



SUSTAINABILITY STATEMENT

READING ROAD, ARBORFIELD

JSP SUSTAINABILITY LTD
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Revision	Revision a – planning policy references updated.	



EXECUTIVE SUMMARY

- The proposed residential development at Reading Road, Arborfield includes the construction of up to 111 no. homes. The application submitted is outline and does not include detailed design of the proposed dwellings.
- The developers, Dandara Southern Limited and Elstree Land, are required by local and national policy to construct energy efficient homes capable of complying with national sustainable design benchmarks.
- The energy strategy for the development includes robust standards of energy efficiency capable of complying with the revised Fabric Energy Efficiency Standard,
- An electric heating strategy will be pursued at the development. Low carbon air source heat pumps will provide the space and hot water heating for every home.
- The site's emission rate is forecast to better the Building Regulations Part L by 68.69%.
- Water efficiency standards of 110 litres per person per day or less will be achieved.
- A site waste management plan will operate at the site.



1 INTRODUCTION

JSP Sustainability Ltd has been commissioned by Dandara Southern Limited and Elstree Land to prepare a Sustainability Statement to accompany the outline planning application for the proposed residential development off Reading Road, Arborfield. The application seeks outline planning permission for the erection of up to 11 no dwellings, associated works, parking, landscaping and publicly accessible open space with access from Reading Road.

In the sections that follow it is demonstrated that the development will exceed national standards, including the most recent amendments to the Building Regulations. By constructing energy efficient homes and incorporating sustainable design features into the design of the site at large, Dandara Homes will deliver a low carbon development lessening the impact of climate change and promoting climate resilience. The following topics are considered in detail;

- Material Selection
- Waste Management
- Health & Well-being
- Water Efficiency; and
- CO₂ Emissions

The outline application does not include a detailed housing design or accommodation schedule and as such this Statement sets out indicative proposals which may be subject to refinement at the reserved matters application. A number of documents have been considered when completing this Statement. 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 L](#) 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.

[The Future Homes Standard: 2019 Consultation on changes to Part L and Part F of the Building Regulations for new dwellings. \(January 2021\)](#) provides a summary of the received responses to the 2019 consultation and the Government's intentions to revise Part L of the Building Regulations in 2022 and introduce a FHS in 2025.



[The Future Homes and Buildings Standards: 2023 Consultation](#) was published in December 2023. Within the consultation the Government presented two options for the technical specification of the Future Homes Standard. Both options confirm a shift to low carbon electric heating.

[Wokingham Borough Core Strategy Development Plan Document](#) includes policy CP1, Sustainable development, which requires new development to “include appropriate on-site renewable energy features” and minimise “energy and water consumption by measures including the use of appropriate layout and orientation, building form, design and construction, and design to account of microclimate so as to minimise carbon dioxide emissions through giving careful consideration to how all aspects of development form.”

[Wokingham Borough Managing Development Delivery Plan](#) includes policy CCO5, Renewable energy and decentralised energy networks. The policy requires residential development of 10 or more homes to include renewable or low carbon technologies capable of reducing CO₂ emissions by 10%.

[Arborfield and Barkham Neighbourhood Development Plan](#) includes policy AD3, High quality development with generous open space, properly landscaped. The policy requires new development deliver good quality design and wherever possible “recognise possible impacts of climate change and consequently reflect sustainable development standards.”

[Wokingham Borough Council Local Plan Update Proposed Submission Plan](#) includes policy CE3, Environmental Standards for residential development. The policy requires development proposals “generate at least the same amount of renewable electricity on-site as it demands over the course of a year.” In addition, a target space heating demand of 15-20kWh/m²/year and total energy demand of 35kWh/m²/year are established.



2 MATERIAL SELECTION

Dandara Homes operates a nationwide timber procurement policy. At its core is a requirement that timber products are sourced from suppliers who can adequately demonstrate and provide appropriate evidence that the supplied material is responsibly and legally procured from a sustainable source. In all instances, suppliers must present Chain of Custody or FSC certificates demonstrating compliance prior to the purchase of materials.

Dandara Homes operates a national sustainable procurement policy which confirms that Dandara will;

- Procure materials with a preference for materials and products with recognised responsible sourcing schemes and or products with Environmental Product Declarations issued or registered by an ISO 14025 compliant operator;
- Adopt a preference for materials and product with recycled content;
- Request that high volatile organic compounds (VOC) paints, finishes and sealant should be designed out; and
- In line with the circular economy and waste hierarchies minimise the specification and use of materials through careful design and site management.

As part of the review of the proposed Sustainability Strategy the environmental impact of the proposed build specification was assessed against the BRE 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+
	Concrete block with cement:lime mortar, plasterboard, paint	809180018	B
Glazing	PVC-U window, double glazed	813100009	A
Roof	Timber trussed rafters and joists with insulation, roofing underlay, counterbattens, battens and tiles	812410008	A+



3 WASTE MANAGEMENT

As an environmentally responsible developer Dandara Homes seeks to minimise waste generation and maximise recycling at all development sites, including at Reading Road, Arborfield. This ambition will be delivered 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 Group's waste management policies.

- 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.
- Work with suppliers to specify the correct size of materials, thereby reducing cuttings and waste material.
- All waste contractors are required to segregate demolition waste off site and provide records of such.
- The regular monitoring and reporting of waste volumes with cross reference to previous performance and annual targets.
- Landfill will be the last option when no economic solution can be found.



4 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. Dandara Homes proposes 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	4 & 2.6 litre dual flush
WHB Taps	4 litres/min
Kitchen Taps	4 litres/min
Bath	180 litres
Shower	8 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)	4.00	1.46	0.00	5.84
	Part Flush (litres)	2.60	2.96	0.00	7.70
Taps (excluding kitchen tap)	Flow rate (litres/min)	4.00	1.58	1.58	7.90
Bath (where shower present)	Capacity to overflow (litres)	180	0.11	0.00	19.80
Shower (where bath present)	Flow rate (litres/min)	8.00	4.37	0.00	34.96
Kitchen/utility room sink taps	Flow rate (litres/min)	4.00	0.44	10.36	12.12
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)				109.98

(5)	Total Internal Water Consumption	109.98
(6)	Normalisation Factor	0.91
(7)	Internal Water Consumption [(5) x (6)]	100.08
(8)	External Water Use	5.00
(9)	Part G Water Consumption [(8) + (7)]	105.08

The calculations above confirm a water consumption of 105.08 litres per person per day.



5 ENERGY STRATEGY

5.1 Local Policy

Policy CP1 of the Core Strategy requires appropriate on-site renewable energy features and the minimisation of energy and water consumption. The policy does not establish targets above and beyond the Building Regulations. Supporting text in paragraph 4.8 notes “the council will expect developers to use the Building Regulations, the Codee for Sustainable Homes and other national guidance (at the time of application).”

Policy CC05 of the Managing Development Delivery Plan requires the installation of renewable or low carbon technologies capable of reducing CO₂ emissions by a minimum of 10%.

5.2 Future Homes Standard

In January 2021 the Government responded to the public consultation on the Future Homes Standard (FHS) and proposed revisions to Part L. The Government confirmed;

“The introduction of the Future Homes Standard will ensure that an average home will produce at least 75% lower CO₂ emissions than one built to current energy efficiency requirements...Homes built under the Future Homes Standard will be “zero carbon ready”, which means that in the longer term, no further retro-fit work for energy efficiency will be necessary to enable them to become zero carbon homes as the electricity grid continues to decarbonise.”

“The Building Regulations will continue to set a performance based standard rather than mandating or banning the use of any technologies. However, to ensure that new homes are zero carbon ready, we intend to set the performance standard of the Future Homes Standard at a level which means that new homes will not be built with fossil fuel heating, such as natural gas.”

“Currently electrification is one of the few proven scalable options for decarbonising heat. As set out in the consultation, we expect heat pumps will become the primary heating technology for new homes under the Future Homes Standard.”

A consultation on the full technical specification for the FHS was launched in December 2023. Within the consultation the Government presented two options for the notional dwelling within the new Home Energy Model. However, both recipes include the specification of electric heat pumps with a co-efficient of performance greater than one.



Importantly the Government concluded that further improvements to fabric energy efficiency were not desirable or necessary;

The performance requirements in this consultation closely resemble the fabric standards in the 2021 Part L uplift to the Building Regulations. We investigated including better walls, floors, roofs, triple glazing and improved thermal bridging. However, the only cost effective and practical improvement we found could be made to the standard was an improvement in airtightness. This improvement in airtightness is matched with the change to a decentralised mechanical extract ventilation system, in line with Approved Document F, Volume 1: Dwellings.

The decision to keep fabric standards largely the same is driven by several factors. Firstly, the level set in 2021 will ensure that (with adequate ventilation) new homes do not generally experience damp and mould or excessive temperatures; an increase in fabric beyond this level does not give significant additional benefit. Secondly, it allows efficient low carbon heating, including modern heat pumps, to function well. The move to low carbon heating is central to the government's commitments to decarbonise housing, and so fabric must be set at a level that allows these systems to work efficiently. Again, increasing fabric beyond the proposed level does not deliver significant gains to the efficiency of heating systems. Thirdly, because the electricity grid is decarbonising rapidly, and the efficiency of heat pumps significantly reduces energy demand, further reducing total energy use is relatively less important than switching to electric sources of heat in efforts to decarbonise. Grid decarbonisation also means that fabric improvements are increasingly not a cost-effective intervention to reduce carbon. This means that as we increase fabric beyond the proposed level, the monetary value of carbon saved by increasing fabric efficiency is less than the cost of installing that additional fabric. As such, there are other interventions that decrease carbon and consumer bills in a more cost-effective way, such as (above) switching heat source and including solar PV panels."

Paragraph 4.2.3, Future Homes & Building Standard Consultation 2023

5.3 Part L of the Building Regulations

In anticipation of the FHS, the Government amended Part L of the Building Regulations on June 15th 2022 to deliver a saving of 31% in CO₂ emissions. The revisions are expected to provide the industry and supply chains with the incentive, skills and time to prepare for the FHS in 2025.

The Part L 2021 Regulations include improved u-value backstops, the inclusion of a new Primary Energy target, updated CO₂ emission factors to take account of the progressive decarbonisation of the national grid and the retention of the Fabric Energy Efficiency Standard. The formulation of the target recipe also makes it necessary to include renewable generation or low carbon heating to deliver compliance with the target metrics.



5.4 Proposed Strategy

In response to the most recent amendments to the Building Regulations, Dandara Homes will construct every home at the application site to a robust energy efficient specification capable of delivering compliance with the revised Fabric Energy Efficiency standard. Furthermore, every home will be heated using low carbon air source heat pumps in advance of the introduction of the FHS. Their inclusion will deliver zero carbon ready homes from the point of first occupation requiring no further retrofit measures by homes owners.

5.5 Energy Efficiency Measures

Dandara 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 proposed 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 will be 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. This will lessen heat loss from the building envelope and lower the energy requirement of every home;
- The detailed house type designs will incorporate intelligent junction design, including the specification of thermally broken lintels, to limit heat loss at non-repeating junctions;
- The heating designs of each house type will include thermostatic and time controls. The heating systems will be designed to a 45 degree flow rate;
- 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 months to prevent overheating. As part of the Building Regulations assessment all of the proposed homes will show a low risk of summer overheating;
- The principal living rooms of every home will have sufficient glazing to allow each to benefit from the positive effects of passive solar gain;
- The glazing specification will achieve a g-value, or solar transmission value, of 0.71 or more. This will aid the benefit of solar gain; and
- The proposed traditional masonry construction will deliver sufficient thermal mass to the structure of each home such that it will retain heat in winter and assist in cooling in the summer;



The table below 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 2021	Specification
Wall	0.26W/m ² K	0.24W/m ² K
Cold Roof	0.16W/m ² K	0.09W/m ² K
Sloped Roof	0.16W/m ² K	0.15W/m ² K
Floor	0.18W/m ² K	0.11W/m ² K
Glazing	1.60W/m ² K	1.30W/m ² K
Door	1.60W/m ² K	1.00W/m ² K
Air Permeability	8.0 m ³ /(h.m ²) @ 50 Pa	4.5-5.0 m ³ /(h.m ²) @ 50 Pa

5.6 Housing Heating Strategy

The services specification of every home will include low carbon monobloc air source heat pumps to provide 100% of each property's space heating and hot water requirement. The systems are highly efficient. Correctly designed, commissioned and installed systems operate with coefficients of performance of 3-4. The systems are fed by mains electricity and their carbon reduction performance is expected to accelerate further as the National Grid decarbonises. The technology has also been identified by the Climate Change Committee and the Government as the preferred solution to low carbon heating from 2025, when new connections to the gas grid are expected to stop. Each home will be **zero carbon ready** at the point of first occupation.



5.7 Forecasted Emission Rate & Energy Requirement

The specification summarised overleaf was modelled in SAP 10 to determine the anticipated emission rate and regulated energy requirement of the site. The table below summarises the results calculated.

Table 5 – Reading Road Emission Rate

House Type	Target Emission Rate (kg/year)	Calculated Emission Rate (kg/year)	Energy Requirement (kWh/year)	Energy Consumption (kWh/year)
Blenheim	4,890.60	1,655.28	31,717.56	11,013.51
Kingston	7,246.32	2,268.63	44,238.70	15,172.50
Penhurst	9,513.54	2,841.47	53,496.16	19,131.84
Goodwood	14,050.29	4,149.94	82,454.13	27,918.11
Chartwell	10,740.79	3,236.01	63,699.36	21,699.28
Frogmore	8,647.59	2,625.01	49,590.90	17,811.36
Woburn	7,269.75	2,092.50	41,492.52	14,100.84
Gosford	5,491.20	1,636.80	30,999.20	11,048.80
Charleston	5,610.38	1,622.46	30,736.02	11,021.16
Wyne	4,984.31	1,414.98	26,855.34	9,605.82
Belmont	844.90	286.84	5,468.41	1,938.41
Bedford	10,479.46	2,965.25	56,381.52	20,182.92
Oakham	6,284.99	1,904.91	35,681.64	12,886.32
Taunton	8,391.60	2,426.76	46,104.03	16,531.74
Maisonettes	11,477.35	5,163.78	56,647.44	34,190.00
TOTAL	115,923.07	36,290.62	655,562.93	244,252.61

The site's forecasted emission rate of 36,290.62kg/year, represents a saving of 68.69% over and above the Building Regulations 2021. As an electrified scheme, the emission rate will lessen in the years ahead as the National Grid is decarbonised. Furthermore, the calculations confirm that 411,310.32kWh/year of energy will be generated by the heat pumps. This equates to 62.74% of the site's energy requirement.



6 EVALUATION

This Sustainability Statement accompanies the outline planning application for the proposed residential development off Reading Road, Arborfield. The Statement has detailed the measures that will guide the construction of the development and considers a number of categories including; materials, water consumption and energy efficiency. These measures can be summarised as follows;

- Dandara Homes operates a robust Sustainable Procurement Policy which emphasises the legal and sustainable sourcing of building materials;
- The construction specification for Reading Road achieves A+-C ratings when assessed against the Building Research Establishments Green Guide;
- A comprehensive, efficient and robust SWMP will be implemented. This plan will adhere to the waste hierarchy of reduce, re-use and diversion from landfill;
- Measures will be incorporated into the design of each property to achieve a water consumption lower than 110 litres per person per day;
- Each home will achieve robust levels of energy efficiency through the careful selection of insulation and intelligent building design and will comply with the amended Fabric Energy Efficiency Standard;
- The lighting, heating and ventilation services of each home will consume energy efficiently;
- The development will pursue an electric heating strategy in advance of the introduction of the Future Homes Standard;
- Low carbon and highly efficient heat pumps will be included in the services design of every home;
- The heat pumps are forecast to generate 62.74% of the site's regulated energy requirement;
- At the first point of occupation each home will be "zero carbon ready." Furthermore home owners will be shielded from future retrofit costs associated with the transition to electric heating; and
- The site's forecasted emission rate represents a 68.69% saving over Part L 2021,



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.