

Sustainability and Energy Statement

Former Battle of Britain Site, Gravesend

November 2022



Gravesham Borough Council

Turley
Sustainability

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Client
Frontier Estates

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1. Introduction

This Sustainability and Energy Statement has been prepared by Turley to support the full planning application to Gravesham Borough Council for the proposed 64-bed care home at the Former Battle of Britain Site, Gravesend.

This Statement provides detail of the various measures incorporated into the care home proposals to ensure suitable levels of sustainability performance in accordance with local and national planning policy.

1.1 Site Context

Frontier Estates are seeking full planning permission for the “construction of a care home (within Class C2), parking, access, hard and soft landscaping and other associated works”.

The site was previously occupied by the former Battle of Britain public house and is now vacant. It is situated between Gravesend town centre and the A2 and is conveniently positioned for access to the M25 and M2. The site measures approximately 1.1 acres and lies on the corner of Coldharbour Road and New House Lane in a predominantly residential and suburban area.

The site is conveniently located with access to several local amenities, including, convenience stores, a café, a post office, primary schools, a community centre, and a doctor’s surgery. The site overlooks the Shears Green Infant School playing field.

Gravesend is a town in northwest Kent, situated 21 miles southeast of Charing Cross (central London) on the south bank of the River Thames and opposite Tilbury in Essex. A Thames Gateway commuter town, it retains strong links with the River Thames, not least through the Port of London Authority Pilot Station and has witnessed rejuvenation since the advent of High Speed 1 rail services via Gravesend railway station.

1.2 Proposed Development

The proposed development (Figures 1 and 2 overleaf) is for a 64-bedroom care home including external amenity garden space.

1.3 Document Structure

Chapter 2 of this report provides an overview of relevant national and local legislation, planning policy and guidance.

Chapter 3 provides detail of the sustainability and energy strategy of the proposed development, in line with local Planning Policy.

Please note, the terms “carbon”, carbon dioxide (CO₂)” and “greenhouse gas (GHG)” are used interchangeably in this Strategy depending on the terminology of referenced documents.

Figure 1: Proposed Site Plan (Source: Harris Irwin Architects)



Figure 2: CGI of the care home (Source: Harris Irwin Architects)



2. Policy Context

This chapter provides an overview of the relevant sustainability planning policy and guidance from a national and local perspective.

2.1 National Policy

This section sets out a summary of current national guidance and policy in relation to sustainable development.

2.1.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) provides a framework for the development of locally prepared plans and the government's planning policies for England and how these are expected to be applied.

Paragraph 7 of the NPPF states that: *"the purpose of the planning system is to contribute to the achievement of sustainable development"*.

Paragraph 8 explains that, in order to deliver sustainable development, the planning system has three overarching objectives which are interdependent and must be pursued in mutually supportive ways.



An **economic** objective to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and



coordinating the provision of infrastructure.

A **social** objective supporting strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and



An **environmental** objective contributing to protecting and enhancing our natural, built and historic environment; including, making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

These objectives are key to the development of plans and the NPPF sets out a number of key themes for consideration which guide the preparation of local plans and policies, ensuring the delivery of sustainable development.

The July 2021 update to the NPPF recognises the role planning has to play in support of the UK's pursuit of the United Nations Sustainable Development Goals (UNSDGs) which address social progress, economic wellbeing and environmental protection¹. Example UNSDGs are presented in **Figure 3**.

¹ [UN Sustainable Development Goals](#)

Figure 3: Example UN Sustainable Development Goals



2.1.2 Planning Practice Guidance

Planning Practice Guidance (PPG) provides further advice on various planning issues associated with development, including those linked to sustainability and renewable energy and underpins the policies within the NPPF.

PPG is a material consideration in planning decisions and should generally be followed unless there are clear reasons not to. It sets out how local authorities should include policies that protect the local environment and strategies to mitigate and adapt to climate change and supports developments that are functional and adaptable for the future.

2.1.3 National Design Guide

The National Design Guide published in October 2019 and is based on the national planning policy practice guidance and objective for good design as set out in the NPPF. The Guide introduces ten characteristics of well-designed places which work together to create developments Character and Community, while positively addressing environmental issues affecting climate.

2.1.4 Building Regulations Update

Part L Conservation of Fuel and Power – Whilst not planning policy, the Building Regulations (and specifically Approved Document Part L: Conservation of Fuel and Power) set out the

requirements for energy and carbon performance in new buildings.

Periodic updates to these national regulations will drive energy efficiency and carbon reduction improvements. Government has stated that developers will continue to have flexibility in how they meet carbon reduction targets; but that the emphasis is on using a “fabric first” approach.

The *Future Buildings Standard Consultation* and *Government Response to the Future Buildings Consultation* explain how Building Regulations Part L ‘Conservation of Fuel & Power’ standards are tightened via the 2021 update which came into effect June 2022 to require a minimum 27% CO₂ emissions reduction for new non-residential buildings relative to the Part L 2013 standards.

Part S and Part O - In addition, the UK government introduced two new Building Regulations Part S and Part O that also came into effect in June 2022.

New approved document Part S sets out guidance for electric vehicle (EV) charging infrastructure and specifies that EV charge points must be provided for each dwelling (or where the total number of parking spaces is less than each dwelling, all spaces should be provided with an active EV charging point). Any remaining spaces must have cable routes for charge points to be installed. For non-residential car parks with more than 10 spaces, at least one active EV charge point must be provided, with cabling to the remaining 20% of spaces.

Part O sets out new requirements for mitigating overheating, specifying that residential developments must limit unwanted solar gains in the summer and provide means to remove heat. Compliance with part O can be demonstrated using two methods to demonstrate the risk of overheating from rising summer temperatures has been mitigated:

- Following a simplified prescribed glazing and free area ratio; or,
- Use of a Dynamic Simulation Modelling.

2.2 Local Policy

2.2.1 Gravesham Local Plan Core Strategy

The Local Plan Core Strategy was adopted by Gravesham Borough Council on 30th September 2014 to guide development and set out the long-term vision for the future of Gravesham. Key sustainability policies relevant to the proposed development include:

CS01: Sustainable Development – The Council will take a positive approach towards proposals that reflect the presumption in favour of sustainable development contained in the NPPF and in the Core Strategy.

CS11: Transport – New developments should mitigate their impact on the highway and public transport networks. Transport assessments and travel plans should be produced to ensure sustainable opportunities for travel. Key Sites are required to include provision for buses. Proposals which support the development of transport hubs to provide high quality interchange between bus, rail, walking and cycling at Gravesend Town Centre will be supported.

CS12: Green Infrastructure – There will be no net loss of biodiversity in the Borough, and opportunities to enhance, restore and maintain habitats will be sought, in particular within new development. A multifunctional network of green spaces, footpaths, cycle routes and wildlife steppingstones and corridors will be created, protected, enhanced and maintained. Sites designated for their biodiversity value will be protected. Where a negative impact on protected or priority habitats or species cannot be avoided, and where the importance of the development is considered to outweigh the biodiversity impact, compensatory provision will be required either elsewhere on the site or off-site, including measures for ongoing maintenance.

CS18: Climate Change – This policy is broken down into 5 main areas: Flood Risk, Water Quality, Sustainable Drainage and Surface Water Run-Off, Water Demand Management, and Carbon Reduction.

- **Flood Risk** – sequential and exception tests should be carried out to locate development in areas at least risk of flooding. Schemes that do not pass sequential and exception tests will be refused. Proposals in areas at risk of flooding must be accompanied by a Flood Risk Assessment and a Flood Risk Management Plan (if required) to demonstrate that they are adequately defended over their lifetime. New development is expected to reduce the causes and impacts of flooding from all sources where feasible.
- **Water Quality** – the council will support the progressive improvement of water bodies to “good” status over the plan period.
- **Sustainable Drainage** – the council requires that surface water run-off from new development has, as a minimum, no greater adverse impact than the existing use, and that Sustainable Drainage Systems (SUDs) are implemented in all developments where feasible.
- **Water Demand Management** – all new non-residential developments of 1,000 sqm and above should meet the BREEAM “Excellent” standards of water efficiency and include provision for the collection of rainwater. Where developments are unable to meet these standards, permission will only be granted if provision is made for compensatory water savings elsewhere in the Borough.
- **Carbon Reduction** – proposals for development on key sites should include proposals for low carbon and renewable energy generation, including combined heat and power. Where not included, applicants must submit evidence which demonstrates that compliance is not technically or financially feasible, or that improved fabric energy efficiency or other allowable solutions will deliver carbon savings.

CS19: Development and Design Principles – New development should incorporate sustainable construction techniques, be adaptable to changing lifestyles, and be resilient to the effects of climate change. This should be achieved through the following:

- Development should take account of guidance set out in Building for Life 12 and the Kent Design guide;
- To encourage sustainable travel, enhance Green Grid links and encourage healthier lifestyles - new development should be well connected to places that people want to use, including the public transport network, local services, and community facilities;
- Adverse impacts from pollution (including noise, air, odour and light pollution, and land contamination), and unacceptable risk to the water environment (including the quality and/or quantity of ground waters, surface waters, wetlands and coastal water systems) should be avoided;
- The Borough's Green Infrastructure network should be protected and enhanced;
- The design and layout of new development should build resilience to the effects of climate change through protection against flood risk, delivering carbon reduction, providing low carbon and renewable energy, and minimising energy consumption and water use; and
- New development should incorporate appropriate facilities for the storage and recycling of waste.

2.3 Supplementary Planning Documents

2.3.1 Kent Design Guide

Gravesham Borough Council have adopted the Design Guide produced by Kent County Council as supplementary planning guidance. The guide contains several sustainability-related considerations such as how the development contributes to:

- Developing on brownfield or recycled land rather than on greenfield sites.
- Promoting more mixed-use development to reduce commuting.
- Reducing car use.
- Reusing buildings and minimising waste during the construction process.
- Designing buildings which are adaptable for different uses over their lifetime.
- Designing and adapting buildings that use less energy to build, heat and light.
- Using materials which take less energy to produce and are easy to recycle.
- Providing recycling facilities for waste in the home and neighbourhood.
- Using water saving devices and natural drainage to prevent depletion of the water table.
- Reducing long term maintenance costs.

2.4 Validation Requirements

The Council's local validation checklist requires applications for more than 10 dwellings to include an Energy / Sustainability Assessment demonstrating:

- How the proposed development will address energy and water consumption, reduce transport impacts, and promote the use of sustainably sourced materials.
- How the proposed building will reduce the CO₂ emissions of the entire scheme.
- How waste collection and recycling facilities will be provided. Larger scale major developments (50 plus homes, or 5,000m² upwards of new commercial floorspace) should demonstrate that the relevant waste collecting authority has been consulted on the final form of facilities proposed.

2.5 Climate Emergency

Gravesham Borough Council passed a motion to declare a Climate Emergency in June 2019 and is committed to becoming net zero by 2030. In December 2021, the council implemented an

ambitious **Climate Change Strategy**², which sets out the council's approach to take action against its own emissions and supporting communities in the borough to reduce their carbon footprint.

2.5.1 Gravesham Borough Council Climate Change Strategy 2022-2030

The Council's **Climate Change Strategy** showcases their commitment to tackling climate change both in council operations and across the borough as a whole. More detailed actions are listed in the strategy, key actions relevant to the proposed development include:

- Implement policy to ensure adequate consideration is given to the impacts on the environment of new development (residential and commercial).
- Ensure that such developments support sustainable living and transport infrastructure and solutions for cycling, walking and low/zero-emission vehicles.
- Develop EV charging infrastructure across the borough, both for resident, business, and general public use.
- Work with partners to reduce and manage the impact of climate change impacts through adaptation, mitigation, sustainable flood risk management and promotion of the benefits of green infrastructure.
- Continue to develop innovative and sustainable waste management solutions and opportunities for waste recycling and disposal.

2.6 Planning Policy Summary

Both local and national policy aims to ensure the delivery of sustainable and well-designed buildings which mitigate and adapt to the impacts of climate change.

The Local Plan complements the NPPF, whilst incorporating notable policy requirements such as

BREEAM 'Excellent' standards for water efficiency and consideration of low carbon and renewable energy generation to ensure development is resilient to climate change. Having declared a climate emergency, climate change and sustainability are likely to be a key focus for Gravesham Borough Council when determining planning applications.

The following sections of this Sustainability and Energy Statement set out the sustainability measures incorporated into the design of the development to ensure the delivery of a sustainable development and address the requirements of local policy.

² <https://www.gravesham.gov.uk/council-democracy/climate-change/2#:~:text=In%20December%202021%2C%20the>

[%20council,their%20emissions%20and%20carbon%20footprint.](#)

3. Sustainability and Energy Strategy

This section summarises the sustainability strategy for the proposed care home at the former Battle of Britain Site, Gravesend.

This section outlines the Sustainability and Energy Strategy for the proposed development, demonstrating how the care home will respond to both national and local planning policy, specifically the requirements of Local Plan **Policies CS01, CS11, CS12, CS18, and CS19**.

In this context, this Sustainability and Energy Statement sets out the various economic, social and environmental benefits associated with the proposed development which are presented under the following headings which reflect the requirements of Local Policy and the NPPF.

3.1 – Sustainable Design

3.2 – Building a Strong and Competitive Economy

3.3 – Promoting Sustainable Transport

3.4 – Promoting Healthy Communities

3.5 – Meeting the Challenge of Climate Change

3.6 – Conserving and Enhancing the Natural Environment

3.1 Sustainable Design

The proposed development has been designed to deliver a sustainable new care home incorporating a range of sustainable design measures to increase material efficiency and reduce waste. These include:

- Designing the building to provide a high thermal mass internally through masonry walls and concrete plank floors, as opposed to structural steel.
- Concrete floor planks will also be used to provide structure for the flat roof on the second floor to support any required renewable energy plant.

3.1.1 Waste Management

Construction Waste Management

Prior to the construction phase a Construction Environmental Management Plan (CEMP) will be developed to ensure the use of measures to minimise waste during the construction phases of the development.

The reduction, reuse and recycling of construction waste is to be prioritised through measures such as avoidance of over-ordering, supervision of deliveries, use of secure materials storage facilities and reuse of materials onsite where feasible.

In addition, the development will be registered with the Considerate Constructors Scheme and achieve certification against the Code of Considerate Practice.

Operational Waste Management

The development will make provision for the storage of non-recyclable waste and recyclable waste including a dedicated external refuse store in accordance with **Policy CS19**.

Full consideration will be given to the Council's waste management infrastructure and services to ensure that the occupiers have the necessary infrastructure to participate in local recycling services.

3.1.2 Circular Economy

The design of the development and specification of materials will give consideration to the principles of the circular economy, for example:

- Designing development to minimise the use of resources and new materials;
- Specification of materials with high recycled content, i.e. recycled steel;
- Use of sustainable materials which are locally sourced from nearby sources; and
- Making use of materials which are easily recyclable and reusable once the building reaches its end of life.

3.2 Building a Strong and Competitive Economy

The proposed development will contribute to positive economic growth for the district through construction and occupation, providing sustainable new homes, supporting the aims of the NPPF.

The economic benefits of construction are well known with considerable direct and indirect positive impacts resulting from new construction.

A study by the Confederation of British Industries (CBI) in February 2020³ demonstrates that construction projects have a significant benefit on the local and wider economy. The report concludes that for every £1 of construction expenditure £2.92 is injected into the economy.

The construction of the care home will therefore provide opportunities for local employment as well as increased revenue locally for materials, services and goods.

3.3 Promoting Sustainable Transport

A transport statement has been prepared by Royal Haskoning DHV summarising the existing conditions in the vicinity of the site, the accessibility of the site relative to local facilities and services, and

sustainable transport measures incorporated into the development.

This section of the report provides a summary of the sustainable access and transport measures available and incorporated into the development.

Walking and Cycling Accessibility – The existing site has a stepped pedestrian access point along New House Lane. The development proposals include pedestrian access points provided from New House Lane and Coldharbour Lane and an internal footpath will connect the two access points.

National Cycle Route (NCR) 177, connecting to Northfleet to the northwest and Strood to the southeast, can be accessed from Hog Lane which is approximately 900m west of the site. NCR1 can also be accessed from Thames Way, approximately 1.4km north of the site, and is a long-distance cycle route connecting to Dover and Colchester.

The development proposals include four Sheffield cycle stands, accommodating a total of eight cycle storage spaces for staff and visitors.

Bus Services – The closest bus stops to the site are located on New House Lane, approximately 35m northeast for eastbound services and 80m northeast for westbound services. Further bus stops are located 280m to the south of the site on Coldharbour Road and 270 northwest of the site on Dene Holm Road.

A summary of the current bus routes and services are listed in Table 1.

Table 1: Bus Routes and Services

Service	Destinations	Frequency
305	Vigo to Northfleet Northfleet to Vigo	One per day
481	Riverview Park to Bluewater Bus Station Bluewater Bus Station to Riverview	1-2 per hour Monday to Saturday Hourly on Sundays

³CBI | [Fine Margins](#)

	Park	
483	Gravesend to Bluewater Bus Station Bluewater Bus Station to Gravesend	2 per hour Monday to Saturday 1-2 per hour on Sundays
735	Gravesend to Temple Embankment to Gravesend	3 per day Monday to Friday 2 per day Monday to Friday
736	Lower Highman to Temple Embankment to Lower Highman	2 per day Monday to Friday

Rail Services – The closest rail station is Gravesend Station, approximately 2.3km north of the site. It is served by Thameslink and Southeastern railway lines and can be accessed via bus routes 481 and 483. The station also contains 280 sheltered cycle storage lockers. The Thameslink service provides direct connection to Rainham and St Alban's City and the Southeastern line provides direct connections to St Pancras International, London Charing Cross, Ramsgate, and Faversham. The Southeastern railway also operates the High Speed 1 (HS1) service providing approximately 23-minute journeys to St Pancras International.

Ebbsfleet International station is located approximately 3.4km northwest of the site, accessible via bus routes 481 and 483 and it has 44 sheltered cycle storage spaces. This station is also served by Southeastern, providing services to St Pancras International, Ashford International, Dover Priory, Faversham, Margate, Sandwich and Ramsgate.

Car parking – The development will include 27 car parking spaces, two of which will be designated disabled spaces. It will also be able to accommodate movement of an ambulance and one of the car parking spaces will be suitable for use by an ambulance. EV charging infrastructure will be

provided in accordance with new part S of the Building Regulations.

Local Services and Amenities – There are several amenities and facilities within walking distance of the site. An ambulance station, GP surgery, pharmacy, catholic church, post office, primary schools and two supermarkets are all located within 1km of the site.

Travel Plan –

A Travel Plan has been prepared to support the application which aims to reduce the dependence of employees using vehicles to travel to the site, promoting sustainable travel choices. A range of measures have been proposed, including:

- A dropped kerb pedestrian crossing on the Site's New House Lane frontage, linking to surrounding pedestrian infrastructure;
- Sheffield cycle Stands for both staff and visitors.
- A staff shower, changing and storage facilities for those that choose to cycle, run/jog or walk to work.
- An Employee Travel Pack containing details of the travel plan coordinator, examples of walking or cycling journeys to destinations such as Gravesend station, Gravesend town centre and local amenities, Public Transport routes and timetables, a list of local transport operators' websites and apps, promotional material highlighting the health and financial benefits of walking and cycling, and information on the development's car-share scheme and other external car share schemes.
- A staff notice board containing details of the travel plan coordinator, a location plan of the site with details of local facilities and public transport services, public transport routes and up-to-date timetables, local cycling routes, car share schemes, and promotion of events such as 'bike to work week'; and
- Proposed 'soft measures, which could include interest free loans for bus and rail tickets, promotion of national events such as 'Bike

Week' or 'Walk to Work Week', a car share database, a guaranteed lift home for car-sharers, a Bicycle User Group, or a Cycle / Walking 'buddy' scheme.

These measures seek to reduce the level of vehicle occupant trips and increase the proportion of movements by sustainable modes of travel.

3.4 Promoting Healthy Communities

Creating a high-quality development that promotes health and wellbeing for residents, staff and visitors is a key aim of the scheme. In this context the design has been developed to enhance the health and wellbeing of the residents.

A key health and wellbeing offering of the care home is the provision of the external amenity spaces. The proposals include a communal garden for residents, staff and visitors to utilise, and individual patios provided for the majority of bedrooms on the ground floor which will lead to circulation footpaths and communal areas.

The proposals also include a small café on the ground floor which will provide a meeting space for

residents and their visitors. The café garden will be split into two public and private spaces with the public, courtyard style garden being accessed from the café and located next to the car park. It will contain a water feature and benches along with planting for privacy. A separate private garden will also be provided with seating and a canopy sail within the central courtyard garden. The central courtyard garden will also contain a 'growing garden' with raised planters for residents to use as an activity space.

In addition, the design of the care home has considered measures to improve internal living environments including:

- Prioritisation of natural ventilation, contributing to good internal air quality;
- Maximisation of natural daylight in occupied areas such as bedrooms and lounges; and
- Utilisation of materials and services that have low emission rates and pollutants.

Figure 4: CGI of the care home (Source: Harris Irwin Architects)



3.5 Climate Change Mitigation and Adaptation

One of the main challenges facing new development is the need to mitigate and adapt to a changing climate. The Government is committed to tackling climate change and in 2019 set out an ambition to extend the UK Carbon reduction target to reduce carbon emissions by 100% (net zero) by 2050, relative to the levels in 1990s.

Climate change will cause the UK to become warmer, winters will become wetter, and summers will become drier. Adapting to this changing climate will impact on the design, construction, location, cost and operation of all new buildings in the next few decades. One of the NPPF's core planning principles is for development to consider climate change adaptation and mitigation during the planning process.

The Core Strategy supports environmentally responsible development with policies to encourage sustainable assessment methods, minimise energy consumption and limit water use. In this context, the following sections outline the key climate change mitigation and adaptation measures considered appropriate for this development based on the latest local and national guidance.

3.5.1 Mitigating Climate Change

Minimising GHG emissions is key to mitigating the effects of development on climate change and moving to a low carbon future.

The following sections set out the proposed measures incorporated within the design to deliver an energy efficient, low carbon development aligning with Policy CS18. All measures are subject to detailed design.

This section demonstrates how the care home will be designed in accordance with the energy hierarchy (**Figure 5**) to utilise enhanced fabric and energy efficiency measures before making use of low carbon renewable energy.

Figure 5: The Energy Hierarchy



The following sections set out the proposed measures to deliver an energy efficient, low carbon development.

Be Lean – Reducing Energy Use

Central to the delivery of low carbon and energy efficient buildings is the 'Fabric First' principle which recognises the most effective way of minimising carbon emissions is to reduce the demand for heat and power through a well-insulated, energy efficient building fabric and services.

Reducing the primary energy demand of a building through the use of an efficient fabric and services is widely regarded as best practice and is therefore the first and most important step to reducing carbon emissions.

This 'fabric first' approach has a number of distinct benefits including:

- Carbon savings delivered are 'locked-in' for the lifetime of the building (60 years or more) rather than the much shorter lifespan (around 25 years) of a renewable energy technology;
- Virtually no maintenance and/or replacement costs to maintain carbon reductions through improved fabric;

- No reliance on an occupier's behaviour to deliver carbon reductions. Achieving carbon savings from renewable energy technologies require education, awareness and often, behavioural changes from occupants.

The following measures to reduce energy use and carbon emissions have been considered in the design of the building:

- Design to promote passive solar gains, maximise natural daylight, sunlight and ventilation;
- Design which aims to optimise natural daylight;
- Target for element u-values and air tightness in accordance with Building Regulations requirements;
- Incorporating high efficiency lighting targeting 100% of all light fittings as LED;
- Use of high efficiency heating systems appropriate to the building use to reduce energy consumption; and
- Where appropriate, specification of high energy efficient equipment will be provided that use less energy and water.

The design of the proposed care home will meet Building Regulations Part L 2021 through a range of enhanced fabric and energy efficiency measures as set out above. The energy strategy has been developed to ensure that comfort for the residents and staff is maintained through the appropriate u values and air tightness levels. The promotion of solar gains and natural daylight will reduce the energy demand of the building and contribute to the health and wellbeing of residents.

Be Clean – Efficient Energy

The next stage of the Energy Hierarchy is the provision of energy efficiently, i.e. from a decentralised energy system such as a Heat Network.

District Heating Networks (DHN) comprise a centralised heat generator, typically a gas fired

Combined Heat and Power (CHP) engine. CHP systems generate electricity and waste heat which can be fed into a network of insulated pipes which deliver low carbon heat to buildings to provide heating and hot water via individual heat transfer units. There are no known heat networks in the vicinity of the proposed development.

The continued decarbonisation of the national electricity network and anticipated changes to the Building Regulations mean that the carbon emission benefits of traditional CHP systems will diminish during their life cycle.

CHP and DHN are therefore unlikely to be incorporated, as carbon emissions associated with electricity are expected to continue to reduce as the grid decarbonises, leading to greater savings in carbon emissions over the lifetime of the development.

Be Green – Low Carbon Renewable Energy

The final stage of the energy hierarchy is the generation of on-site low carbon renewable energy.

At this stage it is anticipated that the proposed new development will meet Part L 2021 Building Regulations through a fabric first approach to design and construction.

Consideration has been given to the provision of low carbon renewable energy systems as part of the initial design of the care home to further reduce carbon emissions and/or generate onsite low carbon energy in accordance with **Policies CS18 and CS19**.

A review of potential low carbon renewable energy technologies which may be suitable for inclusion in building designs have been completed below.

Solar Photovoltaics (PV)

Solar photovoltaic (PV) systems generate zero carbon electricity from sunlight and are well suited to buildings with unobstructed south-east to south-west facing roof space. Excess power is exported to the grid or can be harnessed using battery storage.

Solar PV is suitable for the care home and is relatively low maintenance and easily integrated into the building design.

Solar Thermal

Solar thermal systems generate zero carbon hot water from sunlight in a similar manner to Solar PV. They require insulated tanks to store the hot water and have greater maintenance demands than solar PV given the need to ensure anti-freeze in the pipework is topped up every few years. They can be a highly cost-effective technology. This technology is likely to be feasible for the care home, however roof space may be better suited to solar PV which can meet a consistent electricity demand and require less maintenance.

Heat Pumps

Heat pumps provide low carbon heat sourced either from the ground (Ground Source Heat Pumps) or air (Air Source Heat Pumps). They require main electricity to operate but typically generate at around three units of heat for every unit of electricity that is consumed. Because the heat generated is at a lower temperature than that produced by a gas boiler, heat pumps typically require underfloor heating or over-sized radiators to ensure the heat is distributed efficiently.

GSHP – GSHP systems tap into the earth's energy store and can provide both heating and cooling. There is high capital cost associated with the boreholes for GSHP, these also require a large space to locate underground pipework and associated plant around the site, therefore due to lack of space and cost this technology is not considered viable.

WSHP - There is no suitable watercourse nearby, therefore this technology is not considered feasible.

ASHP – ASHP extracts thermal energy from the surrounding air and transfer it to a working fluid. The relatively minimal maintenance, efficiency and capital cost of these systems means that it is suitable for incorporation into the care home's energy strategy. Heat pumps draw from grid electricity and deliver carbon savings due to the increasing amount of renewable in the UK power generation mix.

ASHPs can be suitable for new energy efficient developments.

Biomass

Biomass provides useable heat from a range of solid fuels including wood and straw. The installation of a biomass boiler, flue and associated fuel store require significant space and is not considered appropriate for the development.

Wind Turbines

Wind turbines have been ruled out for this development due to space limitations on site. Additionally, the close proximity to residential areas as well as implications with respect to noise emissions and risk impacting local birds and bat populations would likely raise planning issues.

Small Scale Hydro Power

Hydroelectric power is the generation of electric power from the movement of water. A hydroelectric facility requires a dependable flow of water and a reasonable height for the water to fall. Due to the lack of suitable nearby watercourses, this option has been discounted.

Summary

To further reduce carbon emissions, the provision of low carbon renewable energy systems will be considered during the detailed design of the care home.

3.5.2 Climate Change Adaptation

To ensure the proposed development is resilient to the effects of climate change in accordance with **Policy CS19**, it will incorporate a number of key design measures in response to the climate predictions set out in the UKCP18 projections.

The UKCP18 projections demonstrate that over time the UK will experience increased summer and winter temperatures with significantly increased maximum temperatures, reduced summer rainfall, increased winter rainfall and an increase in extreme weather events.

The UK Climate Change Risk Assessment updated in 2021 identifies key risks associated with the effects

of climate change and in relation to the built environment and the proposed development these include reduce summer water availability, increased winter rainfall and increased summer temperatures.

This section identifies key measures which will be incorporated into the design of the proposed care home development to adapt to climate change.

Water Efficiency

Potable water is an increasingly important natural resource and with the majority of the UK classed as being in an area of moderate or severe water stress, the conservation of water is becoming a more significant sustainability metric.

The care home will aim to reduce water consumption through a range of water efficiency measures such as:

- Reduced flush WCs;
- Low flow fittings; and
- Water efficient equipment within the café, staff kitchenette and server areas.

The development will meet the BREEAM “Excellent” standard under the Wat01 calculation, in line with **Policy CS18** of the Gravesend Local Plan Core Strategy. This requires the development to achieve a 12.5% reduction against the baseline for water consumption.

The BREEAM Wat 01 calculator tool has been provided separately. The document demonstrates the minimum flow rates that would need to be achieved to meet the 12.5% and secure the BREEAM “Excellent” standard for Water Efficiency in accordance with **Policy CS18**. The following assumptions have been made:

- There will be no baths other than assisted ones which can be excluded for operational purposes;
- A waste disposal unit will not be required;
- Domestic sized dishwashers will not be required but a commercial sized

dishwashers will be installed where necessary; and

- There will be no domestic sized washing machines but, to account for a worst-case scenario, it is assumed that commercial laundry equipment will be installed.

The final measures for water efficiency, flow rates and water usage will be confirmed at technical design.

In addition, water butts will be utilised for the collection of rainwater for garden watering in accordance with **Policy CS18** requiring provision to be made for rainwater collection.

Flood Risk and Drainage

A Flood Risk Assessment (FRA) and Drainage Strategy was prepared by Fairhurst to support the full planning application for the site in accordance with **Policy CS18** and **CS19**. The FRA confirms that the site is within Flood Zone 1 and is considered to not be at risk of flooding from rivers, the sea or surface water. It also confirms that, as such, no flood risk mitigation or compensation measures will be required.

The drainage proposals will be designed to account for climate change to help mitigate its effects on surface water run-off. Sustainable Drainage Systems (SuDS) such as soakaways will be incorporated into the drainage design, to ensure that flooding is mitigated for the 1 in 100 year event, plus 40% climate change allowance.

In accordance with **Policy CS18**, the drainage strategy proposed also includes permeable parking spaces with geocellular infiltration blankets beneath to drain the car park and roof areas. Further SUDs measures may be considered at detailed design.

Further information can be viewed in the accompanying Flood Risk Assessment and Drainage Strategy.

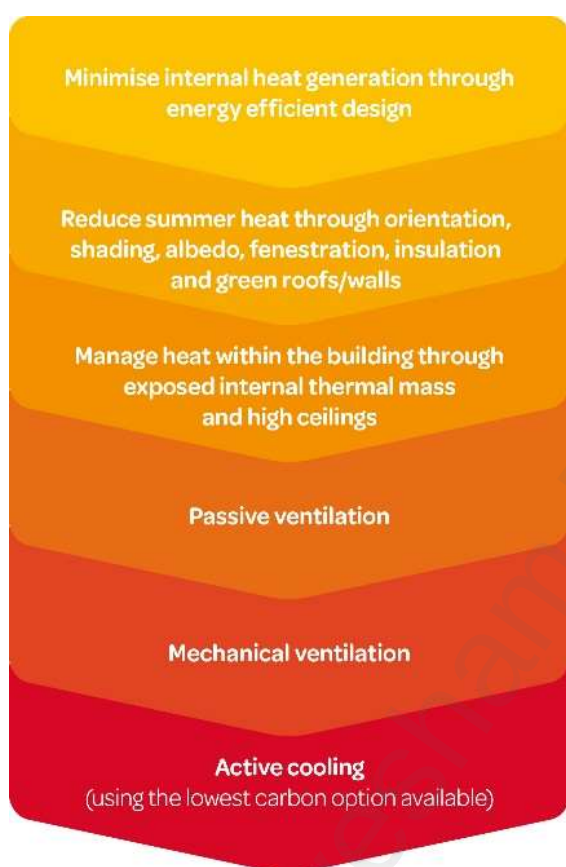
Overheating

With increasing summer temperatures there is an increasing risk of overheating which could adversely affect building occupants and users. The proposed

development will be designed in accordance with the Building Regulations Part O Overheating and proposals will incorporate passive solar design measures.

Additionally, the proposed development has been designed in accordance with the cooling hierarchy, as shown in **Figure 6**, which aims to reduce any potential overheating in buildings. Incorporating the cooling hierarchy into the design process means buildings will be better equipped to manage their cooling needs and to adapt to and mitigate climate change.

Figure 6: The Cooling Hierarchy



The detailed design of the care home will consider future climate scenarios and take into account the potential for overheating in areas likely to be at risk, in order to minimise resident's and staff discomfort.

Through the provision of mitigation measures, buildings will be able to adapt to and be resilient to future climatic changes in accordance with **Policy CS19**.

3.6 Conserving and Enhancing the Natural Environment

The proposed development will incorporate measures to support and enhance the environment through consideration of the existing site ecology, including measures to mitigate the impact of the site and enhance site biodiversity, as well as incorporate measures to reduce pollution from the site.

3.6.1 Ecology

A Preliminary Ecological Appraisal of the site has been undertaken by The Landscape Partnership. The Appraisal included a desk study, Phase 1 Habitat Survey and an assessment of the potential of site features to support bats.

The site comprised the site of the former Battle of Britain public house, which has been demolished, leaving the site vacant. The site currently supports ephemeral vegetation in the location of the demolished pub, as well as hardstanding and a grass sward of poor quality. Collectively the habitats within the proposed development site are assessed as being of value at the Parish level.

The Appraisal confirms that the site has potential to support the following protected species or groups of species: breeding birds, terrestrial mammals and bats.

The following avoidance and mitigation measures have been proposed at the site:

Mitigation measures –

- Retention of mature trees and the tree with low bat roost potential;
- Removal of any vegetation outside the nesting bird season; and
- Safeguards during the construction phase to minimise harm to terrestrial mammals.

A number of ecological enhancements have been proposed at the site, which would improve its overall quality for native flora and fauna. These measures are listed below.

Enhancement measures –

- New native hedgerow and tree planting;
- Creation of wildflower areas and habitat piles; and
- Provision of hedgehog tunnels, bat boxes, swift boxes and native planting.

These measures are considered to have an overall beneficial impact on site ecology and biodiversity.

A calculation of Biodiversity Net Gain (BNG) has been carried out by The Landscape Partnership using Defra Metric 3.1. The calculation demonstrates that the landscape proposals would achieve a biodiversity net gain of circa 58%, which meets the **Policy CS12** of the Gravesham Borough Council Local Plan which requires ‘there will be no net loss of biodiversity in the Borough, and opportunities to enhance, restore, re-create and maintain habitats will be sought’.

Further information is available within the Preliminary Ecological Appraisal and Calculation of Biodiversity Net Gain using Defra Metric 3.1 that accompanies the application.

3.6.2 Pollution

The proposed development will aim to minimise any negative impacts on the natural environment considering the impacts of water use, materials, and air quality.

Water

Throughout construction, water quality will be maintained by the following measures:

- Reduce erosion and run-off by minimising land disturbance and leaving vegetation cover where possible;
- Cover skips and trucks loaded with construction materials and continually damp down with low levels of water;
- Use non-toxic paints, solvents and other hazardous materials wherever possible; and
- Segregate, tightly cover and monitor toxic substances to prevent spills and possible site contamination.

To improve water quality during occupation, the surface water drainage strategy will give consideration to measures to minimise pollution run-off.

Air Quality

An Air Quality Assessment has been prepared by Hawkins Environmental to ensure adverse impacts from air pollution can be avoided, in accordance with **Policy CS19**. It confirms that the impact of the proposed development on the local environment is likely to be insignificant and no further assessment is required. Due to the development site being located between several Air Quality Management Areas and only a short distance from the A2, a highly trafficked road, an assessment of the impacts of the local area on the development was deemed necessary.

It was concluded that there would not be a significant increase in pollutant concentrations as a result of the proposed development, so the only mitigation recommendation was that routinely used to control concentration dust. Further details of these measures can be found within the Air Quality Assessment.

It was also not deemed necessary to implement any mitigation to reduce exposure from NO₂ or other pollutant to future occupiers of the development as concentrations of pollutants are below National Air Quality Objectives at the site.

Further information is available within the Air Quality Assessment that accompanies the application.

4. Conclusion

This Sustainability and Energy Statement has been prepared to demonstrate how the proposed care home responds positively to national and local sustainable policy requirements.

This Sustainability and Energy Statement sets out key sustainability measures incorporated at this stage and further measures to be considered during the detailed design of the care home.

Social and Economic Benefits

The development aims to provide a range of social and economic benefits to both the existing community and care home residents, through:

- Provision of a high-quality residential care home to support those in the local area who require it;
- Support to the local community through increased jobs and population;
- Provision of a Travel Plan to provide staff with sustainable and safe transport options;
- A development in a sustainable location with a range of services and amenities within easy walking distance of the site;
- Measures to support active travel such as provision of a dropped kerb pedestrian crossing on New House Lane, Sheffield Cycle stands, and shower facilities, alongside 'soft measures' such as travel

packs, a notice board, loans for bus and rail tickets, promotion of national walking & cycling events, a Bicycle User Group, or a Cycle / Walking 'buddy' scheme.

Environmental Protection and Enhancement

Through a range of design measures the development aims to protect and enhance the local environment, including:

- A design which will consider the embodied carbon associated with construction materials, and select sustainable products where possible to reduce environmental impacts of construction;
- Development designed to prioritise sustainable and active modes of travel including walking and cycling;
- Provision of enhancement measures to provide multi-functional benefits including a biodiversity net gain of circa 58%, an increase in climate resilience, and enhanced recreation value; and,
- Provision of measures through construction and operation of the site to reduce pollution, minimise waste and encourage recycling.

Mitigating and Adapting to Climate Change

In recognition of the climate emergency, the development will incorporate a range of measures to reduce carbon emissions, mitigate the effects of climate change, and to ensure the long-term resilience of the development to the effects of climate change. Measures include:

- Reduced carbon emissions through the use of energy hierarchy, using a fabric first approach to design to reduce energy

demand, helping mitigate the effects of climate change;

- Use of passive design measures will be incorporated to meet the requirements of the Part L 2021 Building Regulations and low carbon renewable energy systems will be considered, such as solar PV and / or ASHPs, to further reduce carbon emissions;
- Water efficiency measures will be incorporated to provide a 12.5% reduction in line with BREEAM Excellent minimum standards for water consumption;
- Incorporation of soakaways and permeable parking spaces with geocellular infiltration blankets to ensure that post development surface water-run off is no higher than pre-development run-off for the 1 in 100-year storm event plus a 40% allowance for climate change.

Frontier Estates is committed to the delivery of a sustainable care home which includes measures to provide economic and social benefits; protect and enhance the environment, and mitigate and adapt to the effects of climate change.

Turley Birmingham

9 Colmore Row,
Birmingham
B3 2BJ

T 0121 233 0902



Essexham Borough Council

Turley
Sustainability