding area is therefore likely to be characterised by a low heat demand.

5.27 There are no existing or proposed district heating networks within close proximity to the development site. In addition, due to the relatively low density of the development, and the cost of the infrastructure required to connect a peri-urban location to a district heat network, it is not deemed cost effective to establish a district heat network on the site.

Figure 5.2 Site and surroundings

Approximate site boundary



5.28 Based on the anticipated timescale of the proposed development and the predicted trajectory of the national electricity grid decarbonisation, the development of a combined heat and power (CHP) network powered by fossil fuels is not considered to be the most carbon efficient approach.

5.29 The incorporation of a gas-fired CHP network will lock the development into relatively carbon intensive gas-fired heating and hot water technology, and will not facilitate the transition to less carbon intensive solutions.

5.30 Based on the information presented above, it is considered that the incorporation of a gas-fired CHP network is not the optimum solution for the proposed development.

'Be Green' (Utilise Renewable Technologies)

5.31 The proposed development has given consideration to renewable energy technologies that may be applicable to deliver the required level of carbon dioxide savings over the Part L:2021 baseline, and the likely local effects on the environment.

5.32 In determining the appropriate renewable technology for the site, a number of factors including carbon dioxide savings, site constraints, and potential visual impacts have been considered. Further details of each technology and its associated assessment in relation to the development are provided below.

- **Biomass –** This technology is not considered a practical solution for reducing carbon dioxide emissions, in the view of limited options available for domestic scale installations, storage space requirements for the combustible material, and the transport related carbon emissions which are not normally accounted for within energy modelling. Furthermore, high nitrous oxide (NO_x) and

particulate matter (PM_x) emissions are associated with the use of biomass fuel, and as the proposed development will form part of a wider urban settlement, permitted emissions will be restricted.

- **Air Source Heat Pumps (ASHP) –** Given the site location and the lack of local existing or proposed heat networks, it is proposed that, where practicable and technically feasible, air source heat pump (ASHP) technology will be incorporated for all the proposed dwellings. It is proposed that highly efficient, individual ASHP systems are installed to serve both the space and water heating demands of the proposed dwellings. It is recommended that the systems specified have a minimum heating coefficient of 4.35, and a hot water coefficient of performance of 2.95, however this will be confirmed as part of a Reserved Matters Application. Time and temperature zones will be employed in all dwellings which will be controlled by the suitable arrangement of plumbing and electrical systems. For the non-domestic spaces, it is suggested that systems with a heating coefficient of performance of at least 3.50, and a seasonal coefficient of performance of at least 5.50 be specified. It is recommended that hot water be provided to the non-domestic spaces using direct electric heating, with an efficiency of 100%. As the designs progress, it is recommended that acoustic measures to limit the noise generated by the outside unit of any ASHP systems employed during operation are considered.

- **Ground Source Heat Pumps (GSHP) –** This technology is considered unlikely to be suitable, due to the uncertainties concerning the thermal properties of the ground. Ground investigation and borehole drilling is likely to be cost prohibitive and may not yield a suitable energy source. In addition to this, the carbon dioxide and energy cost savings arising from the use of this technology are unlikely to be significant when compared to that of the air source heat pump systems proposed for the development, particularly as high-grade heat is required to generate domestic hot water. Furthermore, the employment of GSHP technology may prove to be economically unviable, with this technology typically being around twice as expensive as ASHP technology. The use of ground source heat pumps for the proposed development is therefore not considered viable.

- **Photovoltaics (PV) –** This technology is considered to be appropriate for the proposed scheme, in light of the potential to deliver a proposed layout that includes for dwellings and non-domestic buildings with areas of unobstructed south-east to south-west facing roof space. This technology may therefore be employed to generate renewable energy on-site, with the potential excess power to be exported to the grid or harnessed using battery storage. The use of this technology, which typically has minimal maintenance requirements, should therefore be considered during the detailed design stage to contribute to the proposed development's compliance with and exceedance of Part L:2021 of the Building Regulations. As such, it is intended that, where practicable and technically feasible, all dwellings and non-domestic spaces will be provided with photovoltaic panels, with the quantum of PV technology to be provided confirmed as part of a Reserved Matters Application.

- **Solar Thermal Hot Water (STHW) –** This technology may also be considered appropriate for the proposed scheme, however it is presently rejected as domestic hot water is proposed to be provided by highly efficient individual air source heat pump systems. Furthermore, the STHW panels would compete for roof space with the PV panels that are recommended to be employed. In addition to this, hot water demand is considered to be outside the energy generating period for the solar thermal panels, meaning its ability to significantly reduce carbon emissions during operation is limited. It is noted, however, that should it be intended that this technology be incorporated within the proposed development, the quantum of STHW technology to be provided would be confirmed as part of a Reserved Matters Application.

- **Wind Turbines –** This technology is rejected on the basis of its potential impact on visual amenity and relatively low efficiency from unpredictable, turbulent wind conditions associated with urban locations.

5.33 Based on the information set out above, it is recommended that air source heat pump (ASHP) systems and rooftop photovoltaic (PV) panels will be employed to service both the domestic and non-domestic components of the development. The incorporation of these technologies will aid the achievement of net zero carbon emissions in operation, which is in line with the aspirations of the proposed scheme, as well as the requirements of the Wiltshire Core Strategy (2015) and the aspirations of Wiltshire Council, following the declaration of a Climate Emergency in 2019.

6. SUMMARY

6.1 This Sustainability & Energy Statement provides an overview as to how the development of the Land South of Snarlton Farm, Melksham, contributes to sustainable development in the context of the strategic, design and construction considerations.

6.2 Consideration has been given to the Wiltshire Core Strategy (2015) in the formulation of this strategy, aiming to minimise the environmental impact of the proposed development during construction and operation, and ensure the development is constructed to rigorous sustainability standards.

6.3 By designing to rigorous energy standards, employing electric-only systems, and integrating renewable energy technologies, the application will respond directly to the Climate Emergency declared by the Council in February 2019. These measures combine to provide a significant carbon dioxide emissions savings compared to the Part L:2021 baseline, aiming to significantly exceed the requirements of Wiltshire Council.

6.4 Sections 4 and 5 of this statement demonstrate that the siting and design of the proposals support relevant policies relating to sustainable development. This shows that the proposed development:

- will make efficient use of land;
- will incorporate low-impact materials, according to the BRE Green Guide to Specification;
- will minimise internal water consumption to 105 litres per person per day;
- will incorporate measures to improve site biodiversity, including biodiverse planting;
- will ensure air, light, ground and water pollution are minimised as far as possible;
- will provide access to areas of green and open space;
- will minimise waste production during construction and maximise the proportion of waste to be diverted from landfill;
- will minimise energy demand through the specification of low U-values, low air permeability and low thermal bridging to reduce heat loss;
- will be fossil fuel free, utilising electric-only systems, such as air source heat pumps (ASHPs) to serve the space and water heating demands of the proposed dwellings and non-domestic space(s);

- will utilise renewable technology, such as rooftop photovoltaic panels, to provide renewable electricity; and

- will achieve a significant reduction in CO_2 emissions for the proposed dwellings, following the Energy Hierarchy methodology.

6.5 Overall, the proposals for the scheme are in line with the principles of sustainable development as well as the policy requirements of the NPPF and Wiltshire Council and will provide a development that promotes these principles in operation.

A1. SITE LOCATION PLAN



LEGEND

Planning Application Boundary
(19.20 Ha / 47.44 ac)

Rev:	Date:	Description:	Initial:
b	21/04/2023	Draft removed from title block	AKP
a	27/03/2023	Amendment to redline to include junctions	AKP

Project:

Land South of Snarlton Farm, Melksham

Drawing:

05c - Application Boundary Plan

Scale:	Drawn:
1:2500	AKP
Date:	Checked:
17/06/2020	AKP

Catesby Estates plc
part of Urban&Civic

Reproduced from the Ordnance Survey Map with the permission of the Controller of H.M. Stationery Office Crown copyright license number 100022432 Catesby Estates Plc. Published for the purposes of identification only and although believed to be correct accuracy is not guaranteed. Catesby Estates Plc does not act as Principal Designer and this drawing is not intended to inform Construction Design Management procedures.

Copyright Catesby Estates Plc. No dimensions are to be scaled from this drawing. All dimensions to be checked on site. Area measurements for indicative purposes only.

A2. WATER USAGE CALCULATOR

breglobal

Job no:	23-IF016
Date:	09/06/2023
Assessor name:	
Registration no:	N/A
Development name:	Land South of Snarlton Farm

BRE Global 2010. BRE Certification is a registered trademark owned by BRE Global and may not be used without BRE Global's written permission.

Permission is given for this tool to be copied without infringement of copyright for use only on projects where a Code for Sustainable Homes assessment is carried out. Whilst every care is taken in preparing the Wat 1 assessment tool, BREG cannot accept responsibility for any inaccuracies or for consequential loss incurred as a result of such inaccuracies arising through the use of the Wat 1 tool.

PRINTING: before printing please make sure that in "Page Setup" you have selected the page to be as "Landscape" and that the Scale has been set up to 70% (maximum)

WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS - (BASIC CALCULATOR)

		House Type:	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7		Type 8		Type 9		Type 10	
		Description:	Typical Unit																			
Installation Type	**Unit of measure**		Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day
Is a dual or single flush WC specified?			**Dual**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Click to Select**		**Click to Select**		**Click to Select**	
WC	Full flush volume		6	8.76		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
	Part flush volume		3	8.88		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Taps (excluding kitchen and external taps)	Flow rate (litres / minute)		3	6.32		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Are both a Bath & Shower Present?			**Bath & Shower**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**	
Bath	Capacity to overflow		180	19.80		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Shower	Flow rate (litres / minute)		8	34.96		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Kitchen sink taps	Flow rate (litres / minute)		4	12.12		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Has a washing machine been specified?			**No**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**	
Washing Machine	Litres / kg			17.16		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Has a dishwasher been specified?			**No**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**		**Select option:**	
Dishwasher	Litres / place setting			4.50		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Has a waste disposal unit been specified?			**No**	0.00	**Select option:**	0.00	**Select option:**	0.00	**Select option:**	0.00	**Select option:**	0.00	**Select option:**	0.00	**Select option:**	0.00	**Select option:**	0.00	**Select option:**	0.00	**Select option:**	0.00
Water Softener	Litres / person / day			0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
		Calculated Use		112.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
		Normalisation factor		0.91		0.91		0.91		0.91		0.91		0.91		0.91		0.91		0.91		0.91
Code for Sustainable Homes		**Total Consumption**		**102.4**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**
		Mandatory level		**Level 3/4**		-		-		-		-		-		-		-		-		-
Building Regulations 17.K	External use			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0
		Total Consumption		**107.4**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**		**0.0**
		17.K Compliance?		**Yes**		-		-		-		-		-		-		-		-		-

A3. GENERAL NOTES

A3.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Iceni Projects Ltd for inaccuracies in the data supplied by any other party.

A3.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.

A3.3 No site visits have been carried out, unless otherwise specified.

A3.4 This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.

A3.5 The copyright in the written materials shall remain the property of Iceni Projects Ltd but with a royalty-free perpetual licence to the client deemed to be granted on payment in full to Iceni Projects Ltd by the client of the outstanding amounts.

A3.6 The report is provided for sole use by the client and is confidential to them and their professional advisors. No responsibility whatsoever for the contents of the report will be accepted to any person other than the client, unless otherwise agreed.

A3.7 These terms apply in addition to the Iceni Projects Ltd "Standard Terms of Business" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms of Business the said Standard Terms of Business shall prevail.). In the absence of such a written contract the Standard Terms of Business will apply