



SUSTAINABILITY STATEMENT



BIRCH AVENUE, BACTON

JSP SUSTAINABILITY LTD
JULY 2021



CONTENTS

| | Page |
|--|-----------|
| Executive Summary | 2 |
| 1 Introduction | 3 |
| 2 Material Selection | 4 |
| 3 Pollution during Construction | 6 |
| 4 Waste Management | 7 |
| 5 Health and Wellbeing | 8 |
| 6 Water Efficiency | 9 |
| 7 Energy Strategy | 11 |
| 8 Evaluation | 17 |

| | | |
|----------------------------|---|--|
| Report Completed By | JSP Sustainability Limited York Science Park, Innovation Centre, Innovation Way, Heslington, York. YO10 5DG |  |
| Reviewed By | Gerard McGuigan BSc PGDipSurvey | |
| Signature |  | |



EXECUTIVE SUMMARY

- Bellway Home's residential development at Birch Avenue, Bacton includes the construction of 85 no. properties.
- Measures will be enacted throughout the construction phase to ensure a sustainable development is created.
- Bellway Homes operates a nationwide timber procurement policy and affords advantage to materials with a lesser environmental impact.
- Eco-sanitary ware and flow restriction devices will be included in the construction of every property.
- A site waste management plan will operate at the construction site.
- Energy efficiency measures will be included in the construction specification of every home.
- The space and hot water heating requirement of every home will be sourced from low carbon air source heat pumps.



1 INTRODUCTION

JSP Sustainability Ltd has been commissioned by Bellway Homes to prepare a Sustainability Statement to accompany the planning application for the proposed residential development off Birch Avenue, Bacton. The application seeks permission for the construction of 85 no. residential properties, landscaping and associated highway works.

This Statement will detail the energy efficiency, water efficiency, materials, pollution and waste management measures to be adopted by Bellway Homes to deliver a sustainable development. A number of documents have been used to complete this report. These include;

[National Planning Policy Framework \(NPPF\)](#) includes a presumption in favour of sustainable development. The Framework expands upon the guiding principles and objectives of a successful planning system. These include the building of a strong and competitive economy, delivering high quality housing, requiring good design and meeting the challenges of climate change.

[Approved Document L1A](#) sets fabric efficiency standards and together with SAP, establishes a maximum CO₂ emission rate for new build residential properties. The Approved Document is the Government's sustainable design benchmark in England.

[Mid Suffolk Core Strategy \(2008\)](#) includes policy CS3, reduce contributions to climate change. The policy is benchmarked to the now suspended Code for Sustainable Homes. However, it does highlight endeavours such as maximising solar gain, high levels of insulation, water efficiency, recycling and sustainable material sourcing.



2 MATERIAL SELECTION

Bellway Homes subcontracts the majority of its development processes to suppliers and contractors. As such the effective monitoring of the processes and practices of all contractors is key to delivering an efficient and environmentally sustainable supply chain. To this end Bellway Homes forms strong collaborative relationships with all its suppliers. Indeed, as many as 82% of all Group suppliers have worked with Bellway Homes for 3 years or more. Of these, the key suppliers have auditable environmental management systems and policies in place which have been certified to ISO 14001 or similar.

Bellway Homes and its contractors operate an ethical timber procurement policy which has at its core a commitment to purchase legally and sustainably sourced timber. Suppliers of timber must produce full Chain of Custody Certificates right through the supply chain; from the initial timber yard, manufacturing process, transformation and distribution. Secure certificates must be produced by valid accrediting bodies – FSC, PEFC, CSA, SFI & MTCC.

When specifying materials at the design stage the sustainable credentials of a product are rated alongside their affordability, lifecycle costs, durability, availability and ease of use. This exercise guarantees Bellway Homes gives due consideration to the environmental impact of materials at the earliest design and procurement stage.

To confirm the environmental impact of materials, Bellway Homes proposed specification for the Birch Avenue development was assessed against the Building Research Establishment's Green Guide. The Guide assesses the relative environmental impact of construction materials commonly used in buildings. Materials are given an overall rating of A+ to E, based on Life Cycle Assessments using the BRE's Environmental Profiles Methodology. The table below summarises the ratings anticipated;



Table 1 –Green Guide Ratings

| | Description | Green Guide Reference | Rating |
|--------------------|---|------------------------------|---------------|
| External Wall | Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement mortar, plasterboard on dabs, paint | 806170615 | A+ |
| Party Wall | Twin leaf 100mm min. solid medium dense blocks (1350-1600kg/m ³), with 100mm min. cavity including proprietary glass wool acoustic roll, type A wall ties, with gypsum-based board (9.8kg/m ²) on dabs and paint to each side | 1118190007 | C |
| Ground Floor | Structural topping on beam and expanded polystyrene flooring | 820140015 | A+ |
| Intermediate Floor | T&G floorboards on timber I joists | 807280024 | A+ |
| Internal Wall | Timber stud, plasterboard, paint | 809760003 | A+ |
| Glazing | PVC-U window, double glazed | 813100009 | A |
| Roof | Timber trussed rafters and joists with insulation, roofing underlay, counterbattens, battens and UK produced slates | 812410008 | A+ |



3 POLLUTION DURING CONSTRUCTION

The NPPF requires sustainable development proposals to take measures to protect the natural environment on site and adjacent to it. Measures concerning waste are detailed in other sections of this report and biodiversity in an accompanying report, instead this section concentrates on those measures to be included in the construction phase to mitigate the negative impacts of construction on the natural environment and public health.

The semi-urban location of the site means there will be no significant air or water quality risks arising from the scheme post construction. Therefore, measures will be targeted to reduce water and air pollution during the demolition and construction phases. Below are a sample of the measures to be undertaken by site operatives;

- Where dust is generated in small quantities through the normal construction process, such as the cutting of bricks and, where significant volumes are required, specialist cutting equipment will be used i.e. brick saws which have dust suppression built in through the use of water jetting onto the cutting surface;
- If cutting is required on a lesser scale i.e. the cutting of pipes, bricks, blocks, paving slabs, chases etc. during installation or laying of these materials. This will be carried out in a part of the site which is considered the most appropriate at that time and, away from any sensitive receptors;
- Waste containers and skips will be covered;
- Just in time deliveries will prevent the stockpiling of unnecessary materials on site, but where unavoidable materials will be secured and covered where necessary to prevent pollution; and
- Hard surfaced roads will be constructed as soon as possible or at the earliest time that the build programme allows.

The measures above will be implemented through induction and toolkit talks with all site operatives and the posting of literature and signs in the site compound.



4 WASTE MANAGEMENT

In 2012 the Government repealed the Site Waste Management Plan Regulations, therefore there exists no legal obligation to operate such a plan at Birch Avenue. However, as an environmentally responsible developer Bellway Homes intends to operate such a Plan at the application site.

As an engaged partner in the WRAP initiative Bellway Homes conducts regular reviews of the Group's performance. At the present-time the Group is engaged in a drive to reduce the volumes of waste generated on site and increase the percentage of waste diverted from landfill through reuse and recycling. Current data confirms a national recycling rate of 98.1% and a 3.7% fall in the absolute volume of waste sent to landfill.

This level of performance is enforced through the adoption of a robust Site Waste Management Plan but also through effective and coordinated design and procurement. The following briefly summarises the policies contained within the Groups waste management policies and to be enacted as part of the SWMP for Birch Avenue;

- Design to minimise wastage during the construction phase;
- Landform design and mass balance exercises are undertaken to retain as much material on site and reduce disposable volumes. There should be careful sub and topsoil storage and accommodation within the predetermined landform;
- Maximise the value of recycled aggregates through the separation of physical and chemical contaminants and through the careful matching of the materials generated with appropriate site use;
- Regular inductions and toolkit talks to all contractors and sub-contractors are standard. Careful site management of stockpiling and storage, segregation of waste groups and the prevention of cross contamination are implemented as standard;
- Agreements are in place with suppliers to reduce the amount of packaging on goods delivered to site. Take back agreements and "*just in time delivery*" are in place with key suppliers.;
- All waste contractors are required to segregate waste off site and provide records of such; and
- Waste streams to be reused on site or recycled offsite are to be identified and communicated to all contractors so that careful disposal is assured;



5 HEALTH AND WELLBEING

In achieving ever stricter levels of sustainability, it is important that one does not lose sight of the fact that the industry is building homes and communities that people will live and prosper in. This is an integral part of sustainability. While it is quite difficult to measure health and wellbeing, the following are a sample of the measures that will be included in the detailed design to address this issue.

- Each property will have a large living/dining space or family space;
- Each of the principal living rooms will have sufficient glazing to allow natural light to penetrate into the rooms, reducing the need for artificial lighting. Numerous studies have also shown this to be beneficial to the general health and happiness of occupants. This also allows for each home to take advantage of solar gain. This is taken into account by the SAP methodology and reduces the forecasted energy consumption of each home;
- Each property will include a suitable room that can be operated as a home office should it be needed in the future;
- All homes will benefit from a garden or private space for recreation. Each property will also have a designated space for recycling facilities;
- Many of the properties will have private detached garages or integral garages. Each will be large enough to store bicycles;
- The development will include open landscaped spaces;
- The site layout will be designed to ease travel for cyclists and pedestrians;
- The party wall specification will reduce sound transmission between properties providing comfort to future residents;
- The scheme will adhere to the principles of Secured by Design where practical and will comply with the current security standards included in Approved Document Q. Further details on this accompany this Statement; and
- A home user guide will be placed in the home of each property.



6 WATER EFFICIENCY

Approved Document G of the Building Regulations requires each new home to achieve a water consumption rate of no more than 125 litres per person per day. Bellway Homes propose to incorporate low flow sanitary ware and eco-sanitary products into the design of each property to achieve a low water consumption rate. This strategy will permanently reduce water consumption. The tables below summarise the proposed flow rates and capacities and the water efficiency calculation.

Table 2 – Flow Rates & Capacities

| Fitting | |
|---------------------|------------------------|
| Toilets | 6 & 3 litre dual flush |
| WHB Taps | 4 litres/min |
| Kitchen Taps | 6 litres/min |
| Bath | 160 litres |
| Shower | 6 litres/min |



Table 3 - Water Efficiency Calculation

| Installation Type | Unit of Measurement | Capacity/Flow Rate (1) | Use Factor (2) | Fixed Use (litres/person/day) (3) | Litres per Person day. =[(1) x (2)] + (3) (4) |
|--------------------------------|-------------------------------|---------------------------|-------------------|--------------------------------------|---|
| WC (Dual Flush) | Full Flush (litres) | 6.00 | 1.46 | 0.00 | 8.76 |
| | Part Flush (litres) | 3.00 | 2.96 | 0.00 | 8.88 |
| Taps (excluding kitchen tap) | Flow rate (litres/min) | 4.00 | 1.58 | 1.58 | 7.90 |
| Bath (where shower present) | Capacity to overflow (litres) | 160 | 0.11 | 0.00 | 17.60 |
| Shower (where bath present) | Flow rate (litres/min) | 6.00 | 4.37 | 0.00 | 26.22 |
| Kitchen/utility room sink taps | Flow rate (litres/min) | 6.00 | 0.44 | 10.36 | 13.00 |
| Washing machine | Litres/kg dry load | 8.17 | 2.10 | 0.00 | 17.16 |
| Dishwasher | Litres/place setting | 1.25 | 3.60 | 0.00 | 4.50 |
| TOTAL | (5) | | | | 104.02 |

| | | |
|------------|---|--------|
| (5) | Total Internal Water Consumption | 104.02 |
| (6) | Normalisation Factor | 0.91 |
| (7) | Internal Water Consumption [(5) x (6)] | 94.66 |
| (8) | External Water Use | 5.00 |
| (9) | Part G Water Consumption [(8) + (7)] | 99.66 |

A water consumption of 99.66 litres per person per day is calculated.



7 ENERGY STRATEGY

Policy CS3 of the Mid Suffolk Core Strategy is benchmarked to the Code for Sustainable Homes, though this has been suspended since 2015. That aside the policy requires energy efficient development and encourages development to “maximise solar gain” and include “high levels of insulation”. The policy does not set energy efficiency targets more onerous than those included in the Building Regulations. This is in the line with the National Planning Policy Framework.

“New development should be planned for in ways that...can help reduce greenhouse gas emissions, such as through location, orientation and design. Any local requirements for sustainability of buildings should reflect the Government’s policy for national technical standards.”

Paragraph 150, National Planning Policy Framework

The most relevant standards are those contained in Part L of the Building Regulations and following the conclusion of the Housing Standards Review, the Government has confirmed it will rely on a “Building Regulations only” approach to deliver sustainable homes. This was emphasised once more in the Government’s Productivity Plan of July 2015.

In response to local and national policy, Bellway Homes proposes to construct every home at Birch Avenue to a Fabric First specification capable of delivering energy and CO₂ emissions betterments over the Building Regulations. The services specification of each home will also include an air source heat pump, providing each home with a low carbon source of space and hot water heating.



7.1 Energy Efficiency Measures

Bellway Home's exposure to the marketplace has confirmed that purchasers demand energy efficient homes with low operating costs and familiar user-friendly technologies. As such the Group's current construction specification has been tailored to these demands and incorporates many of the lean and clean measures of the Energy Hierarchy. Listed below are some of the measures that have been incorporated into the detailed design of the scheme;

- The construction specification of every home will include high levels of insulation in the ground floor, external walls and roof spaces;
- Each of the house types elevations has sufficient glazing provision to the principal living rooms to allow each home to benefit from solar gain. This reduces the space heating and lighting requirement of each home;
- The house type elevation drawings confirm that the rear elevation of each property accounts for a majority of the glazing provision to each home. The exception to this are the corner Thespian plots, where a majority of the glazing is located on the side elevations, but importantly to the bedrooms, living room and kitchen/dining room.
- The proposed layout and house type schedule have been informed through extensive dialogue with the planning and highways officers from Mid Suffolk Council. The plot positions have been determined by the location of the access road and tributary road network and the location of the proposed public open space. As such it is understandably not possible to design and site every home with a south facing rear elevation. That aside a majority of plots do have a south easterly to south westerly facing elevation, though not necessarily a rear elevation.
- The detailed house type designs incorporate the thermal bridging guidance produced by Constructive Details and the Government, thereby reducing a significant source of heat loss;
- An air source heat pump will be provided to each property. The heating controls of every home will include dual zone time and temperature controls;
- Energy efficient lamps will be installed in every light fitting.
- Each property will be naturally ventilated using efficient decentralised extract fans to ensure the internal living environment will be healthy and comfortable. Occupants will have the ability to ventilate their home via openable windows during summer homes to prevent overheating (purge ventilation). As part of the Building Regulations assessment all of the proposed house types will show a low risk of summer overheating;



- Each entrance will be illuminated with an energy efficient external light or provision will be made for a purchaser to install such a fixture; and
- The white goods installed in each property or offered to purchasers will be energy efficient with an A+/A rating.

The table overleaf provides a summary of the energy efficiency standards to be achieved in the design and construction of each home;

Table 4 – Specification Summary

| Element | Part L | Enhanced Specification |
|-------------------------|--|---|
| Wall | 0.30W/m ² K | 0.24W/m ² K |
| Party Walls | 0.20W/m ² K | 0.00W/m ² K |
| Cold Roof | 0.20W/m ² K | 0.11W/m ² K |
| Floor | 0.25W/m ² K | 0.15W/m ² K |
| Glazing | 2.00W/m ² K | 1.30W/m ² K |
| Door | 2.00W/m ² K | 1.40W/m ² K |
| Air Permeability | 10 m ³ /(h.m ²) @ 50 Pa | 5.0 m ³ /(h.m ²) @ 50 Pa |



7.2 Site Emission Rate

The specification summarised overleaf was modelled in SAP to determine the anticipated emission rate of the site. The table below summarises the results calculated.

Table 5 – Birch Avenue Emission Rate

| House Type | No | Target Emission Rate (kg/year) | Calculated Emission Rate (kg/year) |
|---------------|-----------|--------------------------------|------------------------------------|
| Philosopher | 6 | 18,105.41 | 14,126.02 |
| Sculptor | 3 | 8,596.62 | 6,792.91 |
| Silversmith | 6 | 17,610.91 | 13,665.96 |
| Scrivener | 6 | 16,615.96 | 13,091.76 |
| Mason | 11 | 27,988.88 | 22,240.22 |
| Quilter | 4 | 9,277.18 | 7,381.47 |
| Thespian | 7 | 16,874.91 | 13,522.09 |
| Tailor | 4 | 7,816.84 | 6,231.28 |
| Joiner | 4 | 6,738.67 | 5,374.13 |
| Baker | 17 | 35,745.18 | 28,391.73 |
| Woodcarver | 8 | 17,691.86 | 13,710.74 |
| Saffron | 1 | 2,874.34 | 2,227.54 |
| Ploughwright | 4 | 9,818.21 | 7,744.73 |
| Souter/Glover | 4 | 5,998.70 | 4,842.31 |
| TOTAL | 85 | 201,753.67 | 159,342.88 |

The calculations confirm that the proposed energy efficiency measures and specification of an air source heat pump will shrink CO₂ emissions by 42,410.79kg/year or 21.02% over the site's target emission rate.



7.3 Reduced Fabric Energy Efficiency Ratings

The specification summarised overleaf was modelled in SAP to determine the Target Fabric Energy Efficiency Rating and Dwelling Fabric Energy Efficiency Rating of each house type. The table below summarises the results calculated

Table 6 – Birch Avenue Energy Efficiencies

| House Type | TFEE (kWh/year) | DFEE (kWh/year) |
|---------------|-------------------|-------------------|
| Philosopher | 40,619.52 | 33,767.04 |
| Sculptor | 19,373.16 | 16,595.52 |
| Silversmith | 40,526.64 | 34,198.56 |
| Scrivener | 36,696.60 | 31,208.64 |
| Mason | 60,036.90 | 51,217.32 |
| Quilter | 19,200.16 | 16,492.00 |
| Thespian | 36,210.51 | 31,254.16 |
| Tailor | 14,833.60 | 12,731.20 |
| Joiner | 11,915.04 | 10,283.52 |
| Baker | 68,185.36 | 58,553.76 |
| Woodcarver | 36,192.00 | 30,039.36 |
| Saffron | 5,880.00 | 4,880.40 |
| Ploughwright | 20,585.36 | 17,521.84 |
| Souter/Glover | 10,107.11 | 9,190.46 |
| TOTAL | 420,361.96 | 357,933.78 |

Table 6 confirms that the constructed site's area weighted average Fabric Energy Efficiency rating will better Part L of the Building Regulations by 14.85%. This reduction is only achievable through the specification and construction of an efficient and resilient building envelope.

7.4 Electric Vehicle Charging

To ease the transition to low carbon transportation, electrical vehicle charging points will be provided to those private plots that have parking spaces on plot. An annotated site plan accompanies this Statement confirming the provision.



7.5 Future Retro-fit Measures

In 2019 Babergh Mid Suffolk Councils declared a Climate Emergency. As part of the Declaration, the Council requires Sustainability Statements to include details on the retrofit measures future homeowner could implement to reduce the carbon footprint of their home.

Fabric Enhancements

There will be little scope to amend the u-values of each building envelope. The external cavity walls will be fully insulated with a high-performance injected fibre. For obvious reasons it would not be practical to upgrade an existing insulated ground floor. It may be possible to add additional layers of loft roll to the cold roof construction. However, the Fabric First specification already achieves a u-value of $0.11\text{W}/\text{m}^2\text{K}$. Further enhancements will produce negligible improvements in energy efficiency.

Photovoltaic Panels

It will be possible for home owners to install photovoltaic (PV) arrays on the roof slopes of their homes. The generation potential of each array will be determined by the size of the available roof space, the orientation of the property and the budget constraints of each home owner. The SAP methodology estimates that a typical PV array of 2.5kWp will cost between £3,500 and £5,500. It should be noted that as the carbon intensity of the National Grid continues to lessen, as the UK further transitions to low or zero carbon electricity generation, the carbon offset potential of individual small scale PV installations will lessen.

Air Source Heat Pumps

The current specification for Birch Avenue includes the provision of air source heat pumps. This specification is in line with the Government's vision for low carbon heating in homes and the draft specification of the Future Homes Standard. The installation of heat pumps at Birch Avenue will ensure each home is "zero carbon ready." The carbon footprint of the development will shrink in the years ahead as the National Grid continues to be decarbonised. This is independent of any measures taken by home owners.



8 EVALUATION

This Statement accompanies the planning application for the Bellway Homes residential development at Birch Avenue, Bacton and includes details on material selection, pollution, waste management, water efficiency and energy efficiency. The key endeavours are;

- Bellway Homes operates a robust Sustainable Procurement Policy which emphasises the legal and sustainable sourcing of timber and other building materials;
- The construction specification for the site achieves A+ and A ratings when assessed against the Building Research Establishments Green Guide;
- Eco sanitary ware and flow restriction devices will be installed in every property;
- A site waste management plan will operate at the development;
- Recycling facilities will be provided to each home;
- Pollution during the construction phase will be minimised through the adoption of best practice measures with respect to waste, dust and air pollution;
- Best practice policies with respect to site pollution will be implemented as standard;
- The house types elevations proposed aid the ability of each home to take advantage of solar gain;
- The construction and services specification proposed at Birch Avenue achieves robust energy efficiency standards;
- Air source heat pumps will be included in the heating designs of each home. This will ensure the development has a low carbon source of space and hot water heating; and
- The site's forecasted emission rate betters the Building Regulations by 21.02% and the forecasted Fabric Energy Efficiency measure betters the Building Regulations by 14.85%.

In conclusion the strategy addresses energy efficiency, water efficiency, pollution and material selection. When assessed against the definition included in the NPPF, the proposals can be described as sustainable. We therefore recommend the approval of these measures.