



SUSTAINABILITY STATEMENT

MILTON ROAD, WAKEFIELD

JSP SUSTAINABILITY LTD
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EXECUTIVE SUMMARY

- The proposed Keepmoat Homes development at Milton Road, Wakefield will see the construction of 258 no. 2, 3 and 4 bedroom properties.
- Keepmoat Homes has proposed the adoption of a Sustainability Strategy which incorporates robust practices with respect to site pollution, waste generation and material selection.
- The proposed drainage system will restrict and delay surface water run-off from the site.
- The development proposals include measures to enhance the ecological value of the site.
- Keepmoat Homes has proposed the construction of energy efficient homes in line with current Building Regulations.



1 INTRODUCTION

JSP Sustainability Ltd has been commissioned by Keepmoat Homes to prepare a Sustainability Statement for the proposed residential development off Milton Road, Wakefield. The development proposals include the construction of 258 no. 2, 3 and 4 bedroom properties, landscaping and associated works.

The purpose of this report is to identify and highlight the key sustainable practices to be incorporated into the design and construction of the development and determine if these are in line with current national best practice guidance. The following areas have been considered:-

- Material Selection
- Pollution during construction
- Health and Well being
- Water Use
- CO₂ Emissions

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 and was most recently amended in April 2014.

[Wakefield Metropolitan District Council Local Development Framework \(LDF\) Development Policies](#) document includes Policy D27 requiring the incorporation of LZC technologies with the potential to reduce CO₂ emissions by 20%. Policy D28 requires the incorporation of best practice policies with respect to energy efficiency and water consumption.



2 SUSTAINABLE DESIGN AND CONSTRUCTION

In line with Government directives and aspirations set out in the National Planning Policy Framework (NPPF), the development will incorporate sustainable design principles where possible. Clearly, sustainable construction is a key local, regional and national policy objective which the house building industry is seeking to address in partnership with local and national government. Aside from energy efficiency, sustainable construction encompasses other important considerations such as material selection, waste and drainage. These issues will be commented on in detail in the sections that follow. However in brief the scheme will endeavour to:-

- Provide for a well-designed layout which provides for a safe, healthy, accessible and attractive place for residents to live.
- Maximise opportunities to connect to local public transport and cycling/walking routes to reduce the need to travel by car.
- Encourage social cohesion and reduction in crime and the fear of crime through adherence to secure by design principles.
- Follow the principles of localism by partaking in community consultation at pre and post application stages.
- Seek to provide energy efficient homes to help address the effects of climate change that go over and above building regulation targets.
- Provide for an efficient use of the site.
- Provide sufficient opportunities for recycling, of on-site material during construction and waste created by future residents



2.1 Material Selection

Significant amounts of energy and natural resources are consumed in the production, transportation and disposal of building materials. Two issues are of significant importance in the procurement of materials: the environmental impact of materials and the sourcing of materials. Keepmoat Homes is dedicated to taking pro-active measures to addressing these issues.

Keepmoat Homes operates a nationwide timber procurement policy. At its core is a requirement that timber products are only 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.

Included within Keepmoat Homes environmental procurement policy is a commitment to support and give preference to those materials which have a lesser environmental impact than rival products and to review alternative materials that have a lower environmental impact when developing material specifications. As part of the procurement policy Keepmoat Homes reviews the Environmental Management Systems of all suppliers and where possible sources materials from suppliers who have Environmental Management Systems in place which conform to the BES or ISO standard.

As part of the review of Keepmoat Homes proposed Sustainability Strategy the environmental impact of the proposed build specification was assessed against the BRE Green Guide. The table overleaf summarises the ratings anticipated;

Table 1 – Green Guide Ratings

ELEMENT	GREEN GUIDE RATING
External Wall	A+
Internal Wall	A+
Party Walls	C
Roof	A+
Glazing	A
Ground Floor	C
Intermediate Floor	A+



2.2 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, 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;

- Fuel and chemical stores will be located on impervious bases with a bund and secured. The base and walls of the container will be impermeable to the material stored.
- 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. 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, using mechanical saws, 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.
- 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.



2.3 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 Milton Road. However as an environmentally responsible developer Keepmoat Homes intends to operate such a Plan at the application site.

As an engaged partner in the WRAP initiative and with an eye to future regulatory changes Keepmoat 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. In the financial year 2015/2016 waste volumes will have been halved when compared against a 2011/12 baseline.

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.

- 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 demolition waste off site and provide records of such.
- Landfill will be the last option when no economic solution can be found.



2.4 Health and Wellbeing

In achieving ever stricter levels of sustainability, it is important that we do not lose sight of the fact that we are building homes that people can live in and not just occupy. 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 suitable 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.
- All properties will benefit from a garden or private space for recreation. Each property will also have a designated space for recycling facilities.
- The development will include open landscaped spaces.
- The site layout will be designed to ease travel for cyclists and pedestrians.



2.5 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. This level of efficiency was re-affirmed in the Technical Housing Standards Review in 2013 with an optional lower standard equivalent to 110 litres per person per day included in the Government’s new National Standards subject to need and viability.

Keepmoat Home’s proposes to avoid the use of complicated and expensive recycling technologies and instead plans 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 instead of compensating for a high usage through grey water recycling or rainwater harvesting. 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	3 litres/min
Kitchen Taps	6 litres/min
Bath	130 litres
Shower	4 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)	3.00	1.58	1.58	6.32
Bath (where shower present)	Capacity to overflow (litres)	130	0.11	0.00	14.30
Shower (where bath present)	Flow rate (litres/min)	4.00	4.37	0.00	17.48
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)				85.42

(5)	Total Internal Water Consumption	85.42
(6)	Normalisation Factor	0.91
(7)	Internal Water Consumption [(5) x (6)]	77.73
(8)	External Water Use	5.00
(9)	Part G Water Consumption [(8) + (7)]	82.73

An internal water consumption of 85.42 litres per person per day is calculated. This is lower than the Government's higher water efficiency target confirmed in the Housing Standards Review, confirming that a high level of efficiency and sustainability will be achieved.



2.6 CO₂ Emissions

Policies D27 and D28 require the construction of an energy efficient development and the inclusion of renewable technologies capable of reducing the CO₂ emissions of a site by 20%. In response to these local policies Keepmoat Homes proposes a strategy compliant with the Energy Hierarchy, i.e. Lean, Clean and Green. Every home will be constructed to an enhanced specification and PV panels will be installed on the roof to generate sufficient electricity to ensure a 20% CO₂ saving.

2.6.1 Lean and Clean Measures

Keepmoat 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 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.
- The detailed house type designs will incorporate the thermal bridging guidance produced by Constructive Details and the Government, thereby reducing a significant source of heat loss.
- An efficient gas condensing boiler will be installed in each property. The heating designs of each house type will include dual zone controls with delayed start thermostats.
- 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.
- 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 likely energy efficiency standards targeted in the design and construction of each home;



Table 4 – Specification Summary

Element	Part L	Enhanced Specification
Wall	0.30W/m ² K	0.29W/m ² K
Party Walls	0.20W/m ² K	0.00W/m ² K
Cold Roof	0.20W/m ² K	0.10W/m ² K
Floor	0.25W/m ² K	0.17W/m ² K
Glazing	2.00W/m ² K	1.40W/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

The targeted u-values go significantly beyond the minimum standards of Part L. This will ensure the thermal envelope of every home will be energy efficient, thereby reducing energy consumption and CO₂ emissions.



2.6.2 Forecasted CO₂ Emissions

The specification summarised overleaf was modelled in SAP to determine the anticipated CO₂ emission rate of the development. The table below summarises the results calculated.

Table 5 – Milton Road, Wakefield Emission Rate

House Type	No.	Target Emission Rate (kg/year)	Calculated Emission Rate (kg/year)
1178	29	55,751.34	54,723.52
1054	47	74,353.06	71,038.53
955	24	39,612.77	39,076.06
867	8	12,390.53	11,937.22
851	12	17,134.08	16,361.18
764	40	52,40.00	50,484.00
651	21	24,507.42	23,553.39
1249	1	2,265.18	2,178.54
953	14	21,302.92	20,594.45
740	38	50,438.32	45,912.24
Flats	24	30,051.84	29,008.90
TOTAL	258	380,447.45	364,868.02

The site's forecasted emission rate of 34,868.02kg/year represents a saving of 15,579.43kg/year over the target emission rate associated with current Part L. The Approved Document was amended in 2013 and includes a more stringent method of calculation for the target emission rate of a new home. Achieving a reduction over this difficult methodology is a validation of the energy efficiency measures proposed by the developer. They can therefore be described as sustainable as per the definition included in the NPPF.



2.6.4 Renewable Technologies

In addition to the proposed fabric energy efficiency measures Keepmoat Homes intends to install roof mounted PV arrays on a number of plots to reduce the site’s emission rate by a further 60,510.06kg/year.

Photovoltaic panels convert sunlight into electricity for use within a property. A PV cell usually consists of 1 or 2 layers of a semi-conducting material such as silicon. PV systems can come in different forms. The most popular are modules which can either sit on the roof or be integrated into it. The technology is most efficient when oriented due south. However, panels orientated south of east or west are suitable.



To offset 60,510.06kg/year of CO₂ the installed PV arrays must generate 116,589.72kWh/year of electricity. SAP Appendix M estimates that this can be achieved through the installation of PV arrays totalling 142kWp. This is the equivalent of 568 no. 250Wp PV panels orientated in a south easterly to westerly direction. Note however the MCS method of calculation will give a lower kWp figure for the same level of generation.

2.6.5 Energy Strategy Summary

The table below summarises the strategy proposed by Keepmoat Homes to reduce CO₂ emissions and provide on-site energy generation.

Table 7 – Milton Road Summary

	CO ₂ Emission Rate (kg/year)	Cumulative Reduction over Part L
Part L Baseline	380,447.45	-
Energy Efficient Baseline	364,868.02	4.09
Application of PV	304,357.96	20.00



3 EVALUATION

JSP Sustainability was commissioned by Keepmoat Homes to highlight and assess the key sustainability features to be incorporated into the design and construction of the proposed development at the Milton Road, Wakefield. The sustainability measures were highlighted previously but it is worthwhile summarising the key endeavours;

- Keepmoat Homes operates a robust Sustainable Procurement Policy which emphasises the legal and sustainable sourcing of building materials.
- Keepmoat Homes operates efficient and rigorous waste management plans across all developments.
- Best practice policies with respect to site pollution will be implemented as standard.
- The development proposals will include a drainage scheme to reduce the volume and rate of surface water discharged from the site.
- Measures will be incorporated into the design to achieve a water consumption lower than 125 litres per person per day.
- The proposed development site is of low ecological value.
- Each property will be constructed to an energy efficient construction specification.
- The energy efficiency measures and addition of PV capable of generating 116589.72kWh/year will shrink the site's emission rate by 20%.

In conclusion we can state that should the measures detailed in this report be implemented then a sustainable development in line with the definition included in the NPPF will result. We therefore recommend the adoption of the proposed strategy by Keepmoat Homes and its approval by Wakefield Metropolitan District Council.