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Sustainability & Energy Statement

Land at Foxhole Farm, Bolney

Iceni Projects Limited on behalf of
Wates Developments Limited

April 2025

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DEVELOPMENTS LIMITED

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Sustainability & Energy Statement
LAND AT FOXHOLE FARM, BOLNEY

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1. EXECUTIVE SUMMARY

- 1.1 Icen Projects Ltd has been commissioned by Wates Developments Limited to produce a Sustainability & Energy Statement to accompany the outline planning application for the proposed residential-led development of the Land at Foxhole Farm, Bolney.
- 1.2 This outline planning application proposes the provision of up to 200 homes, including affordable housing, a community building (Use Class F1) encompassing land for education provision, vehicular, pedestrian and cycle access, an internal network of roads, footways and cycleways, in addition to the provision of countryside open space, children's play areas, community orchard and allotments, sustainable drainage systems and landscaping.
- 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 Chapter 14 of the National Planning Policy Framework (NPPF), the Mid Sussex District Plan 2014 – 2031, as well as the Mid Sussex Design Guide Supplementary Planning Document, the Bolney Neighbourhood Plan, and the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications) 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 Mid Sussex District Plan 2014 – 2031, as well as the Mid Sussex Design Guide Supplementary Planning Document, the Bolney Neighbourhood Plan, and the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications), to demonstrate that the proposed dwellings and non-domestic building 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 (CO₂) 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 and low carbon energy technologies to deliver further carbon dioxide emissions reductions. It is anticipated that the proposed carbon dioxide emissions reduction strategy will facilitate significant carbon dioxide emissions savings compared to the Part L:2021 baseline, aiming to significantly exceed the current requirements of Mid Sussex District Council

and to align with the draft policies set out within the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications).

1.5 The proposed strategy has been based around Strategic Objectives 1 and 6 and Policies DP39 and DP42 of the Mid Sussex District Plan 2014 – 2031 and the Strategic Objectives and Policies DPS1, DPS2, DPS5, DPS6 and DPA14 of the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications). In summary, based on this strategy, the proposed development will;

- make efficient use of land;
- promote the use of sustainable and active modes of transport;
- reduce the risk of flooding on-site and in the surrounding area;
- minimise internal water consumption to 85 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;
- mitigate the risk of overheating;
- incorporate measures to improve site biodiversity, including biodiverse planting;
- ensure noise, 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 and non-domestic building, in addition to the cooling demands of the non-domestic building, where relevant;
- utilise renewable technology, such as rooftop photovoltaic panels, to provide renewable electricity; and
- achieve a significant reduction in CO₂ emissions for the proposed dwellings and non-domestic building, following the Energy Hierarchy methodology.

1.6 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 Icen Projects Ltd was commissioned by Wates Developments Limited to produce a Sustainability & Energy Statement to accompany the outline planning application for the proposed residential development of the Land at Foxhole Farm, Bolney.

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 Mid Sussex 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 CO₂ emissions; and
- Section 6 summarises the development's design response.

Site and Surroundings

2.4 The application site (Appendix A1) is located to the east of Foxhole Lane, immediately to the west of the village of Bolney, Mid Sussex. The site is bound by the built-up area of the village of Bolney to the east, Cowfold Road (A272) to the south, woodland areas and green space to the north, and agricultural fields to the west. The Bolney Wine Estate is located approximately 120m to the west of the site, and the closest town, Haywards Heath, is situated approximately 6km to the east.

2.5 The application site itself comprises several fields that are currently used as pasture. A number of farm buildings are also present within and adjacent to the site boundaries, in addition to existing trees and hedgerows. The surrounding area is predominantly residential to the east, and rural to the south and west, with a number of small villages, including Twineham, Twineham Green, Hickstead, Cowfold and Wineham, located to the west and south, whilst woodland and additional residential dwellings are present to the north.

The Proposed Development

2.6 The description of development is as follows:

“Outline planning application (appearance, landscaping, layout and scale reserved), for the erection of up to 200 dwellings; a community building (use class F1) encompassing land for education provision, together with associated access, ancillary parking and landscaping; the creation of a vehicular access point from the A272 Cowfold Road, and pedestrian and cycle only access to The Street; and creation of a network of roads, footways, and cycleways through the site; together with the provision of countryside open space, children's play areas, community orchard, and allotments; sustainable drainage systems and landscape buffers.”

2.7 The illustrative masterplan is shown in Figure 2.1 below, whilst the red line boundary of the site is displayed in Appendix A1.

Figure 2.1 Illustrative Masterplan



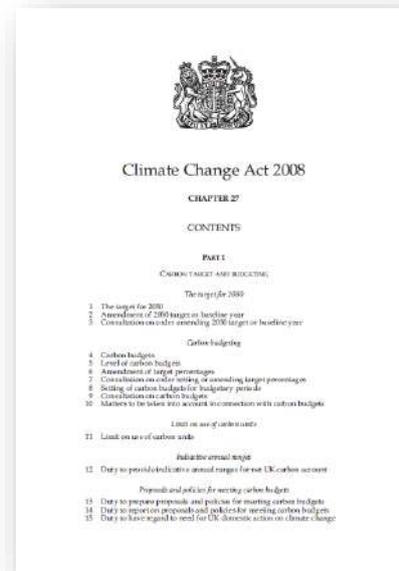
3. PLANNING POLICY FRAMEWORK

- 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 (November 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.

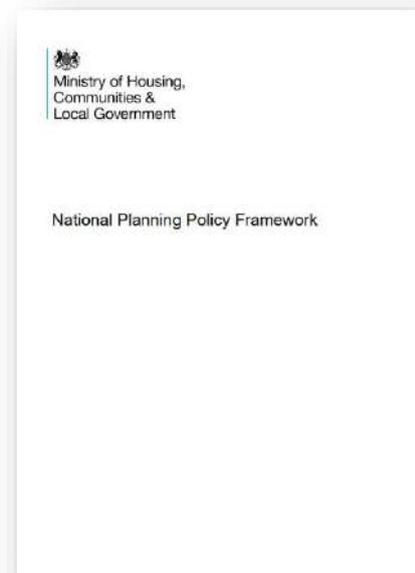


- 3.3 As required under Section 34 of the Climate Change Act, the Sixth Annual Carbon Budget was accepted by the Government in April 2021. This sets out a budget for UK emissions for the period 2033 – 2037.

- 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 (December 2024)

- 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



onshore wind development, and beauty, design, infrastructure, neighbourhood and the environment, respectively. In December 2024, the NPPF was revised in response to reforms to the Framework, and consultations on other changes to the planning system.

- 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 (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 mission, 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 (January 2021)

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, buildings built to the Standard will become net zero carbon over time, with no need for further energy efficiency retrofit work as they will not 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 missions, 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.

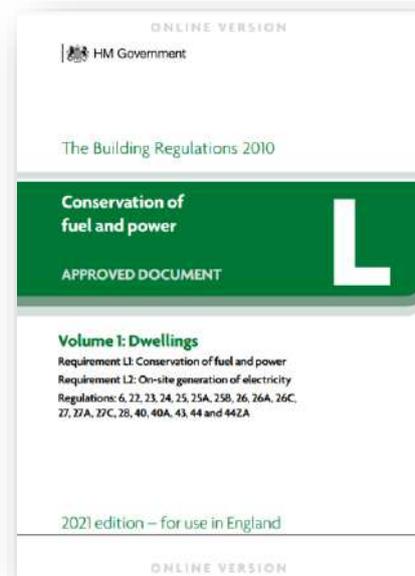


Part L:2021 of the Building Regulations (June 2022)

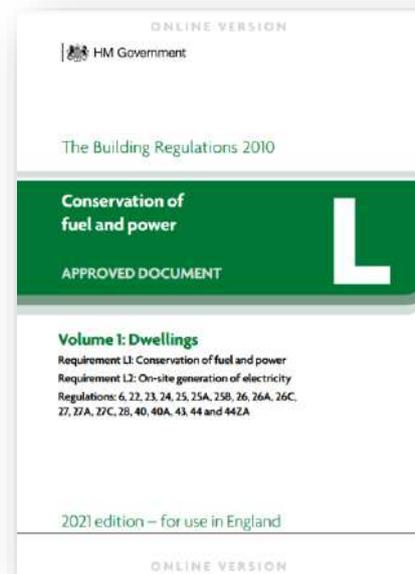
3.13 Part L of the Building Regulations relates to the conservation of fuel and power, and applies to both new and existing buildings. The current edition covers the energy efficiency requirements of the building regulations as set out in Part L of Schedule 1 to the Building Regulations. Technical guidance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

3.14 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.



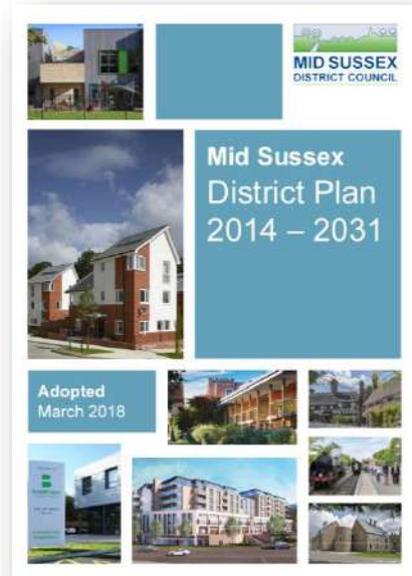
Local

- 3.15 In determining the local context, the Mid Sussex District Plan 2014 – 2031 (March 2018) sets out policy relevant to sustainability.

Mid Sussex District Plan 2014 – 2031 (March 2018)

- 3.16 The Mid Sussex District Plan sets out broad guidance on the distribution and quality of development in the form of 'higher level' strategic policies. The following policies are considered of great relevance to this proposal:

- **Strategic Objective 1** seeks to promote development that makes the best use of resources and increases the sustainability of communities within Mid Sussex, and its ability to adapt to climate change.
- **Strategic Objective 6** seeks to ensure that development is accompanied by the necessary infrastructure in the right place at the right time that supports development and sustainable communities. This includes the provision of efficient and sustainable transport networks.
- **Policy DP39: Sustainable Design and Construction** states that all development proposals must seek to improve the sustainability of development and should, where appropriate and feasible according to the type and size of development and location, incorporate the following measures:
 - Minimise energy use through the design and layout of the scheme, including through the use of natural lighting and ventilation;
 - Explore opportunities for efficient energy supply through the use of communal heating networks where viable and feasible;
 - Use renewable sources of energy;
 - Maximise efficient use of resources, including minimising waste and maximising recycling/re-use of materials through both construction and occupation;
 - Limit water use to 110 litres/person/day in accordance with Policy DP42: Water Infrastructure and the Water Environment;



- Demonstrate how the risks associated with future climate change have been planned for as part of the layout of the scheme and design of its buildings to ensure its longer term resilience.
- **Policy DP42: Water Infrastructure and the Water Environment** states that new development proposals must be in accordance with the objectives of the Water Framework Directive, and accord with the findings of the Gatwick Sub Region Water Cycle Study with respect to water quality, water supply and wastewater treatment and consequently the optional requirement under Building Regulations – Part G applies to all new residential development in the District. Development must meet the following water consumption standards:
 - Residential units should meet a water consumption standard of 110 litres per person per day (excluding external water use).
 - Non-residential buildings should meet the equivalent of a ‘Good’ standard, as a minimum, with regard to the BREEAM water consumption targets for the development type.

Development proposals which increase the demand for off-site service infrastructure will be permitted where the applicant can demonstrate;

- that sufficient capacity already exists off-site for foul and surface water provision. Where capacity off-site is not available, plans must set out how appropriate infrastructure improvements approved by the statutory undertaker will be completed ahead of the development’s occupation; and
- that there is adequate water supply to serve the development. environment.

Planning conditions will be used to secure necessary infrastructure provision.

Development should connect to a public sewage treatment works. If this is not feasible, proposals should be supported by sufficient information to understand the potential implications for the water.

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

Mid Sussex District Plan 2021 – 2039 (Regulation 19; December 2023; with Main Modifications July 2024)

3.17 The draft District Plan 2021 – 2039 comprises an updated vision, strategy, set of site allocations and policies that will supersede the adopted Mid Sussed District Plan 2014 – 2031. Whilst not yet formally adopted, when accounting for the Schedule of Main Modifications set out in July 2024, the policies of relevance to the proposed development detailed within the draft District Plan 2021 – 2039 include:



- **Strategic Objectives: Environment** seeks to protect and enhance the natural, built and historic environment by:
 - Creating and maintaining easily accessible high quality green and blue infrastructure in the right places to encourage active travel, improve physical and mental health, support biodiversity, and address climate change mitigation and adaptation.
 - Promoting development that embodies the 20-minute neighbourhood principles and makes the best use of resources and increases the sustainability of communities within Mid Sussex, and its ability to adapt to climate change.
 - Promoting well located and designed development that reflects the District's distinctive towns and villages, retains their separate identity and character and prevents coalescence.
 - Conserving and enhancing valued landscapes for their visual, historical and biodiversity qualities.
 - Protecting valued characteristics of the built environment for their historical and visual qualities.
 - Ensuring that development is accompanied by the necessary infrastructure in the right place at the right time that supports development and sustainable communities. This includes as a priority the provision of efficient and sustainable transport networks.
 - Protecting and enhancing the natural environment, achieving net gains in biodiversity, nature recovery and tree cover.
- **Policy DPS1: Climate Change** states that the Council will take an integrated and holistic approach to address the causes of climate change and to increase resilience to the effects of climate change. This will be achieved by:

Reducing carbon emissions

1. Development will be required to demonstrate that measures have been taken to reduce carbon emissions, including improvements in energy efficiency and in the design and construction of buildings. This includes new buildings and the conversions of existing buildings. Detailed requirements are set out in Policies DPS2: Sustainable Design and Construction, DPS3: Renewable and Low Carbon Energy Schemes, and the Mid Sussex Design Guide SPD.
2. The Council will support renewable and low carbon energy schemes in line with the requirements set out in Policy DPS3: Renewable and Low Carbon Energy Schemes.
3. Development should embed the principles of the 20-minute neighbourhood and local living and prioritise active travel such as walking and cycling and sustainable transport such as public transport to reduce reliance on private modes of transport and to facilitate healthy lifestyles. Detailed requirements are set out in Policies DPT1: Placemaking and Connectivity; DPT3: Active and Sustainable Travel; and DPB1: Character and Design.
4. Development likely to be sources of other greenhouse gas emissions (methane, nitrous oxide and fluorinated gases) will be required to demonstrate that opportunities have been taken to reduce these emissions. This includes proposals that may use these other greenhouse gases in their design and operation, for example, refrigerants and air conditioning systems.

Maximising carbon sequestration

5. Development will be required to protect existing trees, woodland and hedgerows and their soils and seek opportunities to plant new hedgerows and appropriate species of trees in appropriate places including street trees. Detailed policy requirements are set out in Policy DPN4: Trees, Woodland and Hedgerows.
6. Development will be required to protect existing carbon sinks and stores and take opportunities to provide nature-based solutions for carbon capture and sequestration.
7. Development will be required to take opportunities to improve soil health and minimise disturbance to soils in order to protect soil biodiversity and carbon storage. Detailed policy requirements are set out in Policy DPN1: Biodiversity, Geodiversity and Nature Recovery.

Climate change adaptation and mitigation

8. Development must be designed to minimise vulnerability from the effects of climate change particularly in terms of overheating, food security, flood risk and water supply. Detailed policy

requirements are set out in Policies DPS2: Sustainable Design and Construction and DPS4: Flood Risk and Drainage.

9. Development will be required to incorporate green and blue infrastructure and nature-based solutions to moderate surface and air temperatures, increase biodiversity and as part of sustainable drainage systems. Detailed requirements are set out in Policies DPB1: Character and Design; DPS4: Flood Risk and Drainage; and DPN3: Green and Blue Infrastructure.
 10. Development will be required to achieve a net gain in biodiversity and contribute to ecological networks and the Local Nature Recovery Strategy. Detailed policy requirements are set out in Policies DPN1: Biodiversity, Geodiversity and Nature Recovery, and DPN2: Biodiversity Net Gain.
 11. The Council will seek adaptation and mitigation measures that improve resilience to climate change and allow communities, businesses, buildings, infrastructure and ecology to adapt to the impacts of climate change.
- **Policy DPS2: Sustainable Design and Construction** states that all development must submit a proportionate Sustainability Statement to demonstrate how through its design, construction, operation and use it will contribute to the reduction of greenhouse gas emissions, increase resilience to the impacts of climate change and improve sustainability and includes incorporation of measures set out at Principle DG37 of the Mid Sussex Design Guide SPD.

Zero carbon development

Unless it can be demonstrated that doing so is not technically feasible or unviable, using a fabric first approach, all new build development must achieve zero operational GHG emissions by reducing heat and power demand and then supplying all (regulated and unregulated) operational energy through on-site renewables.

Energy Use

The carbon reduction requirements for achieving net zero development must be met by using a fabric first approach following the energy hierarchy:

- i. Minimise the demand for energy.
- ii. Maximise energy efficiency.
- iii. Utilise renewable energy.

All developments must include decentralised, renewable or low carbon energy provision. Residential and non-residential renewables such as solar panels (including ground mounted)

and associated infrastructure, will be supported in principle but should seek to minimise the visual impact wherever possible

Heating to all new build developments and major refurbishments shall be provided using renewable energy (not fossil fuels).

Residential new build: Until superseded by higher national standards, development must achieve a 100% emissions reduction against the Target Emissions Rate (TER) on all new build dwellings. Compliance shall be demonstrated via the Standard Assessment Procedure (SAP) calculations and detailed submitted as part of an Energy Statement.

Development is encouraged to exceed this standard where feasible and viable, and alternative routes such as Passivhaus standards will be supported where evidence is provided. Passivhaus compliance shall be evidenced by submitting full Passivhaus Planning Package outputs demonstrating that Passivhaus certification is achievable.

Non-residential new build: Major development must achieve maximum credits in the “Energy performance”, and “Prediction of operational energy consumption” and “Beyond zero net regulated carbon” categories of BREEAM (or equivalent) to demonstrate that the development has surpassed net zero regulated emissions.

All minor new build developments have the option to demonstrate achievement of zero operational GHG emissions through the Part L of Building Regulations rather than a BREEAM assessment.

Evidence must be provided to demonstrate every feasible and viable option has been explored to fully achieve the net zero target on-site. Only in exceptional circumstances, where any shortfall is identified, appropriate mitigation should be formally agreed with the Council.

Assessment frameworks

BREEAM Technical Standards: Planning applications of a scale and nature defined in the table below, must be accompanied by a pre-assessment, demonstrating how the BREEAM Technical Standards and/or any future replacement standards, will be met.

Evidence demonstrating the project has been registered with BRE during the design stage shall be submitted with any application and conditions/ requirements will be imposed to secure appropriate final (post-construction/ post-refurbishment stage) certification to demonstrate compliance with this policy.

Where Passivhaus certification is being sought, a ‘preconstruction compliance check’ completed by a Passivhaus certifier will be required; secured by condition and upon completion, a Quality Approved Passivhaus certification for each dwelling/building will be required.

Development, as defined below, will be required to meet the relevant minimum defined standards until they are superseded by higher national standards.

Development Type	Scale of Development	Minimum Standard
Non-residential and mixed-use new build	Major	BREEAM Excellent
Non-residential Refurbishment and/or extension	Major	BREEAM Excellent – Refurbishment and Fit Out Technical Standards

Post-occupancy monitoring: All major non-residential new build developments must achieve a credit for POE in the category Man 05 Aftercare under the relevant BREEAM scheme.

Developers should share their POE information with the built environment sector to ensure transparency and inform wider lesson learning.

Embodied Carbon

Development proposals must prioritise retention and retrofit of existing buildings or structures to capture the embodied carbon associated with the building's original construction; unless it can be demonstrated to be unviable to do so.

Major new build developments: Major new build developments must undertake a whole life-cycle (WLC) carbon assessment using a nationally recognised assessment methodology. Relevant credits in BREEAM, or equivalent, shall be achieved to demonstrate reasonable endeavours have been made to minimise embodied carbon.

The use of sustainably sourced wood in construction, particularly from local sources, is strongly encouraged.

Householder development

Proposals for householder development must demonstrate that they have been designed to be as energy efficient and sustainable as possible through good design and by:

1. Increasing the energy efficiency of the proposed new elements, and
2. Increasing the energy efficiency of other parts of the building.

All measure should be set out in a proportionate Sustainability Statement.

Prevent overheating

All new development must demonstrate how design measures have been incorporated to:

3. Minimise potential overheating such as through the layout, orientation and design of buildings.
4. Maximise passive cooling through natural ventilation and other passive means. Reliance on air conditioning systems should be avoided. Green and blue infrastructure incorporated in line with Policy DPN3: Green Infrastructure to provide natural cooling and shading

Water resources and water efficiency

New development proposals must accord with the findings of the Gatwick Sub Region Water Cycle Study with respect to water resources, water quality, water supply and wastewater treatment.

All residential new build: Development must meet a maximum water consumption standard of 85 litres per person per day to minimise the impact of the development on water resources and water quality.

Major non-residential new build: Development must achieve 3 credits in BREEAM category Wat 01 and demonstrate reasonable endeavours to achieve an 'Outstanding' rating overall.

All development will be required to meet the relevant minimum standards set out above until they are superseded by higher national standards.

Sustainable water consumption rates can be achieved through incorporation of measures to reduce water use and reuse water including:

- Water efficient fittings and appliances
- Rainwater harvesting, including incorporation of rainwater butts
- Greywater recycling

Minimise waste

In accordance with relevant policies in the West Sussex Waste Local Plan, all development must support the circular economy by minimising construction, demolition and excavation waste disposed of in landfill and follow the waste hierarchy to maximise recycling and re-use of material.

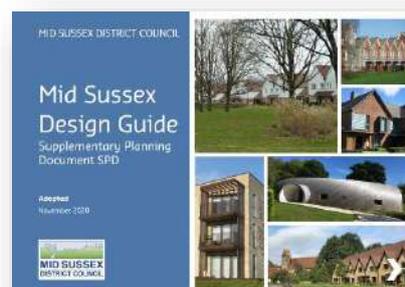
New development must be designed with adequate and easily accessible storage space that supports separate collection of dry recyclables and food waste, as well as residual waste taking account of guidance in the Mid Sussex Design Guide SPD.

- **Policy DPA14: Land at Foxhole Farm, Bolney** lists the following policy requirements:

1. Informed by a Heritage Impact Assessment, provide an appropriate layout and design which protects the setting of nearby Grade II listed building, 'Walnut and Well Cottage', and Bolney Conservation Areas (North and South).
2. Follow a sequential approach by directing development away from areas of flood risk associated with surface water flooding in lowest areas of the site.
3. Retain the character of footpath 44Bo which runs along the site's northern boundary and create a pedestrian link from the site.
4. Provide suitable vehicular, pedestrian and cycle access from Cowfold Road (A272).
5. Provide pedestrian and cycle access to The Street into the north part of the site between the properties of Westmeadow and Downland. In addition, explore potential for additional pedestrian and cycle access to The Street into the south-central part of the site.
6. Provide countryside open space between the north and south development parcels.
7. Provide on-site community facility suitable for uses falling within E(e), E(f) or F(1)(a).
8. The site lies within the brick clay (Weald) Mineral Safeguarding Area, therefore the potential for mineral sterilisation should be considered in accordance with the requirements of the West Sussex Joint Minerals Local Plan and associated Safeguarding Guidance
9. Meet the requirements of other relevant development plan policies.

Mid Sussex Design Guide Supplementary Planning Document (SPD; November 2020)

3.18 The Mid Sussex Design Guide Supplementary Planning Document (SPD) provides a number of design principles that aim to deliver high quality new development across Mid Sussex. It states that all new development should be designed to high environmental standard. This applies to both the building design and layout, which should have regard to the following:



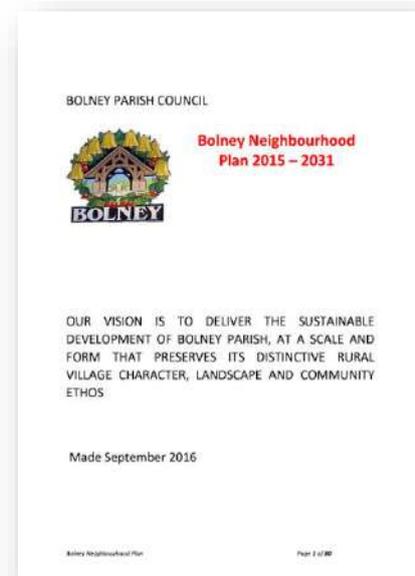
- Sustainable construction principles including maximising energy and water efficiency, minimising carbon emissions and use of resources;
- Optimising development opportunities especially on brownfield sites and in locations close to facilities or with good transport links;
- Organising development around green transport principles that reduce travel distances, prioritise pedestrian and cycle movement and integrate public transport;

- Planning schemes around Green Infrastructure provision that is underpinned by: (a) healthy living and well-being principles; (b) helping to deliver a net gain in bio-diversity; (c) responding to the beauty of the natural landscape and ensuring that natural features are retained and enhanced; and
- Designing for adaptation and resilience to future weather events (drier/hotter summers and wetter/warmer winters).

Bolney Neighbourhood Plan 2015 – 2031 (September 2016)

3.19 The Bolney Neighbourhood Plan provides the local community with a powerful tool to guide the long-term future of Bolney and its surrounding countryside for the period to 2031. The Plan contains a vision and objectives for the future of Bolney Parish and sets out clear planning policies to realise the following vision:

“Our vision is to deliver the sustainable development of Bolney parish, at a scale and form that preserves its distinctive rural character, landscape and community ethos.”



Other Considerations

Climate and Sustainability Action

3.20 Mid Sussex Council is committed to playing its part in supporting international and national plans to allow prosperity to continue, but to move away from old and polluting ways of doing things. Key actions that the Council is taking to aid in the achievement of this include:

- The use of the United Nations (UN) Sustainable Development Goals in the preparation of future plans and policies, to guide thinking and reporting on wider measures of social, environmental and economic wellbeing.
- The commissioning of climate change experts in June 2021 to advise how to create an effective pathway to reduce greenhouse gas emissions in line with the government’s 2050 net-zero target.
- Requesting that the Council is proactive in including young people in the ‘Climate Emergency’ process.
- With the guidance of the recommendations of the Net Zero report, the updating of policy approaches to environmental sustainability, through the development of the Sustainable Economy Strategy and the review of the Local Plan during 2021 – 2022.

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 Mid Sussex District Plan 2014 – 2031, as well as the Mid Sussex Design Guide Supplementary Planning Document, the Bolney Neighbourhood Plan, and the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications). This enables a holistic sustainability approach to be set out for the proposed development. The Mid Sussex District Plan 2014 – 2031, the Mid Sussex Design Guide Supplementary Planning Document, the Bolney Neighbourhood Plan, and the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications) encourage 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 (CO₂) emissions reduction strategy for the proposed buildings 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 Mid Sussex District Plan 2014 – 2031, the Mid Sussex Design Guide Supplementary Planning Document, the Bolney Neighbourhood Plan, and the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications), 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 east of the site within the village of Bolney. A range of community facilities and amenities are located within Bolney and the surrounding area, including nurseries, a primary school, shops, cafes and areas of public open space, all within walking or cycling distance of the application site.
- 4.8 The proposed development is therefore considered to be an extension of the existing village of Bolney, making 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. Haywards Heath railway station is located approximately 7.4km to the east of the site, Cooksbridge railway station is located approximately 7km to the southeast, and Burgess Hill railway station is located approximately 7km to the southwest. These stations provide frequent access to a range of destinations, including London Victoria and Littlehampton via Southern services, Brighton and Cambridge via Thameslink services, and Gatwick Airport via Gatwick Express services.
- 4.10 The nearest bus stops are located on The Street, just to the south of the property known as 'Agates'. These bus stops are served by the number 2 service, which provides one service per day on Thursdays to destinations between Balcombe, Handcross and Burgess Hill, and the number 89 service, which provides four services per day on Mondays, Wednesdays and Fridays and two services per day on Tuesdays and Thursdays to destinations between Horsham and Princess Royal Hospital / Franklands. In addition, a bus stop is present on London Road to the east of the site, which is also served by the number 89 service, as well as the number 273 service which runs seven times

per day on Mondays to Fridays and six times per day on Saturdays to destinations between Crawley Bus Station and Brighton Old Steine.

- 4.11 There are a number of existing footways that provide access to the site, including along The Street to the east, and Cowfold Road (A272) to the south. Three Public Rights of Way (PRoWs), numbered 18BO, 19BO and 20BO, run to the east of the village of Bolney, whilst an additional public footpath, numbered 44BO, runs to the north of the site. These existing PRoW provide a network of alternative walking routes for future residents, providing connections to the wider area surrounding the site. With respect to cycling facilities, a traffic-free cycle route is present to the east of the site, which connects London Road with the A2300 to the south of the site. Along the A2300, on-carriageway cycle lanes are provided on both sides of the road. It is noted that London Road is considered to be generally lightly trafficked, and that a wide enough carriageway is present to ensure cyclists are able to share this carriageway in reasonable safety in order to access local facilities, or for recreational purposes.
- 4.12 As detailed within the Transport Assessment, prepared by i-Transport, the proposed development will be provided with a vehicular point of access at the southern boundary of the site from Cowfold Road (A272). The access will also comprise 2m wide footways on either side of the road. The existing signalised road crossing will be relocated 25m to the west, to facilitate the introduction of a ghost island right turn lane, and it is proposed that a dropped kerb and tactile paving pedestrian crossing, comprising a 2m refuge island, be provided immediately to the west of the proposed site access. In addition to the proposed vehicular access to be included for at the southern boundary, and which will provide pedestrian and cycle access to Cowfold Road (A272), the following active travel connections are also to be provided:
- from the eastern boundary to connect to The Street, between the properties of Westmeadow and Downland; and
 - to PRoW 44BO, which runs along the northern boundary of the site.
- 4.13 It is also noted that there is potential for an additional active travel connection to be made to The Street via the existing car park located to the south of the properties at numbers 19 and 20 The Street.
- 4.14 Whilst the internal layout of the proposed development is to be determined at the Reserved Matters stage, it is intended that the layout will ensure future residents and site users will be able to easily walk and cycle within the site itself, and beyond, within the local community. This will be achieved through the delivery of the pedestrian and cycle access points outlined above, in addition to the employment of a hierarchy of street types within the proposed development itself. It is considered, therefore, that the internal layout of the proposed development, and the provision of multiple pedestrian / cycle access points, will aid in encouraging the use of sustainable mode of transport.

- 4.15 Both cycle and car parking proposals for the scheme will be confirmed as part of future Reserved Matters Applications. Parking provision will adhere to West Sussex County Council's 'Guidance on Parking at New Developments', unless otherwise agreed. Electric vehicle (EV) charging infrastructure provision will adhere to the adopted EV charging standards in place at the time of the Reserved Matters application. It is noted that, at the time of writing, this equates to the provision of at least one charging point per new dwelling.
- 4.16 With respect to the proposed community building, it is proposed that a total of 12 car parking spaces be provided, two of which will be accessible spaces. A layby is to also be provided on the spine road adjacent to the building to allow for coach drop-off and pick-up, which will help to minimise the number of vehicles accessing the facility. Further to this, it is intended that two of the 12 car parking spaces to be provided incorporate active charging points for EVs, with the remaining 10 spaces to be provided with ducting for passive provision. Cycle parking will also be provided within close proximity to the entrance of the building.
- 4.17 A Sustainable Transport Strategy is also set out within the Transport Assessment, to encourage travel by sustainable modes, which plays a key role in facilitating future growth in the context of various constraints, including the Climate Emergency. The Sustainable Transport Strategy seeks to take a 'Reduce, Contain and Facilitate Alternatives' approach to travel demands, as follows:

Reduce

- Fast broadband connectivity will be provided, to reduce the need for future residents to travel off-site for work, and to enable online shopping and associated deliveries.
- Provision of comprehensive EV charging facilities for the proposed dwellings and community building.

Contain

- Design of walkable networks, and the delivery of a site layout that provides permeability and direct routes for pedestrians and cyclists. In particular, pedestrian and cycle connections are proposed directly onto The Street, enabling a walking journey into the village of Bolney that is the shortest and most direct means of travel.
- Provision of on-site facilities, including countryside open space, community allotments and orchards, and a community building.

Facilitate Sustainable Travel

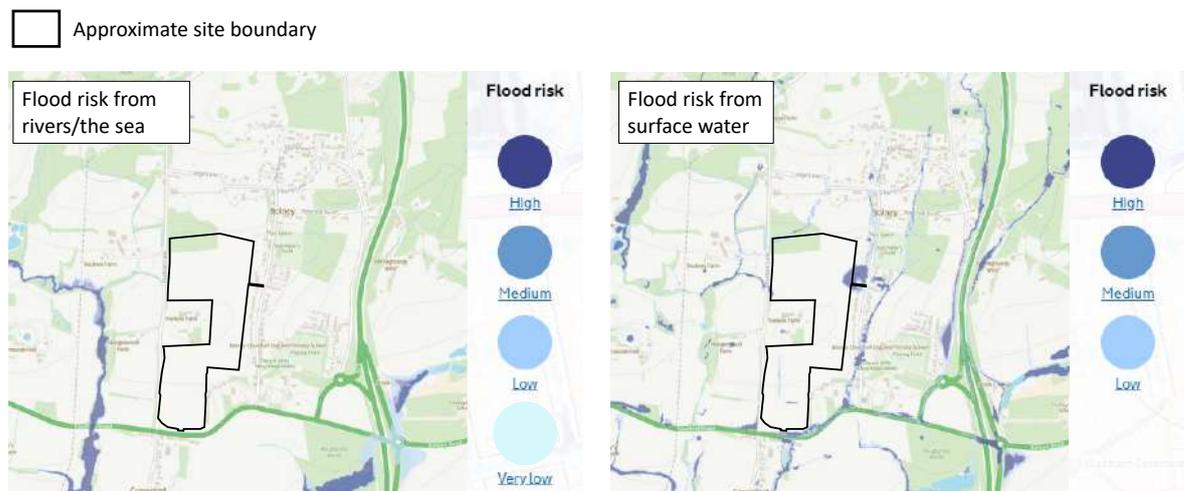
- Delivery of a car club, with an agreement in principle for two vehicles to be provided on-site.
- Potential provision of an annual bike hire scheme for residents of the proposed development.
- Incorporation of a centralised parcel drop and storage facility.

- Potential contributions to the enhancement and improvement of local bus services.
- 4.18 Additional opportunities to deliver improvements to the off-site infrastructure within the local area, and to therefore encourage the uptake of active and sustainable modes of transport, are being explored. The first potential option would seek to deliver two additional uncontrolled pedestrian crossings on The Street. These crossings, which would comprise kerbed build outs, would also act as a traffic calming feature, and would aid to deter the use of The Street as a 'rat-run'. The introduction of these crossings would provide safe access to footways located on the eastern side of The Street, which connect to a range of destinations, including the Bolney CofE Primary School and the Bolney Cricket Club. The second option would build upon this, with the following potential enhancements to be delivered in addition to the new crossings set out under the first option:
- Widening of the carriageway of The Street to accommodate on-street parking, and therefore reduce the propensity for cars to overrun the existing footway.
 - Introduction of a third additional kerbed build out and uncontrolled crossing.
 - Relocation of the existing accessible parking bay.
- 4.19 It is also expected that, in the context of the allocated nature of the site within the draft Mid Sussex District Plan 2021 – 2039 (Regulation 19), the development would make proportional contributions towards the delivery of key infrastructure identified within the West Sussex Council Walking and Cycling Strategy (2016 – 2026), and the Mid Sussex Local Cycling and Walking Infrastructure Plan (LCWIP), alongside any other measures identified through the Infrastructure Delivery Plans associated with the Mid Sussex District Plan. Contributions to the delivery of these schemes will enhance connectivity for both residents of the proposed development, and the existing communities within Mid Sussex and beyond.
- 4.20 In addition to the above, a Framework Travel Plan will be implemented, identifying a number of soft measures to encourage the use of sustainable and active modes of transport, in lieu of private cars. The Framework Travel Plan sets out a number of measures to promote walking and cycling, including: the provision of information, including walking and cycling maps and health information, to future residents; the delivery of walking / cycling routes throughout the site and connecting to routes in the wider area; the provision of electric vehicle (EV) charging infrastructure; the setting up of a Bicycle User Group (BUG); and the promotion of bike hire schemes and a car club. Similarly, the use of public transport facilities will be encouraged via the Framework Travel Plan through the provision of public transport information, contributions to the improvement of bus services, and the offer of a Bus Taster pass.
- 4.21 Based on the information contained within the Transport Assessment, it is considered that there is no reason that the proposed development should be refused on highways grounds.

Reducing Flood Risk and Surface Water Run-off

- 4.22 Information contained within the Flood Risk Assessment, prepared by Ramboll, confirms that the entire site falls within Flood Zone 1, indicating a less than 1 in 1,000 (0.1%) chance of flooding from rivers or the sea per year. In addition, and as also demonstrated in Figure 4.2 below, approximately 90% of the site is located within an area demonstrated to be at very low risk of flooding from surface water sources. There are areas within the northeast and northwest of the site, and adjacent to the southern boundary, that are highlighted to be at high risk of flooding from this source, however it is noted that the proposed dwellings will be located outside of these areas of risk. In addition, it is noted that a site-wide surface water drainage system will be integrated, further details of which are provided below, which will aid to manage the risk of surface water flooding present at the site. Further to this, it is intended that, where possible, the site levels be engineered such that external areas fall away from building entrances. Where this cannot be achieved, linear interceptor drains will be provided at all building entrances, towards which there will be a positive gradient for surface water to flow.
- 4.23 The Flood Risk Assessment confirms that no potential overland surface water flow paths are indicated to lead onto the site, and any overland flow that may potentially occur as a result of surcharging sewers would likely to be directed away from the site. It is also highlighted that the proposed site-wide surface water drainage strategy has been designed to accommodate a 1 in 100-year +45% climate change storm event. This will aid to ensure that the risk of flooding associated with sewer surcharge will be low. In addition to this, it is highlighted that, whilst a review of the baseline conditions at the site suggests a medium risk of groundwater flooding at the site, the layout of the proposed development and intended incorporation of the surface water drainage system set out below, with aid to ensure the risk of flooding at the site will be low. In addition, the risk of flooding from reservoirs, canals and other artificial sources is confirmed to be very low.

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



- 4.24 The proposed surface water drainage network, set out within the Drainage Strategy prepared by Ramboll, seeks to manage surface water runoff generated within the northern and southern sections

of the site separately. Within the northern section, it is intended that two surface water attenuation areas be provided, one in the northeastern corner of the site, and one along the western boundary. At the street level, permeable paving / tarmac and rain gardens would be incorporated within all driveways and access roads. Surface water would be stored within the attenuation areas prior to its discharge to an existing culvert that runs beneath Foxhole Lane to the west, and which discharges to an unnamed watercourse, also located to the west of the site, and which flows in an approximate east to west direction. Discharge from the northern section of the site to the existing culvert and unnamed watercourse would be restricted to the calculated 1 in 2-year greenfield runoff rate of 44 litres/second. For the southern section of the site, which includes the area within the centre of the site that is not designated for housing, it is intended that surface water runoff be attenuated within a series of attenuation areas, in addition to permeable paving / tarmac and rain gardens, as per the northern section of the site. Attenuation features to be incorporated within the southern section of the site will discharge to an existing ditch present at the southern boundary of the site at a rate restricted to the calculated 1 in 2-year greenfield runoff rate of 46 litres/second. The proposed attenuation features and surface water drainage network have been designed to ensure that surface water runoff generated on the site in the post-development context is adequately managed up to and including the 1 in 100 year +45% climate change storm event. Details of the treatment of attenuated surface water runoff and the maintenance of the proposed sustainable drainage features are provided in the Drainage Strategy, which accompanies this submission.

Reducing Water Consumption

- 4.25 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.
- 4.26 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 of no more than 85 litres per person per day, based on the water efficiency calculator for new dwellings provided in Appendix A of Part G of the Building Regulations. Full details of the water consumption calculations are provided in Appendix A2. It should be noted that, whilst examples of fittings that may be specified as part of the proposed development are included within Appendix A2, the calculations undertaken here are indicative only, and the specification of internal sanitation fittings will be confirmed as part of a Reserved Matters application.
- 4.27 Table 4.1 provides an example of the consumption rates that may be targeted for sanitation fittings in order to achieve an internal water consumption rate of no more than 85 litres per person per day, subject to changes at later detailed design stages.

Table 4.1 Proposed water use

Fitting	Consumption
Low volume dual flush toilets	4.0 litres (full) / 2.6 litres (part)
Wash hand basin tap	2.0 litres per minute
Kitchen sink tap	6.0 litres per minute
Bath (where fitted)	130.0 litres capacity (to overflow)
Shower	6.0 litres per minute
Washing machine	5.6 litres/kg dry load
Dishwasher	1.0 litres/place setting

- 4.28 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. Rainwater harvesting or greywater systems may also be employed to serve internal, non-potable water demands, such as toilet flushing. The potential to incorporate systems of this type will continue to be explored as part of the detailed design stage.
- 4.29 For the non-domestic element of the proposed development, it is recommended that water-efficient fittings, such as low flush volume toilets and low water use spray taps, be provided to aid the minimisation of internal water consumption. It is also recommended that rainwater harvesting be employed, with collected water used in toilet flushing and other non-potable applications, such as the irrigation of soft landscaping. Additional measures may also be considered for incorporation during the detailed design stage, such as the employment of leak detection systems and solenoid shut-off valves controlled with PIR systems.
- 4.30 Further to this, it is recommended that drought-resistant and drought-tolerant species be incorporated within the proposed Landscape Strategy, where appropriate, to reduce external water demand.

Materials and Waste

- 4.31 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.

- 4.32 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.
- 4.33 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.
- 4.34 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.
- 4.35 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.
- 4.36 Consideration has been given to the reduction and recycling of waste during both the construction and operation phases.
- 4.37 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".
- 4.38 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 and the non-domestic building. 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 dwelling to be delivered as part of the proposed development, as well as the non-domestic building.

Tackling Increased Temperatures and Drought

- 4.39 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 facades of the dwellings and non-domestic building 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 and non-domestic building.
 - Internal heat gains will be minimised through the use of energy efficient lighting and equipment, the anticipated employment electric-only heating systems, such as air source heat pump (ASHP) technology, and the insulation of hot water distribution pipework to prevent heat loss into the dwelling spaces and the occupiable spaces of the non-domestic building.
- 4.40 It is anticipated that detailed overheating assessments will be undertaken for the proposed development at the detailed design stage to ensure the potential risk of overheating is sufficiently mitigated. This will aid to inform any further mitigation measures that may be required to reduce this risk.

Ecology and Landscape

- 4.41 The Arboricultural Implications Report, prepared by SJA Trees, confirms that no statutory or non-statutory nature conservation designations are present within the site, and that there are no woodlands within or abutting the site that are classified as 'Ancient'. It is also confirmed that no trees present within the site are covered by a tree preservation order (TPO).
- 4.42 In order to facilitate the delivery of the proposed development, it will be necessary to partially remove four groups of trees and two hedges that are present within or adjacent to the site in the existing case. However, it is highlighted that no mature trees, category 'A' or 'B' trees, or trees of high landscape or biodiversity value are to be removed. Similarly, none of the main arboricultural features of the site are to be removed. It is considered that the proposed partial removal of four groups of trees and two hedges will represent no alteration to the main arboricultural features of the site, and will result only a minor alteration to the overall arboricultural character of the site, and that there will be no significant adverse impact on the arboricultural character and appearance of the local landscape as a result of the proposed development.
- 4.43 Proposed pruning of trees that are to be retained is minor in extent, and it is noted that any potential incursions into the root protection areas (RPAs) of the retained trees would be minor, subject to the implementation of the measures recommended on the Tree Protection Plan included within the

appendices of the Arboricultural Implications Report. This will ensure that no significant or long-term damage to the root systems of retained trees, or the rooting environments within which they are situated, will occur. It is also considered that none of the proposed dwellings are likely to be shaded by the retained trees to an extent that would interfere with their reasonable use by future occupiers. Similarly, it is considered that the sizes and dispositions of the proposed private gardens will ensure they will not be unduly shaded, and that sufficient levels of daylight and sunlight will be achieved.

- 4.44 The Ecological Appraisal, prepared by Aspect Ecology, confirms that no statutory or non-statutory nature conservation designations are present within the site. The nearest statutory designated site is Blunts Wood and Paige's Meadow Local Nature Reserve (LNR), located approximately 5.6km to the northeast of the site. Further to this, Ashenground and Bolnore Woods LNR is located approximately 5.8km to the east. The closest European designation to the site is Ashdown Forest Special Area of Conservation (SAC) and Special Protection Area (SPA) located approximately 16km to the northeast. The nearest non-statutory designation to the site is the Colwood Lane Designated Road Verge, located approximately 0.85km to the northwest of the site. The next nearest non-statutory designated site is Seven Acre Hanger Local Wildlife Site (LWS), approximately 1.65km northeast of the site. It is considered that all statutory and non-statutory nature conservation designations are well separated from the site and, given the scale and nature of the proposed development, in addition to the provision of extensive areas of open space that will accommodate much of the associated recreational activity, the identified designated sites are unlikely to be adversely affected.
- 4.45 The closest area of Ancient Woodland to the site is Nailards Wood Ancient Replanted Woodland (ARW), 180m to the northwest of the site, and Hangar Wood Ancient and Semi Natural Woodland (ASNW), located 190m to the west. No Ancient Woodland or notable or veteran trees are located within or adjacent to the site, and are therefore unlikely to be adversely affected by the proposals. A number of areas of woodland present within the site are identified as Priority Habitat, including one area of woodland at the northwestern boundary, and two areas of woodland at the western boundary of the northern development parcel. Further to this, a number of native hedgerows and treelines present within the site are designated as Priority Habitats. The proposed development has followed the mitigation hierarchy, with habitats forming important ecological features to largely be retained as part of the scheme, which will ensure significant habitat losses are avoided. Built development will be focused within areas of lower value habitat, predominantly formed by modified grassland, with losses of these habitats, which do not form important ecological features, addressed as part of the overall balance of biodiversity net gain. All areas of woodland present within the site boundaries will be unaffected by the proposed development, with the intention to retain them in full within open space surrounding the northern development parcel. Supplementary tree and shrub planting will also be delivered to enhance these areas of woodland. Similarly, the existing hedgerows and lines of trees will be largely retained, with any hedgerow losses limited to short sections in order to facilitate road and pedestrian access and to accommodate small areas of the built form of the northern development

parcel. New hedgerow planting will be provided as part of the proposed Landscape Strategy to compensate for any hedgerow losses.

4.46 The existing building within the site has been assessed as having negligible suitability for roosting bats, with no evidence of this species recorded during surveys undertaken as part of the Ecological Appraisal. A number of trees within the site and immediate surroundings, however, have been identified as potentially suitable for roosting bats. Similarly, a number of the habitats present have been identified as potentially suitable for supporting foraging and commuting bats. It is highlighted within the Ecological Appraisal that all trees within the site are to be retained as part of the proposed development, and that the vast majority of the woodland margins and hedgerows within the site are also to be retained. Substantial buffers of open space are also to be retained along the northern and northwestern boundaries of the site associated with the woodland edges and treelined hedgerows present. Accordingly, the main features of importance for roosting, foraging and commuting bats will be maintained, whilst habitat creation and enhancement with proposed open space should increase the value of these areas for bats. A sensitive lighting scheme will be implemented as part of the proposed development to ensure these areas remain suitable for light sensitive species.

4.47 The site contains suitable habitat for Dormouse, particularly within the areas containing hedgerows and wooded vegetation. It is noted that the majority of these habitats are to be retained under the proposed development, with the exception of short lengths of hedgerow, which are to be removed to facilitate road and pedestrian accesses. It is highlighted that these sections would make up only a small proportion of the habitat resources of a single Dormouse, and that the creation of gaps within these hedgerows would be unlikely to impact on connectivity across the site, particularly in light of the fact that the remainder of the hedgerow network is to be fully retained. Further to this, new woodland and shrub planting within the area of open space will provide new habitat opportunities, and will compensate for minor habitat losses, thus providing an increase in suitable habitat areas for Dormouse. The habitats present within the site are unsuitable for Water Vole and Otter, and these species are considered to be absent, or do not form a constraint to the proposed development. No evidence of any other protected, rare or notable mammal species was recorded within the site. There is potential, however, for habitat losses arising from the proposed development having significant effects on Hedgehog. It is noted that the provision of new gardens and open space will aid to mitigate this, however, and that precautionary safeguards are recommended to minimise the risk of harm to this species, and other mammals that may be present within the site. Further to this, the site contains areas of suitable habitat for reptiles, including Slow-worm and Grass Snake. As part of the proposed development areas suitable for reptiles may be maintained and enhanced along field margins, and these areas will be located within an open space buffer to be established with a mixture of grassland, scrub, woodland and wetland habitats, which will form enhanced habitat for reptiles. One offsite pond has been identified as supporting populations for Great Crested Newt and whilst this pond will not be directly affected by the proposed development, it is noted, however, that given the presence of suitable terrestrial habitat and the proximity of this pond, Great Crested Newts may be present within

the site. It is highlighted within the Ecological Appraisal that the identified off-site pond is bordered by offsite woodland, and that Great Crested Newts are also likely to benefit from new habitat creation including wildflower grassland establishment, tree and shrub planting and wetland habitats as part of the drainage strategy. Accordingly, and subject to the appropriate protection of higher value habitats including woodlands and hedgerows, as well as long-term favourable management, the conservation status of this species will be maintained. The site is considered to support a diverse assemblage of birds, albeit with species primarily associated with the hedgerows and woodland areas, and almost no breeding activity recorded within the open fields. It is therefore considered that the bird assemblage is unlikely to be significantly impacted by the proposed development. No evidence for the presence of any protected, rare or notable invertebrate species was recorded within the site, and it is therefore considered unlikely that the proposed development will result in significant harm to any protected, rare or notable invertebrate populations.

- 4.48 A number of mitigation measures are recommended within the Ecological Appraisal to ensure harm to habitats and species as a result of the proposed development are minimised, including:
- The protection of all hedgerows and trees to be retained in line with standard arboricultural best practice (BS5837:2012) during construction.
 - New hedgerow planting will be provided to compensate for minor losses of sections of hedgerows.
 - Employment of a sensitive lighting strategy, with light-spill onto retained and newly created habitat to be minimised as far as possible, in line with good practice guidance.
 - Updated badger surveys prior to the commencement of site works to confirm the current status of Badger at the site.
 - Undertaking of vegetation clearance along hedgerows under a European Protected Species (EPS) development licence to ensure no harm to Dormouse.
 - Safeguards will be implemented during the clearance of vegetation, including the sensitive timing of works to avoid the peak hibernation or breeding periods, and the undertaking of works under ecological supervision.
 - Provision of replacement habitat, through the delivery of new tree and shrub planting at the margins of the site, to compensate for losses of Dormouse habitat. Nest boxes may also be provided in retained habitat areas to increase breeding opportunities for this species.
 - Undertaking of works in accordance with District Licensing to minimise adverse impacts on Great Crested Newt, and to deliver maximum benefits for this species.

- Undertaking of reptile translocation exercises to ensure reptiles are relocated to suitable areas of retained or nearby habitat during construction.
- Undertaking of the clearance of vegetation suitable for nesting birds outside the bird-nesting season (1st March to 31st August, inclusive). Where is this 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.
- Employment of safeguards for small mammals, such as the provision of means of escape for any trenches left open overnight and the dismantling of piles of material present onsite by hand.
- Safeguards will be implemented to prevent against pollution arising from potential run-off or pollution events during construction, including:
 - Provision of holes within garden fences or under gates to ensure access to suitable foraging habitats for Hedgehog and other small mammals.

4.49 The following enhancements are also recommended within the Ecological Appraisal:

- Delivery of new planting, comprising native species of local provenance, where practicable. Where non-native species are proposed, these should include species of value to wildlife, such as varieties listed on the RHS' 'Plants for Pollinators' database, providing a nectar source for bees and other pollinating insects.
- Creation of wildflower grassland within areas of open space. Within recreation and amenity areas, consideration can be given to seeding of flowering lawns. This will provide a further flowering and pollen resource for invertebrates.
- Provision of scrub habitat along the woodland margins, hedgerows and within grassland areas, to form valuable ecotone habitats for a range of wildlife, including reptiles, small mammals and invertebrates.
- Potential creation of wetland habitats as part of the proposed surface water management strategy. Such measures will benefit a range of wetland species including birds, aquatic invertebrates and amphibians whilst also helping to attenuate surface water run-off.
- Delivery of new lengths of hedgerow along the boundaries of green space and around built development areas. Existing hedgerows should also be subject to supplementary planting where necessary to fill gaps and strengthen the integrity of the hedgerow.
- Integration of bat and bird boxes throughout the proposed development, including on new buildings and retained trees.

- Retaining of a proportion of deadwood arising from vegetation clearance 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.
- Incorporation of bee bricks and insect boxes to provide nesting opportunities for declining populations of non-swarming solitary bee populations and other invertebrates

4.50 The Illustrative Landscape Strategy, prepared by SLR, is shown in Figure 4.3.

Figure 4.3 Proposed Landscape Strategy



- 4.51 It is concluded within the Biodiversity Net Gain (BNG) Assessment report, prepared by Aspect Ecology that, through the delivery of the habitats and features within the Landscape Strategy set out above, the proposed development will result in a net gain in habitat and hedgerow units within the site boundaries. At the outline planning stage, it is anticipated that the net gains in biodiversity that may be achieved are in excess of 10% for habitats and hedgerows, as required by national and Mid Sussex District Council policy
- 4.52 In addition to the above, it is confirmed within the Landscape and Visual Appraisal (LVA), prepared by SLR, that whilst negative landscape and visual effects would arise as a result of the proposed development of the site, these effects would be highly localised, owing to the intention to deliver the built form on areas of low ground. The enclosure of the site by well-established vegetation and its situation on the edge of the existing settlement of Bolney will also help to reduce these effects. It is also highlighted that visual effects arising from the proposed development would reduce over time, as the proposed planting would soften views of the built form of the development.

Air Quality

- 4.53 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).
- 4.54 As detailed within the Air Quality Assessment, prepared by RSK, the main likely effects on air quality during the construction phase of the proposed development are related to fugitive dust and exhaust emissions from construction vehicles and plant. A number of measures are recommended within the Air Quality Assessment for implementation during the construction phase to mitigate the potential impacts of construction activities on local air quality. These measures, which include the development and implementation of a Dust Management Plan (DMP), the avoidance of using diesel- or petrol-powered generators, and the covering of vehicles entering and exiting the site, will be set out within a Construction Environmental Management Plan (CEMP). It is considered that, through the implementation of the measures set out within the Air Quality Assessment, the residual impacts of the construction activities and associated vehicles and plant on local air quality will be negligible.
- 4.55 An assessment of the potential operational impacts on local air quality has also been undertaken. This assessment compares the annual mean nitrogen dioxide (NO₂) concentrations between two scenarios: 2031 without proposed development; and 2031 with proposed development. The percentage changes relative to the air quality objective is considered, and the magnitude of impact classified in line with the Environmental Protection UK (EPUK) – Institute of Air Quality Management (IAQM) guidance. The assessment concludes that changes in annual mean NO₂ levels as a result of the proposed development will be 0% of the air quality assessment level (AQAL), and potential impacts on nearby sensitive receptors will therefore be negligible. Similarly, it is not anticipated that

the hourly mean NO₂ objective would be exceeded prior to or when the proposed development becomes operational. With respect to particulate matter (PM₁₀ and PM_{2.5}), it is noted that, in the anticipated opening year of 2031, the annual mean PM₁₀ and PM_{2.5} concentrations will be well below the relevant Air Quality Standard (AQS) objectives. As for NO₂, the assessment compares the annual mean PM₁₀ and PM_{2.5} concentrations with and without the proposed development in 2031, and it is concluded that the proposed development is not predicted to cause any new exceedances of the annual PM₁₀ or PM_{2.5} objectives. Potential impacts associated with particulate matter emissions on nearby sensitive receptors are therefore concluded to be negligible. In addition, it is noted that electric vehicle charging will be provided for the residential units, and that electric heat pump technology, rather than significant stationary combustion sources, such as combined heat and power (CHP) plant, are proposed to deliver space and water heating. This will also ensure that the air quality impacts of the proposed development are reduced. Further to this, in consideration of the baseline conditions at the site, it is concluded that future site users are unlikely to be exposed to poor ambient air quality, and that the overall air quality impact of the proposed development will be not significant.

- 4.56 Based on the information contained within the Air Quality Assessment, it is considered that, should the appropriate mitigation measures be implemented, the proposed development will comply with national and local planning policies, and that there are therefore no air quality-related constraints for the development.

Noise Pollution

- 4.57 As detailed within the Noise Impact Assessment, prepared by RSK Acoustics Limited, the dominant source of noise affecting the proposed development site is road traffic present on the A23 to the east, Foxhole Lane to the west, and Cowfold Road (A272) to the south. As part of the Noise Impact Assessment, a Site Suitability Assessment was undertaken to the requirements of BS 8233:2014, and in line with World Health Organisation (WHO) Guidelines to determine the potential levels of internal and external noise at locations across the proposed development site. The results of the Site Suitability Assessment indicate that, in order for all dwellings to achieve the internal design targets specified within BS 8233:2014, and by WHO, standard glazing products accompanied by a suitable acoustically treated trickle ventilator, would be required.
- 4.58 As part of the Noise Impact Assessment, the potential risk of overheating has also been considered, through the employment of the simplified method of overheating assessment set out within Approved Document O of the Building Regulations. This assessment indicates that the noise levels present at the site would likely allow for partially open windows to be employed for ventilation purposes during a potential overheating scenario. It is noted that proposed dwellings situated in close proximity to Cowfold Road (A272) within the southern portion of the site would be subjected to the highest levels of noise and that, as these noise levels may exceed the criteria set out in Approved Document O, there is potential that additional forms of ventilation or cooling may be required. This is subject to confirmation following the final design, and input from an overheating specialist.

4.59 The results of the Noise Impact Assessment indicate that the levels of noise projected to be achieved within external amenity areas are likely to comply with the upper design targets specified within BS 8233:2014.

4.60 With respect to the levels of noise projected to be generated as a result of development traffic movements, whilst there is likely to be an increase in both the short and long term, the magnitude of change in noise levels at the site will be of minor and negligible impact, respectively, in accordance with the Design Manual for Roads and Bridges (DMRB). Predicted noise levels are anticipated to fall below the Significant Observed Adverse Effect Level (SOAEL) at sensitive receptor locations, and are therefore not considered to be significant.

4.61 Overall, it is considered that the predicted noise levels at the site will fall within the relevant noise design targets and are of a magnitude suitable for the nature of the proposed development. In consideration of the outline nature of the application, it is recommended that the principles of good acoustic design be adopted within the final masterplan. These considerations should include the positioning of buildings to maximise the distance and attenuation to main road sources of noise, as well as the screening effects that may be realised by adjacent properties. The orientation of facades and considerate internal layout designs should also be taken into account during the detailed design stage.

Light Pollution

4.62 As outlined in the Ecological Appraisal, prepared by Aspect Ecology, a sensitive lighting strategy designed in accordance with the recommendations of the Bat Conservation Trust and Institute of Lighting Professionals (2018) Guidance Note 08/18: Bats and artificial lighting in the UK, should be implemented during the construction and operation of the proposed development.

Water Pollution

4.63 The implementation of the proposed surface water drainage network, outlined in the Drainage Strategy, prepared by Ramboll, 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 sustainable drainage systems (SuDS) treatment train, consisting of a series of attenuation areas and the provision of permeable paving / tarmac and rain gardens, has been incorporated within the design to treat surface water before it is discharged to the existing culvert and unnamed watercourse located to the west of the site from the northern portion, and to an existing ditch locate to the south for the site from the southern portion of the proposed development.

4.64 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.

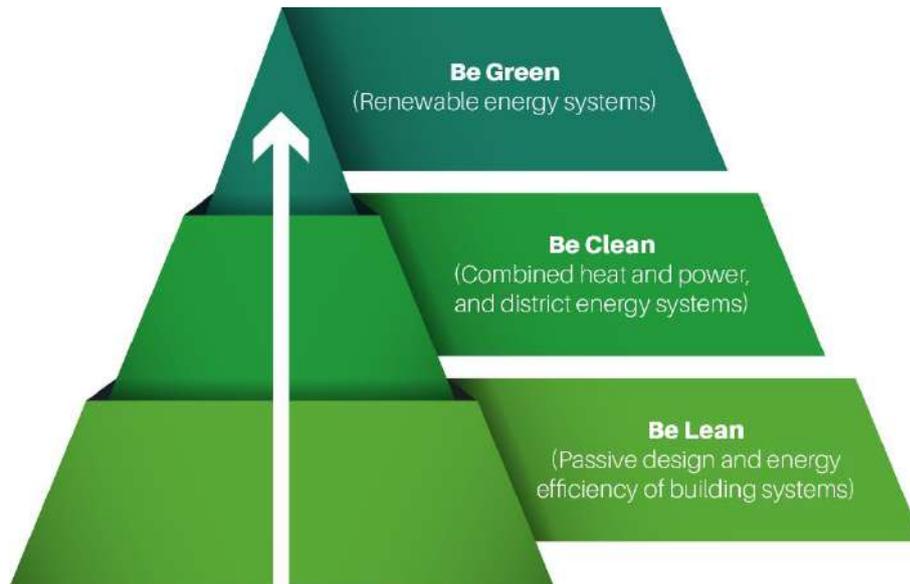
5. ENERGY STRATEGY

- 5.1 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, a comprehensive energy and carbon dioxide (CO₂) 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 Mid Sussex District Council policies.
- 5.2 In order to maintain a degree of flexibility in meeting the national standards set out in the Building Regulations on carbon and energy performance, as required by Mid Sussex District Council, the measures outlined below describe a potential means of achieving a reduction in CO₂ emissions over the Part L:2021 baseline. Therefore, the final building specification may be subject to change during detailed design, although the overall principles proposed below will be retained to deliver low carbon dwellings and buildings in operation.

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 CO₂ 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 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 As shown in Figure 2.1 above, 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, which align with the anticipated requirements of the upcoming Future Homes Standard, are proposed as a means of limiting heat loss through the dwellings' building fabric.

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	0.13
External wall	0.26	0.18
Roof	0.16	0.13
Windows	1.60 (including frame)	1.20 (including frame)
Doors	1.60	1.00

- 5.11 It is expected that glazing will be double glazed, with a low emissivity coating. Although this has yet to be formally specified, it is anticipated that thermally efficient glazing will be employed, with window U-values of 1.20 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 m³/h/m² 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 comes from 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 low ψ -value 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 Future Homes Standard 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 recommended that space and water heating will be provided by all-electric systems, such as air source heat pumps (ASHPs). This is addressed in more detail in the renewable and low carbon 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.
- Suitable controls will be provided for heating systems, for example through the use of time and temperature zones that are controlled by the suitable arrangement of plumbing and electrical systems.

Non-Domestic

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

5.16 The proposed development will deliver a community facility. The building fabric specification has therefore been driven by the energy demand profile associated with this building uses.

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

5.18 The following U-values, which align with the anticipated requirements of the Future Buildings Standard, are proposed as a means of limiting heat loss through the building fabric of the proposed non-domestic building.

Table 5.2 Proposed non-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	0.13
External wall	0.26	0.18
Roof	0.18	0.11
Windows	1.60 (including frame)	1.40 (including frame)

- 5.19 Subject to confirmation, it is proposed that glazing will be double or triple glazed, 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 1.40 W/m²K or better (including frame).
- 5.20 A high level of air tightness is proposed, where it is recommended that a level equal to or below 5 m³/h/m² 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 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 Future Buildings Standard in order to minimise carbon dioxide emissions as far as possible through the 'Be Lean' stage.
- Low energy LED lighting is recommended to be installed throughout the non-domestic spaces of the proposed development, including daylight dimming and presence detection controls where appropriate.
 - In order to remove the need for fossil fuel combustion on-site, it is intended that space and water heating will be provided by all-electric systems, such as air source heat pump (ASHP) systems. This is addressed in more detail in the renewable energy technology section below.
 - It is recommended that the non-domestic spaces be naturally ventilated during the summer months, with outside air provided via mechanical ventilation with heat recovery (MVHR) during the winter. It is recommended that, where provided, MVHR systems with a specific fan power (SFP) of 1.1 W//s and heat exchanger efficiency of 70% be employed. Toilets should be provided with extract ventilation only, using fans with a specific fan power not greater than 0.3 W//s.
 - Whilst the cooling demands of the non-domestic building will be reduced as far as possible, through the prioritisation of passive means of cooling, it may be necessary in some instances to

employ active cooling within some spaces. Where cooling is required, it is recommended that this be provided using a variable refrigerant flow (VRF) system with a seasonal energy efficiency ratio of no less than 5.0.

- Energy usage should be separately sub-metered to ensure that energy usage can be appropriately measured and managed, based on the end use category.
- It is recommended that variable speed pumps be employed to modulate flow rates as required by demand.
- 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 (DHN) 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 DHN 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. The establishment of a new DHN is capital intensive and, to ensure economic viability, requires areas of high thermal demand density in order to minimise losses and associated costs. A threshold thermal density value of 50 kWh/m² is typically required to ensure viability, as is a location in proximity to an anchor heat load, such as a hospital.

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 a low-density residential settlement to the east. The surrounding area is therefore likely to be characterised by a low heat demand, and it is considered that no anchor heat load is present within the surroundings of the site.

Figure 5.2 Site and surroundings

 Approximate site boundary



- 5.27 There are no existing or proposed district heating networks within close proximity to the 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 as part of the proposed development.
- 5.28 The proposed development will deliver buildings that are designed to comply with the most up to date iteration of the Building Regulations and the upcoming Future Homes and Buildings Standards, which will reduce the energy demand of the buildings. It is anticipated, therefore, that the thermal demand density of the proposed development will be far less than the threshold value stated above. Further to this, densities well in excess of 100 dwellings per hectare are typically required at a minimum to ensure the efficient operation of a DHN. As demonstrated in Figure 2.1 above, the proposed development will not seek to deliver the densities required to support the efficient operation of a DHN.
- 5.29 Therefore, based on the low density of the proposed development, and the costs associated with the establishment of a DHN in a peri-urban location, in combination with the fact that there are no existing or proposed DHNs within close proximity to the site, it is not considered to be feasible to incorporate a DHN as part of the proposed development.

Combined Heat and Power Feasibility

- 5.30 Based on the anticipated timescale of the proposed development and the predicted trajectory of the national electricity grid decarbonisation, the establishment of a CHP network powered by fossil fuels is not considered to be a carbon efficient approach.

- 5.31 It is considered that projected changes to the carbon content of electricity and gas will result in technologies that have lower operational emissions than CHP, and which are able to optimise local energy sources, being the preferred option for serving the heating demands of the built environment. These technologies are likely to be able to offset more carbon emissions than traditional, gas-engine CHP systems.
- 5.32 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.

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

- 5.33 The proposed development has given consideration to renewable and low carbon 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.
- 5.34 In determining the appropriate renewable and low carbon energy 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 storage space requirements for 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 is located within proximity to existing, and will introduce new, residential dwellings, the permitted emissions will be restricted. It is noted that alternative technologies, such as ceramic filters or bag filters, have the potential to significantly reduce the emissions associated with biomass fuels, and this may therefore be explored as the design of the proposed development continues to progress.
 - **Air Source Heat Pumps (ASHP)** – Given the site location and the lack of local existing or proposed heat networks, the use of air source heat pump (ASHP) technology is considered appropriate to serve the space and water heating demands of the proposed dwellings and non-domestic building, in addition to the cooling demands of the proposed non-domestic building where this is required. ASHPs do not produce emissions at the point of use, and do not impact on air quality within their locality. This technology is therefore considered appropriate for the proposed development, and should the intention be to incorporate ASHPs, details of their integration would be provided as part of a Reserved Matters Application. It is noted that, should this type of system be employed to deliver space heating, low temperature systems, such as underfloor heating or low temperature radiators, would be recommended. Furthermore, should

this technology be incorporated within the proposed development, 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)** – As detailed above for air source heat pump (ASHP) technology, the location of the site means that the incorporation of ground source heat pump (GSHP) technology may also be appropriate to serve the space and water heating, and cooling where relevant, demands of the proposed development. Ground temperatures are typically stable throughout the year, and GSHPs are therefore able to provide a consistent level of performance throughout the year. It is highlighted, however, that there are uncertainties concerning the thermal properties of the ground, and that ground investigation and borehole drilling has the potential to be cost prohibitive, with the potential that a suitable energy source is not present. Furthermore, there is potential that the carbon dioxide and energy cost savings arising from the use of GSHP systems may not be significant when compared to that of ASHP systems, particularly as high-grade heat is required to generate domestic hot water. It is also noted that GSHP systems are typically around twice as expensive as ASHP technology, which may therefore make the use of this technology economically unviable. Notwithstanding, the use of GSHP technology is potentially appropriate and feasible within the proposed development, and the potential use of systems of this type will continue to be considered as the detailed design of the proposed development progresses.
- **Photovoltaics (PV)** – This technology is considered to be appropriate for the proposed development, in light of the potential to deliver a proposed layout that includes for dwellings and non-domestic building 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 for 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 Part L:2021 of the Building Regulations and the Future Homes and Future Buildings Standards. As such, it is recommended that the incorporation of PV technology continues to be explored through the detailed design stage and, should this technology be incorporated, details of the PV systems to be employed be provided as part of a Reserved Matters application.
- **Solar Thermal Hot Water (STHW)** – This technology may also be considered appropriate for the proposed development, in light of the potential to deliver dwellings and non-domestic building with areas of unobstructed southeast to south-west facing roof space. The incorporation of this technology can contribute to the meeting of a building's domestic hot water demand, and this technology can be employed effectively alongside a range of heating systems. It is noted that the incorporation of this technology would need to account for the requirements of other technologies that may be employed, such as heat pump or PV systems. In addition to this, the

potential for hot water demand to fall outside the energy generating period for STHW systems should be accounted for, as this may result in a reduced ability for this technology to significantly reduce carbon dioxide emissions during operation. The potential incorporation of this technology within the proposed development will continue to be explored throughout the detailed design stage, and should this technology be included for, details of the systems will be provided as part of a Reserved Matters Application.

- **Wind Turbines** – Wind turbines may be employed to harness the kinetic energy of wind to generate electricity on-site. The employment of this technology should account for the need for a steady source of wind that does not have an uneven direction. This technology is typically incorporated at the roof level of buildings that are significantly higher than their immediate surroundings, or within an open area, to ensure disruption to prevailing winds is minimised. When accounting for the nature of the proposed development and the area within which it is situated, it is considered that the incorporation of this technology is inappropriate.

5.35 Based on the information set out above, it is recommended that air source heat pump (ASHP) systems and rooftop photovoltaic (PV) panels be employed to serve the space and water heating demands of the proposed dwellings and non-domestic building, as well as the cooling demands of the non-domestic building where relevant, and to generate carbon free electricity on-site. The incorporation of these technologies will aid the achievement of a significant reduction of carbon emissions in operation when compared to the Part L:2021 of the Building Regulations baseline, which is in line with the aspirations of the proposed scheme, as well as the requirements of both the adopted Mid Sussex District Plan 2014 – 2031, and the emerging policies set out within the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications).

6. SUMMARY

- 6.1 This Sustainability & Energy Statement provides an overview as to how the development of the Land at Foxhole Farm, Bolney contributes to sustainable development in the context of the strategic, design and construction considerations.
- 6.2 Consideration has been given to Chapter 14 of the National Planning Policy Framework (NPPF), the Mid Sussex District Plan 2014 – 2031, as well as the Mid Sussex Design Guide Supplementary Planning Document, the Bolney Neighbourhood Plan, and the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications) 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 and low carbon energy technologies, the application will respond directly to the Climate Emergency declared by the Council in July 2019. These measures combine to facilitate significant carbon dioxide emissions savings compared to the Part L:2021 baseline, aiming to significantly exceed the current requirements of Mid Sussex District Council and to align with the draft policies set out within the Mid Sussex District Plan 2021 – 2039 (Regulation 19; with Main Modifications).
- 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;
 - promote the use of sustainable and active modes of transport;
 - reduce the risk of flooding on-site and in the surrounding area;
 - minimise internal water consumption to 85 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;
 - mitigate the risk of overheating;
 - incorporate measures to improve site biodiversity, including biodiverse planting;
 - ensure noise, 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 and non-domestic building, in addition to the cooling demands of the non-domestic building, where relevant;
- utilise renewable technology, such as rooftop photovoltaic panels, to provide renewable electricity; and
- achieve a significant reduction in CO₂ emissions for the proposed dwellings and non-domestic building, 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 Mid Sussex District Council and will provide a development that promotes these principles in operation.

A1. SITE PLAN



A2. WATER USAGE CALCULATOR

Installation Type	Unit of Measure	Capacity/Flow rate (1)	Use Factor (2)	Fixed use (litres/person/day) (3)	Litres/person/day = [(1)x(2)] + (3) (4)
WC (single flush)	Flush Volume (litres)		4.42	0.00	0
WC (dual flush)	Full flush Volume (litres)	4	1.46	0.00	5.84
	Part flush Volume (litres)	2.6	2.96	0.00	7.70
WC (multiple fittings)	Average effective flushing Volume (litres)		4.42	0.00	0
Taps (excluding kitchen/utility room taps)	Flow rate (litres/min)	2.00	1.58	1.58	4.74
Bath (where shower also present)	Capacity to overflow(litres)	130.00	0.11	0.00	14.30
Shower (where bath also present)	Flow Rate(litres / minute)	6.00	4.37	0.00	26.22
Bath Only	Capacity to overflow(litres)		0.50	0.00	0
Shower Only	Flow Rate (litres/minute)		5.60	0.00	0
Kitchen/Utility room sink taps	Flow rate (litres/minute)	6.00	0.44	10.36	13.00
Washing Machine	(Litres/kg dry load)	5.63	2.1	0.00	11.82
Dishwasher	(Litres/place setting)	0.98	3.6	0.00	3.53
Waste disposal unit	(Litres/use)	<input type="checkbox"/> Present	3.08	0.00	0
Water Softener	(Litres/person/day)		1.00	0.00	0
	(5)	Total Calculated use (litres/person/day) = SUM(column 4)			87.15
	(6)	Contribution from greywater (litres/person/day)			0
	(7)	Contribution from rainwater (litres/person/day)			0
	(8)	Normalisation factor			0.91
	(9)	Total internal water consumption = [(5)-(6)-(7)]x(8) (litres/person/day)			79.31
	(10)	External water use			5.0
	(11)	Total water consumption (Building Regulation 17.K) = (9)+(10)(litres/person/day)			84.3

Installation Type	Make/Model (mandatory)	Litres/Person/Day
WC (dual flush)	Grohe Concealed Cistern	13.54
Taps	Vado Basin Mixer	4.74
Baths (shower(s) present)	Renaissance Grove	14.30
Showers (bath(s) present)	Aqualisa CMD100FS Thermostatic	26.22
Kitchen Taps	Reginox Rellini	13.00
Washing Machines	Samsung WW90T684DLH	11.82
Dishwasher	Samsung 2021 Series 11	3.53



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- 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.
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