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# Sustainability & Energy Statement

Great Cauldham Farm, Capel-le-Ferne

Iceni Projects Limited on behalf of  
Quinn Estates Ltd

February 2024

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ON BEHALF OF QUINN  
ESTATES LTD

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**Sustainability & Energy Statement**  
GREAT CAULDHAM FARM, CAPEL-LE-FERNE



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# 1. EXECUTIVE SUMMARY

- 1.1 Icen Projects Ltd has been commissioned by Quinn Estates Ltd to produce a Sustainability & Energy Statement to support the proposed development of the Great Cauldham Farm, Capel-le-Ferne.
- 1.2 This outline application proposes the erection of up to 90 dwellings, with associated parking and infrastructure.
- 1.3 The aim is to develop a proposal with sustainability and energy saving at its core, with plans to incorporate carbon reduction measures wherever practicable. While the energy strategy submitted as part of this proposal is indicative at this stage, it is envisaged that detailed proposals could include features such as photovoltaic panels, or air-source heat pumps (ASHPs), where achievable.
- 1.4 Sustainability is a core consideration of the application and has been incorporated from the project outset. Resource and water efficiency will be maximised, whilst the production of waste and pollution are to be minimised, with the aim of ensuring that the impact of the proposals on its immediate surroundings and the environment as a whole is minimised.
- 1.5 By designing to rigorous energy standards, and through exploration of the potential to employ ASHP technology to serve the space heating and cooling demand of the proposals, the application will respond directly to the Climate Emergency declared by the Council in January 2020. These measures are anticipated to combine to provide a significant carbon dioxide emissions savings, aiming to significantly exceed the requirements of Dover District Council.
- 1.6 The use of electric-only systems where practicable for space heating and hot water generation will push the scheme towards being fossil fuel free, and compatible with the Government's intended trajectory to achieve net zero carbon emissions by 2050.
- 1.7 Consideration has been given to the Dover District Council Core Strategy (February 2010) and the draft Dover District Local Plan to 2040 (Regulation 19 Submission; October 2022) in the overall formulation of this strategy, aiming to minimise the environmental impact of the proposed development during construction and operation, and to ensure the development is constructed to rigorous sustainability standards.
- 1.8 The proposed strategy has been based around the objectives of the Core Strategy policy CP 5 and the draft Local Plan policies SP1, CC1, CC2, CC4, CC5, CC6 and CC8. In summary, based on this strategy, the proposed development aims where possible to;
- make efficient use of land;

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- encourage the use of sustainable modes of transport;
  - minimise internal water consumption to 105 litres per person per day;
  - incorporate low-impact materials, according to the BRE Green Guide to Specification;
  - minimise waste production during construction and maximise the proportion of waste to be diverted from landfill;
  - incorporate measures to improve site biodiversity, including biodiverse planting;
  - not increase the risk of flooding on the site or in the surrounding area;
  - ensure air, noise, land, light and water pollution are minimised as far as possible;
  - minimise energy demand through the specification of low U-values, low air permeability and low thermal bridging to reduce heat loss;
  - 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;
  - utilise renewable technology, such as rooftop photovoltaic (PV) panels, to provide renewable electricity; and
  - achieve a significant reduction in CO<sub>2</sub> emissions for the proposed dwellings, following the Energy Hierarchy methodology.

1.9 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.

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## 2. INTRODUCTION

2.1 Icen Projects Ltd has been commissioned by Quinn Estates Ltd to produce a Sustainability & Energy Statement to support the proposed development of the Great Cauldham Farm, Capel-le-Ferne.

### **Report Objective**

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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 Dover District Council.

2.3 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<sub>2</sub> emissions; and
- Section 6 summarises the development's design response.

### **Site and Surroundings**


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2.4 The application site (Appendix A1) is located within the settlement of Capel-le-Ferne, within the Alkham & Capel-le-Ferne ward. The site is bounded by properties fronting onto Capel Street to the east, and properties fronting onto Cauldham Lane to the south and west. Open agricultural fields form the northern boundary of the site.

2.5 As shown in Figure 2.1 below, the application site itself comprises agricultural land, with no buildings present on-site.

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**Figure 2.1 The Site**

 Approximate site boundary



### **The Proposed Development**

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2.6 The description of development is as follows:

*“Outline planning application for the erection of up to 90 dwellings with associated parking and infrastructure following demolition of existing dwelling; with all matters reserved except access.”*

2.7 The illustrative layout of the proposed development, prepared by Clague Architects, is shown in Figure 2.2, below.

Figure 2.2 Illustrative site layout





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### 3. PLANNING AND REGULATORY CONTEXT

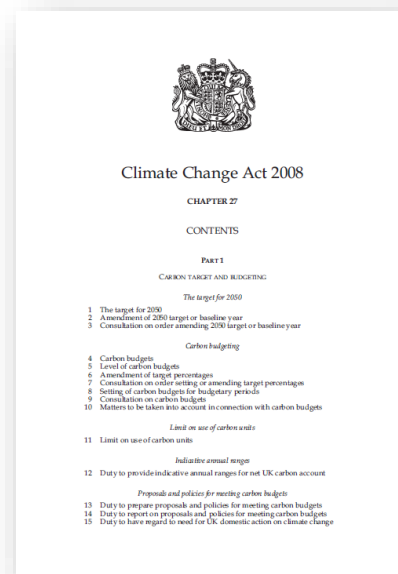
- 3.1 Built environment sustainability is incorporated within policy and regulation at a national and local level, as set out below.

#### National

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##### Climate Change Act 2008

- 3.2 On 26<sup>th</sup> 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.

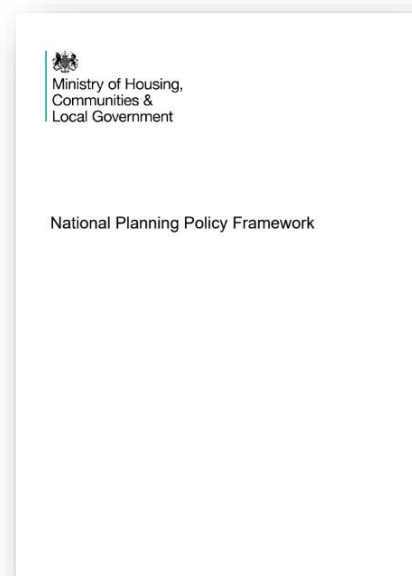


- 3.3 As required under Section 34 of the Climate Change Act, the Sixth Annual Carbon Budget was accepted by the Government in April 2021. This sets out a budget for UK emissions for the period 2033 – 2037.

- 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. Further updates were made in September and December 2023 with respect to



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onshore wind development, and beauty, design, infrastructure, neighbourhood and the environment, respectively.

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.

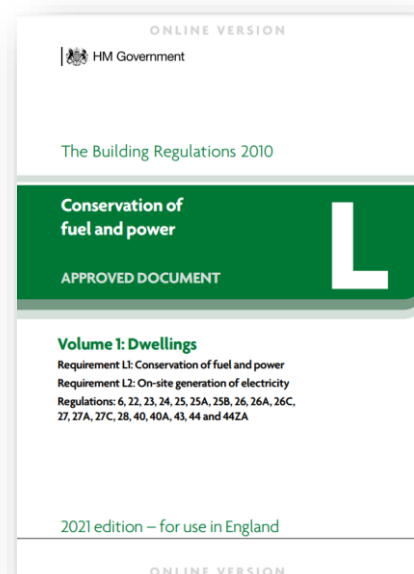


### Part L:2021 of the Building Regulations

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.

3.11 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.



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## Local

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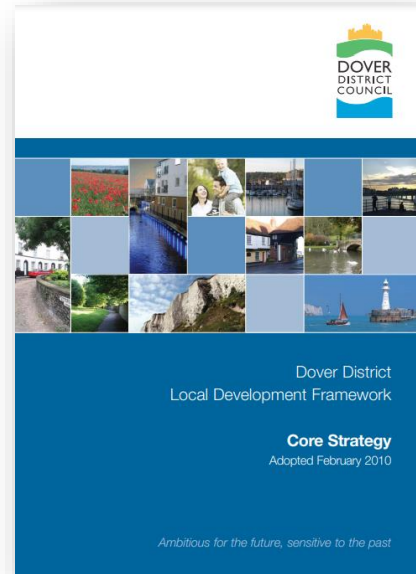
3.12 In determining the local context, the following policy documents set out policy relevant to sustainable development:

- Dover District Core Strategy (February 2010); and
- Draft New Dover District Local Plan to 2040 (Regulation 19 Submission; October 2022).

### Dover District Core Strategy (February 2010)

3.13 The Core Strategy sets out the overall ambitions and priorities for the District, a set of proposals, and a means for making sure that they are delivered.

3.14 **Policy CP5: Sustainable Construction Standards** states that new residential development permitted after the adoption of the Strategy should meet Code for Sustainable Homes level 3 (or any future national equivalent), at least Code level 4 from 1 April 2013 and at least Code level 5 from 1 April 2016.



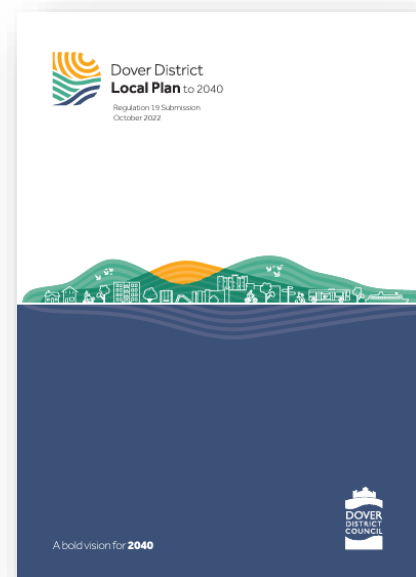
### Draft New Dover District Local Plan (Regulation 19 Submission; October 2022)

3.15 Although not yet adopted, the emerging Dover District Local Plan demonstrates the importance the local authority places on maintaining and enhancing the natural environment, and therefore represents best practice in terms of the delivery of the principles of sustainable development.

3.16 **SP 1: Planning for Climate Change** states that the Council will seek to ensure that all new built development contributes to the mitigation of, and adaptation to, climate change through:

#### Mitigation:

- Including low carbon design approaches to reduce energy consumption in buildings;
- Utilising sustainable construction techniques and optimising resource efficiency;



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- Incorporating renewable and low carbon technologies;
  - Providing opportunities for decentralised energy and heating;
  - Maximising green infrastructure; and
  - Reducing the need to travel and maximising opportunities for 'smarter' sustainable transport options to deliver the highest possible share of trips by the most sustainable travel modes.

Adaptation:

- Ensuring that development is designed to reduce vulnerability to, and provide resilience from, the impacts arising from a changing climate, whilst not increasing the potential for increased greenhouse gas emissions in doing so;
- Incorporating multi-functional green infrastructure to enhance biodiversity, manage flood risk, address overheating and promote local food production;
- Improving water efficiency; and
- Ensuring that development does not increase flood risk, including by taking a sequential approach to avoid development in flood risk areas, and where possible reduces the risk of flooding.

Applications for qualifying new built development must be supported by a climate change statement.

3.17 **CC1: Reducing Carbon Emissions** states that, in the event that the Future Homes Standard is required to be delivered through the planning system, all new residential dwellings must achieve, as a minimum, a reduction in carbon as required by this Standard. This should be achieved using the measures set out below:

- An increase in fabric standards to deliver a 'fabric first' approach to new development; and
- The use of on-site renewable and low carbon energy technologies.

Until the introduction of the Future Building Standard, all new non-residential buildings must achieve BREEAM 'Very Good' standard overall, including Very Good for addressing maximum energy efficiencies under the energy credits.

Development proposals subject to this policy must submit an Energy Statement in the case of residential applications, and a BREEAM pre-assessment for commercial developments as part of a planning application to demonstrate how the policy requirements above have been complied with. Policy requirements will be secured by condition.

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3.18 **CC2: Sustainable Design and Construction** states that, in order to mitigate against and adapt to the effects of climate change, all new buildings should:

- Utilise layout, orientation, massing and landscaping to make the best use of solar energy, passive heating and cooling, natural light and natural ventilation;
- Prioritise the use of low embodied carbon and energy efficient building materials and construction techniques;
- Consider the lifecycle of the building and any associated public spaces, including how they can be easily modified to meet changing social and economic needs and how materials can be recycled at the end of their lifetime;
- Provide measures to adapt to climate change, such as the provision of water efficiency measures in accordance with Policy CC4, green infrastructure in accordance with Policies CC8, PM1 and PM3 and Strategic Policies SP2 and SP14, sustainable drainage systems (SuDS) in accordance with Policy CC6, suitable shading of gardens and other open spaces, rainwater harvesting, drought resistant landscaping; and in the case of major developments, the shading of pedestrian routes and the provision of opportunities for growing food; and
- Minimise waste and promote recycling, during both construction and occupation.

All applications for new buildings should be accompanied by a Sustainable Design and Construction Statement demonstrating how the requirements of this Policy have been met.

3.19 **CC4: Water Efficiency** states that all new dwellings must be built to the higher water efficiency standard under Regulation 36(3) of the Building Regulations, to achieve a maximum use of 110 litres per person per day.

The Council will strongly support proposals that seek to reduce daily water consumption even further, through the use of additional measures such as rainwater harvesting.

For non-residential development, development must achieve BREEAM 'Very Good' standard overall, including Very Good for addressing maximum water efficiencies under the mandatory water credits, unless it can be demonstrated that it is not technically feasible and viable.

3.20 **CC5: Flood Risk** states that development on sites at risk of flooding must comply with the National Planning Policy Framework and associated guidance and will only be permitted as an exception and where it is demonstrated by a site-specific Flood Risk Assessment (FRA), carried out in accordance with the requirements set out in the Council's Strategic Flood Risk Assessment, that it would not result in an unacceptable risk of flooding on the site itself or elsewhere.

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The FRA should be prepared in accordance with the guidance set out in the Council's 'Site-specific Guidance for Managing Flood Risk'. For development identified by the FRA to be at risk of flooding from any source, flood mitigation should be implemented in accordance with the Flood Risk Management hierarchy outlined in the document 'Site-specific Guidance for Managing Flood Risk'.

Where development does go ahead, all floor levels for living and sleeping accommodation should be set at a minimum of 300mm and 600mm above the flood level for Flood Zones 2 and 3 respectively, including an allowance for climate change.

3.21 **CC6: Surface Water Management** states that all new development should replicate natural ground and surface water flows and decrease surface water run-off through the use of Sustainable Drainage Systems, in accordance with the following criteria and the NPPG:

- Proposals must follow the hierarchy of methods for discharge set out in the Council's Site-specific Guidance for Managing Flood Risk (2019):
  - Into the ground, infiltration the preferred method for discharging surface water run-off
  - To a surface water body, subject to appropriate pollution control measures
  - To a surface water sewer, highway drain or another drainage system
  - To a combined sewer
- SuDS design and robust long-term maintenance must be considered as an integral part of the master-planning and design process, and should where possible provide multi-functional benefits.
- No surface water connection to a foul only sewer will be permitted.
- The discharge of surface water run-off into a public surface or combined sewer will only be acceptable if infiltration or discharge into a surface water body are shown not to be possible, an assessment of the capacity of the sewer has been undertaken, and the evidence demonstrates that there is no increased flood risk.
- In Groundwater Source Protection Zones 1 and 2, SuDS will only be permitted if adequate safeguards against possible contamination are provided or where it can be demonstrated that there will be no environmental risks to water quality and adequate mitigation measures can be implemented.

For major development, the following criteria also apply:

- Drainage must be integrated into on-site multifunctional open space and landscape provision.

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- Proposals should be informed by guidance produced by the Lead Local Flood Authority.
  - Approval for the design and long-term maintenance of SuDS will be required prior to the development being permitted.

Where SuDS are required, a Sustainable Drainage Strategy containing proportionate information on the proposed sustainable drainage systems must be submitted as part of any planning application.

3.22 **CC8: Tree Planting and Protection** states that:

Tree Planting:

- A minimum of two new trees will be required to be planted for each new dwelling (this does not apply to applications for conversions and changes of use to residential), and a minimum of one new tree will be required to be planted for every 500sqm of new commercial floorspace created.
- Trees should be native Kent species, of local provenance from a bio-secure source, and should be standard size in specification as a minimum.
- A presumption that the trees will be planted on-site rather than off-site will apply. For major development where it is demonstrated that new trees cannot be provided on-site, a financial contribution will be required towards the planting of trees off-site in accordance with the requirements of the Council's Green Infrastructure Strategy.
- A detailed landscaping scheme and landscape management plan should be submitted for all major development schemes, including, but not limited to, details of the trees and shrubs to be planted, and proposals for how the landscaping scheme will be managed and maintained over the lifetime of the development.

Tree Protection and Replacement:

- Dover District Council will make Tree Preservation Orders (TPOs) where necessary in order to protect specific trees, groups of trees, or woodlands, in the interests of amenity and biodiversity.
- Development involving the loss of or damage to a tree, group of trees or areas of woodland that are designated as being of significant amenity, biodiversity or historic value in the Council's Green Infrastructure Strategy will only be permitted when the benefits of the development clearly outweigh the benefits of their retention and the applicant has demonstrated that no alternatives are available.
- Trees protected by Tree Preservation Orders should be retained wherever possible, unless:
  - It is demonstrated by an arboriculturist report that they are dead, dying, diseased, or represent a hazard to public safety; or



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- The Council deems the felling to be acceptable with regards to the Council's policy on tree management; or
  - The benefit of the proposed development outweighs the benefit of their retention.
  - If felling is deemed acceptable by the above, then the planting of two replacement trees for each tree felled in an appropriate location will be required.

### **Other Considerations**

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#### **Written Ministerial Statement (Statement UIN HCW488; March 2015)**

- 3.23 On the 25<sup>th</sup> March 2015, the Secretary of State for the Ministry of Housing Communities and Local Government at the time, provided a planning update, outlining the steps to be taken to streamline the planning system, protect the environment, support economic growth and assist locally-led decision-making. Within this update, it was stated that, for the specific issue of energy performance, local planning authorities will continue to be able to set and apply policies in their Local Plans which require compliance with energy performance standards that exceed the energy requirements of Building Regulations until commencement of amendments to the Planning and Energy Act 2008 in the Deregulation Bill. It was added that the energy performance requirements in the Building Regulations would be set at a level equivalent to the Code for Sustainable Homes Level 4. Whilst the Code for Sustainable Homes is no longer in use, it is still an expectation that local planning authorities take this statement of the Government's intention into account in applying existing policies, and not setting conditions with requirements above a Code Level 4 equivalent. This equates to a 19% reduction in regulation carbon dioxide emissions over the Part L 2013 baseline.

#### **Declaration of a Climate Emergency (July 2019)**

- 3.24 On the 29<sup>th</sup> January 2020, Dover District Council declared a climate change emergency, and set a target to reduce its carbon emissions to net zero by 2030. Steps that the Council will be taking to achieve this target include the development of a Climate Change Strategy, which explains how the Council intends to meet the net zero target. An Action Plan has also been developed, which aims to refocus the Council's activity, operations and spheres of influence to reduce emissions, increase sustainability and benefit the wider environment. The Action Plan is a living document, and will continue to evolve to reflect ongoing action and opportunities.

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## 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 the Dover District Core Strategy and the Draft New Dover District Local Plan to 2040. This enables a holistic sustainability approach to be set out for the proposed development. The Dover District Core Strategy, and the Draft New Dover District Local Plan to 2040, require that all new development provides sustainable, high quality and inclusive design, and this therefore represents best practice guidance to meet high standards of sustainable design and construction.
- 4.3 The carbon dioxide (CO<sub>2</sub>) emissions reduction strategy for the proposed dwellings to be delivered as part of 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**


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- 4.4 In line with the guidance provided in the Dover District Core Strategy, and the Draft New Dover District Local Plan to 2040, 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 As shown below in Figure 4.1, the site, which is located towards the north-western edge of the settlement of Capel-le-Ferne, currently comprises agricultural land.

**Figure 4.1** Current site

 Approximate site boundary



- 4.7 The proposed scheme is considered to be an extension of the existing settlement of Capel-le-Ferne, and therefore make effective use of land located within an established residential area.

#### **Location and Transport**

- 4.8 Accessibility to public transport connections contributes to the sustainability of a site's location. Folkestone Central railway station is located approximately 3.5km to the south-west of the site, and can be accessed from the site via the number 102 bus service, or a 17-minute cycle ride. This station provides frequent access to London Charing Cross, St Pancras International, Ramsgate, Tonbridge, Dover and Ashford International via Southeastern services.

- 4.9 The nearest bus stops are located on New Dover Road (B2011), less than 100 m from the proposed site access at the eastern boundary. These stops are served by a number of services, including the following:

- Route 102, which provides access to Dover, Lydd and Folkestone; and
- Route 991, which runs between Cheriton and Dover.

- 4.10 Walking and cycling facilities within the area surrounding the proposed development site are good, providing linkages to a range of local facilities and villages. The proposed development site benefits from a number of existing footpaths, which provide access to local communities such as West Hougham, as well as the wider settlement of Capel-le-Ferne in addition to Folkestone. In particular, the proposed development site is located within close proximity to an extensive Public Right of Way (PRoW) network, which provides access to the suburbs of Folkestone. In addition to this, there is a

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shared footway and cycleway along New Dover Road leading towards Folkestone, and it is noted that the proposed development site is located within proximity to National Cycle Route (NCR) 2, known as the Lydden Spout Coast Path, and to NCR 17, which provides access into Dover and onto Canterbury. To facilitate walking and cycling within the proposed development, it is intended that internal roads and streets within the scheme will be designed to allow for pedestrians and cyclists to move freely throughout the site. Further to this, it is proposed that a shared footway and cycleway be provided to connect Capel Street with NCR 2 and to the westbound bus stop.

- 4.11 As detailed within the Transport Assessment, prepared by Charles & Associates, an all-modes access will be provided for the site from Capel Street, which will include for a number of public parking bays. A second access will also be provided for emergency access, pedestrians and cyclists from Cauldham Lane.
- 4.12 It is intended that car parking be provided in accordance with the requirements of Kent County Council. Each dwelling will also be provided with cycle storage facilities and an electric vehicle (EV) charging point, to enable future residents to adopt more sustainable modes of transport.
- 4.13 An assessment of the potential impact of the proposed development on the surrounding highways network has also been undertaken. The results of this assessment indicate that the proposed development would result in approximately 50 additional vehicle trips within each peak hour. It is considered that these trips would primarily relate to commuting and school runs, with vehicles from the proposed development considered most likely to be travelling towards a range of destinations across Kent, including Ashford, Canterbury, Dover and Folkestone & Hythe. It is therefore concluded that the additional road traffic generated by the proposed development would not result in a severe impact on the local highway network.
- 4.14 Accounting for the above, it is considered that the site benefits from a sustainable location with good access to local amenities and public transport services, and that the development would not result in a significant impact on the local highway network.

#### **Reducing Water Consumption**

- 4.15 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.
- 4.16 In order to actively mitigate against this, it is intended that water saving fittings and appliances shall be installed to target a water consumption rate of 105 litres or less per person per day, based on the DCLG water efficiency calculator for the residential elements. This is in compliance with Policy CC4

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of the Draft New Dover Local Plan to 2040. Full details of the water calculation are provided in Appendix A2.

- 4.17 It should be noted that methods such as rainwater harvesting and greywater recycling would not be required to achieve the indoor water usage targets associated with this development. Therefore, the installation of water butts for irrigation purposes may be a suitable solution if external water storage is required for the dwellings.
- 4.18 Table 4.1 details the consumption rates associated with the water efficient fittings to be included within the dwellings, subject to changes at later detailed design stages.

**Table 4.1 Proposed water use**

<b>Fitting</b>	<b>Consumption per use</b>
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

#### **Materials and Waste**

- 4.19 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.
- 4.20 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.
- 4.21 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

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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.

- 4.22 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.
- 4.23 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.
- 4.24 During the construction phase, 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.
- 4.25 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 convenient location for each of the new dwellings. Internal storage will be considerate of the Building Regulations, Council and other relevant requirements. Dedicated external waste storage areas for refuse and recycling have been allocated for each house.

#### **Nature Conservation and Ecology**

- 4.26 As confirmed within the Ecological Assessment, prepared by Aspect Ecology, the site itself is not subject to any statutory or non-statutory ecological designations. The nearest statutory designation is the Folkestone Warren Site of Special Scientific Interest (SSSI), which is located approximately 0.3km to the south of the site. The nearest non-statutory designation is a Roadside Nature Reserve (RNR) approximately 1.4km to the south-west of the site. It is considered that, due to the active management of the statutory designated sites within proximity to the proposed development site, recreational effects generated by the scheme can be readily targeted by management, and it is considered that the provision of open space as part of the development will result in there being no adverse effect on the integrity of the designated sites as a result of recreational activity. Further to this, it is expected that, whilst traffic associated with the proposed development may be routed in proximity to the Folkestone to Etchinghill Escarpment Special Area of Conservation (SAC) and the Lydden and Temple Ewell Downs SAC, any contribution from the proposals would be small when accounting for its scale. It is therefore considered that there will be no adverse impact on designated sites arising from air quality. It is therefore concluded that the proposed development will not have a

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significant impact on statutory designated sites within the vicinity. Further to this, all non-statutory designations in the surrounding area are well separated from the site by existing development and, given the nature and scale of the proposals, these designations are unlikely to be affected.

- 4.27 The majority of the site is comprised of arable field, largely bounded by hedgerows, although there are additional areas of tall ruderal vegetation and bare ground. A building is also located within the easternmost part of the site, surrounded by an area of amenity grassland, associated with the garden. The hedgerow present along the boundaries of the site is classified as a Habitat of Principal Importance. It is understood that the majority of the boundary vegetation will be retained as part of the proposals. To avoid impacts on the retained trees and hedgerows works should be undertaken in accordance with the British Standard (BS) '5837:2012 Trees in Relation to Design, Demolition and Construction'. In addition, new planting will be delivered as part of the proposed development, which will link and strengthen the existing hedgerows.
- 4.28 A number of semi-mature trees are present on the site, with one tree identified as potentially offering opportunities for roosting bats. This tree, and all those present on the site in the existing case are to be retained as part of the proposed development, ensuring potential impacts on roosting bats will be minimised. A survey undertaken on the building present on the site indicates that there are negligible opportunities for roosting bats, and it is therefore considered that the removal of this building will have a minimal impact on roosting bats, however it is recommended that precautionary mitigation measures be implemented when undertaking the demolition of this building. Further to this, the areas of vegetation present at the margins of the site are considered likely to offer foraging and commuting opportunities for bats, albeit of low value. It is intended that the majority of the habitats considered to present opportunities for foraging and commuting bats will be retained as part of the proposed development, with additional tree, hedgerow and shrub planting to be delivered, which will aid in improving connectivity through the site, and increasing foraging potential. The habitats present on the site are not considered to offer potential for Dormouse, Water Vole, Otter, or other protected mammals, and it is concluded that the presence of these species is therefore unlikely. It is noted, however, that suitable habitat for Brown Hare and Hedgehog are potentially present on-site. The site does offer potential opportunities for nesting and wintering birds, and it is noted that, under the proposals, habitats of value for bird species can largely be retained under the layout, with the majority of hedgerows and trees to be maintained. No water bodies are present within or adjacent to the site, however the semi-improved grassland and boundary hedgerows do provide some limited opportunities for amphibian species. It is noted, however, that the presence of Great Crested Newt on the site is unlikely. Whilst the majority of the site does not offer opportunities for reptile species, the hedgerow and associated boundary vegetation located at the margins of the site may offer some suitable habitat. As stated above, the vast majority of this vegetation is to be retained as part of the proposed development, with additional tree, hedgerow and shrub planting to be delivered.

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4.29 The following mitigation measures are recommended to ensure impacts on the habitats and species present at the site are minimised as far as possible:

- As detailed above, works at the site should be undertaken in accordance with BS 5837:2012 to avoid damage to retained trees, hedgerows and associated vegetation.
- Should trees identified as offering potential for roosting bats need to be removed to facilitate the proposed development, this should be undertaken under consultation with a suitable qualified ecologist to determine whether further survey work is required.
- The roof structure of the existing building on the site that is to be demolished should be removed with care during favourable conditions, and under an appropriate watching brief.
- A sensitive lighting strategy should be implemented, in line with good practice guidance to reduce potential impacts on bats and other nocturnal species.
- Badger construction safeguards should be implemented during the construction phase, including the provision of means of escape from trenches or excavations that are to be left open overnight, the capping of temporarily exposed open pipes at the end of each working day, and the storage of chemical or other harmful substance in such a way that they cannot be accessed or knocked over by badgers.
- Interventions to prevent harm to mammals should also be implemented including, but not limited to, the clearance of piles of materials on the site by hand, and the prevention of piling materials that are to be burnt for more than 24 hours.
- As a precautionary measure to minimise impacts on reptiles that may be present at the site, habitat manipulation exercise and destructive search should be undertaken within areas of potential reptile habitat including hedgerow / woodland margins and any areas of long sward grassland.
- No clearance of suitable vegetation should be undertaken during the bird-nesting season (1<sup>st</sup> March to 31<sup>st</sup> August inclusive). If this is not practicable, any potential nesting habitat to be removed should first be checked by a competent ecologist in order to determine the location of any active nests.

4.30 The following ecological enhancements are recommended for incorporated within the proposed development in order to deliver a net gain in biodiversity:

- Where practicable, new planting within the site be comprised of native species of local provenance, including trees and shrubs appropriate to the local area.



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- It is recommended that areas of wildflower grassland are created within the site such that, in combination with new native landscape planting, opportunities for biodiversity will be maximised under the proposals.
  - Opportunities to create new wetland habitats, for example ponds or other habitats that may be incorporated as part of the sustainable drainage strategy.
  - It is recommended that a number of bat boxes be incorporated to provide new roosting opportunities for bats in the area.
  - It is recommended that Hedgehog nest domes be installed within sheltered areas, such as the existing or newly created hedgerows to provide suitable nesting and hibernation sites for this species.
  - A number of bird nesting boxes may also be incorporated within the proposed development, thereby increasing nesting opportunities for birds at the site.
  - A proportion of any deadwood arising from vegetation clearance works should be retained within the site in a number of wood piles located within areas of new planting, new wetland habitats or areas of wildflower grassland in order to provide potential habitat opportunities for invertebrate species, which in turn could provide a prey source for a range of other wildlife.
  - It is recommended that a number of bee bricks be incorporated within the proposed development thereby increasing nesting opportunities for declining populations of non-swarming solitary bee populations.
  - Within suitable areas at the north and west of the site the creation of log piles for reptiles are recommended to be incorporated within the landscape plan.

4.31 The indicative Landscape Strategy, prepared by Aspect Landscape Planning Ltd, is shown in Figure 4.2 below.

**Figure 4.2 Proposed Illustrative Landscape Masterplan**

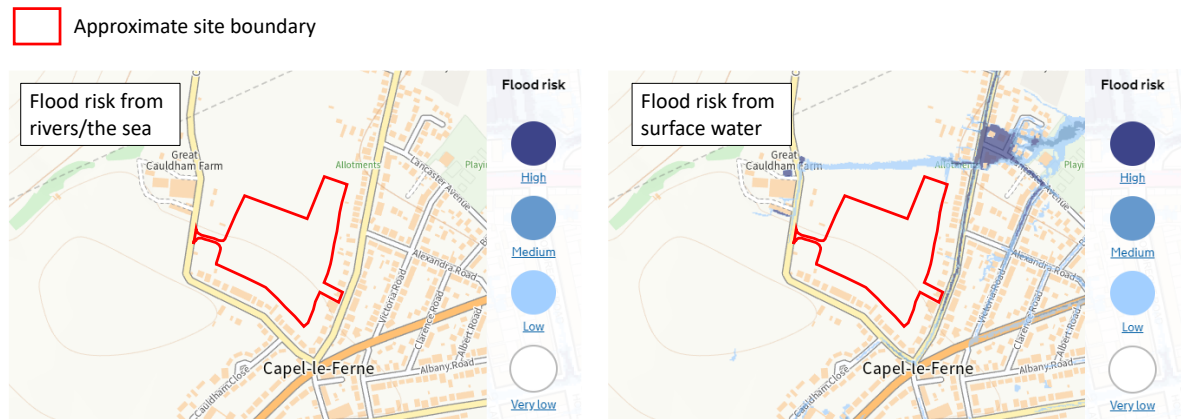


**Reducing Flood Risk and Surface Water Run-off**

- 4.32 Information contained within the Flood Risk Assessment, prepared by Charles & Associates, confirms that the entire site falls within Flood Zone 1. This indicates that the site is at low risk of fluvial or tidal flooding, with a less than 1 in 1,000 annual probability of river or sea flooding.
- 4.33 Figure 4.3 indicates that the site is also at very low risk of surface water flooding. As noted within the Flood Risk Assessment, there is an area demonstrated to be at low risk of surface water flooding present to the north of the site, outside of the site boundaries. The site currently falls towards this area, and it is considered that surface water runoff from the site therefore likely contributes to the risk highlighted in this area. It is noted, however, that a surface water drainage strategy will be implemented as part of the proposed development to aid in managing surface water runoff in the post-development context. This will further aid in reducing the risk of surface water flooding within the site boundaries, as well as aiding to mitigate the risk of surface water flooding in the surrounding area, in particular the area highlighted to the north.
- 4.34 The Flood Risk Assessment confirms that there are no existing public sewers within the site boundaries, and that all new sewers proposed within the development will be constructed in line with the latest technical guidance. As such, the risk of sewer flooding is considered to be very low. Further to this, whilst the proposed development site does fall within a groundwater source protection zone, it is noted that there are no records of groundwater flooding either within the site or surrounding area.

The risk of flooding from this source is therefore also considered to be low. No artificial sources of water are located within the vicinity of the site, therefore the proposed development site is at no risk of flooding from artificial or reservoir sources.

**Figure 4.3** Extract from the Environment Agency’s online flood map



4.35 A proposed surface water drainage strategy for the scheme is also presented within the Flood Risk Assessment. At this stage, it is expected that the underlying geology at the site will facilitate the use of infiltration techniques, and it is therefore intended that surface water runoff generated on the site be allowed to infiltrate directly to the ground. In order to restrict the rate of surface water runoff generated on the site, a range of attenuation features will be incorporated, including permeable paving, swales, filter drains, attenuation basins, and tanks. The proposed surface water drainage strategy will be split into two separate networks. Network 1 will direct flows to an attenuation basin underlain by an attenuation tank, to be located in the eastern section of the site. The bottom of the basin will be planted with dense vegetation and underlain by soil with good contaminant attenuation potential. Surface water attenuated within this system will then infiltrate directly to the ground via a deep bore soakaway. Network 2 will direct flows from the western portion of the site towards a swale above a filter trench, within which flows will be attenuated and treated. The attenuated surface water runoff will then be discharged to an attenuation basin, underlain by a tank, in the north-eastern corner of the site. Water attenuated within this system will similarly infiltrate directly to the ground via a deep bore soakaway. It is expected that surface water runoff generated within the eastern portion of the site that is not collected by Network 1 will be directed to the attenuation basin located in the north-eastern corner of the site. The surface water drainage strategy has been designed to deliver sufficient capacity to manage surface water runoff generated during the 1 in 100 year event, plus 45% climate change allowance.

### Pollution

4.36 To assess the impact of the development in terms of air, noise, land, light and water pollution, a number of assessments have been undertaken. The results of these assessments are summarised below.

### Air Quality

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- 4.37 An Air Quality Assessment, addressing both the construction and operational impacts of the proposed development, has been undertaken by Entran. This Assessment concludes that, whilst limited releases of dust and particulate matter are likely to be generated during the demolition and construction phases of the proposed development, the employment of good site practices and suitable mitigation measures will ensure that the release of dust and particulate matter may be effectively mitigated. The application of the recommended mitigation measures, which include the development of a Dust Management Plan (DMP), will ensure that the impacts arising during the demolition and construction phases of the proposed scheme on local air quality will be negligible.
- 4.38 Modelling undertaken as part of the Air Quality Assessment demonstrates that concentrations of pollutants, including NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>, are below the relevant air quality objectives within the proposed development site and at nearby sensitive receptors. Future occupants would therefore not be exposed to pollutant concentrations above the relevant objective levels, therefore the impact of the proposed development with regards new exposure to air quality is considered to be negligible

#### **Noise Pollution**

- 4.39 A Residential Noise Assessment has been undertaken by Entran to consider the projected noise levels within the habitable spaces of the proposed dwellings.
- 4.40 Modelling undertaken as part of the Environmental Noise Assessment indicates that all the proposed dwellings across the development will achieve the recommended levels of internal noise with windows partially open, without the need for additional mitigation. Typical insulated double glazing and attenuated trickle ventilation are considered to be suitable to attain suitable internal noise levels. Ambient noise levels within the external amenity spaces are also expected to achieve the recommendations of the relevant industry standards, and therefore no specific mitigation is required.

#### **Land Contamination**

- 4.41 The Phase 1 Land Contamination Assessment, prepared by Ecologia, confirms that the site is underlain by Lewes Nodular Chalk Formation within the bedrock, which is designated as a Principal Aquifer, with Clay with Flints, designated as a Secondary A Aquifer, forming the superficial deposits. The site is located within a groundwater Source Protection Zone 3, but is not located within a Drinking Water Protected Area for either groundwater or surface water. It is highlighted that the proposed development is partially reported to be located within a Radon affected area, and full protective measures are therefore necessary for all new developments.
- 4.42 The Assessment indicates that there is a moderate risk to future end users associated with dermal contact and the inhalation of indoor and outdoor dust and vapours from the agricultural land and existing residential property. In addition, it is considered that there is a moderate risk of vertical soil leaching causing contamination of the groundwater associated with the Principal and Secondary A Aquifers. There is a very low risk, however, of contamination of surface water bodies. With respect

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to the proposed buildings and structures, there is a high risk of ground gas accumulation within buildings, a low to moderate risk associated with hydrocarbons/volatile organic compounds (VOCs) permeating into plastic utilities pipes, and a low to moderate risk of aggressive ground conditions impacting on concrete building elements. Finally, there is a low to moderate risk of off-site sources of contamination laterally migrating onto the site from surrounding historical and current land uses.

- 4.43 It is recommended, therefore, that a discovery strategy be implemented during the redevelopment works, detailing the procedures to be followed should unexpected contamination be identified. Furthermore, appropriate personal protective equipment (PPE) should be provided to ground workers to mitigate the potential risks of dermal contact, ingestion and inhalation of contaminated materials. Finally, good housekeeping rules should be observed on-site, in accordance with health and safety regulations. Further details related to ground conditions at the site are provided within the Phase 1 Land Contamination Assessment, prepared by Ecologia, and submitted in support of this application.

#### **Light Pollution**

- 4.44 A sensitive lighting strategy should be employed across the development to mitigate potential impacts on bats, invertebrates and other nocturnal fauna. Recommended measures include: the integration of light exclusion zones, particularly where habitat areas are to be retained and at the margins of the site; positioning of new planting or built elements to provide light barriers or screening; lighting with low lux (intensity) levels; directional lighting to provide light only to areas within which it is required; spacing of lighting units to minimise the overall areas that are artificially lit; and dimming and part-night lighting.

#### **Water**

- 4.45 The implementation of the proposed sustainable drainage system (SuDS), outlined with the Flood Risk Assessment prepared by Charles & Associates, will include appropriate pollution control to minimise the risk of pollution entering the ground from surface water runoff from the development, in compliance with Environment Agency's (EA) Pollution Prevention Guidance. An appropriate SuDS treatment train, consisting of a range of features, including permeable paving, swales, filter drains, attenuation basins, and tanks, have been incorporated within the design to treat surface water runoff before it discharges directly into the ground.
- 4.46 It is recommended that additional measures are also 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;

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- 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.

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## 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<sub>2</sub>) 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 Dover District Council policies, accounting for economic, technical and functional feasibility.
- 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 Dover District 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.

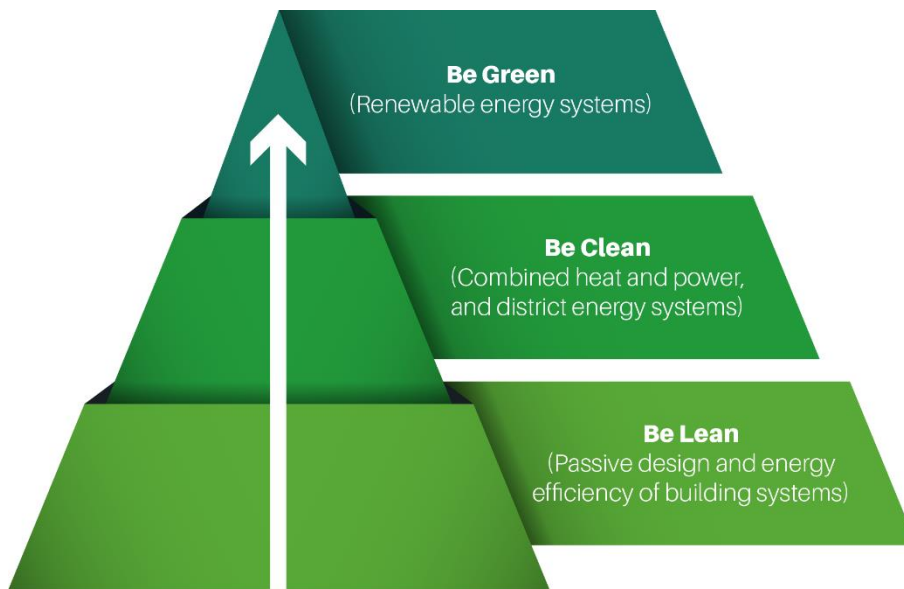
### **The Energy Hierarchy**

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- 5.3 The proposed energy 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

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**Figure 5.1 The Energy Hierarchy**



**'Be Lean' (Use Less Energy)**

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- 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<sub>2</sub> 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.
- 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 building fabric U-values**

<b>Building Fabric Element</b>	<b>Part L1:2021 backstop U-values (W/m<sup>2</sup>K)</b>	<b>Proposed U-values (W/m<sup>2</sup>K)</b>
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 It is proposed that glazing will be double glazed, argon filled with a low emissivity coating. Although this has yet to be formally specified, it is expected that window U-values will be 1.4 W/m<sup>2</sup>K or better (including frame), with 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<sup>3</sup>/h/m<sup>2</sup> 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  $\psi$ -value of 0.05 will be targeted for each dwelling.

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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.
- Whilst residential units will be provided with opening windows to mitigate against overheating and to provide fresh air, the incorporation of mechanical ventilation with heat recovery (MVHR), with heat exchanger efficiency of up to 95%, may also be considered. This efficiency is higher than that set out in the Building Regulations. It is also recommended that, should MVHR systems be specified, that these will include a summer bypass mode to reduce the risk of overheating in the summer.
- 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.

#### **'Be Clean' (Supply Energy Efficiently)**

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

5.16 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.


5.17 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.

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### District Heating Feasibility

- 5.18 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.
- 5.19 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 a low-density settlement to the south. The surrounding area is therefore likely to be characterised by a low heat demand.
- 5.20 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 rural 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



- 5.21 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.
- 5.22 The incorporation of a gas-fired CHP network has potential to 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.
- 5.23 Based on this, it is recommended that if practicable air source heat pump (ASHP) systems and rooftop photovoltaic (PV) panels be employed to service the development. The incorporation of these technologies is discussed in greater detail in the 'Be Green' section below.

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## **'Be Green' (Utilise Renewable Technologies)**

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5.24 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.

5.25 In determining the appropriate renewable technology for the site, a number of factors including carbon dioxide savings, site constraints will need to be considered. Further details of each technology worth further consideration, 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<sub>x</sub>) and particulate matter (PM<sub>x</sub>) 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. As the design progresses, it is recommended that acoustic measures to limit the noise generated by the outside unit of the system 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. 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 proposed layout that can deliver dwellings 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

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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 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 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 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.
- **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 low-lying locations.

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## 6. SUMMARY

- 6.1 This Sustainability & Energy Statement provides an overview as to how the proposed development of the Great Cauldham Farm, Capel-le-Ferne contributes to sustainable development in the context of the strategic, design and construction considerations.
- 6.2 The aim is to develop a proposal with sustainability and energy saving at its core. While the energy strategy submitted as part of this outline proposal is indicative at this stage, it is envisaged that detailed design could include features such as those discussed, to reduce carbon. Consideration has been given to Dover District Council Core Strategy (February 2010) and the draft Dover District Local Plan to 2040 (Regulation 19 Submission; October 2022) in the formulation of this statement. The overall development has been assessed using the guidance outlined in Core Strategy policy CP 5 (Sustainable Construction Standards) and the draft Local Plan policies SP1 (Planning for Climate Change), CC1 (Reducing Carbon Emissions), CC2 (Sustainable Design and Construction), CC4 (Water Efficiency), CC5 (Flood Risk), CC6 (Surface Water Management) and CC8 (Tree Planting and Protection) providing a holistic sustainability approach for the proposals.
- 6.3 By designing to rigorous energy standards, the application will respond directly to the Climate Emergency declared by the Council in January 2020. These measures combine to provide a significant carbon dioxide emissions saving compared to the Part L:2021 baseline, aiming to significantly exceed the requirements of Dover District 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;
  - encourage the use of sustainable modes of transport;
  - minimise internal water consumption to 105 litres per person per day;
  - incorporate low-impact materials, according to the BRE Green Guide to Specification;
  - minimise waste production during construction and maximise the proportion of waste to be diverted from landfill;
  - incorporate measures to improve site biodiversity, including biodiverse planting;
  - not increase the risk of flooding on the site or in the surrounding area;
  - ensure air, noise, land, light and water pollution are minimised as far as possible;

- 
- minimise energy demand through the specification of low U-values, low air permeability and low thermal bridging to reduce heat loss;
  - aim to be fossil fuel free, potentially utilising electric-only systems such as air source heat pumps (ASHPs) to serve the space and water heating demands of the proposed dwellings;
  - utilise renewable technology, such as rooftop photovoltaic (PV) panels, to provide renewable electricity; and
  - achieve a significant reduction in CO<sub>2</sub> emissions for the proposed dwellings, following the Energy Hierarchy methodology.

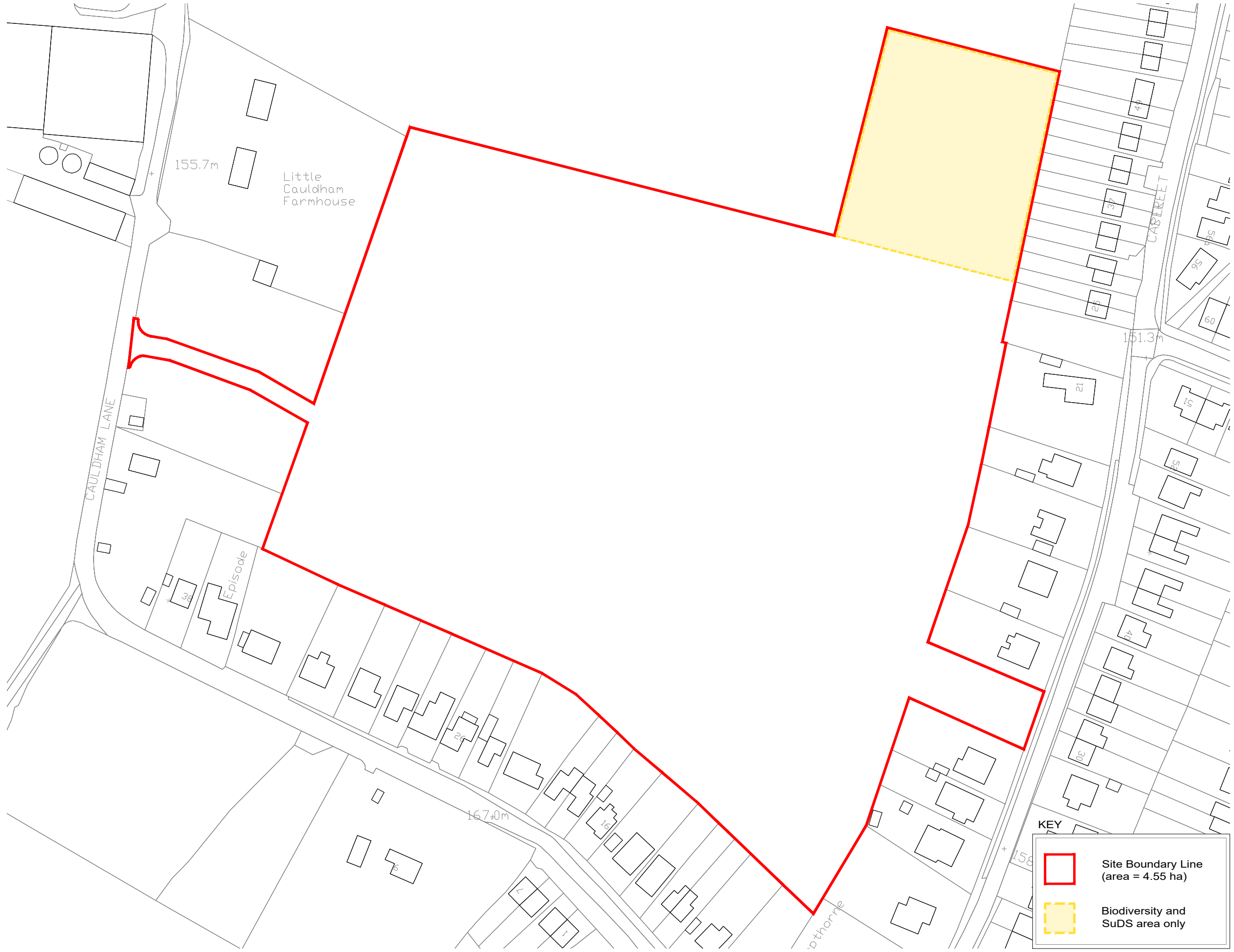
6.5 Overall, the proposals for the scheme are in line with the principles of sustainable development as well as the policy requirements of the NPPF and the Dover District Council, and will provide a development that promotes these principles in operation.

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## **A1. SITE PLAN**



# Quinn Estates



**NOTES:**

Do Not Scale.

Report all discrepancies, errors and omissions.

Verify all dimensions on site before commencing any work on site or preparing shop drawings.

All materials, components and workmanship are to comply with the relevant British Standards, Codes of Practice, and appropriate manufacturers recommendations that from time to time shall apply.

For all specialist work, see relevant drawings.

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Rev	Date	Description
A	01.02.2021	First Issue
B	01.02.2021	Area amendment
C	02.02.2021	Area amendment
D	09.11.2021	Red Line Amended
E	02.02.2024	Red Line Amended
F	12.02.2024	Hatch colour added
G	14.02.2024	Red Line Amended
H	22.02.2024	Red Line Amended

Project Title

**Land off Capel Street,  
Capel-Le-Ferne  
Kent  
CT18 7HF  
For Quinn Estates**

Drawing Description

**Site Location Plan**

Scale	Drawn by
1:1250 @ A3	AS
Date	Checked by
February 2024	CSS

## CLAGUE ARCHITECTS

62 Burgate, Canterbury  
Kent CT1 2BH 01227 762060

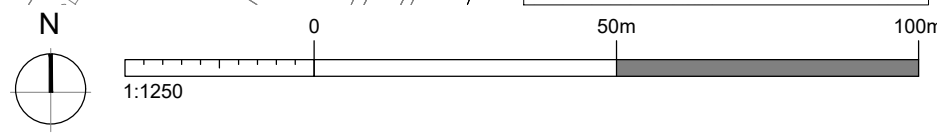
1 Kinsbourne Court, Luton Road,  
Harpden, Hertfordshire AL5 3BL 01582 765102

8, Disney Street  
London SE1 1JF 0203 597 6112

CANTERBURY      LONDON      HARPENDEN

**KEY**

- Site Boundary Line (area = 4.55 ha)
- Biodiversity and SuDS area only



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## **A2. WATER USAGE CALCULATOR**



Job no:	24-IF007
Date:	21/02/2024
Assessor name:	
Registration no:	N/A
Development name:	Great Cauldham Farm

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**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		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:	
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		-		-		-		-		-		-		-		-		-	

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### **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 Icen 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.
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