
Energy and Sustainability Statement

Barnsley West
For
Strata Homes/ Sterling Capitol

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Unit 1 Waterside
Old Boston Road
Wetherby
LS22 5NB

Telephone: 01937 585082
Email: wetherby@hydrock.com

BREEAM Consultancy
Registered CIBSE Low Carbon Consultants

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1.0 Executive Summary

1.1 General

The statement addresses the sustainability and energy requirements of the proposed development which comprises of a mixed-use development to provide up to 1,760 new homes and up employment land for Use Classes E/B2/B8. In addition, the proposals will provide:

- i) A Link Road between M1, Junction 37 and the A635, Barugh Green Road (The section from Higham Common Road to Barugh Green Road)
- ii) A new primary school
- iii) Small local shops and community facilities
- iv) Strategic areas of greenspace and wildlife corridors

The statement has been prepared to address planning policies CC1 'Climate Change' and CC2 'Sustainable Design and Construction' and RE1 'Low Carbon and Renewable Energy' of the 'Barnsley Local Plan 2014 -2035'.

All developments will prioritise an overall reduction in energy demand as the most effective way in which to minimise environmental impacts associated with energy use. The use of energy efficient technologies, in addition to low carbon and renewable technologies to supply the remaining energy shall result in lower greenhouse gas emissions as compared with the use of conventional alternatives.

The proposed development shall seek to follow the energy hierarchy to reduce carbon emissions through firstly the incorporation of energy reduction and energy efficiency measures, before investigating the feasibility of a number of potentially appropriate renewable and low carbon energy technologies, before finally considering conventional energy solutions for any remaining generation.

The phases of development will include for non-domestic building uses and will aim for a BREEAM Very Good rating where practical and cost-effective. A BREEAM pre-assessment will be undertaken prior to the reserved matters applications to ascertain if BREEAM Very Good can be achieved.

2.0 Introduction

2.1 General

The statement addresses the sustainability and energy requirements of the proposed development which comprises of a mixed-use development to provide up to 1,760 new homes and up employment land for Use Classes E/B2/B8. In addition, the proposals will provide:

- i) A Link Road between M1, Junction 37 and the A635, Barugh Green Road (The section from Higham Common Road to Barugh Green Road)
- ii) A new primary school
- iii) Small local shops and community facilities
- iv) Strategic areas of greenspace and wildlife corridors

The statement has been prepared to address planning policies CC1 'Climate Change' and CC2 'Sustainable Design and Construction' and RE1 'Low Carbon and Renewable Energy' of the 'Barnsley Local Plan 2019'.

2.2 Proposed Development

The proposed development comprises two planning applications, detailed below:

Application 1

Hybrid application for residential development for 1,760 dwellings, including:

- i) Full planning permission for:
 - earthworks to create development platforms;
 - strategic drainage ponds and associated drainage infrastructure;
 - construction of a new link road;
 - strategic landscaping and ecological areas;
 - demolition of existing buildings;
 - works to Hermit Lane and;
 - erection of residential development comprising 229 dwellings.
- ii) Outline planning permission for:
 - Residential development comprising 1,531 dwellings;
 - new primary school;
 - small shops and community facilities and;
 - associated infrastructure works.

Application 2

Hybrid application for employment development, including:

- i) Full planning permission for:
 - earthworks to create development platforms;
 - strategic drainage ponds and associated drainage infrastructure; and
 - location of strategic landscaping and ecological areas.

- ii) Outline planning permission for:
- employment land (use classes E/B2/B8) and;
 - associated infrastructure works.

3.0 Policy Review

3.1 Summary Review of Planning Policy Context

This section summarises the policy context for the development sustainability statement, with a focus upon energy and carbon reduction and the various policies from international to local level, that aim to reduce greenhouse gas emissions, particularly carbon dioxide, and hence contribute to sustainable development and are identified below.

3.2 National Planning Policy Framework

The National Planning Policy Framework (February 2019) sets out the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so. It provides a framework within which local people and their accountable councils can produce their own local and neighbourhood plans, which reflect the needs and priorities of their communities.

At the heart of the National Planning Policy Framework is a 'presumption in favour of sustainable development', which requires Local Plans to meet development needs, unless any adverse impacts would significantly and demonstrably outweigh the benefits. National Guidance says that:

- i) The purpose of the planning system is to contribute towards achieving sustainable development.
- ii) Sustainable development comprises of economic, social and environmental dimensions, which leads the planning system to perform the following three roles:
 - Economic- contributing to building a strong, responsive and competitive economy.
 - Social- supporting strong, vibrant and healthy communities.
 - Environmental- contributing to protecting and enhancing the natural, built and historic environment.
- iii) These roles are mutually dependent therefore to achieve sustainable development economic, social and environmental gains should be sought jointly through the planning system. Planning should also actively guide development to sustainable solutions.
- iv) In order to achieve sustainable development, improvements in the quality of the built, natural and historic environment, as well as in people's quality of life must be pursued, including (but not limited to): improving the ease of job creation, moving from a net loss of bio diversity to a net gain for nature, replacing poor design with better design, improving working, living, travelling and leisure conditions for people and widening the choice of high quality homes.
- v) Plans and decisions must take into account local circumstances to ensure sustainable development is responded to appropriately in different areas.
- vi) At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking. For plan-making this means that:
 - Local Planning Authorities should positively seek opportunities to meet the development needs of their area; and

- Local Plans should meet objectively assessed needs, with sufficient flexibility to adapt to rapid change, unless: any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this framework taken as a whole; or specific policies in this Framework indicate development should be restricted.

Planning policies should follow the presumption in favour of sustainable development approach so development which is sustainable can be approved without delay. All plans should set clear policies that will guide how the presumption should be applied locally.

3.3 Local Sustainability Policy

3.1.1 Barnsley Local Plan (Adopted January 2019)

Planning policy CC1 'Climate Change' states:

We will seek to reduce the causes of and adapt to the future impacts of climate change by:

- i) Giving preference to development of previously developed land in sustainable locations;
- ii) Promoting the reduction of greenhouse gas emissions through sustainable design and construction techniques;
- iii) Locating and designing development to reduce the risk of flooding;
- iv) Promoting the use of Sustainable Drainage Systems (SuDS);
- v) Promoting and supporting the delivery of renewable and low carbon energy; and
- vi) Promoting investment in Green Infrastructure to promote and encourage biodiversity gain.

Planning policy CC2 'Sustainable Design and Construction' states:

Development will be expected to minimise resource and energy consumption through the inclusion of sustainable design and construction features, where this is technically feasible and viable.

All non-residential development will be expected, to achieve a minimum standard of BREEAM 'Very Good' (or any future national equivalent). This should be supported by preliminary assessments at planning application stage.

Planning policy RE1 'Low Carbon and Renewable Energy' states:

All developments will be expected to seek to incorporate initially appropriate design measures, and thereafter decentralised, renewable or low carbon energy sources in order to reduce carbon dioxide emissions and should at least achieve the appropriate carbon compliance targets as defined in the Building Regulations.

We will allow development that produces renewable energy as long as there is no material harm upon:

- i) The character of the landscape and appearance of the area;
- ii) Living conditions;

- iii) Biodiversity, Geodiversity and water quality;
- iv) Heritage assets, their settings and cultural features and areas;
- v) Key views of, from or to scenic landmarks or landscape features;
- vi) Highway safety, or
- vii) Infrastructure including radar.

In assessing effect, we will consider appropriate mitigation which could reduce harm to an acceptable level.

Proposals will be expected to include information regarding their efficiency. Proposals must be accompanied by information that shows how the local environment will be protected, and that the site will be restored when production ends.

3.1.2 Declared Climate Emergency

In September 2019 Barnsley Cabinet declared a climate emergency, with two programmes to help Barnsley reduce its carbon emissions.

Zero 40

Barnsley Council will become net carbon zero by 2040, or earlier if possible. Zero 40 will focus on improvements in the council's environmental performance. This will be measured by reducing carbon emissions against agreed milestones. The end result will see us being net zero carbon in our work by 2040.

Zero 45

The borough of Barnsley Council will become net zero carbon by 2045. Zero 45 is a programme where the council will help the whole of Barnsley including its residents, communities, partners and businesses to support Barnsley's changeover to be net zero carbon by 2045.

4.0 CC1 Climate Change

4.1 Policy

Planning policy CC1 'Climate Change' states:

We will seek to reduce the causes of and adapt to the future impacts of climate change by:

- i) Giving preference to development of previously developed land in sustainable locations;
- ii) Promoting the reduction of greenhouse gas emissions through sustainable design and construction techniques;
- iii) Locating and designing development to reduce the risk of flooding;
- iv) Promoting the use of Sustainable Drainage Systems (SuDS);
- v) Promoting and supporting the delivery of renewable and low carbon energy; and
- vi) Promoting investment in Green Infrastructure to promote and encourage biodiversity gain.

4.2 Sustainable Design and Construction

See section 5.2 regarding the proposed sustainable design and construction features to reduce energy consumption for the proposed development where technically feasible and viable.

All developments will prioritise an overall reduction in energy demand as the most effective way in which to minimise environmental impacts associated with energy use. The use of energy efficient technologies, in addition to low carbon and renewable technologies to supply the remaining energy shall result in lower greenhouse gas emissions as compared with the use of conventional alternatives.

For the initial phase 1 it is unlikely that low or zero carbon technologies would be required to achieve compliance with Building Regulations.

For future phases, the proposed design and servicing solutions will be dependent upon the Building Regulations applicable at the time, and the expected push towards decarbonisation of the electricity network.

Following the incorporation of energy reduction and energy efficiency measures, the feasibility of a number of potentially appropriate renewable and low carbon energy technologies shall be investigated for the proposed development during detailed design of future phases.

A summary of possible low and zero carbon technologies and their expected suitability for the scheme is provided below

Technology	Suitable?	Observations
Air source heat pumps	√	Suitable to generate space heating and cooling for the future phases of the development, and contribute towards the Domestic Hot Water (DHW) demand

		(building type dependent). Currently expected to be incorporated in the non-domestic elements, but may be considered suitable for inclusion in the domestic properties from 2025 onwards. Will be considered further at detailed design.
Ground source heat pumps	X	Possible and likely to be suitable land area to incorporate, but unlikely to be financially viable when compared to the air source heat pump option.
Combined Heat and Power	X	Could contribute towards the DHW demand for the non-domestic development where significant year round demand is in place. Unlikely to align with future building regulations requirements.
Biomass	X	Possible, but unlikely to be financially viable when compared to the air source heat pump option. Could be considered on a building-by-building basis. Unlikely to align with future building regulations requirements.
Solar water heating	√	Available roof space likely to be available, however carbon savings would be low compared to other technologies to contribute towards the DHW. Will be considered further at detailed design.
Photovoltaics	√	Available roof space likely to be available. Would be a suitable technology to be compatible with air source heat pump integration. Will be considered further at detailed design.
Wind turbines	X	Poor yield within urbanised area and possible planning issues. Unlikely to be financially viable when compared to the air source heat pump and solar photovoltaics option.
Minewater	X	Geology beneath the proposed development may support the use of minewater for geothermal projects using open loop heat exchangers. However, would require significant further investigation not currently considered a viable option.

It is expected that the incorporation of air source heat pumps and/ or solar photovoltaics would be the most feasible low and zero carbon technologies for the proposed development. The integration of these technologies and compliance with Building Regulations will be considered during detailed design of each future phase.

The proposed demand reduction, energy efficiency and low and zero carbon technologies incorporated will be building type dependent, and to adhere to the standards of Building Regulations current at the time of design and construction.

4.3 Flood Risk and Sustainable Drainage

The Flood Risk Assessment (FRA) has been undertaken by JPG for the proposed development.

The report confirms that the site is located within Flood Zone 1 and NPPF Technical Guidance states that residential and Industrial/Commercial uses are considered Less Vulnerable in terms of flood risk and are appropriate in Flood Zone 1. The FRA has considered all potential sources of flood risk at the site and concluded these to be low for all sources.

The JPG report confirms that on site ground investigation has been carried out and confirms the site is mixed underlying material consisting of rock, cohesive and fill material which would be unsuitable for infiltration drainage methods on this site.

Based on the drainage hierarchy the most appropriate location for discharge of surface water from the development would be into an onsite watercourse and land drainage ditch system. Where levels dictate the surface water infrastructure drainage will be a gravity system. However, some areas may need to be pumped due to the levels.

Surface Water Discharge from the site will be restricted to greenfield run off rate of 3.900 l/s for all storms up to the 1 in 100-year event plus climate change. Attenuation storage will be provided on site in attenuation basins and the pipe network.

4.4 Biodiversity

The outline Biodiversity and Ecological Management Plan (BEMP) has been undertaken by Tetra-Tech for the proposed development.

This report details the proposed habitats to be retained and created during Phase 1 and future Phases.

4.5 Transport and Travel Planning

The development will provide and encourage a range of sustainable transport options including walking, cycling and opportunities for public transport.

5.0 CC2 Sustainable Design and Construction

5.1 Policy

Planning policy CC2 'Sustainable Design and Construction' states:

Development will be expected to minimise resource and energy consumption through the inclusion of sustainable design and construction features, where this is technically feasible and viable.

All non-residential development will be expected, to achieve a minimum standard of BREEAM 'Very Good' (or any future national equivalent). This should be supported by preliminary assessments at planning application stage.

5.2 Sustainable Design and Construction

All developments will prioritise an overall reduction in energy demand as the most effective way in which to minimise environmental impacts associated with energy use. The use of energy efficient technologies, in addition to low carbon and renewable technologies to supply the remaining energy shall result in lower greenhouse gas emissions as compared with the use of conventional alternatives.

The proposed development shall seek to follow the energy hierarchy to reduce carbon emissions through the following sequence of priorities:

- i) Energy reduction
- ii) Energy efficiency
- iii) Low or Renewable energy

5.2.1 Phase 1a Domestic Properties

For the erection of Phase 1a residential development comprising 229 dwellings, the following demand reduction measures are expected to be proposed to reduce initial energy consumption:

- i) Building Envelope U-values significantly better than limiting Building Regulation values
- ii) Double Glazed window
- iii) Composite front and rear doors
- iv) Reduction in air permeability

The following energy efficiency measures are expected to be incorporated to ensure efficient use of energy:

- i) High efficiency combi gas boiler
- ii) Low energy lighting
- iii) Low Specific Fan Power (SFP) and intermittent fans

Based upon previous developments, this specification shall result in providing a home with an approximate 5.00% reduction in carbon emissions Dwelling Emission Rate (DER) over the

Target Emission Rate (TER). It is also expected to achieve an approximate reduction of 12.50% in the Dwelling Fabric Energy Efficiency Rate (DFEE) over the Target Energy Efficiency Rate (TFEE) that must also be achieved to pass current Building Regulations.

For the Phase 1a residential development EVCP (Electric Vehicle Charging Points) will be included for each dwelling.

For the initial phase 1a it is unlikely that low or zero carbon technologies would be required to achieve compliance with Building Regulations.

5.2.2 Future Phases of Domestic and Non-domestic Properties

For future phases, the proposed design and servicing solutions will be dependent upon the Building Regulations applicable at the time, and the expected push towards decarbonisation of the electricity network.

For the erection of future Phases of residential and non-domestic properties, the following demand reduction measures are expected to be proposed to reduce initial energy consumption:

- i) Improve U-values of the external envelope.
- ii) Improve U-value of glazing.
- iii) Improve air permeability of the envelope.

The following energy efficiency measures are expected to be incorporated to ensure efficient use of energy:

- i) Improve efficiency of the space heating and cooling.
- ii) Use of energy efficient lighting.
- iii) Use of intelligent lighting controls.
- iv) Use of variable speed pumps, fans and drives to match supply and demand.
- v) Improve efficiency of heat recovery to mechanical ventilation systems.

Following the incorporation of energy reduction and energy efficiency measures, the feasibility of a number of potentially appropriate renewable and low carbon energy technologies shall be investigated for the proposed development during detailed design.

See section 4.2 regarding the possible low and zero carbon technologies to reduce carbon emissions for the proposed development where technically feasible and viable.

The installation of Electric Vehicle Charging Points (EVCP) will be considered for the future phases of employment development.

5.3 BREEAM

The initial phase 1a of development includes for full planning application for residential development only, therefore the BREEAM requirement is not applicable.

The proposed subsequent phases of development will include for non-domestic building uses and will aim for a BREEAM Very Good rating where practical and cost-effective. A BREEAM pre-assessment will be undertaken prior to the reserved matters applications to ascertain if BREEAM Very Good can be achieved.

6.0 RE1 Low Carbon and Renewable Energy

6.1 Policy

Planning policy RE1 'Low Carbon and Renewable Energy' states:

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6.2 Low and Zero Carbon Technologies

See section 4.2 regarding the possible low and zero carbon technologies to reduce carbon emissions for the proposed development where technically feasible and viable.

7.0 Summary

The statement has been prepared to address planning policies CC1 'Climate Change' and CC2 'Sustainable Design and Construction' and RE1 'Low Carbon and Renewable Energy' of the 'Barnsley Local Plan 2019'.

All developments will prioritise an overall reduction in energy demand as the most effective way in which to minimise environmental impacts associated with energy use. The use of energy efficient technologies, in addition to low carbon and renewable technologies to supply the remaining energy shall result in lower greenhouse gas emissions as compared with the use of conventional alternatives.

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