



Sustainability Statement

Land to the South of Cemetery Road, Jump

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Revision History

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About Environmental Economics

Our team of experienced consultants specialise in construction and building energy. We have qualifications in sustainability, energy, engineering, building physics and construction as well as environmental, quality management and auditing.

We develop flexible, practical, cost-effective specifications for our clients through identifying solutions and delivering design advice. This includes the following disciplines:

- *Energy Reports*
- *Sustainability Statements*
- *Compliance assessments and advice covering*
 - *Part L (SAP) & Future Homes Standard*
 - *Part F (ventilation)*
 - *Part G (water)*
 - *Part O (overheating)*
- *Overheating - TM59 dynamic modelling*
- *Overheating – simple method*
- *Life cycle carbon assessments*
- *Net zero carbon assessments*
- *BREEAM*
- *SBEM (existing and new build)*
- *Minimum Energy Efficiency Standards (MEES)*
- *Thermal Bridging (Psi value calculations)*

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1. Executive Summary

- 1.1.1. Environmental Economics Ltd has been commissioned by Barratt Homes Yorkshire West to prepare a sustainability statement for the residential site Land to the South of Cemetery Road, Jump. This document sets out how the development proposal presents a positive sustainable development.
- 1.1.2. As part of the sustainable development strategy, the proposed development has been designed to consider sustainability in accordance with the National Planning Policy Framework (NPPF) and the Barnsley Local Plan.
- 1.1.3. The proposed development is designed to achieve carbon emissions in line with both Part L 2021 and Future Homes Standard through the employment of low and zero carbon technologies.
- 1.1.4. Enhanced building fabric specification with a Fabric-First approach including high efficiency insulation.
- 1.1.5. The use of smart meters will provide occupiers with real time data which will allow occupiers to manage their energy consumption, save money and reduce Carbon. This is particularly important as the UK migrates towards half-hourly pricing levels and the proposed smart grid system.
- 1.1.6. Potential overheating risk will be assessed in accordance with Approved Document O.
- 1.1.7. The proposed development is situated in Flood Zone 1, as identified by the Environment Agency Flood Map for Planning, and has been assessed against the requirements of Policy CC3 of the Barnsley Local Plan. There is also small pocket of surface water flooding along the south-eastern boundary.
- 1.1.8. Water efficiency has been reviewed as part of the design process and a Part G compliant specification will be adopted, resulting in the higher standard (lower water use) of 110 litres/person/day.
- 1.1.9. Embodied carbon has been assessed for the build specification of this development which shows a low level of Embodied Carbon when compared against UK standards.
- 1.1.10. While the development is still at an early stage of the design process, it is considered that the proposal meets or exceeds the required level of sustainability across all given criteria.

2. Project Overview

2.1. Description of Site

2.1.1. The site proposal consists of the construction of 270 residential dwellings.

2.1.2. The proposed site plan is shown in Appendix A.

2.2. Brief

2.2.1. The planning authority for this site is Barnsley Metropolitan Borough Council. The local plan containing the relevant planning policy is the Barnsley Local Plan.

2.2.2. Within the Local Plan there are several relevant policies which are addressed herein.

2.2.3. Policy CC1 Climate Change

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

Giving preference to development of previously developed land in sustainable locations;

Promoting the reduction of greenhouse gas emissions through sustainable design and construction techniques; Locating and designing development to reduce the risk of flooding;

Promoting the use of Sustainable Drainage Systems (SuDS);

Promoting and supporting the delivery of renewable and low carbon energy; and

Promoting investment in Green Infrastructure to promote and encourage biodiversity gain.

2.2.4. Policy CC2 Sustainable Design and Construction

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.

2.2.5. Policy CC3 Flood Risk

The extent and impact of flooding will be reduced by:

Not permitting new development where it would be at an unacceptable risk of flooding from any sources of flooding, or would give rise to flooding elsewhere;

Ensuring that in the Functional Floodplain (Flood Zone 3b), only water compatible development or essential infrastructure (subject to the flood risk exception test) will be allowed. In either case it must be demonstrated that there would not be a harmful effect on the ability of this land to store floodwater;

Requiring developers with proposals in Flood Zones 2 and 3 to provide evidence of the sequential test and exception test where appropriate;

Requiring site-specific Flood Risk Assessments (FRAs) for proposals over 1 hectare in Flood Zone 1 and all proposals in Flood Zones 2 and 3;

Expecting proposals over 1000 m² floor space or 0.4 hectares in Flood Zone 1 to demonstrate how the proposal will make a positive contribution to reducing or managing flood risk; and

*Expecting all development proposals on brownfield sites to reduce surface water run-off by at least 30% and development on greenfield sites to maintain or reduce existing run-off rates requiring development proposals to use Sustainable Drainage Systems (SuDS) in accordance with policy CC4; and
Using flood resilient design in areas of high flood risk.*

2.2.6. Policy CC4 Sustainable Drainage Systems (SuDS)

All major development will be expected to use Sustainable Drainage Systems (SuDS) to manage surface water drainage, unless it can be demonstrated that all types of SuDS are inappropriate. The Council will also promote the use of SuDS on minor development.

To enable the Council to determine the suitability of a proposed SuDS scheme:

Outline Planning applications must be supported by a conceptual drainage plan and SuDS design statement; and

Detailed Planning applications must be supported by a detailed drainage plan and SuDS design statement, which should contain information on how the SuDS will operate, be managed and maintained for the lifetime of the development.

2.2.7. Policy RE1 Low Carbon and Renewable Energy

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:

The character of the landscape and appearance of the area;

Living conditions; Biodiversity, Geodiversity and water quality;

Heritage assets, their settings and cultural features and areas;

Key views of, from or to scenic landmarks or landscape features;

Highway safety, or

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.

2.2.8. This report seeks to address the planning policies relevant for the proposed site and present a sustainable strategy.

2.2.9. This report should be read in conjunction with other reports prepared for this development.

2.3. Building Regulations

- 2.3.1. All newbuild development must comply with Building Regulations. The Approved Document L 2021 (AD-L 2021) provides for a 31% reduction in Carbon emissions over the previous 2013 edition.
- 2.3.2. It is understood that part of Cemetery Road, Jump will be developed in accordance with AD-L 2021.
- 2.3.3. Parts of this development may also fall under the Future Homes Standard (also known as Part L 2026), which was released on 24th March 2026 and represents an improvement over Part L 2021 building regulations by 49%.
- 2.3.4. Future Homes Standard will come into effect on 24th March 2027, with a 12-month transitional arrangement. Sites which have been notified to local authorities prior to this date have 12 months transitional allowance on a plot-by-plot basis. That is to say if a plot has commenced construction prior to 24th March 2028, it will be built under AD-L 2021.
- 2.3.5. The continual betterment of building regs from Part L 2013 through Part L 2021 to Future Homes Standard is shown in Figure 1 below:

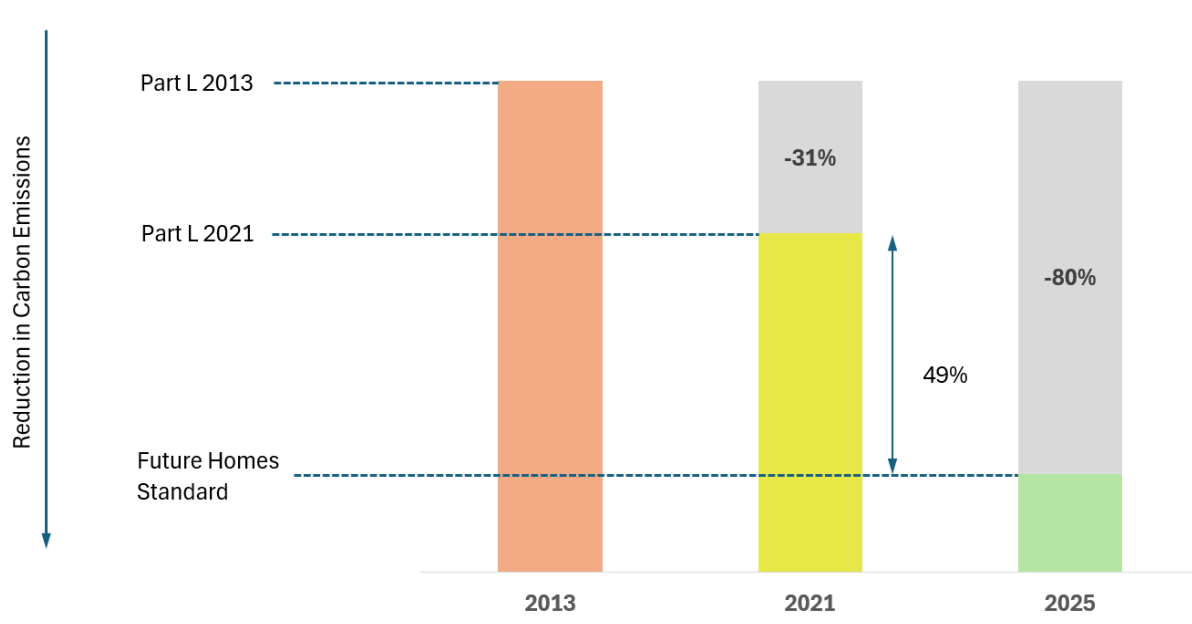


Figure 1: Regulatory targets for Carbon emissions. Percentage figures are reductions over Part L 2013 baseline.

3. Sustainability Appraisal

3.1. Green Guide Specification

3.1.1. The Green Guide is used to examine the environmental impact of the construction materials commonly used within dwellings.

3.1.2. The standard specification of materials used by Barratt Homes consists of predominantly 'A' and 'A+' Green Guide rated elements. 'A+' rated construction elements include: pitched roof construction, internal upper floors, internal timber partitions and external cavity walls.

3.1.3. Table 1 below shows a sample of materials used by Barratt Homes and their Green Guide rating.

Table 1

<i>Element</i>	<i>Green Guide Equivalent (online)</i>	<i>Code</i>	<i>Rating</i>
Ground Floor Option A (Beam and Aircrete Block)	Screed on insulation laid on grouted beam and Aircrete block flooring.	820140014	B
Ground Floor Option B (Beam and EPS Block)	Structural topping on beam and expanded polystyrene flooring	820140015	A+
Internal Upper Floors	Chipboard decking on timber I joists	807280024	A+
Wall – External Timber Frame (single and 2 storey)	UK produced natural slate on timber battens, breather membrane, OSB/3 sheathing, timber frame with insulation, vapour control layer, plasterboard on battens, paint	806210566	A+
Wall – Internal Partition (timber) non loadbearing	Timber stud, plasterboard, paint	809760003	A+
Wall – Internal Partitions (masonry) (Used in very small number of cases)	Medium dense solid blockwork, plasterboard, paint	809180008	B
Wall – Party (timber)	Robust Detail E-WT-2: Twin timber frames with 50mm min. between sheathing and 240mm min. between wall linings; to each side 9mm OSB sheathing, 60mm mineral wool (10-60kg/m ³) between studs, 2 or more layers gypsum based board (22kg/m ²) and emulsion paint	818570065	A+
Windows	PVC-U window with steel reinforcement, double glazed	813100009	A
Insulation	Glass wool insulation - density 12 kg/m ³	815320001	A+
Pitched Roof	Timber trussed rafters and joists with insulation, roofing underlay, counterbattens, battens and concrete plain tiles	812410017	A+

3.2. Responsible Sourcing

- 3.2.1. BDW has an established network of responsible sourcing certified suppliers that have been carefully selected to align with sustainability and responsible sourcing policies.
- 3.2.2. Materials used within construction of the proposed development will be at a certified standard, proving the materials sourced have been done so with sustainability in mind.
- 3.2.3. Responsible sourcing of materials can come in a variety of certifications including: BES 6001, FSC, PEFC and EMS.
- 3.2.4. Appendix B shows a wide range of Barratt's suppliers with material responsible sourcing certification including:
- *Wallboard supplier British Gypsum;*
 - *Aggregate/cement product supplier Tarmac;*
 - *Aircrete block supplier H+H Celcon;*
 - *Timber frame supplier Oregon Timber Frame.*
- 3.2.5. Additionally, the site aims to utilise timber that is procured sustainably and independently accredited by either the FSC or PEFC schemes. The Barratt Redrow Sustainable Procurement Policy can be seen in Appendix C. The policy sets a high standard of sustainability when sourcing materials.

3.3. Waste Management

- 3.3.1. Appendix D shows an extract of BDW's Sustainability Framework 2020+ that sets targets for waste management including at least 95% construction waste diverted from landfill as well as continued reductions in construction waste intensity.
- 3.3.2. The scheme aims to use waste reduction procedures to enable waste reduction and diversion of waste from landfill. The goal is to minimise waste and maximise re-use of resources in response to climate change. BDW achieved 97% of construction waste diverted from landfill in 2018 and BDW's Sustainability Framework 2020+ sets targets to continue diversion from landfill and reduce construction waste intensity.
- 3.3.3. Adequate internal and external space will be provided for the collection and sorting of operational non-recyclable and recyclable waste. Refuse collection will be designed to be in line with the surrounding area.

3.4. Flood Risk

- 3.4.1. Appendix E shows the Environment Agency Flood Risk Map for the site location.
- 3.4.2. All residential development on site will be within Flood Zone 1, the lowest probability evaluated by the Environment Agency. Flood Zone 1 is defined as land with less than 1 in 1000 annual probability of river or sea flooding.
- 3.4.3. Zone 1 flood risk is considered best practice for a positive sustainable development and would be well located for a site that is resilient to climate change.
- 3.4.4. There is a small pocket of surface water flooding along the south-eastern boundary. The masterplan indicates that this area is proposed as public open space, and therefore no built development is intended within it.
- 3.4.5. This therefore complies with Policy CC3 of the Barnsley Local Plan.

3.5. Sustainable Urban Drainage

- 3.5.1. A Drainage and Flood Risk Assessment has been carried out for the site.
- 3.5.2. This study included a SuDS Assessment. The assessments carried out consider any potential drainage and flood risk issues which could arise from the development and put forward recommendations to mitigate these impacts.
- 3.5.3. Full details of the recommendations put forward can be found in the associated report.
- 3.5.4. This therefore complies with Policies CC1, CC3 and CC4 of the Barnsley Local Plan.

3.6. Ecology

- 3.6.1. A full Ecology Assessment has been carried out for the site.
- 3.6.2. The Ecology Assessment takes into account any habitats and species which could be impacted by the proposed development and puts forth recommendations on how to minimise any potential impacts and protect or improve any habitats.
- 3.6.3. Full details of the recommended approach can be found in the associated report.

3.7. Electric Vehicle Charging

- 3.7.1. Providing EV charging points or the ability to retrofit EV charging points is an exemplary measure for sustainability and promotes sustainable lifestyles for residents.
- 3.7.2. With the provision of EV charging points, residents would have ready opportunity to purchase / lease EV's and have immediate secure charging infrastructure. This aligns with current government policy to stop the sale of new petrol and diesel cars by 2035 (GOV.UK, April 2025).
- 3.7.3. The BEAMA Guide to Electric Vehicle Infrastructure (BEAMA, 2015) illustrates the various "Modes" of electric car charging, with Mode 1 being the slowest, and Mode 4 the fastest. Mode 1 is not recommended and Mode 4 is only recommended for public and commercial use. Modes 2 to 3 are suitable for dedicated charging of EV's at domestic properties. Please refer to Figure 2 below which shows common infrastructure side connections for Mode 2 and 3.

CONNECTOR TYPE	BS 1363	BS EN 60309-2	BS EN 62196-2 TYPE 2	BS EN 62196-2 TYPE 3
				
MODE	2	2	3	3
MAX POWER (kW) (at mains voltage i.e. harmonised EU voltages)	Single phase - 3	Single phase - 28.8 Three phase - 86.6	Single phase - 16.1 Three phase - 43.7	Single phase - 7.4 Three phase - 43.7
NOTES	Standard UK household plug & socket-outlet system	Standard industrial plug & socket-outlet system	Specialist EV	Specialist EV

Figure 2 – Common infrastructure options for Mode 2 and 3 EV charging points (BEAMA, 2015)

- 3.7.4. It is currently proposed that there will be provision of one EV charging point for all plots with dedicated parking.
- 3.7.5. The full specification of these charging points will be determined during detailed design stage.
- 3.7.6. The development therefore complies with Approved Document S of the 2021 Building Regulations.

3.8. Water Use

3.8.1. The design team will implement a specification which complies with the optional requirement of 110 litres/person/day as set out in Approved Document G 2015 with 2016 amendments (AD-G).

3.8.2. While the build specifications are not yet set, the table below provides an example of a compliant strategy, delivering reduced water consumption of 110litres/person/day.

		(1)	(2)	(3)	(4)
Installation type	Unit of measure	Capacity / flow rate	Use factor	Fixed use (litres/person/day)	Litres/person/day = [(1) × (2)] + (3)
WC (dual flush)	Full flush volume (litres)	4	1.46	0.00	5.84
WC (dual flush)	Part flush volume (litres)	2.6	2.96	0.00	7.696
Taps (excluding kitchen/utility room taps)	Flow rate (litres/minute)	5	1.58	1.58	9.48
Bath (where shower also present)	Capacity to overflow (litres)	170	0.11	0.00	18.7
Shower (where bath also present)	Flow rate (litres/minute)	9	4.37	0.00	39.33
Kitchen/utility room sink taps	Flow rate (litres/minute)	5	0.44	10.36	12.56
Washing machine	Litres/kg dry load	8.17	2.1	0.00	17.157
Dishwasher	Litres/place setting	1.25	3.6	0.00	4.5
	(5)	Total calculated use = (Sum column 4)			115.3
	(6)	Contribution from greywater (litres/person/day) from Table 4.6			0
	(7)	Contribution from rainwater (litres/person/day) from Table 5.5			0
	(8)	Normalisation factor			0.91
	(9)	Total water consumption = [(5) – (6) – (7)] × (8)			104.9
	(10)	External water use			5.0
Approved Document G	(11)	Total water consumption = (9) + (10) (litres/person/day)			109.9

3.8.3. Alternative component consumption rates are available which can achieve the required water consumption. The rates provided are representative only.

3.8.4. The calculated results show that utilisation of the representative component's water consumption can achieve a maximum of 105 litres per person per day internally, and additional external water use of 5 litres per person per day.

3.9. Overheating Risk

- 3.9.1. Extreme temperatures have an adverse effect on health and wellbeing. 'Overheating' occurs when the building temperature exceeds the limits of thermal comfort. Since UK weather data records began in 1884, the twelve warmest years have all occurred since 2003, including 2020, 2022, 2023, 2024 and 2025. Future temperatures should be considered across a building's lifetime to ensure further thermal comfort. Furthermore, advances in air tightness and thermal insulation levels have exacerbated overheating risk.
- 3.9.2. The Building Regulations (Amendment) (England), 2021, requires all residential buildings limit overheating risk by limiting unwanted solar gains in summer and by providing an adequate means of removing excess heat from the indoor environment. This can be assessed either by using the simplified method, which is set out in Section 1 of Approved Document O (ADO), or by using the dynamic thermal modelling method, as set out in Section 2 of ADO, which is based on CIBSE TM59.
- 3.9.3. There are many factors to consider when assessing overheating risk, such as the building orientation, cross ventilation, glazing area, window openable area, total solar transmittance of glazing, building fabric efficiency, solar shading and ventilation provision.
- 3.9.4. Solutions to mitigate overheating risk include improving shading, which limits solar gains, and increasing ventilation, which can help purge habitable rooms of hot air. Shading solutions include low g-factor glazing, brise soleil, shutters and overhangs. Ventilation solutions include low-noise extract fans, mechanical ventilation (if heat recovery is specified, it must include a summer bypass), and ceiling fans. All ventilation systems must meet the noise requirements set out in Approved Document F.
- 3.9.5. The safety and reasonable enjoyment of the residence of all occupants must be considered when designing overheating solutions. If all strategies to passively cool the building are insufficient, then mechanical cooling may be used.

4. Embodied Carbon

- 4.1.1. As building regulation requirements and decarbonisation of grid electricity make buildings more energy efficient, operational Carbon emissions will make up a decreasing proportion of a development's emissions over time.
- 4.1.2. Lifecycle Carbon Assessments (LCA) are therefore becoming increasingly important to value engineer a development and reduce the carbon emissions associated with other aspects of a development, such as embodied carbon (emissions generated in producing materials).
- 4.1.3. Whilst not yet a requirement under Building Regulations, Lifecycle Carbon Assessments are increasingly a requirement of local planning policy, most notably within the Greater London Authority (GLA) through its inclusion in the London Plan.
- 4.1.4. An Embodied Carbon Assessment is required under the Barnsley Local Plan Sustainable Construction and Climate Change Adaptation SPD.
- 4.1.5. By assessing the LCA of their standard build specifications at this stage, BDW are pre-empting the wider adoption of LCA requirements and ensuring that they are meeting or exceeding the current industry standard benchmarks.
- 4.1.6. Environmental Economics have modelled a sample house type in the timber frame specification utilised on this development using One Click LCA software.
- 4.1.7. One Click LCA utilises a library of Environmental Product Declarations (EPDs) including product specific, manufacturer specific and generic EPDs in accordance with RICS guidance.
- 4.1.8. One Click LCA follows the Royal Institute of Chartered Surveyors (RICS) Conventions and reports on RIBA life cycle stages A-C, as shown in Table 2 below:

Table 2 – RIBA life cycle stages for Whole Life Carbon analysis

<i>Product Stage</i>			<i>Construction Process Stage</i>		<i>Use Stage</i>							<i>End of Life Stage</i>			
Raw material supply	Transport	Manufacturing	Transport to building site	Installation into building	Use / application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport	Waste processing	Disposal
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4

- 4.1.9. The assessment is based on an assumed 60 year life-cycle for a building, in accordance with RICS PS 2023 guidance.
- 4.1.10. In depth bill of quantities are not currently available, so measurements and volumes of individual materials are based on the available drawings. Materials utilised within the assessment are based on the specification found in section 5.3 of this report.
- 4.1.11. Figures 3 and 4 below shows the carbon emissions of the sample build specification per life-cycle stage:

Global warming potential - Non-Decarbonised scenario kg CO₂e - Life-cycle stages

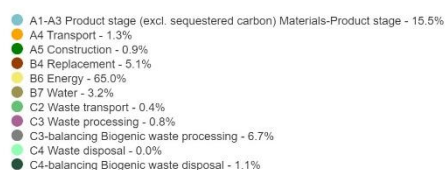


Figure 3 - Carbon emissions per life-cycle stage

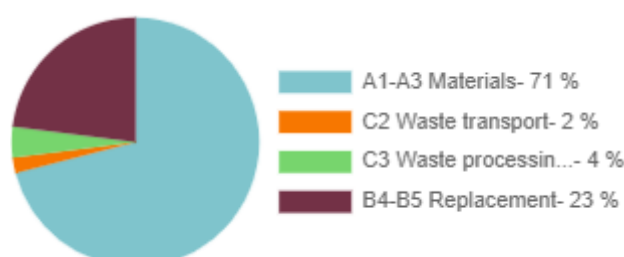


Figure 4 - Embodied carbon per life-cycle stage

- 4.1.12. Figure 3 shows that the largest contributing factors to the overall emissions associated with this assessment are operational energy.
- 4.1.13. Figure 4 shows embodied carbon emissions with operational emissions removed, which shows that RIBA stages A1-A3 are the most contributing factors in relation to embodied carbon.
- 4.1.14. This shows that the greatest savings in emissions can be made through improvements to the operational energy usage and the material specification used for the development. As the build specification progresses, materials can be selected which improve both the operational energy efficiency (in order to reduce B6) and the material embodied carbon (A1-A3).

4.1.15. For the purposes of this section, material embodied carbon (A1-A3) is the focus.

4.1.16. Figure 5 below shows which building elements have the greatest impact on embodied carbon emissions:

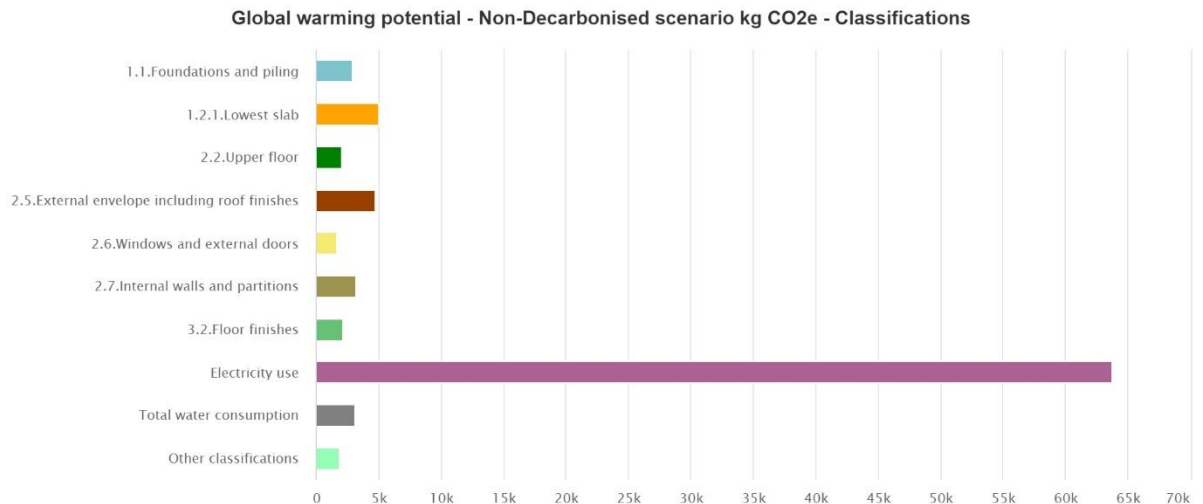


Figure 5 - Embodied carbon emissions per building element

4.1.17. With the current build specification, it can be seen that the largest contributing material element (excluding operational use) is associated with the lowest slab and the external envelope including roof finishes. It can therefore be seen that improvements can be made through the specification of lower impact materials utilised in these building elements.

4.1.18. Figure 6 below shows how embodied carbon will differ based on both a decarbonised (based on grid decarbonisation assumptions over the life-cycle of the assessment) and non-decarbonised scenario (business as usual):

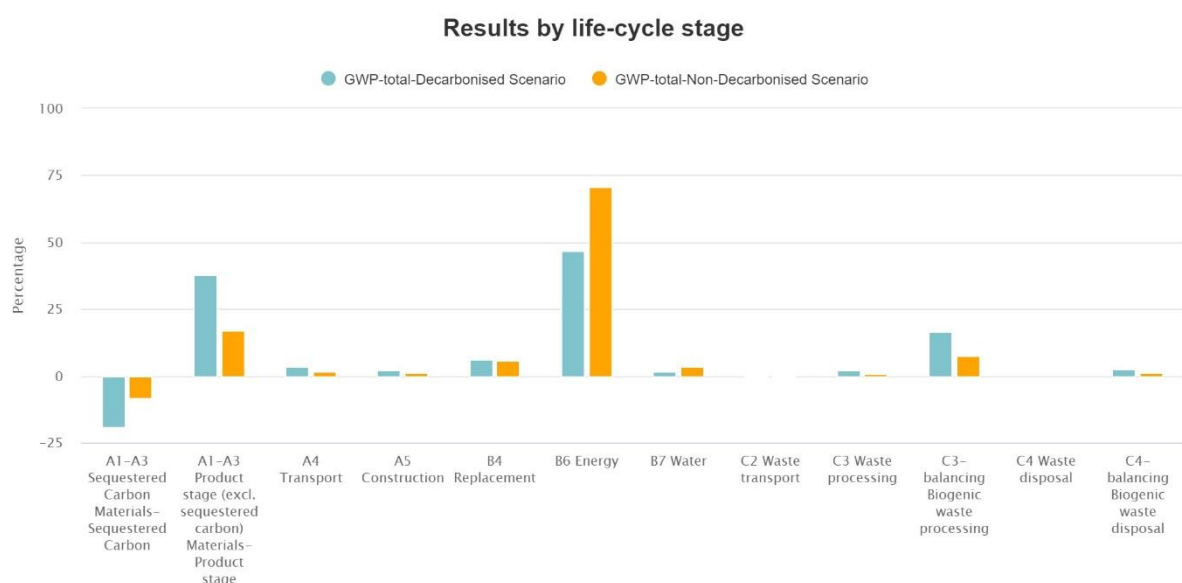


Figure 6 - Decarbonised scenario (blue) vs. non-decarbonised scenario (orange)

- 4.1.19. Figure 6 shows that as grid electricity is predicted to continue decarbonising, the operational emissions associated with a building become a smaller proportion of overall emissions.
- 4.1.20. The predicted continuing decarbonisation of the grid greatly increases the benefits which can be gained from value engineering a build specification to reduce material embodied carbon.
- 4.1.21. To show how the residential build specification for Cemetery Road, Jump compares to industry standard build specifications for the same or similar building types, One Click LCA software has been used to produce an embodied carbon benchmark rating, as show in Figure 7 below:

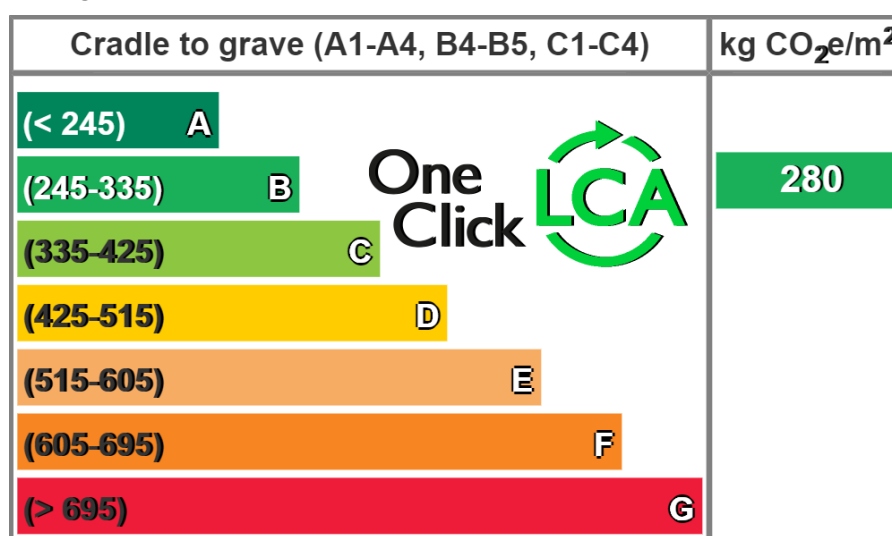


Figure 7 – Embodied carbon benchmark rating for BDW masonry specification

- 4.1.22. The embodied carbon benchmark is calculated by comparing the assessed build specification to available data of the same or similar building types to produce a comparative ranking of how much embodied carbon is associated with the assessed specification.
- 4.1.23. The residential build specification that has been assessed for this development achieves an embodied carbon emission rating of 280 kgCO₂e/m². This level of embodied carbon emissions compares positively against the available data, and is ranked as B.
- 4.1.24. This comparatively low embodied carbon rating shows that the assessed build specification for this development can be considered a positive sustainable specification for residential dwellings.

5. Energy Performance

5.1. Assessment Methodology

5.1.1. Environmental Economics will model the proposed dwellings using the software Design SAP 10 by Elmhurst and approved by BRE. The software provides a number of outputs, and based on the provided specification for this proposed development, we are able to assess the following areas for our calculations:

- *Building regulations compliance, including:*
 - *Carbon emissions (kg CO₂/m²/year);*
 - *Primary Energy Demand (kWh/m²/annum);*
 - *Fabric Energy Efficiency (kWh/m²/annum).*
- *Energy usage per year (kWh/annum);*
- *Energy costs per year (£/annum);*
- *More detailed breakdowns by end use (space heating, water heating, cooking, lighting, appliances).*

5.1.2. Each of these outputs can be used in different ways to analyse the performance of the dwelling. The total regulated carbon emissions for each property is based upon:

- *Space heating;*
- *Water heating;*
- *Electricity for pumps and fans;*
- *Electricity for lighting.*

5.1.3. SAP software is issued by independent software suppliers, and checked and approved on behalf of government by the Building Research Establishment (BRE).

5.1.4. Plots being constructed to Part L 2021 will be assessed utilising Design SAP 10.2, whilst Future Homes Standard plots will be assessed utilising Design SAP 10.3.

5.1.5. The dwellings on the proposed development will be assessed using this methodology during the detailed design stage.

5.2. Design Philosophy

- 5.2.1. Upgrades have been made to a number of elements from a standard build specification in order to improve energy efficiency across the development.
- 5.2.2. The proposed development adopts nationally recognised design and construction principles as the industry moves towards zero carbon. The principles are illustrated in Figure 8 below.

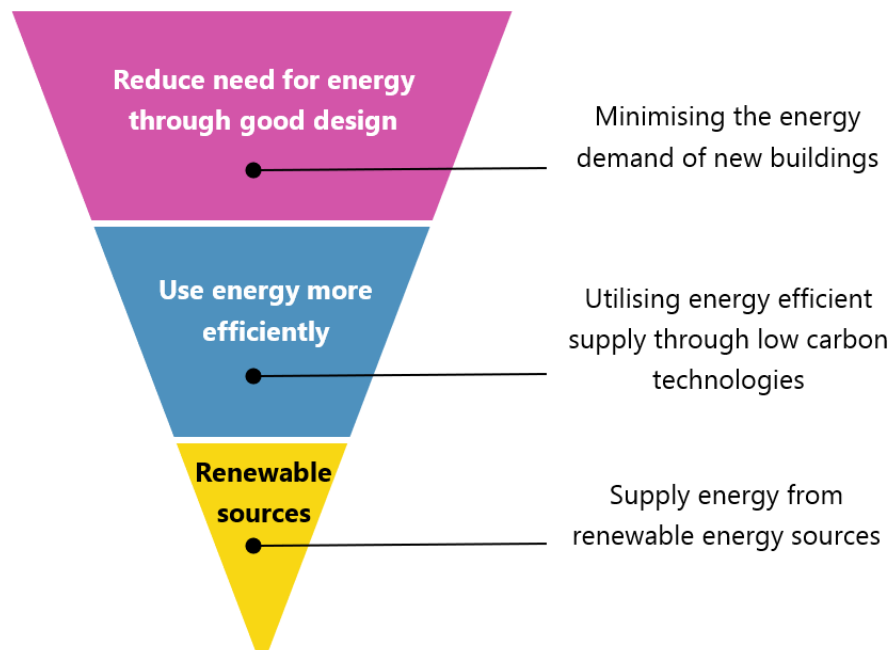


Figure 8 – The Energy Hierarchy

- 5.2.3. In order to reduce the residual carbon emissions a number of improvements were made to the standard material and product specification. These improvements include:
- *Upgraded heating and hot water controls*
 - *Delayed start thermostat*
 - *Design air permeability of 4.00m³/hr/m²*
 - *Bespoke thermal bridging details*

5.3. Fabric Improvements Part L1A 2021

5.3.1. The building fabric for all dwellings was improved from the minimum standards required to an enhanced specification. These fabric improvements reduce the space heating requirement upon a property. The improvements have been made through a combination of upgraded materials and increased insulation thicknesses. Enhanced glazing with a larger transmittance factor allowing for increased solar gains will also be used. Changes to the U-Value of external elements for dwellings built to Part L 2021 are shown in Table 3 below.

Table 3 –Build Specification

<i>Element</i>	<i>Minimum Standard</i>	<i>Improved Specification</i>	
-	<i>W/m²k</i>	<i>Description</i>	<i>W/m²k</i>
Walls	0.26	Timber frame construction insulated with Mineral Wool	0.20
Roof	0.16	500mm Mineral Wool Horizontal Ceiling, Loft Space	0.09
		Sloping Ceiling to have 100mm PUR between joists, and 55mm PUR Board underlaid	0.15
Floors	0.18	225mm TE Platinum Insulation	0.10 - 0.12
Doors	1.60	Double glazed Low-E, u-PVC frame	1.00 - 1.60
Glazing	1.60	Double glazed Low-E, u-PVC frame	1.30

5.3.2. Please note that this specification is not finalised and is subject to change up until detailed design stage.

5.3.3. As improvements are made to the thermal conductivity of main elements, thermal bridging and air permeability becomes increasingly significant in the overall fabric performance. Bespoke thermal bridging designs have been utilised, which achieve much lower heat loss levels in comparison with standard practice.

5.3.4. As a result of following these junction details and focusing on build quality air permeability will also decrease. A target air pressure rating of 4.00m³/hr.m² has been set for all houses on site which is an improvement on the maximum allowable rating in the 2021 Building Regulations.

5.4. Fabric Improvements Future Homes Standard

- 5.4.1. Owing to the timeline of this development it is expected that a proportion of the site will be constructed in accordance with the Future Homes Standard.
- 5.4.2. Tables 4 and 5 below show the comparison of Future Homes Standard requirements to the requirements under Part L 2021:

Table 4 – FHS Services Comparison with Part L 2021

	<i>Part L 2021</i>	<i>FHS</i>
Space + Water Heating	Mains Gas boiler	Heat Pump – ErP A++
Water Storage	Loss = $0.85 \times (0.2 + 0.051 V^{2/3})$ kWh/Day	120mm Insulation
Lighting	80 l/w	120 l/w
WWHRS	Y	Y*
Ventilation	Natural with intermittent fans	Continuous dMEV, 0.15 w/l.s
Airtightness	5m ³ /m ² /hr @ 50Pa	4m ³ /m ² /hr @ 50Pa
PV	Y	Y**

*WWHRS removed from notional dwelling for single story dwellings.

**PV to be removed from notional dwelling for blocks of flats >15 stories or in the case where buildings have limited roof space.

Table 5 – FHS Notional U-Values Comparison with Part L 2021

	<i>Part L 2021</i>	<i>FHS</i>
Floor (W/m²K)	0.13	0.13
Wall (W/m²K)	0.18	0.18
Roof (W/m²K)	0.11	0.11
Window (W/m²K)	1.2	1.2
Door (W/m²K)	1.00	1.00

- 5.4.3. Improvements to building fabric beyond those utilised for Part L 2021 compliance will be made for any plots being constructed to Future Homes Standard. A finalised specification for these plots will be agreed prior to construction of said plots starting.
- 5.4.4. Future Homes Standard will come into force with a transitional period as stated below:
- *12 month period between publication and regulations coming into force followed by a 12 month transitional period.*

5.5. Building Services & Renewable Energy (LZCT)

- 5.5.1. The systems used in a property to supply hot water and heating, as well as control it, are important to the overall energy demand of a property. AD-L 2021 includes requirements for efficiency and controls of such equipment, including space heating, water heating, ventilation and lighting.
- 5.5.2. The design of building services which provide space heating and domestic hot water, ventilation, and lighting, must be considered in a holistic way in order to avoid unintended consequences and to maximise the benefits from such systems
- 5.5.3. After due consideration of the potential LZCT available (shown in Appendix F) the design team propose to adopt the following technologies which provide benefits / compliance with national and local policies as listed:
- **Photovoltaic (PV) panels:**
 - Low noise and visual pollution;
 - Efficient low-carbon source of renewable energy.
 - **PV diverters:**
 - Connects to the immersion heater within hot water cylinder;
 - Utilises energy from PV panels to heat hot water, reducing demand on gas.
 - **Waste Water Heat Recovery (WWHR):**
 - Passive technology, no maintenance required;
 - Recovers waste heat from shower, pre-heats incoming cold. This mitigates the amount of hot water required from the hot water cylinder;
 - Typical systems recover ~60% waste heat.
 - **Flue Gas Heat Recovery (FGHR):**
 - Recovers waste heat from the flue of a boiler;
 - The waste heat is utilised to pre-heat incoming mains cold supply, thereby reducing the energy required from the boiler to lift the incoming main water to the required temperature.
 - **Air source heat pump (ASHP):**
 - No connection to the gas grid;
 - Uses grid electricity as the fuel;
 - Provides 100% space heating and domestic hot water;
 - Minimum co-efficient of performance over 2.5 (250% efficient);
 - ASHP are defined as LZCT. For every 1 kWh of grid electricity consumed they deliver approx. 3kWh into the dwelling (300% efficient). 2kWh is taken from ambient air;
 - Delivers very good performance within Building Regulations assessments;
 - Significant reduction in primary energy demand due to the Coefficient of Performance (COP).

- 5.5.4. It is currently proposed that PV panels and WWHR will be used to improve dwelling performance to the level required for Part L 2021. The amount of PV which will be required for this development is to be calculated at the detailed design stage.
- 5.5.5. For Future Homes Standard it is currently proposed that ASHP and PV will be utilised to improve dwelling performance to the required levels. Calculations for these elements will be carried out at detailed design stage.
- 5.5.6. This level of renewable energy generation and minimisation of greenhouse gas emissions enables the development to comply with requirements laid out in Policies CC1, CC2 and RE1 of the Barnsley Local Plan.
- 5.5.7. For Part L 2021 it is currently proposed to provide heating and hot water via mains gas boilers.
- 5.5.8. Where installed, hot water cylinders can lose a significant amount of energy. To minimise this energy loss and corresponding carbon emissions, cylinders which have higher levels of insulation in comparison to typical hot water cylinders will be used.
- 5.5.9. All pipes connected to hot water storage vessels should be insulated for at least 1m from their points of connection or to the point at which they become concealed
- 5.5.10. The viability of a heat network was considered for this development, however DHNs (District Heating Networks) are generally suited to development with high thermal demand, typically provided by sufficient density or a large anchor load, i.e., high-density flats or leisure centres.
- 5.5.11. The development of highly-insulated, high-efficiency homes such as those proposed limits the heating demand of the site, and therefore, the feasibility and viability of the installation of district heating. For these reasons, DHN is considered unsuitable for this development.
- 5.5.12. Lighting provision will be from LED low energy fittings achieving a minimum efficacy of 100 lamp lumens per circuit watt, an improvement of over 50% from AD-L 2013 performance levels.
- 5.5.13. Smart meters will be installed on all properties, providing:
- Real time information on energy use both in terms of consumption and cost
 - Occupier can manage their energy, save money and reduce carbon emissions
 - Smart meters will also allow for easier switching between suppliers
 - Facilitate a more reactive, price driven, demand-response
 - End estimated billing and eliminate the need for meter readers to visit premises

6. Conclusion

- 6.1.1. This sustainability statement has been produced for the residential site Land to the South of Cemetery Road, Jump.
- 6.1.2. The development strategy sets a high standard of overall sustainability with measures that include:
- Building elements with highest standard 'A+' Green Guide ratings including upper floors, external cavity walls, internal partitions, insulation and pitched roof;
 - Material suppliers with responsible sourcing certification guided by a high-quality sustainable procurement policy;
 - Effective waste management procedures to minimise waste;
 - The implementation of drainage and ecology assessments;
 - The provision of EV charging points to all plots;
 - Efficient internal and external water use in line with building regulations;
 - Low Embodied carbon when compared to UK standard practices for residential build specifications;
 - Enhanced building fabric specification with a Fabric-First approach including high efficiency insulation and provision of efficient appliances;
 - Use of PV and/or WWHR to achieve the efficiency levels required under Part L 2021;
 - Use of ASHP and PV to achieve the efficiency levels required under Future Homes Standard.
- 6.1.3. It should be noted that future policies and building regulations may require an update to the sustainability measures within this report.
- 6.1.4. The proposed site is found to present a positive sustainable development based on the assessed sustainability criteria.

[illegible]

Appendix B – Responsible Sourcing Certificates



Certificate of Registration

RESPONSIBLE SOURCING OF PRODUCTS

This is to certify that:

Saint-Gobain Construction Products
UK Limited
T/A British Gypsum
Head Office
East Leake,
Loughborough
LE12 6HX
United Kingdom

Holds Certificate Number: BES 613170

and complies with the requirements of BES 6001: Issue 3.1 - Framework Standard for the Responsible Sourcing of Products for the following scope. This Responsible Sourcing certification has been carried out under licence using BRE's Responsible Sourcing scheme methodology and underpinning processes.

Gyproc plasterboard, Glasroc specialist board, Thistle plaster, Gyproc cove, Gyproc ready-mix joint cement - Performance rating Excellent.

For and on behalf of BSI:

Matt Page, Managing Director Assurance - UK & Ireland

Original Registration Date: 2014-10-13

Latest Revision Date: 2023-09-01

Effective Date: 2023-09-01

Expiry Date: 2026-08-31

Page: 1 of 4



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Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PR, Tel: + 44 345 080 9000
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.



Certificate of Registration

Responsible Sourcing of Products

This is to certify that:



Tarmac Cement & Lime Limited
Part of Tarmac Holdings Limited
T3, Ground Floor
Trinity Park, Bickenhill Lane
Solithull
Birmingham
B37 7ES
United Kingdom

Holds Certificate Number: **BES 568430**

and complies with the requirements of BES 6001: Issue 4.0 – Framework Standard for the Responsible Sourcing of Products for the following scope. This responsible sourcing certification has been carried out under licence using BRE's responsible Sourcing scheme methodology and underpinning processes.

Asphalt - performance rating Excellent.

For and on behalf of BSI:

Matt Page, Managing Director Assurance - UK & Ireland

Original Registration Date: 2011-03-10

Latest Revision Date: 2024-02-07

Effective Date: 2024-02-07

Expiry Date: 2027-02-07



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A Member of the BSI Group of Companies.



Certificate of Registration

Responsible Sourcing of Products

This is to certify that:

H+H UK Limited
Ightham Sandpits
Borough Green Road
Ightham
Sevenoaks
TN15 9JB
United Kingdom

Holds Certificate Number:

BES 636778

and complies with the requirements of BES 6001: Issue 4.0 – Framework Standard for the Responsible Sourcing of Products for the following scope. This responsible sourcing certification has been carried out under licence using BRE's responsible Sourcing scheme methodology and underpinning processes.

Product Group: Solar Aircrete Blocks, Standard Aircrete Blocks, High Strength Aircrete Blocks, Super Strength Aircrete Blocks, Coursing Units.
Overall Assessment Score: Very Good.

For and on behalf of BSI:

Matt Page, Managing Director Assurance - UK & Ireland

Original Registration Date: 2015-07-23

Latest Revision Date: 2024-07-11

Effective Date: 2024-07-23

Expiry Date: 2027-07-22



Page: 1 of 3

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PEFC International database extract

This extract has been generated on 11.03.2025

Verification link: <https://pefc.org/find-certified/details?cbResetParam=1&EID=E-IFI5J8&CID=C-UFGA0N&LID=L-BU770J>

Oregon Timber Frame - Derby

Oak House, Pioneer Way
Derby
United Kingdom
VAT n°:

Certificate

N°: CATG-PEFC-COC-320
Subcertificate N°:
Type: COC - Multisite
Status: Valid
Validity end: 09.07.2029

Issued by

Certification & Timber Grading (CATG)
29A Princes Crescent
LA4 6BY Morecambe
United Kingdom
sales@catg.co.uk
+441524400632
<http://www.catg.co.uk>

PEFC Trademarks licence

N°: PEFC/16-37-1457
Sublicence N°:
Type: C - Forest related industries
Status: Valid

Issued by

PEFC United Kingdom
Sheffield Technology Parks Cooper Buildings
Arundel Street
S1 2NS Sheffield
United Kingdom
info@pefc.co.uk
+441143072334
<http://www.pefc.co.uk/>

Due to the ongoing military invasion and humanitarian crisis in Ukraine, the Board of PEFC International clarified on March 4 2022 that all timber originating from Russia and Belarus is 'conflict timber' and therefore cannot currently be used in PEFC-certified products. For more information, see: <https://pefc.org/conflict-timber-faq>

Appendix C – Sustainable Procurement Policy



Sustainable Procurement policy

Introduction

Our purpose is: *'Making sustainable living a reality, building strong communities'*. The Group is determined to be the leading sustainable national housebuilder. We believe that fundamental to building quality homes is building a positive environmental, social and economic legacy for future generations. Sustainability presents opportunities for business prosperity and growth, encourages innovation and resilience, and improves our products and customer experience.

We purchase significant volumes of materials, and work with many sub-contractors across the UK. Sustainable sourcing of materials and labour is critical to the delivery of our strategy.

Objectives

We are committed to continuously safeguarding the environment and maintaining good labour relations by:

- Working with suppliers, contractors and supply chains to minimise the negative environmental and social impact of the materials, services and labour within our operations and supply chain that are integral to our business; and
- Developing commercial relationships with partners that embrace sustainable practices and spread best practice through the supply chain.

This Policy sets out a framework that we expect our supply chain partners to apply

and relates to both the products/services they provide to us and the operating activities that they and their respective supply chains are engaged in.

Policy

The key elements of our Policy relating to suppliers and subcontractors are:

- Suppliers must ensure compliance to all mandatory legislation that affects their activities and those of their own supply chain;
- Suppliers must conform to the specific requirements of our health, safety, environmental, quality and responsible sourcing requirements as set out in our Trade Specifications; and
- Suppliers must maintain Health and Safety and Environmental Management Systems that are of a suitable standard for the operations they are engaged in. As a preference, organisations should gain certification to ISO45001 and ISO14001.

Suppliers must maintain an ethical sourcing policy, or other policy, that aims to ensure as a minimum that:

- All statutory legislation (in their country of operation) is adhered to;
- Working conditions are safe and healthy; No child, forced or slave labour takes place and the requirements of the International Labour Organization's conventions are complied with;
- All employees are paid a real Living Wage which is the hourly rate set by the Living Wage Foundation, is based on cost of living and is higher than the legal minimum;



- No individual is expected to work excessive hours; and
- There is no discrimination on the grounds of ethnicity, skin colour, gender, sexual orientation, age or other protected characteristic.

Our suppliers and subcontractors must be prepared to demonstrate how they monitor compliance with these requirements on request.

We will use sustainability criteria including environmental & social impact, quality and price in the assessment and selection of future supply sources.

We will include appropriate sustainability criteria in our tender and contract documentation. Where materials can be ethically sourced (and are economically viable and have equivalent quality and technical performance to alternative offerings), a preference will be given to materials that:

- a) Have a recycled content;
- b) Minimise ecological damage and declines in biodiversity;
- c) Have low embodied carbon as demonstrated by an appropriate method such as an Environmental Product Declaration (EPD);
- d) Utilise less resources and less virgin material by design;
- e) Can be re-used, recycled or recovered;
- f) Minimise packaging waste;
- g) Minimise the use of water;
- h) Use local resources; and

We will provide training for our internal procurement teams on a risk basis. This policy underpins our Group Sustainability, Climate Change and Environment Policies, and is supported by our Timber Sourcing Policy.

This policy is reviewed annually and is approved by the Group Board. It is communicated to key stakeholders and is available on our website.

**David Thomas
Chief Executive
22 October 2024**

Appendix D – Waste Management Targets

Barratt Developments, October 2019

barrattddevelopments.co.uk/sustainability

5

INNOVATIVE EFFICIENT CONSTRUCTION

Our ambition is to minimise our use of materials and energy, reduce waste generation and maximise low carbon opportunities in all aspects of our business through innovation and development.



MODERN METHODS OF CONSTRUCTION (MMC)

OUR TARGET

To apply MMC based products and systems in 20% of our homes by 2020 and 25% by 2025.

ACTIONS

- Increase roll out of low embodied carbon timber frame, offsite ground floor systems and large format blocks.
- Investigate a viable MMC system for apartments.

CONSTRUCTION WASTE

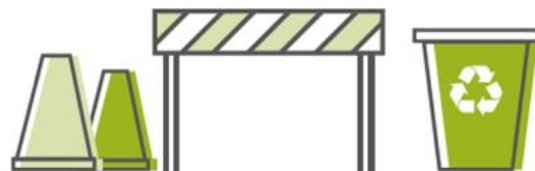
OUR TARGET

To reduce construction waste intensity by 20% from 2015 levels by 2025 (to 5.67t per 100m² legally completed build area).

To maintain diversion from landfill rate at 95% for construction waste.

ACTIONS

- Use the findings from our traditional/timber frame build comparison study to inform our waste reduction plans.
- Increase uptake of suitably sized plasterboards across divisions to avoid off-cuts.
- Work with suppliers and sub-contractors to find ways to reduce waste from chipboard packs and single-use plastics across our supply chain.
- Return 300,000 pallets for repairing, re-use and recycling.



Appendix E – Flood Risk Map (Zone 1)



Flood map for planning

Your reference
Cemetery Road

Location (easting/northing)
438426/401156

Created
28 April 2026 12:06

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

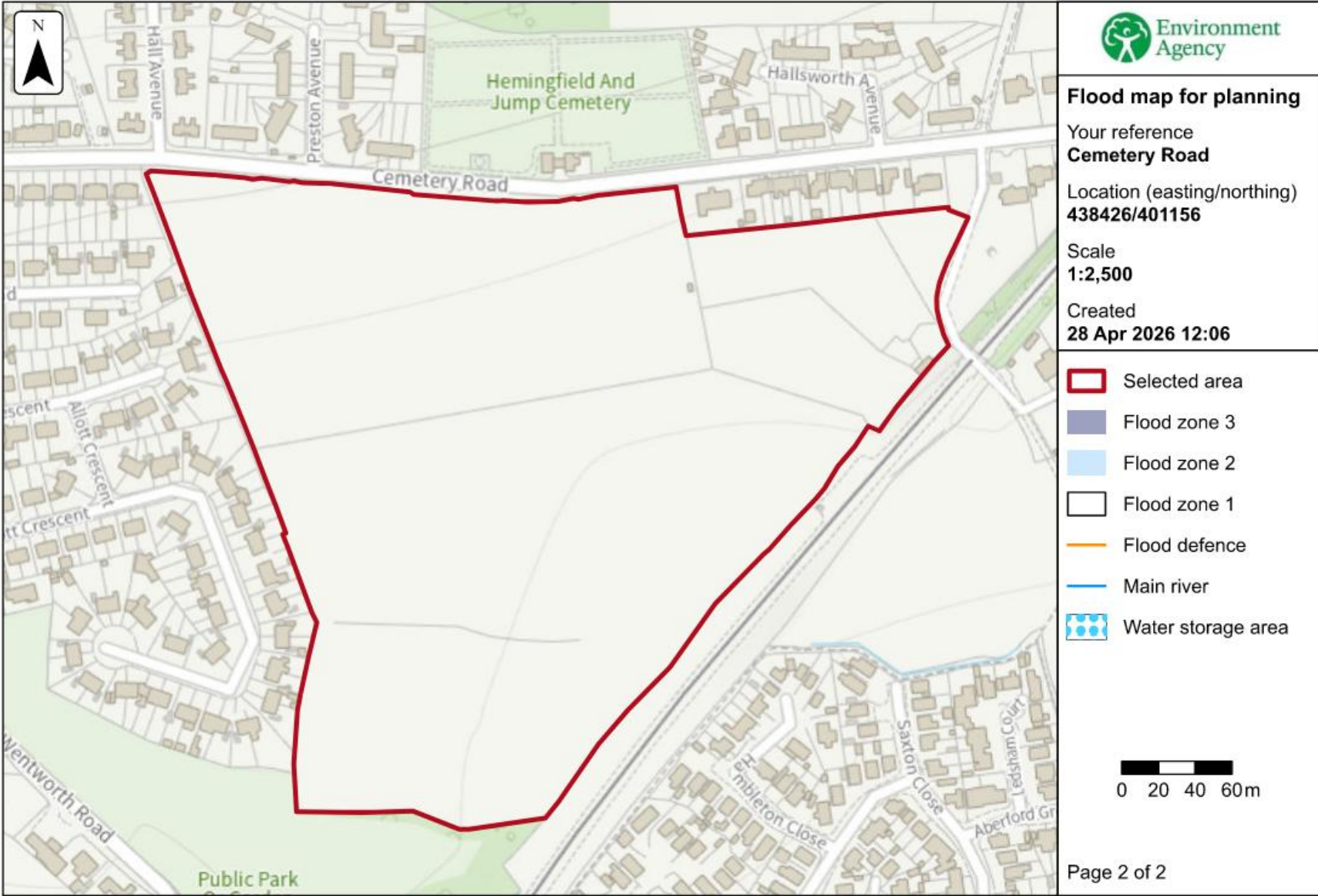
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2026 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



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Appendix F – Low and Zero Carbon Technologies

Description		Advantages	Disadvantages	Adopted?
Solar Hot Water (SHW)	SHW systems generate energy which is used to heat stored water (in a special solar hot water cylinder) which offsets the energy required for the boiler, thereby reducing fuel use and reducing carbon emissions.	Meets approximately 50% hot water demand for a dwelling	PV cells provide more efficient use of roof area compared to SHW	
Air Source Heat Pumps (ASHP)	ASHP provide heating and hot water to a home through thermal energy gathered from air outside the dwelling.	- Net zero ready complying with UK Government policy to reach net zero carbon by 2050. - This is achieved by utilizing low carbon grid electricity. - Typical CoP of 3.5 leading to large energy and carbon savings.	Requires professional commissioning to ensure optimal performance. This ensures cost parity with gas systems.	 (for FHS plots)
Ground Source Heat Pumps (GSHP)	GSHP provide heating and hot water to a dwelling through geothermal effects.	CoP can be greater than that of ASHPs	- Rely on having appropriate ground conditions - Expensive to install	
Biomass Heating Systems	Biomass heating systems burn fuels, considered carbon neutral, to heat the water required for a dwelling.	- Large variety of systems available - Good carbon savings when replacing electrical hot water system	High maintenance	
Wind Turbines	Wind turbines provide electricity directly to a dwelling. They can be added to a property in two ways: pole mounted or building mounted.	Large-scale pole mounted turbines provide great financial return	- Pole mounted requires a lot of space - Building mounted have lower power output	

Description		Advantages	Disadvantages	Adopted?
Photovoltaic (PV) Cells	Generates electricity from solar energy from the sun.	- Provides carbon savings - Excess electricity can be exported to the grid - Low maintenance	Additional capital cost	✓
Waste Water Heat Recovery (WWHR)	Recovers the energy that is lost from the waste water that is generated from showers.	- Reduces load on the main DHW system, leading to greater energy/carbon savings - Passive design requiring very low maintenance	Additional capital cost	✓