

2-4, Send Road, Caversham, Reading, RG4 8EH



Sustainability Statement

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Report produced by -

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1.0 Introduction

- 1.1 Blewburton Limited has been commissioned to prepare a Sustainability Statement to support the application for planning permission for the construction of a 9 house residential scheme at 2-4, Send Road, Caversham, Reading, RG4 8EH.
- 1.2 As licensed BREEAM, Home Quality Mark, Code for Sustainable Homes and energy assessors of several years standing, Blewburton Limited has considerable expertise in all issues of sustainability.
- 1.3 The site is located in an urban location within the Caversham area of Reading, between Send Road to the west and Forge Close to the east.
- 1.4 The site is currently made up of 2 Send Road, which contains a single storey dwelling and 4 Send Road which is an amalgamation of rundown light industrial buildings.
- 1.5 The proposed scheme will see a contemporary residential development of nine houses in two terraced rows, with a total of seven 3-bedroom houses and two 2-bedroom houses, over two and three floors, with four of the dwellings also featuring integral garages.
- 1.6 Externally, there are secure cycle shelters, bin storage and private garden space for all houses. Mobility stores are also specified for the rear garden areas which will include electric charging facilities for e-bikes and e-scooters.
- 1.7 Those dwellings without garaging built in will have a single off road parking spaces located to the front of the property. One unit will be car free, with a motorcycle/e-motorbike space.
- 1.8 The existing site area and location is shown in the aerial photo in Figure 1 below, with the proposed site location plan shown in Figure 2 and the proposed site layout plan shown in Figure 3.



Figure 1: Existing aerial photo of site location and area



Figure 2: Proposed site location plan



Figure 3: Proposed site layout

2.0 Proposed Approach to Sustainability

2.1 This statement sets out the approach that the applicant is proposing to adopt to ensure that the proposal meets high standards of sustainability. The report includes a discussion of the full range of sustainability issues as shown below:

- Energy & carbon emissions
- Water conservation
- Flood risk, surface & waste water management
- Ecology & biodiversity
- Waste & pollution
- Materials selection and sustainable construction methods
- Transport & accessibility
- Security

2.2 This will demonstrate that this proposed development will meet the requirements of policies CC2, CC3 and H5 of the Reading Borough Council (RBC) Local Plan.

3.0 Energy Conservation and Carbon Emissions

- 3.1 It is recognised that the generation of energy to heat, light and cool buildings is responsible for approximately half of the total CO₂ emissions of the UK. Part L of the Building Regulations requires a minimum standard of energy efficiency in new and refurbishment development, however, it is the intention with this development to go beyond this and to meet the 19% uplift required under RBC Local Plan policy H5.
- 3.2 The approach to compliance with Part L of the Building Regulations and RBC requirements is driven by a fabric first strategy and as such, the energy efficiency measures for the building are listed below:
- Ground floor U-value of 0.12 (Part L minimum standard is 0.25);
 - External wall U-values of 0.18 (Part L minimum standard is 0.30);
 - Party walls with cavities fully insulated and sealed or solid walls for a U-value of 0.00 (Part L minimum standard is 0.20);
 - Roof U-values of 0.18 for pitched elements and 0.16 for flat roof areas (Part L minimum standard is 0.20);
 - High specification windows, glazed doors, entrance doors & with U-values of 1.5, 1.6 & 1.8 respectively (Part L minimum standard is 2.0);
 - Specification of high efficiency gas fired combination boilers (Part L minimum standard is 88%) to radiators – mains gas Worcester Bosch Greenstar 25Si Compact ErP boilers (89.6 efficiency) used in the calculations, but similar with the same or better parameters maybe specified and if available, hydrogen ready boilers will be specified;
 - Best practice heating control systems – boiler interlock with time and temperature zone control and delayed start thermostats in all units;
 - Use of Accredited Construction Details (ACD) to deal with issues around non-repeat thermal bridging at external wall junctions with sills, jambs, ground floor, upper floors, corners and roofs, with hi-therm lintels;
 - Air pressure testing results of 4.5 m³/hm² (@50Pa) or lower (Part L allows for a result of up to 10.0m³/hm² (@50Pa);
 - All new lights installed will be of the low energy variety, with external lights featuring daylight sensors.
- 3.3 The use of passive solar design has been considered and where possible good levels of glazing have been designed in to the proposal to allow for natural light and heat penetration, without causing a summertime overheating issue. Where artificial light

is required, the focus will be on the provision of the energy efficient lighting systems as appropriate to locational requirements.

- 3.4 The option to utilise solar energy technologies has also been considered, with the addition of a minimum 1.04kWp PV array (3 panels per roof) proposed and modelled assuming installation of Suntech PV panels rated at 345Wp each, with dimensions of 1,960mm by 992mm (other dimensions and energy rated panels are available). Panels to be located on the upper, flat roof, horizontally, on all units, bar unit 5, which has no PV and unit 9, which will have the array located on the rear, west facing roof.



Figure 4: Solar PV installation on an apartment development in Oxford

- 3.5 'White Goods' will be supplied to the proposed dwellings – fridge-freezers, washing machines and dishwashers – and these will all be rated at A or higher under the EU Energy Labelling Scheme.
- 3.6 In summary, the use of energy conscious design principles and a fabric first approach means that the building should remain energy efficient for its entire lifetime.
- 3.7 The nine proposed units have been modelled using Elmhurst Design SAP 2012 4.14 software for Part L compliance based on the details supplied above and the site as a whole is assessed to have a Part L1A compliance combined Target Emissions Rate (TER) of 177.24kgCO₂/yr/m² with a combined Dwelling Emissions Rate (DER) of 140.47kgCO₂/yr/m². This is a 21.25% uplift over minimum Part L1A compliance and is therefore in compliance with the minimum 19% uplift required by RBC Local Plan policy H5.

4.0 Water Resource Management

- 4.1 The UK has a poor record in being profligate with its abundant water resource and the South-East of England is recognised as suffering from water stress, therefore, on this site only water efficient products will be specified.
- 4.2 The actual specifications of the water using products are yet to be established, however, the following notional specification is considered realistic for this type of development and an assessment of the efficiency of the residential units' domestic water-consuming components has been undertaken using the Building Research Establishment's water calculator.
- 4.3 The water consumption (L/person/day) for the proposed dwellings show a figure of 104.8l/p/d with the following proposed specification (which is below the 105.00l/p/d required under RBC Local Plan policy H5):
- Dual 6.0/3.0 litre flush WCs
 - Shower average flow rates of 8.0L/min
 - Basin average tap flow rates of 3.0L/min
 - Kitchen tap average flow rates of 5.0L/min
 - Bath average overflow capacities of 165 litres
 - Washing machine water use of 8.0l/kg dry load or lower
 - Dishwasher water use of 0.90l per place setting or lower
- 4.4 Should a more generous specification for internal water using products be decided upon, then thought will be given to the installation of grey-water harvesting systems, such as the EcoPlay unit, pictured below, however, rainwater harvesting will not be utilised as the carbon footprint arising from the pumps involved with such a system is heavy and it is more efficient to specify the low flush WCs detailed above in 4.3.



Figure 5: EcoPlay unit above WC

- 4.5 Externally, a rainwater harvesting butt for external watering and car washing will be supplied, attached to suitable downpipe and with a lid and tap included.
- 4.6 The provision of water meters is also recognised as an important tool in reducing water usage and in a domestic context they can encourage people to monitor and reduce their water consumption by an average of 10% to 15%. Therefore, the dwellings will have an individual, easily accessible water meter installed as part of the specification.

5.0 Flood Risk, Surface & Waste Water Management

- 5.1 The Environment Agency's (EA) Flood Mapping for the area shows the site is located within an area considered to be of medium risk from flooding – see <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=523555&northing=114594&address=100061800883> and the image below (site marked by the yellow star).



Figure 6: EA flood risk map for site and surrounding area

- 5.2 A full flood risk assessment and surface water-runoff strategy has been developed by ARK Environmental Consultancy Ltd in accordance with the National Planning Policy Framework (NPPF) and NPPG and is deemed to meet RBC and EA requirements.
- 5.3 The potential for future flood issues at this site is partially mitigated by the ground floor being raised 300mm above the 1 in 100 year + 35% allowance for climate change event on an approved void design. In addition, a number of design measures will be included to reduce potential property damage such as plasterboards to be installed in horizontal sheets on ground levels rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event and wall sockets to be raised to as high as is feasible and practicable.
- 5.4 The surface water run-off strategy proposed will comply with Building Regulations, thereby minimising the risk and impact of localised flooding on and off-site, watercourse pollution and other environmental damage. The solution implemented will ensure there is less runoff from the developed site when compared to the existing

site and will also lead to an improvement in the quality of the rainwater discharged from the site.

- 5.5 The EA have confirmed that infiltration techniques are not allowed at this site due to the protection required for the groundwater. The run-off strategy has therefore been optimised to store on site and discharge at the required restricted discharge rate using the existing connections as feasible. Full details are provided in the Flood Risk Assessment and SUDS Strategy (Ark Environmental, 2021) which concludes the scheme: “can be constructed and operated safely in flood risk terms, without increasing flood risk elsewhere, in fact reducing flood risk overall; it is therefore considered appropriate development in accordance with the NPPF/PPG”.

6.0 Ecology & Biodiversity

- 6.1 The existing site is currently occupied by a single dwelling and a dilapidated light industrial unit. There is only limited amount of green space and very limited opportunity for biodiversity. As such, the site can be regarded as being of low ecological value. Perimeter images of the site from ground level are shown below in figures 7 & 8.



Figure 7: Looking north up Send Road with the site on the right

- 6.2 The existing offsite trees to the north of the site have been determined by the scheme arborculturalist to be 'highly unlikely' to be adversely impacted by the development. Any vegetation removal onsite will be undertaken outside of the nesting bird season (generally 1st March – 31st August) or checked by a suitably qualified ecologist prior to works.



Figure 8: The site looking west from Forge Close

- 6.3 Both 2 and 4 Send Road have been professionally assessed as having negligible bat roosting potential, with both buildings roofs either in good condition and sealed with no potential bat access points. There is a single exception to this, with the bungalow supporting a very small area of raised tiles on the southeast corner.

- 6.4 Accordingly, construction work will only commence following a soft strip of the small section of lifted tiles on the bungalow roof and this will be undertaken between mid-March and the end of October to avoid hibernation season. It will be overseen by a suitably qualified and licensed ecologist. Should any bats or signs of bats be identified, the work will cease until appropriate surveys have been undertaken and a European Protected Species (EPS) license obtained to legally proceed with the development.
- 6.5 One of the main driving factors of the scheme is the intention to increase the biodiversity of the site through a range of measures. The intention is for these to be relatively low key items spread throughout the scheme.
- 6.6 Each house will have its own rear garden of up to 40m² of private amenity space. Each garden will be planted with a range of plants, a lawn and trees of native species to the rear boundary. Each house will have green roofs, sedum blanket or similar, with this forming the G/F roof for the Send Road terrace units and the roof for the bike/bin store for the Forge Close terrace units. The frontages of the houses on Forge Close will also have planting areas and new trees along the street. A landscape and ecology site plan is shown below in Figure 9.



Figure 9: Proposed landscaping and ecology uplift site plan

- 6.7 The provision of bird and bat boxes and other options to enhance local site fauna has been considered as part of the scheme and their positioning will be advised by an appropriate professional.

7.0 Waste & Pollution

- 7.1 Waste arising from the construction process has been an area of focus for some years now, with the industry making good strides in re-use and reduction of materials, which not only helps the environment, but also engenders significant cost savings to developers.
- 7.2 With this in mind, the appointed contractor for the scheme will be encouraged to develop a comprehensive site waste management plan (SWMP) prior to the start of construction reflecting the recognition that reduction of waste begins in the design and ordering stage of a project and carries on through to the sign-off of the building. This SWMP will set targets and procedures for the sorting, reusing and recycling of construction waste into defined waste groups, either on site or through a licensed contractor at a waste transfer station.
- 7.3 As the proposal will see existing buildings taken down and hard standing removed, a demolition audit will also be undertaken, to see if any of the materials being removed can be recycled for use on this or other building projects in the area or the materials recycled for use by others.
- 7.4 The generation of waste does not stop at the end of the construction process and adequate provision will be supplied to the proposed dwellings, both internally and externally to allow for the sorting of general waste from recyclable materials and separation of food waste in line with RBC's waste collection practice.
- 7.5 Pollution can occur in various guises and attempts will be made to design out or mitigate against a number of issues identified below.
- 7.6 At the construction stage there can potentially be noise nuisance for neighbouring properties and all contractors will be made aware of and expected to comply with policies to prevent this issue, including being signed up to the Considerate Constructors Scheme. The main contractor will also be expected to have and operate policies to facilitate against air and water pollution from their activities and to have emergency and mitigation procedures in place should an accident occur.
- 7.7 Noise pollution and nuisance between dwellings, once occupied, is also a potential issue and attention has been paid to deliver an improvement against the minimum standards of Part E of the Building Regulations to mitigate against this issue for the two terraces proposed.
- 7.8 Light pollution will be countered by the use of external lighting which only involves energy efficient fittings, daylight detectors and angling/capping to prevent unnecessary glare.

8.0 Materials Selection and Sustainable Construction Methods

8.1 Whilst a view on final material specification in terms of actual product and suppliers has been taken at this stage, it is not finally confirmed as planning permission is yet to be granted, although it is anticipated the current proposals will be acceptable to the RBC Planning Department.

8.2 The developer is committed to ensuring that all materials used score as highly as possible when checked against the Building Research Establishment's Green Guide to specification – see Figure 10 to right.

8.3 In addition, wherever possible all building and finishing materials will be sought from local suppliers and manufacturers registered to an environmental management scheme such as FSC or PEFC (for timber based products), BES6001, ISO14001 or EMAS. This will ensure that the materials have been sourced from suppliers certified as ethical and responsible as far in to the supply chain as possible.

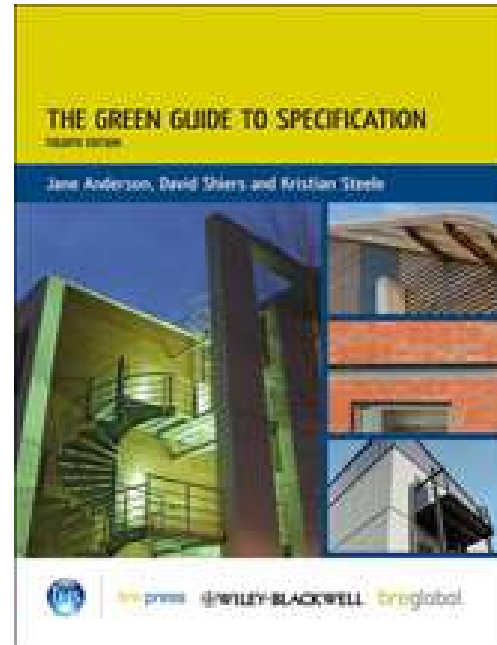


Figure 10: BRE Green Guide to Specification

8.4 All insulation materials selected for the building will have a Global Warming Potential of below 5 and where possible be made from natural products.

8.5 Finally, attention will also be paid to materials specified for the internal environment with a focus on materials/finishes containing low/no volatile organic compounds (VoCs) in an effort to improve the internal environment for occupants as internal air pollution is increasingly recognised as having negative impacts on health.

9.0 Transport & Accessibility

- 9.1 The site is a highly sustainable transport location, within easy walking distance of many local amenities, open spaces, Reading main-line railway station and the town centres of Reading and Caversham. It is also located on a high frequency bus corridor.
- 9.2 Secure cycle parking spaces for two bikes are provided in the garages for the Send Road facing terrace. The garage doors are partitioned to allow for easy access into the garage from the side door to take a bicycle in and out. They will also have electric charging facilities for electric bicycles and electric scooters.
- 9.3 For the Forge Close facing terrace, electric vehicle charging facilities are provided externally as part of the integrated bike/bin storage area, with the exception of Unit 9 (which will have a motorcycle/e-motorcycle parking space with charging facilities). The bike stores will also include plug points to enable charging of electric bikes and electric scooters.
- 9.4 Details of local cycle routes will be supplied to occupiers to encourage cycling as a mode of local transport and exercise.
- 9.5 A appropriate number of car parking spaces are supplied in line with the highly sustainable location and all will be equipped with electric charging facilities. This is as detailed in the Design and Access Statement and Transport Statement submitted with the application.
- 9.6 The proposed two-bedroom house (Unit 9) with no on-site car parking will be marketed as such, and will be self-enforcing in terms of parking demand. There is already a local precedent and demand for car-free dwellings, demonstrated by the 25% of local households with no car.
- 9.7 The proposed development is expected to result in fewer daily vehicle movements than the extant use of the site given that the current use of 4 Send Road is a vehicle cleaning, repair and maintenance business operating six days a week with associated vehicle movements, including larger commercial vehicles, throughout the day.
- 9.8 For all the dwellings, the first floor has two bedrooms and the smaller of the bedrooms is designed to be easily adapted into a home office or study space. This reflects the new reality of increased home working that has arisen during COVID and is widely projected to see reduced need for transport in the coming years.
- 9.9 With regards accessibility, all the dwellings have been designed so that all the internal circulation spaces and room sizes comply with the required standards of Approved Document M, Part M4(2).
- 9.10 Due to the site falling within a flood risk location, the ground floor level has been

raised in line with the climate changing modelling. These steps have all been designed to have a maximum riser of only 170mm, not the 220mm permitted for private dwellings. This should help people with less mobility enter the houses. The houses could all at a later stage have a small external stair lift added to overcome these external stairs.

10.0 Security

- 10.1 Crime is the product of many factors. However, research has shown that design is one element that can influence the occurrence of crime - both positively and negatively. The aim of 'Designing Out Crime' is to reduce the vulnerability of people and property to crime by removing opportunities that may be provided inadvertently by the built environment. It also aims to reduce fear of crime and, in doing so, helps to improve people's quality of life.
- 10.2 Security Secure by Design (SBD) is a police initiative to encourage the building industry to adopt crime prevention measures in the design of developments to assist in reducing the opportunity for, and fear of, crime, creating a safer and more secure environment.
- 10.3 This development will adopt SBD design principles for a residential setting. This includes the consideration of the following:
- Good visual overlooking opportunities within the design allowing for natural surveillance of communal spaces around the site, with restricted access to the side of the building;
 - Doors and windows to be SBD certified;
 - Provision of a clear threshold between the street and site in the form of front gardens to clearly define public and private space;
 - Within the site around the buildings soft landscaping is kept low to reduce hiding places;
 - A lighting design to reduce dark and shadowed areas will be developed, in accordance with recommendations by the Ecology Consultant;
 - Cycle and bin stores will be lockable;
 - The motorcycle/e-motorcycle space for Unit 9 will feature a ground anchor for securing the motorcycle to.

11.0 Summary

- 11.1 In summary, this development incorporates many sustainable features that are consistent with achieving a high level of overall sustainability.
- 11.2 Areas of strong approach involve the plans for energy and water efficiency, waste arising and the approach to ecology and materials and where issues have requirements to be met under the Building Regulations, the proposed approach is to significantly exceed these minimum standards.
- 11.3 All specific requirements under RBC policy are met, with the proposed dwellings currently projected to achieve a 21.25% uplift over minimum Part L1A compliance, in exceedance of the 19% uplift required by RBC Local Plan policy H5.
- 11.4 In short, the proposals outlined within this report demonstrate that the proposed development will meet the high levels of sustainability as required by Reading Borough Council.

Appendix 1 – Site Energy Calculation Spreadsheet

BLOCK COMPLIANCE			
Calculation Type: New Build (As Designed)		Design SAP elmhurst energy	
Block Reference	000016	Issued on Date	
Block Name	Send Road site		
Assessor Details	Mr. Ian Bacon, Ian Bacon, Tel: 01455 883250, ian.bacon@blewburton.com	Assessor ID	T238-0001
Client			
Block Compliance Report - DER			
Block Reference: 000016		Block Name: Send Road site	
Property-Assessment Reference	Multiplier	Floor Area (m ²)	DER (kgCO ₂ /m ²)
			TER (kgCO ₂ /m ²)
			% DER/TER
000986-001	1	96	16.79
000987-001	1	96	16.34
000988-001	1	96	16.34
000989-001	1	96	16.79
000990-001	1	68.56	14.92
000991-001	1	90	13.01
000992-001	1	90	13.01
000993-001	1	90	13.09
000994-001	1	68.56	20.18
Totals:	9	791.12	140.47
Average DER = 15.53 kgCO ₂ /m ²		% DER/TER	
Average TER = 19.72 kgCO ₂ /m ²		21.25 %	
		PASS	

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