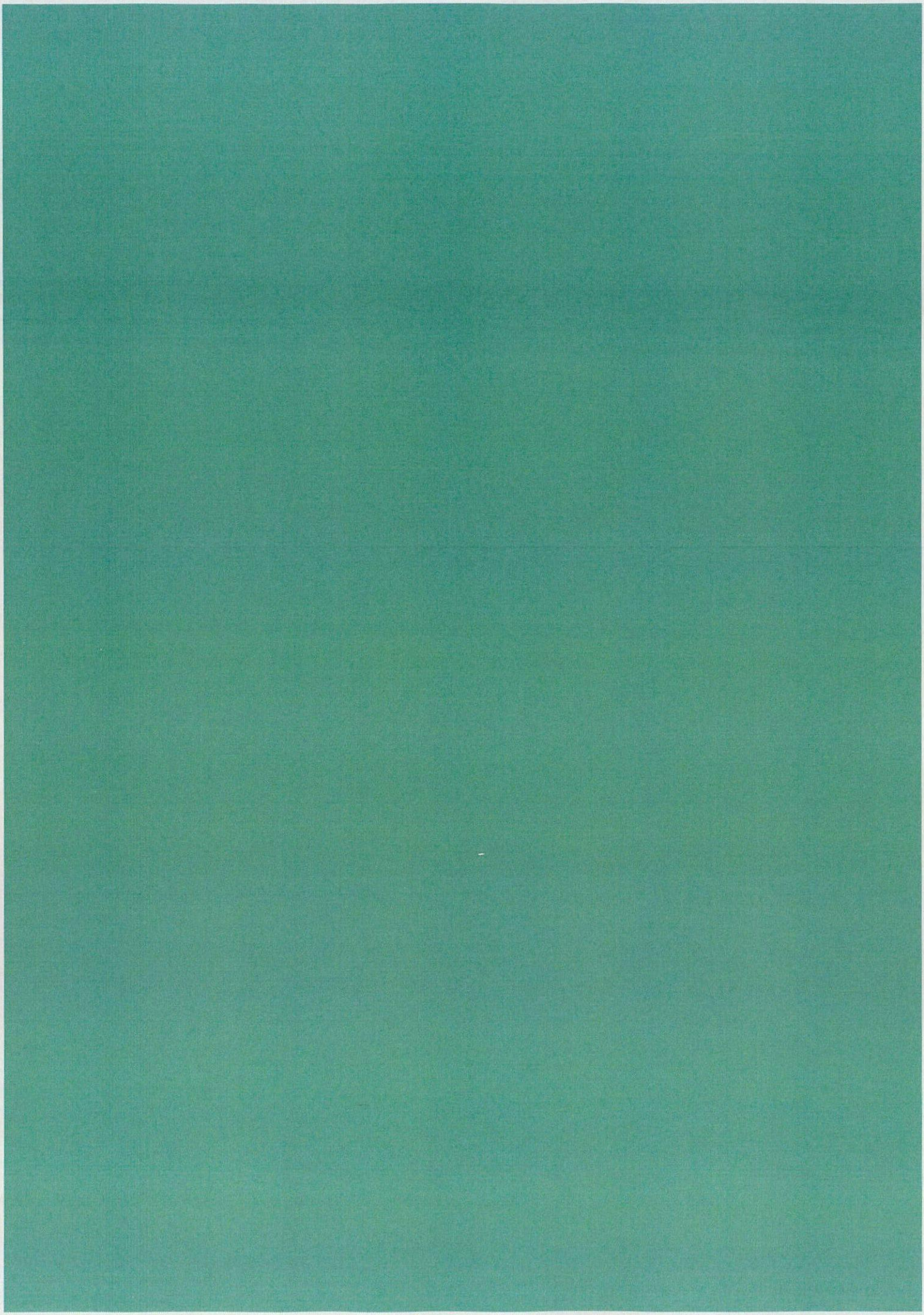
Harworth Estates

# Former North Gawber Colliery Site, Barnsley

## Sustainability and Energy Statement

TURLEYASSOCIATES



# Contents

Office Address:
9 Colmore Row
Birmingham
B3 2BJ

Telephone:
0121 233 0902

HARQ2007

Date of issue:
March 2014

Status: Final

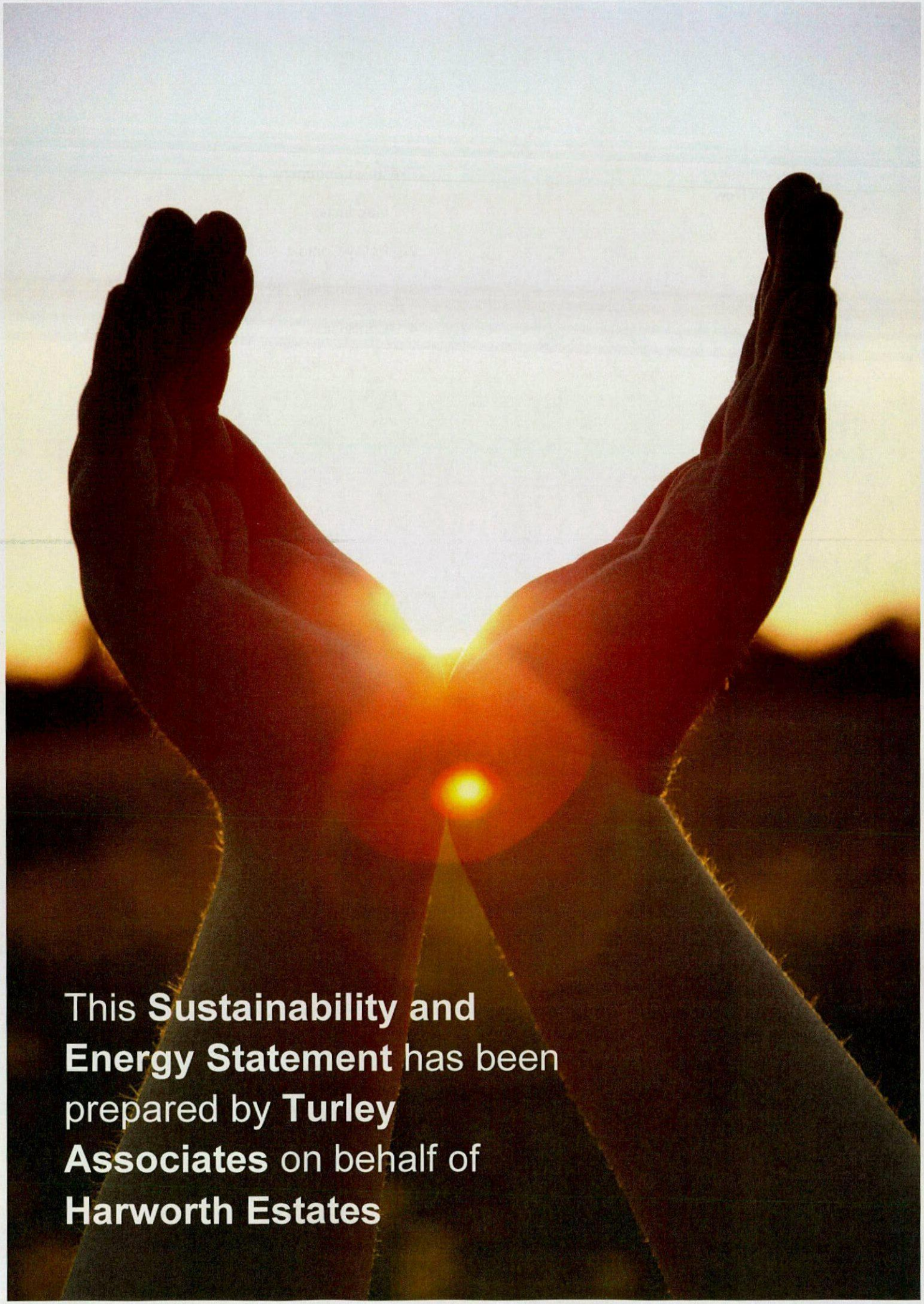
Executive Summary

1. Introduction 6

2. Policy Context 8

3. Sustainability at North Gawber 14

4. Conclusion 24


This **Sustainability and Energy Statement** has been prepared by **Turley Associates** on behalf of **Harworth Estates**

# Executive Summary

This Sustainability and Energy Statement has been prepared in support of a planning application for residential development of up to 325 new homes at the Former North Gawber Colliery Site, Barnsley.

## Achieving Sustainable Development

This report demonstrates how the proposed development will meet the sustainability requirements of the National Planning Policy Framework and local planning policy.

The adopted Core Strategy for Barnsley identifies the need to avoid adverse contributions to climate change and adopt good design encouraging energy efficiency, renewable energy and sustainable construction.

In this context the scheme presents proposals that aim to effectively balance economic, social and environmental impacts in accordance with national and local sustainability priorities and latest best practice.

The schemes key sustainability benefits include:

## Economic

- The regeneration of the former colliery site which is in in a **sustainable location** with good access to local amenities established local public transport, cycle and pedestrian routes.
- The development will positively contribute to the growth of the local economy bringing **new family homes and jobs**.

## Environmental

- **Energy efficient** and **low carbon** new homes through a **fabric first approach** to design and construction in accordance with best practice, recent NPPG guidance and **Part L 2013** Building Regulations.
- Total carbon emissions reduction equivalent to **>15%** through holistic **design**, **construction**, **travel** and **water** reduction measures.
- Development in an area of **low flood risk** with no adverse impacts on flooding including creation of onsite surface water attenuation.
- Transformation of a disused colliery site, creating new ecological habitats and **green infrastructure** including new hedgerow and tree planting providing significant climate change mitigation and adaptation benefits.
- **Effective waste management**, during remediation, construction and occupation encouraging reuse and recycling.

## Social

- A masterplan designed in accordance with the principles of Safer Places and Secure by Design to deliver **a safe and secure environment** for people to live and play.
- Provision of new **green public open space** and centrally located **children's play area**. Enhancements to Mapplewell village centre including enhanced street furniture cycle stands to improve pedestrian experience.
- Comfortable living environments that will optimise natural daylighting and ventilation and be resilient and **adaptive to a changing climate**.

# 1 Introduction

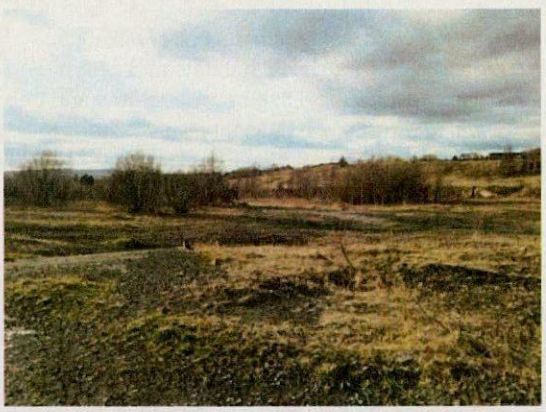
This Sustainability and Energy Statement is submitted on behalf of the applicant, Harworth Estates, in support of a hybrid planning application including up to 325 new homes at the Former North Gawber Colliery Site.

Creating sustainable and low carbon development is a key aim of national and adopted local development policy.

This Sustainability and Energy Statement has been prepared to demonstrate how the policies of the National Planning Policy Framework and the local Sustainability policies of Barnsley Council (The Council) have been addressed within the proposals to ensure the delivery of a high quality and sustainable new development.

## Site and Surroundings

The site is located in Mapplewell, North of Barnsley close to the A61 and junction 36 of the M1. The site is a former colliery site which extends to approximately 38 hectares.



The site currently comprises a predominantly open area of colliery spoils, demolition rubble, derelict areas and birch land scrub with low quality vegetation and habitats. The site is disused and has been since 1988 when mining activities ceased on the site with the closure of the North Gawber Colliery.

The site slopes from north to south and there are known to be 3 mine shafts on the site. It is bounded by residential developments to the East and West with an industrial estate to the North. To the South of the site there is open grassland and woodland.

## Existing Planning Permission

The site currently has outline planning permission for up to 400 residential units and retirement apartments which was granted in 2012.

## Proposed Development

The applicant is submitting a new hybrid application which seeks full planning consent for the site restoration and regrading works with outline planning permission for residential development of up to 325 dwellings with all matters reserved except for partial means of access, which will be taken from Carr Green Lane.

Further details regarding the development proposals are provided within both the Design and Access Statement and the Planning Statement that accompany the application.

The proposed development will deliver **well designed and energy efficiency new homes** and support local **sustainability priorities**

# 2 Policy Context

This section of the report outlines the main national and local policies that have informed the Sustainability and Energy Strategy for the proposed development at the Former North Gawber Colliery Site.

## UK Sustainable Development Strategy

In 2005, the Government published an updated strategy for implementing sustainable development across the UK.

This strategy acts as an overarching document from which a range of specific policies and legislation was derived. Although published in 2005, the strategy has taken a recently renewed focus in light of the Government's definition of Sustainable Development in the NPPF. -

One of the key aims of this strategy is to recognise the threats of climate change and ensure that the UK develops a strategy to mitigate and adapt to this phenomenon.

The document established five key principles that will underpin the national sustainable development strategy:

1. **Living within Environmental Limits;**
2. **Ensuring a Strong, Healthy and Just Society;**
3. **Achieving a Sustainable Economy;**
4. **Promoting Good Governance; and**
5. **Using sound science responsibly.**

The strategy will be implemented at a national level through the development of more specific strategies at a Government department or sector level. With regards to planning and the built environment, this document set the basis for the development of plans and policies that promote development that mitigates and adapts to climate change.

## Climate Change Act

The Climate Change Act (2008) sets a legally binding target for reducing UK $CO_2$ emissions by least 80% on 1990 levels by 2050.

It established the Committee on Climate Change, which is responsible for setting binding interim carbon budgets for the Government over successive five year periods.

The first three carbon budgets were announced in the Budget 2009, resulting in an interim target of a 34% reduction in $CO_2$ equivalent emissions on 1990 levels by 2020.

## UK Carbon Plan

In 2011, the Government published an updated plan setting out how the UK will achieve decarbonisation and make the transition to a low carbon economy. It outlines the strategy the Government will take to securing energy supply, improving energy efficiency and meeting the country's carbon emission reduction targets. It sets this objective within a framework of mitigating and adapting to climate change and maintaining energy security in a way that minimises costs and maximises benefits to the economy.

With regards to development, the Carbon Plan presents the government's approach to promoting the delivery of low carbon, resilient and adaptive buildings and enabling sustainable transportation as positively contributing to these national carbon reduction targets.

## Building Regulations

Whilst not planning policy, the Building Regulations, and specifically Approved Documents Part L Conservation of Fuel and Power, are relevant as they determine the energy efficiency and carbon emission standards required by new buildings.

The primary mechanism for reducing carbon emissions in new development is progressive changes to Part L and in 2006 the government established a policy whereby these regulations would be gradually improved in phases from 2006, 2010, 2013, 2016 and 2019, commonly referred to as the Zero Carbon Buildings Policy. At the end of 2010 the latest changes to these regulations came into force requiring new homes to deliver an approximate 25% reduction in carbon emissions compared to equivalent 2006 standards.

In July this year the Government set out further changes to Part L of the Building Regulations which will be introduced from April 2014 and aim to strike a balance between the commitments to reducing carbon emissions and improving energy efficiency

and ensuring that the overall effect of regulation upon consumers and businesses does not stifle growth.

For new homes, the changes require a further 6% improvement on 2010 Part L standards, with specific compliance targets differentiated by home type to take advantage of the most cost effective savings.

The Government has stated that house builders will continue to have flexibility in how they meet carbon reduction targets, however, the emphasis of these changes is on using a fabric first approach and this is reinforced through the introduction of a new target for fabric energy efficiency.

## Code for Sustainable Homes and Housing Standards Review

The Code for Sustainable Homes was introduced in 2007 and, for a limited period of time, remains the national recognised standard for the sustainable design and construction of new homes in England and Wales.

Following the publication of the Harman Review into local housing standards in 2012 a Technical Housing Standards Review Group was established to look into existing sustainability standards applied to new housing, including the Code for Sustainable Homes.

On August 20th 2013 the Government published the Housing Standards Review Consultation in relation to the rationalisation of the framework of building regulations and local housing standards.

This sets out that the Government is currently considering implementing the outcomes of the review if one of two ways:

- **A set of 'nationally described standards; or**
- **Fully integrating the standards proposed in the review into the Building Regulations (England).**

The overall aim of this policy is to prevent local and national housing standards being unnecessarily complex and overlapping or contradicting each other, or parts of the Building Regulations.

The consultation proposes that the standards for energy in new homes are set solely through future changes to Part L of the Building Regulations. Supported by new national standards for:

- **Accessibility**
- **Space**
- **Domestic Security**
- **Water Efficiency**

It establishes the Government feels it is no longer appropriate for local plan policies to specify additional standards for how much of the energy use from homes should come from on-site renewables.

With regard to the Code for Sustainable Homes, the Government has confirmed it will wind down the role of the Code in favour of a new regulatory framework.

## National Planning Policy Framework

Following its publication on 27 March 2012, national planning policy is now provided by the NPPF which sets out the government's planning policies for England and how these are expected to be applied. It also sets out the requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so.

The government has made clear its expectation that the planning system should positively embrace well-conceived development to deliver the economic growth necessary and the housing we need to create inclusive and mixed communities.

The presumption in favour of sustainable development is a key thread running through national policy for both plan making and decision taking.

The NPPF states that: '*The purpose of the planning system is to contribute to the achievement of sustainable development*'.

It states clearly that in order to deliver sustainable development, the planning system must perform three distinct roles, aligned to the three pillars of sustainability, which must not be taken in isolation and should be pursued jointly:

**An economic role** – contributing to building 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 and innovation; and by identifying

and coordinating development requirements, including the provision of infrastructure;

**A social role** – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and

**An environmental role** – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

Where a Local Plan is silent, absent or relevant policies are out-of-date then the 'Presumption in Favour of Sustainable Development' can apply.

This policy will ensure that development that meets the objectives of the NPPF is defined as sustainable and should be approved without delay.

### Demonstrating Sustainable Development

Paragraph 6 of the NPPF states that:

*"The purpose of the planning system is to contribute to the achievement of sustainable development. The policies in paragraphs 18 to 219, taken as a whole, constitute the Government's view of what sustainable development in England means in practice for the planning system".*

The policies referred to in Paragraph 6 of the NPPF have been divided into 13 themes;

1 **Building a Strong Competitive Economy**

2 **Ensuring the Vitality of Town Centres**

3 **Supporting a prosperous rural economy**

4 **Promoting sustainable transport**

5 **Supporting high quality communications infrastructure**

6 **Delivering a wide choice of high quality homes**

7 **Requiring good design**

8 **Promoting healthy communities**

9 **Protecting Green Belt Land**

10 **Meeting the challenge of climate change, flooding and coastal change**

11 **Conserving and enhancing the natural environment**

12 **Conserving and enhancing the historic environment**

13 **Facilitating the sustainable use of minerals**

Should a proposed development demonstrate that it is supporting the relevant policies of the NPPF then it is deemed to be 'Sustainable Development'

## National Planning Practice Guidance

The National Planning Practice Guidance (NPPG) supports the NPPF providing advice on how to deliver its policies.

The recently published guidance sets out a number of important points which relate to climate change and sustainability.

In response to the issues of national standards for a building's sustainability as described in the NPPF the NPPG states that any local sustainability requirements "*should form part of a Local Plan following engagement with appropriate partners, and will need to be based on robust and credible evidence and pay careful attention to viability*".

It also states that in this respect, "*planning authorities will need to take account of Government decisions on the Housing Standards Review*".

## The Development Plan

The Development Plan for the application comprises:

- **Barnsley Core Strategy, September 2011**

The Development Plan also includes the adopted Joint Waste Plan:

- **Barnsley, Doncaster and Rotherham Joint Waste Plan, March 2012**

## Barnsley Core Strategy (2011)

The Core Strategy sets out a spatial vision for how Barnsley should develop providing the overarching principles by with the development needs of the borough will be delivered.

The Core Strategy sets out a number of policies relating to sustainable development. These policies are outlined below:

**Policy CSP 1, Climate Change:** To ensure that new developments reduce and mitigate the impact of carbon emissions and those new and existing communities are resilient to climate change.

**Policy CSP 2, Sustainable Construction:** Developments must demonstrate minimisation of resources and energy consumption compared to current Building Regulations and for developments 2013 and 2016 must meet Code for Sustainable Homes Level 4.

**Policy CSP 3, Sustainable Drainage Systems:** All new developments should incorporate Sustainable Urban Drainage Systems.

**Policy CPS 4, Flood Risk:** New developments must produce Flood Risk Assessments where required and demonstrate how flood risks are managed. Brownfield sites are required to reduce surface water run-off by 30%.

**Policy CPS 5, Including Renewable Energy in Developments:** All residential developments over 10 units are expected to incorporate decentralised, renewable or low carbon energy sources and design measures to reduce the developments carbon emissions.

**Policy CPS 14, Housing Mix and Efficient Use of Land:** Developments are expected to provide a broad mix of house size, type and tenure which are adaptable for the changing needs of the population.

**Policy CPS 25, New Development and Sustainable Travel:** New developments are expected to be located and designed to reduce the need for travel and encourage the use of sustainable transport options.

**Policy CPS 29, Design:** Buildings need to be of a high quality design which achieve Building for Life 'Good' rating and developments should enhance green infrastructure, natural habitats, woodland and other natural features. Through good design developments should aim to create attractive, sustainable and successful neighbourhoods.

**Policy CPS 36, Biodiversity and Geodiversity:** Developments are expected to conserve and enhance the biodiversity and geodiversity of sites by protecting habitats and species where they are of ecological value.

## Supplementary Planning Documents

The Core Strategy sets out a list of SPDs to be produced as required. The only SPD applicable to sustainability produced to date is;

**Designing New Housing Development (March 2012):** Includes a number of points around policy CPS 29, including additional guidance on flood risk, recycling and waste.

### Barnsley, Doncaster and Rotherham Joint Waste Plan

The Joint Waste Plan adopted in 2012 makes up part of the Barnsley local plan and includes policies relating to waste management in Barnsley and the surrounding areas.

**Policy WCS 7, Managing Waste in All Developments:** Requires new developments to submit a waste management plan which includes, amongst other things, information on the type of waste generated and the measures to reuse and recycle waste within the development.

The Joint Waste Plan is aiming for 93% of construction waste to be diverted away from landfill.

## Other Relevant Documents

### South Yorkshire Residential Design Guide (2011)

Also adopted by Barnsley Council is the South Yorkshire Residential Design Guide (2011) which provides best practice guidance to assist in the appraisal of new housing proposals and includes additional guidance under a number of headings including:

- Local resources, energy and carbon dioxide reduction

- Green Infrastructure
- Sustainable Drainage Systems
- Building Design
- Construction Waste

## Review of Sustainability Policy

There are consistent themes emerging from the review of national and local sustainability policy which are considered relevant to this application.

Central to the Government's and Council's vision for 'Sustainable Development' is the approval of development that jointly promotes economic, social and environmental benefits.

The adopted Barnsley Core Strategy highlights the need to ensure development functions within environmental limits and avoids adverse contributions to climate change adopting good design encouraging energy efficiency, renewable energy and sustainable construction.

Since the adoption of the Core Strategy and granting of the existing planning permission there have been considerable changes to national sustainability policy and related legislation.

The recent Housing Standards Review consultation has set out the Government's intention to prevent duplication of sustainability standards, including winding down the code for sustainable homes, and removing requirements for local onsite renewable energy targets.

The following section of this report demonstrates how the proposed development will deliver energy efficient, low carbon and sustainable new homes that is in accordance with the policies of the NPPF, latest national guidance and the objectives of the Barnsley Core Strategy.

Delivering **a broad mix of housing** through **sustainable design and construction**, that reduces **carbon emissions** whilst safeguarding **biodiversity** are key local **sustainability priorities**

# 3 Sustainability at North Gawber

This chapter summarises the approach taken by Harworth Estates to ensure that the proposed new homes at the Former North Gawber Colliery Site function within environmental limits, protects the natural environment and reduces carbon emissions.

The purpose of the planning system is to contribute to the achievement of sustainable development.

This Sustainability and Energy Statement has been prepared to clearly demonstrate that the proposed development is supporting the policies of the NPPF and local planning policy of Barnsley Council.

Whilst Policy CSP 2 Sustainable Construction of the Barnsley Core Strategy encourages new developments to meet Code for Sustainable Homes standards the recent Housing Standards Review has confirmed the Government's intention to "wind down the Code for Sustainable Homes" in favour of a national set of sustainability standards through Building Regulations.

Since the adoption of the Core Strategy Part L of the Building Regulations has also recently been improved and from April 2014 requires new homes to achieve a further 6% reduction in regulated carbon emissions placing great emphasis on the building fabric as a viable step towards zero carbon homes.

## Achieving Sustainable Development

Sustainability has been addressed for the development at the Former North Gawber Colliery Site, under the following chapter headings:


**3.1 Economic Benefits**

**3.2 Sustainable Transport**

**3.3 Well Designed and High Quality Homes**

**3.4 Promoting Health and Wellbeing**

**3.5 Climate Change**

3.5.1 Energy Efficiency

3.5.2 Renewable Energy

3.5.3 Carbon Emissions

**3.6 Water**

**3.7 Flood Risk and Sustainable Drainage**

**3.8 Biodiversity and Pollution**

**3.9 Waste Management**

## 3.1 Economic Benefits

The proposed development will contribute to positive economic growth for Barnsley, providing sustainable new homes for local people.

The economic benefits of construction are well known with considerable direct and indirect positive impacts resulting from new housing construction. A study by the Confederation of British Industries (CBI) demonstrates that construction projects have a significant benefit on the local and wider economy. The report concludes that for every £1 of construction spend £2.84 is injected into the economy.

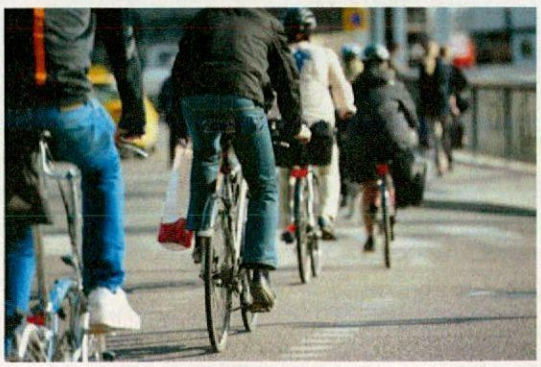
The construction of up to 325 new homes will create direct local employment opportunities as well as indirect benefits through demand for goods and services to support the construction phase.

Additional council tax revenues will also be generated thereby proving further benefits to the Council and local economy.

## 3.2 Sustainable Transport

Policy CPS 25 of the adopted Core Strategy requires new developments to carry out a Transport Assessment and produce Travel Plan to analyse the impact of the development on the local area and outline the measures taken to reduce the impact, provide a safe environment and promote sustainable transport options.

A Transport Assessment and Framework Travel Plan have been prepared by Development Planning Limited with the aim of minimising car use and supporting more sustainable travel choices.



Access to the site is proposed via Carr Green Lane to the east of the site with secondary pedestrian access to Carr Green Lane and Spark Lane to the west.

There are a wide range of facilities, services and shops all located in close proximity to the site which are accessible on foot or by cycle.

There are frequent bus services from bus stops within easy access of the site providing easy access to key destinations including Barnsley, local schools and Darton rail station.

The proposals include a significant number of enhancements to the local transport network to support more sustainable travel including:

- Improvements to existing footpaths with access points for pedestrians and cyclists;
- Direct links to bus stops and the Mapplewell village centre;
- Enhancements to Mapplewell village centre including improved pedestrian signage, enhanced street furniture: bollards, seating and cycle stands; whilst minimising street clutter; reducing the priority of vehicles to improve pedestrian experience; and resurfacing footways and private paved areas in a unified material;
- Creation of a designated 'Quiet Lane' along Swallow Hill Road which pays special attention to the needs of walkers, cyclists, horse riders and the mobility impaired;
- Provision of adequate parking and safe and secure cycle storage for new homes in line with Local Council requirements.

The proposed development has been assessed to have no significant adverse impact in terms of congestion and road safety of the local road network. The proposals are estimated to generate less traffic than that estimated for the previously consented scheme and as such will result in a reduced impact on the wider highway network.

A Framework Travel Plan has been prepared and accompanies the planning application aiming to reduce the impact of travel related to the development by assisting those residents to travel more sustainably.

A Travel Plan Coordinator is to be appointed by the developer and will be responsible for overseeing the implementation of the Travel Plan. They will distribute information on a range of sustainable

travel initiatives including encouraging residents to sign up with a number of initiatives including the South Yorkshire Car Share Scheme.

More detailed information on how the development promotes sustainable transportation is contained within the Transport Assessment and Travel Plan which both accompany the application.

## 3.3 Well designed and high quality homes

The proposals will deliver up to 325 new homes that will provide a mix of housing with a broad range of dwelling types appropriate to the location and market demand in line with Core Strategy Policy CSP 14.

The development seeks to promote character and quality in its urban design approach and the masterplan for the North Gawber Colliery Site has been developed in response to the specific constraints and opportunities of the site and its local context.

Good urban design will result in a sustainable, functional and high quality new settlement in line with the South Yorkshire Residential Design Guide.

More detailed information on how the outline masterplan and design principles have been developed is contained within the Design and Access statement that accompanies the planning application.

## 3.4 Health and Wellbeing

Creating a high quality development that promotes health and wellbeing for residents and local people is a key aim of the proposals.

The design has been developed in accordance with the principles of Safer Places and Building for Life and has resulted in a number of positive features to promote health and wellbeing:

- Safe and secure accessibility with strong connections to and from the development encouraging walking and cycling.
- Provision of green public open space providing amenity opportunities.
- Children's play space centrally located and overlooked by neighbouring houses.
- New homes with comfortable living environments that have natural day-lighting and thermal comfort prioritised through good design and energy efficiency measures.

## 3.5 Climate Change

Core Strategy Policies 2 and 5 encourage new developments in Barnsley to incorporate renewable energy and energy efficiency targets as well as wider carbon reduction targets.

### 3.5.1 Energy Efficiency

Central to the creation of low carbon and energy efficient homes 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.

Harworth Estates is committed to the development of affordable, warm and low carbon homes at the North Site and propose a fabric first approach to minimising carbon emissions that is practical, sustainable and commercially viable.

The proposed homes are anticipated to be of a traditional masonry construction and therefore have good thermal mass to act as a buffer to external climate. Habitable rooms within the dwellings will be designed to benefit from good natural daylighting, minimising the need for artificial lighting.

To prevent heat loss the dwellings will be well insulated and target levels of thermal efficiency are presented in Table 1 below. Measures will be taken to limit air leakage targeting air tightness of $5m^3$ ($hr.m^2$) exceeding the minimum requirements of Building Regulations.

**Table 1: Target construction U-Values**

| Element | U-Value ($W/m^2K$) |
|---|---|
| Roof | 0.18 $W/m^2K$ |
| Wall external | 0.13 $W/m^2K$ |
| Ground Floor | 0.13 $W/m^2K$ |
| Door | 1.4 $W/m^2K$ |
| Windows | 5 $m^3/hr/m^2$ |

Suitable consideration has been given at the outline application stage to within the masterplan to optimise passive solar gain. This will enable the future design to include south facing windows and patio doors onto living spaces, good natural daylight

penetration and views of the sky from habitable rooms.

The development aims to achieve a minimum 6% reduction in carbon emissions arising from regulated energy use in the homes in accordance with latest Part L building regulation standards.

The final specification of building fabric, construction materials and associated thermal performance of individual homes will be defined as part of future reserved matters applications

### 3.5.2 Renewable Energy

Core Strategy Policy 5 encourages on-site generation of low carbon or renewable energy in combination with design measures to reduce carbon emissions by 15%.

This policy was adopted prior to the revised Part L of the Building Regulations and recent Housing Standards Review recommendations which acknowledges that as we move towards zero carbon homes energy efficiency measures and renewable technologies will play an increasingly important role in new homes, but that it is no longer appropriate for local plan policies to specify additional standards for how much of the energy use from homes should come from on-site renewables.

To deliver energy efficient and low carbon new homes the development aims to adopt a fabric first approach to construction. This approach will deliver homes which are in line with national policy and substantially exceed previous Building Regulations and will include a number of distinct benefits:

- Carbon savings delivered are 'locked-in' the house for the lifetime of the homes (60 years or more) rather than the much shorter lifespan (around 25 years) of a renewable energy technology.
- There are virtually no maintenance and/or replacement costs to maintain $CO_2$ reductions through improved fabric;
- There is no reliance on occupier's behaviour to deliver $CO_2$ reductions. Achieving carbon savings from renewable energy technologies require education, awareness and behavioural changes from occupants.

It is potentially feasible to install a number of different low carbon and renewable energy technologies at the site, subject to specific constraint of individual plots. A high level review of the suitability of different low carbon and renewable energy technologies at the North Gawber Colliery Site is provided below.

**Solar Photovoltaic (PV) Panels**

Solar PV systems generate renewable electricity from sunlight. It is technically feasible to install PV systems to dwellings and buildings with unobstructed roof spaces orientated with 30 degrees of the south.

**Solar Thermal Hot Water Panels**

Solar Thermal Hot Water systems generate renewable hot water and again could be feasible at the site, installed on dwellings with unobstructed south facing roof space.

**Biomass Heating**

*Biomass heating for individual mass market new* homes is not considered feasible or practical at this stage given the need for fuel storage, occupant operation and maintenance impacts.

**CHP and District Heating**

The residential mix, low density (targeting an overall density of 30 dwellings per hectare net) and thermal demand from more energy efficient new homes means that Combined Heat and Power (CHP) led District Heating is considered unlikely to be a suitable or viable energy strategy for the development.

**Ground Source Heat Pumps**

Ground Source Heat Pumps (GSHP) can be expensive and deployment is subject to specific locational ground constraints. Systems are reliant on grid supplied electricity and carbon savings in comparison to modern high efficiency gas heating systems can be low although systems could be suitable in some locations.

**Air Source Heat Pumps**

Air Source Heat Pump (ASHP) systems capture the thermal energy in the ambient air to provide space heating and hot water. Systems are typically less efficient than ground source systems although can be less costly and might be considered in certain locations although careful consideration will need to be given to carbon saving and occupant cost impacts.

The specific potential for installation of appropriate technologies will be evaluated for individual development phases as part of future Reserved Matters applications.

### 3.5.3 Carbon Emissions

It is important to consider all carbon emissions impacts arising from development and value those carbon reductions that can be achieved not just those associated with operational energy use in the home and onsite renewable energy generation.

Considering all carbon impacts of the development and adopting measures to reduce these, where feasible and viable, ensures a holistic approach to climate change mitigation and reduction of greenhouse gas emissions.

A high level carbon emissions assessment has been completed for the proposed development as appropriate to the outline planning application and in the context of national and local policy targets

The scheme will deliver carbon savings beyond Part L Building Regulations (2010) and additional savings from new green infrastructure created by the development as well as embodied carbon associated with the construction of new homes.

The key target areas for carbon savings are:

1. **Regulated energy**– regulated carbon emission savings are targeted based on reduced energy consumption in the proposed new homes and compliance with the latest 2013 Part L Building Regulations due to come into force in April 2014.

2. **Unregulated energy** – Reductions in unregulated energy consumed in the homes can be achieved through the promotion of energy efficient appliances and provision of home user guides and display energy monitors which encourage reducing energy use in the home.

3. **Water** – The treatment and supply of water to homes has an associated carbon emission impact and measures proposed to reduce water consumption will deliver further carbon savings.

4. **Green infrastructure** – New green infrastructure for the former colliery site will increase the carbon sequestration potential of the site following development.

5. **Street lighting** – The installation of high efficiency LED lighting can deliver further carbon savings.

6. **Embodied energy** – Through best practice modern construction techniques and material sourcing it is estimated that the project could achieve up to a 20% reduction in embodied carbon over typical practice.

The annual carbon emissions savings estimated to be achieved from this approach are summarised in Table 2 below.

**Table 2: carbon emissions**

| CO2 Impacts | Baseline Carbon $tCO_2e$ | Proposed Carbon $tCO_2e$ | Carbon Savings $tCO_2e$ |
|---|---|---|---|
| Building regulated energy | 584 | 549 | 35 |
| Building unregulated operational energy | 74 | 66 | 7 |
| Water consumption | 29 | 15 | 13 |
| Green Infrastructure carbon sequestration | -2 | -29 | 27 |
| Street lighting | 25 | 11 | 14 |
| Embodied carbon in materials | 341 | 273 | 68 |
| Total | 1,050 | 885 | 165 |
| **% Improvement** | | | **16%** |

The implementation of these measures is estimated, at the outline application stage, to deliver total annual carbon savings equivalent to 165 tonnes CO2e which is a **16%** saving on the estimated baseline.

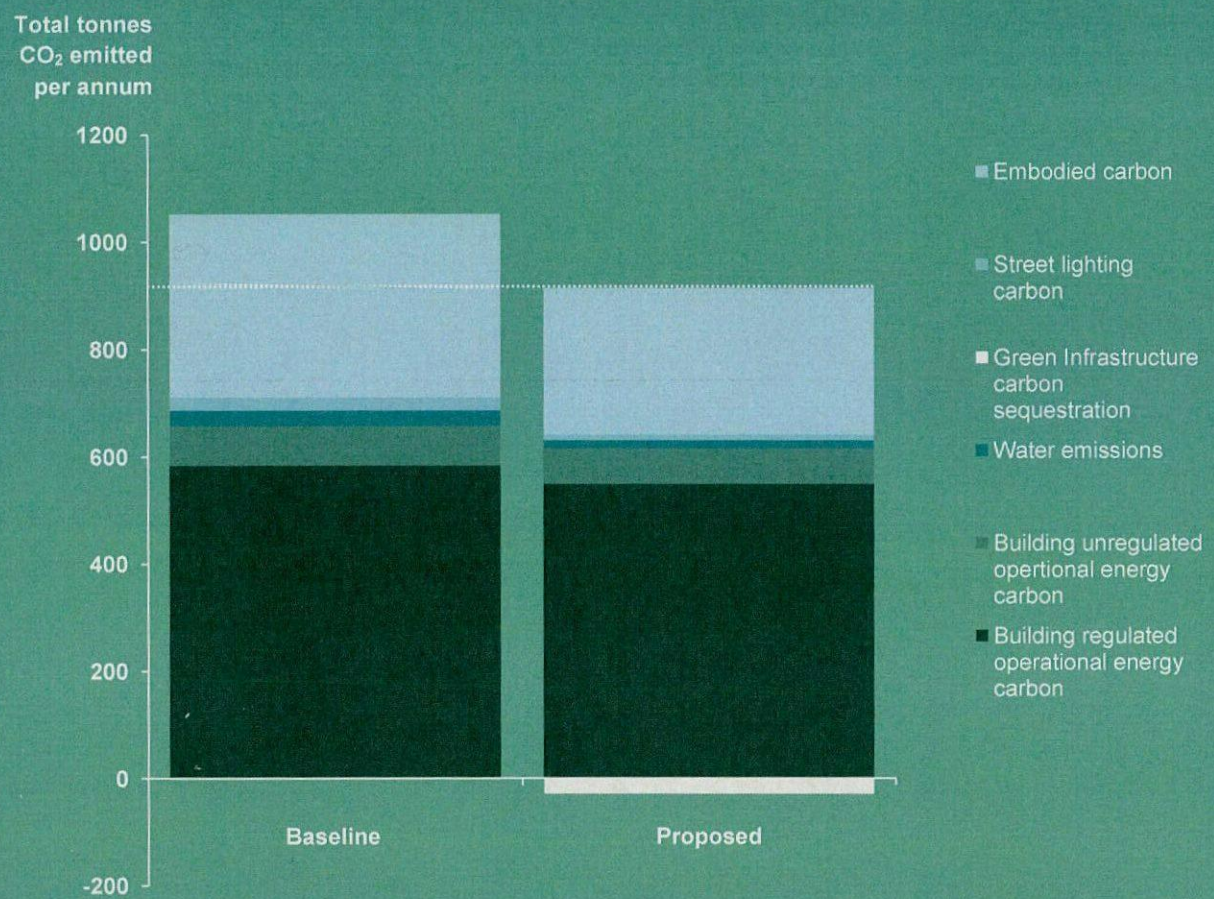
Suitable measures will also be taken to reduce the one off carbon emissions impact of remediation of the site along with measures detailed in the applications Travel Plan to reduce the carbon emissions impact of travel.

**The Former North Gawber Colliery Site** will deliver **energy efficient** and **low carbon** new homes that are **resilient** and **adaptive** to future **climate change**

## What is the carbon footprint of the Former North Gawber Colliery Site?

The graph below illustrates the estimated carbon savings of the proposed development of up to 325 homes. These savings are to be delivered through a well-conceived masterplan and fabric first approach to design and construction of new homes.

This clearly demonstrates how the development aims to positively reduce carbon emissions and meet the challenge of climate change.



## 3.6 Water

Potable water is an increasingly important natural resource. Increasing population, climate change effects and traditionally high water use are pushing more areas into higher levels of water stress. The area of Barnsley is currently in a low water stress zone.

The reduction of water use and efficient treatment and recycling of used water are therefore important. The treatment and supply of water is also therefore becoming more energy intensive and has associated carbon emissions. Reductions in water use therefore also have an added benefit of reducing carbon emissions from this process.

To reduce water consumption during occupation, the homes will achieve high standards of water efficiency through a number of measures including dual flush WCs, low flow fittings and water meters.



These measures are targeting reductions in domestic water consumption to <105 litres per person per day, well below the typical 150 litres.

Where feasible dwellings will be provided with a water butt to allow the capture of rainwater for garden irrigation.

## 3.7 Flood Risk and Sustainable Drainage

The Barnsley Council Core Strategy includes policies relating to both Sustainable Drainage and Flood Risk (Policies CSP 3 and 4).

A Flood Risk Assessment has been prepared in accordance with policy CPS 4 which has assessed all potential sources of flooding at the site.

The site is located within Flood Zone 1 and therefore considered to be at a low risk of flooding and there are no known sources of flood risk to the site from elsewhere.

A drainage strategy for the site has been developed in line with Policy CSP 4 which requires surface run-off from brownfield sites to be reduced by 30%.

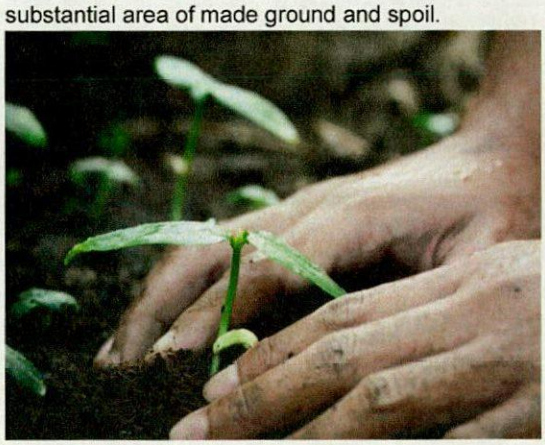
Development would inevitably result in additional surface water runoff if suitable mitigation measures are not taken. The proposed surface water drainage strategy includes the creation of a new surface water attenuation pond with outflows regulated by a hydro-brake. The drainage strategy will reduce runoff rates and militate against the impact of increased volumes of surface water.

Full details are provided within the Flood Risk Assessment and outline drainage strategy that accompany the planning application.

## 3.8 Biodiversity and Pollution

Both national and local planning policy recognises the importance of conserving and enhancing the natural environment, preventing pollution and providing net gains in biodiversity where possible.

The former colliery site has been left unoccupied since the colliery closed in 1988. As such the existing site contains low value scrubland, with a substantial area of made ground and spoil.



The current ecological value of the site is low and ecological appraisal has been undertaken to identify any existing habitats on and adjacent to the site, potential impacts of the development on habitats or species and how they can be avoided or mitigated; and opportunities to enhance the site's biodiversity resource.

This has identified no protected species or habitats and the development is not considered to pose a significant risk to the ecological status of the site.

The site is currently dominated by scrubland vegetation including poor quality grassland and shrubs. A significant proportion of the site is made up of made ground with no vegetation.

The development of the site will see significant ground remediation works which will see the removal of some exiting vegetation of low ecological value.

As part of the ecology appraisal a single species of Orchid has been identified which is to be protected and moved to the new green open space to the south of the site during the landscaping phase.

To minimise adverse impacts arising from development, site clearance is to be undertaken outside the bird nesting season (March to end of August) or once an ecologist has confirmed the absence of nesting birds and a survey is currently being undertaken to confirm the absence of badger setts.

The development proposes the introduction of new green infrastructure including hedges, trees and maintained grassland. As well as the creation of wetland habitats around the proposed attenuation pond.

This net gain in green infrastructure will enhance biodiversity and has a number of additional benefits including:

- New native planting of green spaces including trees and hedgerows to increase biodiversity;
- Improved habitats for local wildlife.
- New green spaces which improve air quality with positive impacts on health and wellbeing;
- A local carbon sink through new green infrastructure creating a sequestration asset for the future

To achieve a greater increase in biodiversity of the site other measures such as bat boxes will be considered at the detailed design stage.

## 3.9 Waste Management

Policy WCS7 of the Barnsley, Doncaster and Rotherham Joint Waste Plan requires new development to be designed to minimise waste creation and disposal.

Prior to the construction phase a Site Waste Management Plan (SWMP) 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.

Each construction phase of development will be registered with the Considerate Constructors Scheme (CCS) and will target a score of >32.

Insulation materials containing substances known to contribute to stratospheric ozone depletion (ODP) or with the potential to contribute to global warming (GWP) will not be used.

All homes will provide adequate internal and external storage space for non-recyclable waste and recyclable household waste including dedicated internal storage for recyclable household waste and household compost bins.

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 any kerbside recycling services.

# 5 Conclusions

This Sustainability and Energy Statement demonstrates that the proposals constitute sustainable development in accordance with national and local policies and key local sustainability priorities for Barnsley.

A range of sustainability measures have been incorporated into the proposed development which will result in construction of a high quality, energy and resource efficient, low carbon and sustainable new homes.

The main sustainability features of the proposed development of up to 325 new homes at the Former North Gawber Colliery Site include:

- Regeneration of a brownfield former colliery site to provide much needed **energy efficient** and **low carbon** new homes.
- A significant contribution to the local economy through **new job creation** and the **New Homes bonus**.
- An **accessible location** with strong connections to pedestrian and cyclist routes and close proximity to the **local public transport** network with a Travel Plan to support more sustainable movement.
- A **fabric first approach** to the construction of the dwellings that will deliver long term reduction in regulated carbon emissions in accordance with latest guidance and best practice.
- Implementation of a range of measures which are estimated to reduce total carbon emissions of the site by up to 15% through measures including energy efficiency, reduced water consumption, new green infrastructure and reduced embodied energy.
- No adverse impact on flood risk, either at the site or elsewhere including creation of an onsite surface water attenuation pond.
- Remediation of the former colliery site and provision of new **green infrastructure** including hedgerows and tree planting as part of a landscape strategy which will create **new habitats** and enhance **biodiversity**.
- Commitment to **sustainable waste management** both in remediation, during development and occupation.

We are a leading consultancy operating from offices in key development sectors across the United Kingdom.

Belfast
Birmingham
Bristol
Cardiff
Edinburgh
Glasgow
Leeds
London
Manchester
Southampton

TURLEY ASSOCIATES

www.turleyassociates.co.uk