

Worton Grange, Reading

Sustainability Statement

On behalf of **Kier Reading LLP**



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Appendix A Site Layout Plan

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0 Executive Summary

1. Peter Brett Associates LLP (PBA) has been commissioned by Kier Reading LLP (Kier) to prepare a Sustainability Statement to support the hybrid planning application for the proposed development at Worton Grange, Imperial Way, Reading.
2. Kier are submitting a hybrid application for outline planning permission for the development of 175 new homes, including affordable housing (with all matters reserved apart from access) and full planning permission for the development of 12 commercial units to be used flexibly within Classes B1(c), B2 and B8 with ancillary retail sales to accommodate trade counters; two car showrooms with provision for MOT and servicing (Sui Generis); three retail warehouse units (Class A1); 120 bed hotel (Class C1); pub with restaurant facility (Class A4); coffee shop with drive through facility (Class A1); restaurant with drive through facility (Class A3); and bank with drive through facility (Class A2).
3. The methodology adopted in this Sustainability Statement is to review national and local policies in relation to sustainable development and use this to establish a 'sustainability framework' for development at the site that achieves both over-arching national sustainability goals and site-specific objectives. In doing so, the Sustainability Statement follows Reading Borough Council's 'sustainability checklists' which are used to assess sustainable development in Reading.
4. The Sustainability Statement concludes that Worton Grange can be considered a sustainable development, as defined local policies. It will incorporate the following target measures:
 - Non-residential buildings to achieve a BREEAM score of 62.5%;
 - Energy efficient and low carbon design to comply with Part L of the Building Regulations 2013;
 - 50% of domestic properties to achieve an improvement of at least 19% over Part L 2013 (or a 9.5% improvement across all domestic properties);
 - Water efficient design to comply with Part G of the Building Regulations and BREEAM requirements;
 - Low environmental impact and responsible sourcing of materials;
 - Appropriate management of construction and operational waste to minimise waste sent to landfill and provide increased opportunities for recycling;
 - Low greenhouse gas emissions and pollution impact (including noise, air and light pollution);
 - Appropriate surface water management to protect the receiving waters from pollution and minimise the risk of flooding;
 - Designed to help ensure the health, comfort and well-being of residents and site users;
 - Site managed in an environmentally and socially considerate manner;
 - Bringing previously developed land into beneficial use;
 - Protecting and enhancing ecological value, where possible; and
 - Accessibility to sustainable modes of transport and opportunities to promote non-car travel.

1 Introduction

1.1 Introduction

- 1.1.1 Peter Brett Associates LLP (PBA) has been commissioned by Kier Reading LLP (Kier) to prepare a Sustainability Statement to support the hybrid planning application for the proposed development at Worton Grange, Imperial Way, Reading.

1.2 Purpose of this Sustainability Statement

- 1.2.1 Reading Borough Council (RBC) requires applicants for all major developments¹ to submit a Sustainability Statement with the formal planning application, including consideration of all aspects of development form that can contribute to securing high standards of development.
- 1.2.2 The purpose of this Sustainability Statement is to demonstrate the proposed development's compliance with RBC's sustainability policy where applicable.

1.3 Site Description

- 1.3.1 The site is approximately 8 ha in size and is located within south Reading, just north of Junction 11 of the M4 motorway.
- 1.3.2 Roads are seen to presently bound the site on all sides with Imperial Way to the north, Basingstoke Road to the south-east and the A33 (where it joins Basingstoke Road) to the south-west. The site was formally occupied by Hewlett Packard (Compaq). All buildings have since been demolished and the site is currently vacant. Landscape bunds remain in part around the perimeter of the site. There are two vehicular accesses servicing the site. The first is centrally placed on the western boundary of the site onto Imperial Way and a second is located on the southern part of the eastern boundary of the site onto Basingstoke Road.
- 1.3.3 Basingstoke Road divides the residential development of Whitley Wood and Whitley (located to the east and north-east of the site respectively) from the non-residential development (industrial, commercial, leisure and retail uses) to the west.
- 1.3.4 The site is therefore close to the strategic highway network (M4, A33 and Basingstoke Road) and within an area characterised by mixed use development including warehouses, retail, offices, leisure and residential uses. The site is well served by public transport links and there are frequent bus services to Reading Town Centre via the A33 and Basingstoke Road.
- 1.3.5 The site has an outline planning permission for two warehouse buildings (Class B8 Use) with ancillary office accommodation, granted 10 September 2014 under 131527/OUT. This permission remains extant for three years from the determination date.
- 1.3.6 Worton Grange is allocated in Reading Borough Council's (RBC) Sites and Detailed Policies Document (Adopted October 2012) as a strategic development site for residential and commercial development.
- 1.3.7 A Site Location Plan is presented in **Figure 1.1**.

¹ Major development is defined as residential development or more than 10 dwellings and non-residential development more than 1,000 m² floor space.

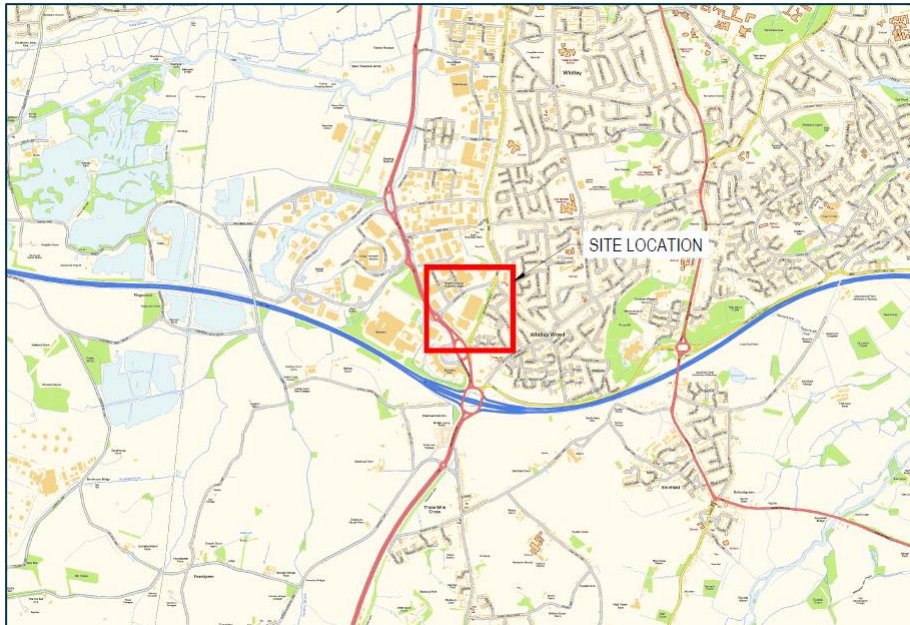


Figure 1.1: Site Location Plan

1.4 Proposed Development

- 1.4.1 A hybrid application for outline planning permission for the development of 175 new homes, including affordable housing (with all matters reserved apart from access) and full planning permission for the development of 12 commercial units to be used flexibly within Classes B1(c), B2 and B8 with ancillary retail sales to accommodate trade counters; two car showrooms with provision for MOT and servicing (Sui Generis); three retail warehouse units (Class A1); 120 bed hotel (Class C1); pub with restaurant facility (Class A4); coffee shop with drive through facility (Class A1); restaurant with drive through facility (Class A3); and bank with drive through facility (Class A2).
- 1.4.2 The Proposed Site Plan is presented as **Appendix A** .

1.5 Methodology

- 1.5.1 The methodology adopted in this Sustainability Statement is to review national and local policies in relation to sustainable development (undertaken in **Section 2**), and use this to establish a 'sustainability framework' for development at the site that achieves both overarching national sustainability goals and site-specific objectives.
- 1.5.2 In doing so, the Sustainability Statement follows RBC's 'sustainability checklists' (discussed further in **2.4.8 to 2.4.9**), which are used to assess sustainable development in Reading. The report is structured to align with these checklists. The sustainability objectives and report structure are discussed further in **Section 2.5**.

2 Policy Context

2.1 Introduction

- 2.1.1 The policies that apply to the proposed development in relation to sustainability are multi-layered and complex. The following sections present a summary of the main policies that are directly related to defining 'sustainable development' in this location, and highlight the key sustainability objectives that need to be met.

2.2 National Planning Policy Framework

- 2.2.1 The National Planning Policy Framework (NPPF) 2012 supports the role of the local plan process and introduces the presumption in favour of sustainable development. It sets out the three mutually dependent roles that the planning system needs to consider to deliver sustainable development. These are:

- An economic role – Contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements;
- A social role – Supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and supports its health, social and cultural well-being; and
- An environmental role – Contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving towards a low carbon economy. It encourages development and states that, in particular, development which will provide economic, social and environmental benefits should proceed without delay.

2.3 Part L of the Building Regulations

- 2.3.1 The energy efficiency requirements of the national Building Regulations are set out in Part L of Building Regulations. The current editions of Part L (2013) came into effect on 6 April 2014 and, in summary, require:

- Residential development to deliver 6% carbon savings across the new homes build mix relative to Part L 2010 and achieve a mandatory fabric energy efficiency target; and
- Non-residential development to deliver 9% carbon savings relative to Part L 2010.

- 2.3.2 The Treasury has confirmed² that the planned changes to Part L in 2016 will not go ahead. It does not intend to proceed with the proposed increase in on-site energy efficiency standards, 'Zero Carbon Homes' or the 'Allowable Solutions' carbon offsetting scheme.

- 2.3.3 Therefore, the national target for energy at Worton Grange will be the current Part L 2013 standards.

² HM Treasury (July 2015) *Fixing the foundations: Creating a more prosperous nation*.

2.4 Reading Borough Council Planning Policies

Adopted Core Strategy (January 2008, Altered January 2015)

- 2.4.1 RBC's key policy in relation to sustainable development is *Policy CS1: Sustainable Design and Construction* of the Adopted Core Strategy. The Sustainable Design and Construction Supplementary Planning Document (SPD) has amended the requirements of CS1 to reflect the changing national policy context. This includes removal of the former requirement to offset at least 20% of predicted carbon dioxide (CO₂) emissions from the estimated energy usage of the completed and occupied development.
- 2.4.2 The amended requirements of CS1, directly relevant to this Sustainability Statement, are summarised as follows:
- Proposals for new development will be acceptable where the design of buildings and site layouts use energy, water and minerals and other natural resources appropriately, efficiently and with care to take account of the effects of climate change;
 - Major residential development, including flats, to achieve a minimum of 50% Code for Sustainable Homes (Code) Level 4 and the remainder Code Level 3;
 - Major non-residential development to achieve a minimum of 50% 'Excellent' rating under the Building Research Establishment's Environmental Assessment Method (BREEAM) and the remainder 'Very Good';
 - All development to maximise the use of energy efficiency and energy conservation measures in their design, layout and orientation to reduce overall energy demand; and
 - All developments to reduce mains water use and demonstrate that water conservation measures are incorporated to ensure per-capita consumption does not exceed the appropriate levels in the Code and BREEAM.
- 2.4.3 The Sustainable Design and Construction SPD states that, where the above split is not appropriate, major non-residential developments should achieve a BREEAM score of 62.5%.
- 2.4.4 Furthermore, the Deregulation Act March 2015 and accompanying Written Ministerial Statement state that:
- "The Government has now withdrawn the Code, aside from the management of legacy cases.*
- Where there is an existing plan policy which references the Code for Sustainable Homes, authorities may continue to apply a requirement for a water efficiency standard equivalent to the new national technical standard, or in the case of energy . . . [local planning authorities] will continue to be able to set and apply policies in their local area which require compliance with energy performance standards that exceed the energy requirements of Building Regulations, until commencement of amendments to the Planning and Energy Act 2008."*
- 2.4.5 Therefore, for the residential development at Worton Grange, the intention is to avoid tying the scheme to the now withdrawn Code for Sustainable Homes and to define 'sustainable development' through other local policy objectives. Furthermore, the mandatory water targets contained in the Code are no longer applicable.
- 2.4.6 *Policy CS2: Waste Minimisation* requires developments to demonstrate measures to minimise the generation of waste in the construction, use and life of buildings and promote more sustainable approaches to waste management.

Sites and Detailed Policies Document (Adopted October 2014, Altered January 2015)

2.4.7 The key policies for this Sustainability Statement in the Sites and Detailed Policies Document are detailed below:

- *Policy SA2a: Worton Grange* allocates Worton Grange as a strategic development site. It states that proposals at the site must, in meeting RBC's sustainability requirements, secure energy from a decentralised energy source;
- *Policy DM2: Decentralised Energy* requires major developments to demonstrate how consideration has been given to securing energy for the development from a decentralised energy source, including Combined Heat and Power (CHP) plant, a biomass-fuelled heating system or other form of decentralised energy provision (unless demonstrated that doing so is not suitable or feasible);
- *Policy SD1: Presumption in Favour of Sustainable Development* transposes the requirements of the NPPF (**Section 2.2**) to secure development that improves the economic, social and environmental conditions of the area; and
- *Policy DM1: Adaption to Climate Change* requires all developments to demonstrate how they have been designed to incorporate measures to adapt to climate change.

Sustainable Design and Construction SPD (Adopted July 2011)

2.4.8 The SPD states that a Sustainability Statement should be submitted with a planning application, focusing on the questions posed in the relevant 'sustainability checklists', in order to meet the requirements of policies CS1 and CS2.

2.4.9 The SPD contains two sustainability checklists – one each for residential and non-residential development - that have their requirements based on the Code and BREEAM standards, as well as other requirements. The sustainability 'topics' covered in both checklists are summarised in **Table 2.1** below:

Table 2.1: Table summarising the sustainability 'topics' and their aims in RBC's 'sustainability checklists'

Residential Checklist Topic	Non-residential Checklist Topic	Aim
Energy/CO ₂	Energy	To conserve energy, in particular CO ₂ emissions, and maximise the use of energy efficiency techniques.
Water	Water	To improve efficiency in the use of water, conserve water resources and minimise vulnerability to flooding.
Materials	Materials	To retain local character and promote the use of materials with a low environmental impact.
Surface Run-off	N/A	To reduce flooding, pollution and other environmental damage.
Waste	Waste	To minimise the production of waste and maximise re-use and recycling.
Pollution	Pollution	To minimise damage to the environment through air,

		ground/surface water, land, noise or light pollution.
Health and Well-being	Health and Well-being	To improve the quality of life in homes through good daylighting, improved sound insulation and provision of outdoor space with good accessibility. To ensure a good quality amenity level is afforded to occupants of buildings.
Management	Management	To manage the site in an environmentally and socially considerate manner.
Ecology	Land Use and Ecology	To retain, protect and enhance wildlife habitats and natural features.
N/A	Transport	To reduce the need to travel through appropriately located development.
N/A	Innovation	To recognise innovation in the field of sustainability.

Consultation with RBC Sustainability Team

- 2.4.10 Consultation with RBC's Sustainability Team confirms that the council expects 50% of domestic properties to show an improvement of at least 19% over Part L 2013 (or a 9.5% improvement across all domestic properties).

2.5 Summary of Sustainability Objectives and Report Structure

- 2.5.1 Based upon the policy review undertaken above, the key sustainability objectives for development at the Worton Grange site are as follows:

- Adhere to the overarching aims of RBC's 'sustainability checklists';
- Major non-residential development to achieve a BREEAM score of 62.5%;
- Comply with the energy-efficiency requirements of Part L of the Building Regulations;
- 50% of domestic properties to achieve an improvement of at least 19% over Part L 2013 (or a 9.5% improvement across all domestic properties); and
- Demonstrate how consideration has been given to securing energy for the development from decentralised energy sources (including CHP plant or biomass-fuel heating), unless demonstrated that doing so is not suitable or feasible.

- 2.5.2 A framework to assess the overall sustainability of Worton Grange has been established by combining the residential and non-residential 'sustainability checklists', and using this structure to address the questions raised in each topic area and the key sustainability objectives noted in **2.5.1** above. This Sustainability Statement is therefore structured as follows:

- Section 4: Energy and CO₂;
- Section 5: Water;

- Section 6: Materials;
- Section 7: Waste;
- Section 8: Pollution (including Surface Water Run-off);
- Section 9: Health and Well-being;
- Section 10: Management;
- Section 11: Land Use and Ecology; and
- Section 12: Transport.

3 Energy and CO₂

3.1 Introduction

- 3.1.1 Climate change is recognised as one of the most immediate environmental challenges we currently face. Government legislation now includes numerous provisions to minimise climate change and the anticipated effects, including the need to reduce energy usage within new buildings. National energy policy stipulates that new developments should be designed in accordance with the Energy Hierarchy of reducing energy demand in the first instance, using energy more efficiently and, only then, supply clean renewable energy, where appropriate.
- 3.1.2 In accordance with RBC's sustainability checklist, the aim for Worton Grange is:
- 3.1.3 *"To conserve energy, in particular carbon dioxide emissions and maximise the use of energy efficiency techniques."*
- 3.1.4 An Energy Statement has been prepared to support the hybrid planning application, specifically focusing on the sustainable provision of energy at Worton Grange (PBA report 32618-3003-ES, October 2015).

3.2 Optimising the Sun's Energy, Natural Daylighting and Ventilation

- 3.2.1 Within site constraints, dwellings will be carefully designed to ensure the position and size of windows provides sufficient daylight to residents, especially in regularly used rooms such as living rooms/dining rooms, kitchens and studies. Non-residential buildings will also be designed to ensure sufficient access to daylight, where it is appropriate to the building type. This is discussed further in **Section 8.2**.
- 3.2.2 Careful consideration of glazing designs in this manner will help to provide natural daylighting, reducing the energy requirements for artificial lighting, as well as passive solar gains.
- 3.2.3 In order to mitigate the risk of overheating in buildings, dynamic thermal analysis will be undertaken at the detailed design stage, as appropriate (e.g. using *CIBSE TM52 The Limits of Thermal Comfort: Avoiding Overheating in European Buildings 2013*). Where suitable, 'thermally massive' materials will be incorporated into building designs (e.g. concrete cores) to absorb and store heat energy, thereby regulating temperatures.
- 3.2.4 In the residential development, plot layout and building locations will be designed to facilitate air movement and enhance natural ventilation, whilst minimising any potential 'wind tunnel' effects. Green open space(s) will also be incorporated, which provide evaporative cooling at night and help to reduce the heat island effect. Tree planting will also provide naturally shaded areas. Design considerations such as this will help to reduce the energy requirements for cooling.

3.3 Limiting Heat Losses and Efficient Use of Energy

- 3.3.1 All buildings will be designed to comply with the *Part L of the Building Regulations: Conservation of fuel and power* as a minimum. Energy and carbon emissions may be reduced further in accordance with the BREEAM strategy for commercial buildings under issue *ENE 01: Reduction of energy use and carbon*. In accordance with RBC's requirements, 50% of dwellings will target an improvement of 19% over Part L 2013 (or a 9.5% improvement across all domestic properties).
- 3.3.2 In accordance with the Energy Hierarchy, the buildings at Worton Grange will adopt a fabric-first approach to reduce energy demands – maximising the energy efficiency performance of components and materials that make up the building fabric itself, before considering the use of mechanical or electrical building services systems. Part L1A (*Conservation of fuel and power*

in new dwellings) includes a mandatory Fabric Energy Efficiency (FEE) standard to ensure a minimum standard for dwelling fabric (the longest-lasting part of a home).

- 3.3.3 Highly efficient heating and cooling systems will be specified to meet the buildings' energy requirements. This is likely to include high efficiency condensing gas boilers in dwellings (e.g. efficiencies of 88% and above) and, if appropriate, may include Mechanical Ventilation with Heat Recovery (MVHR) systems.
- 3.3.4 The final energy strategy at the site will be developed through the mechanical and electrical (M&E) strategy as the detailed design progresses.

3.4 Energy Generated from Renewables

- 3.4.1 The Energy Statement includes a Renewable Energy Feasibility Study which assesses the suitability of a range of low carbon and renewable energy technologies for Worton Grange. Based upon the site's location and the details of the proposed development there is a 'suite' of potential technologies which could be employed: photovoltaic panels (PV), solar water heating, air/ground source heat pumps and micro-gas Combined Heat and Power (CHP).
- 3.4.2 There are no existing or proposed district energy networks in the vicinity of Worton Grange that the new buildings could connect to. Furthermore, preliminary analysis shows that the site is unlikely to be suitable for the development of a new district heating network.
- 3.4.3 The need for, and specification of, any renewables will be confirmed through detailed energy modelling at a later stage in the design process.

3.5 Energy Efficient Lighting

- 3.5.1 All internal lighting will be low energy (e.g. LED, T5 etc.). Where possible, the buildings will be designed to operate without the need for external lighting. Where external lighting is provided the fittings will be energy efficient (e.g. not less than 60 luminaire lumens per circuit Watt). External lighting will be automatically controlled to prevent operation during daylight hours and use presence detection systems in areas of intermittent pedestrian traffic (e.g. Passive Infra-red (PIR) and daylight cut-off sensors).

3.6 Energy Monitoring

- 3.6.1 Energy metering systems will be installed in commercial buildings to monitor major energy consuming systems. The energy consuming systems in buildings with a total floor area of 1000 m² will be metered using an appropriate energy monitoring and management system. The systems in smaller buildings will be metered with either an energy monitoring and management system or with separate accessible energy sub-meters with pulsed or other open protocol communications outputs. This is to enable future connection to an energy monitoring and management system. The end energy consuming uses will be identifiable to the building users (e.g. through labelling or data outputs).
- 3.6.2 Monitoring systems covering a significant majority of the energy supply to tenanted areas or, in the case of single occupancy buildings, relevant function areas or departments within the buildings/units, will also be provided.

3.7 Energy Efficient Cold Storage

- 3.7.1 Refrigeration systems in food retail buildings will be designed, installed and commissioned as follows:
 - In accordance with the Code of Conduct for carbon reduction in the refrigeration retail sector and *BS EN 378-2 Refrigeration systems and heat pumps – Safety and environmental requirements*; and

- Using robust and tested refrigeration systems/components (e.g. those included in the Enhanced Capital Allowance Energy Technology Product List).
- 3.7.2 The installed refrigeration systems will demonstrate a saving in indirect greenhouse gas emissions (CO₂ eq.) over the course of the operational life.

3.8 Energy Efficient Transportation Systems

- 3.8.1 In the hotel and large retail units, an analysis of the transportation demand and usage patterns for the buildings will be carried out to determine the optimum number and size of lifts and escalators. The transportation systems with the lowest energy consumption will be specified.
- 3.8.2 Lifts will be fitted with the following energy efficient features:
- The lifts operate in standby condition during off-peak periods;
 - The lift car lighting and display lighting provides an average lamp efficacy (across all fittings) of > 55 lumens/circuit Watt; and
 - The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency control of the motor drive.
- 3.8.3 Escalators (or moving walkways) will comply with at least one of the following:
- It is fitted with a load-sensing device that synchronises motor output to passenger demand through a variable speed drive; or
 - It is fitted with passenger-sensitive device for automated operation (auto walk), so the escalator operates in standby mode when there is no passenger demand.

4 Water

4.1 Introduction

- 4.1.1 Water is a vital resource and using water, especially hot water, uses energy and increases greenhouse gas emissions. During a drought, it is even more important to make sure that water is not wasted.
- 4.1.2 The average person in England uses approximately 150 litres of water per day, which is equivalent to around one tonne of water per week³. In accordance with RBC's sustainability checklist, the aim for Worton Grange is:
- 4.1.3 *"To improve efficiency in the use of water, conserve water resources and minimise vulnerability to flooding."*

4.2 Minimising Internal Water Consumption

- 4.2.1 Dwellings will aim to significantly reduce mains water usage through a number of demand reduction measures, including:
- Flow restrictors to reduce the flow rate of kitchen sink and bathroom basin taps;
 - Low flow showers and small capacity baths;
 - Dual flush toilets; and
 - Water efficient appliances (where provided).
- 4.2.2 Through a combination of these measures, dwellings will achieve a maximum internal water consumption of 125 litres/person/day in accordance with Part G of the Building Regulations.
- 4.2.3 As part of the BREEAM assessment strategy, non-residential buildings will aim to reduce the consumption of potable water for sanitary use by 40% compared to the BREEAM baseline. This will be achieved through the use of water efficient components and water recycling systems, as appropriate.
- 4.2.4 Tree planting will include drought-resistant species to reduce irrigation needs.

4.3 Water Monitoring

- 4.3.1 Water meters will be specified on the mains water supply to each commercial building. Furthermore, sub-meters or appropriate water monitoring equipment will be fitted to high water-consuming plant or building areas (consuming 10% or more of total water demand). Each meter will have a pulsed output or other open protocol communication output to enable connection to an appropriate utility monitoring and management system (e.g. a Building Management System (BMS)). Through these measures, water consumption can be monitored and managed, thereby encouraging reductions.

4.4 Water Leak Detection

- 4.4.1 Suitable leak detection systems will be fitted on non-residential premises, which will be capable of detecting major water leaks on the main water supply within buildings and between buildings and utilities water meters. Flow control devices that regulate the supply of water to

³ DEFRA (2008) *Future Water. The Government's water strategy for England* [online] available at: <http://www.gov.uk/> [accessed 09/09/2015]

each WC area/facility (e.g. solenoid valves) will be installed, according to demand. Such measures will minimise water leaks and wastage from sanitary fittings.

4.5 Rainwater and Greywater Recycling

- 4.5.1 Reducing water use for irrigation in the first instance will negate the need for separate infrastructure. However, houses will be designed to incorporate rainwater butts to reduce the use of potable water for irrigation.

5 Materials

5.1 Introduction

- 5.1.1 The UK construction industry uses more than 400 million tonnes of material every year, making it the nation's largest consumer of natural resources⁴. Construction materials have an impact on the environment in a range of different ways and at different times during their life cycles. For example, the extraction, transportation and manufacturing of raw material consumes energy and releases carbon.
- 5.1.2 In accordance with RBC's sustainability checklist, the aim for Worton Grange is:
- 5.1.3 *"To retain local character and promote the use of materials with a low environmental impact."*

5.2 Low Environmental Impact Materials

- 5.2.1 The life-cycle environmental impacts (including embodied carbon) of the new buildings will be reduced by careful specification of building materials, using the Green Guide to Specification (2008)⁵ or a similar sustainable materials assessment tool.
- 5.2.2 The Green Guide rates the overall environmental performance of more than 1,500 building components used in a variety of building types. It covers a series of environmental impacts including climate change, mineral resource extraction, stratospheric ozone depletion, toxicity to water/land/humans and acidification. The overall environmental performance of each building component is ranked from A+ to E.
- 5.2.3 Where practical, external hard landscaping and boundary protection areas in the construction zones will use materials with an A or A+ rating as defined by the Green Guide.
- 5.2.4 All new insulation for building fabric and services will have a low embodied environmental impact relative to its thermal properties.

5.3 Materials that Ensure Long Life

- 5.3.1 All commercial buildings will incorporate suitable durability measures, protection measures and design features to prevent damage to vulnerable internal and external areas. This will include:
- Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (e.g. corridors, lifts, stairs, doors etc.);
 - Protection against any internal vehicular/trolley movement within 1 m of the internal building fabric in storage, delivery, corridor and kitchen areas;
 - Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs close to the external building façade (including all parking and delivery areas); and
 - Appropriate design and specification measures to limit material degradation due to environmental factors (e.g. wind/rain erosion).

⁴ UK Green Building Council (no date) *Materials* [online] available at: <http://www.ukgbc.org/resources/key-topics/circular-economy/materials> [accessed 09/09/2015]

⁵ BRE (2008) *Background to the Green Guide to Specification* [online] available at: <http://www.bre.co.uk/greenguide/page.jsp?id=2069> [accessed 09/09/2015]

- 5.3.2 Adequate protection of exposed elements in this manner will minimise the frequency of material replacement and help to ensure a longer use. All buildings will be constructed to the relevant British Standards and, therefore, are expected to have a life span of at least 60 years.

5.4 Reusing Materials In-situ and Existing Structures

- 5.4.1 There are no existing structures on site that can be reused at Worton Grange but, where practical, any hard standing or rubble piles on site will be crushed and used as hard-core in the new development (e.g. for the new roads throughout the site).

5.5 Responsible Sourcing of Materials

- 5.5.1 As well as considering the environmental impact of the materials themselves, consideration will be given to how and where materials are sourced in terms of their extraction, manufacturing, process, and the distance the materials are transported.
- 5.5.2 The principal contractor will be required to select materials which come from suppliers and manufacturers who are covered by third party environmental certifications. There are a range of certification standards, which cover a range of materials. These include:
- FSC or PEFC for timber;
 - ISO 14001 Environmental Management Systems; and
 - BES 60001 for quarried products such as bricks and concrete.

5.6 Materials that Retain Local Character

- 5.6.1 The proposals have been designed to be in-keeping with the local area whilst also delivering contemporary sustainable design solutions which effectively integrate into the existing fabric of the area. External materials and streetscape palettes will incorporate materials considered to be sympathetic to the local character and the appearance of the surrounding area.

6 Waste

6.1 Introduction

6.1.1 New developments should include measures to minimise the generation of waste during construction and throughout the operation of the development (2.4.6). In accordance with RBC's sustainability checklist, the aim for Worton Grange is:

6.1.2 *"To minimise the production of waste and maximise re-use and recycling."*

6.2 Minimising Waste Sent to Landfill

6.2.1 A Waste Strategy has been prepared to support the hybrid planning application for Worton Grange (PBA report 32618-2501, October 2015). During the construction process and the occupation of the completed development, the waste strategy will follow the principles of the Waste Hierarchy - "eliminate, reduce, reuse and recycle" - to minimise waste sent to landfill and to ensure that the environmental, social and economic risks from waste are minimised and, where possible, turned into opportunities.

6.3 Construction Waste

6.3.1 In accordance with the BREEAM strategy, a Resource Management Plan (RMP) will be developed covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication generated by the buildings design and construction. The following construction waste resource efficiency benchmarks will be targeted for commercial buildings:

- $\leq 3.4 \text{ m}^3$ of waste generated per 100 m^2 of gross floor area; or
- ≤ 3.2 tonnes of waste generated per 100 m^2 of gross floor area.

6.3.2 Where existing hard surfaces will be demolished, a pre-demolition audit will be undertaken to maximise the recovery of material for subsequent high grade/value applications.

6.3.3 The following percentages of non-hazardous construction (on-site and off-site manufacture/fabrication) and demolition waste generated from the project will be diverted from landfill:

- Non demolition: 70% (by volume) and 80% (by weight); and
- Demolition: 80% (by volume) and 90% (by weight).

6.3.4 Waste materials will be sorted into separate key waste groups (according to the waste streams generated by the scope of works) either on-site or through a licensed contractor for recovery.

6.4 Operational Waste

6.4.1 The Waste Strategy includes an impact analysis of the likely waste generation from the completed and occupied development. This shows that approximately 166 tonnes per annum of domestic waste and a volume of 157,418 litres of commercial waste will be generated each week.

6.4.2 The operational waste strategy for Worton Grange is primarily aligned to the waste collection requirements of RBC. As the waste disposal authority, RBC has a management infrastructure provision that aims to recover a wide number of products and avoid final disposal to landfill.

- 6.4.3 The residential properties will, as a minimum, be designed to incorporate RBC's waste collection practices, including space to house recycling, garden and non-recyclable waste bins. Residential waste generated by Worton Grange will be collected by RBC and will be designed to fit in with local and regional waste infrastructure.
- 6.4.4 Non-residential buildings will be provided with dedicated storage facilities for operational-related recyclable waste streams, so that this waste is diverted from landfill or incineration. This space will be:
- Clearly labelled to assist with segregation, storage and collection of recyclable waste streams;
 - Accessible to building occupants/facilities operators for the deposit of materials and collection by waste management contractors; and
 - Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates.
- 6.4.5 Where the consistent generation in volume of the appropriate operational waste streams is likely to exist (e.g. large amounts of packaging or compostable waste generated by a buildings operation) the following facilities will be provided:
- Static waste compactors or balers, situated in a service area or dedicated waste management space;
 - Vessels for compacting suitable organic waste resulting from the building's daily operation and use, or adequate space for storing segregated organic waste prior to collection; and
 - Where organic waste is to be stored/composted on site, a waste outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.

7 Pollution (including Surface Water Run-off)

7.1 Introduction

- 7.1.1 The construction industry is a major source of pollution, responsible for a significant percentage of particulate emissions, water pollution incidents and many noise complaints each year. Furthermore, if not properly designed and managed, new developments can also cause pollution nuisances once operational.
- 7.1.2 In accordance with RBC's sustainability checklist, the aim for Worton Grange is:
- 7.1.3 *"To minimise damage to the environment through air, ground/surface water, land noise or light pollution."*

7.2 Minimising Noise Pollution

- 7.2.1 The buildings at Worton Grange will be designed to ensure acoustic performance meets appropriate standards and to reduce the likelihood of noise affecting nearby noise-sensitive areas.
- 7.2.2 A Noise Impact Assessment has been prepared to support the hybrid planning application for Worton Grange (PBA report 32618/3001, October 2015). This assesses the current noise climate at the site and considers the noise impact of the proposals on the surrounding area. This is with respect to achieving suitable residential noise level criteria for both internal and external spaces, and to control the noise impact from commercial premises to residential receptors.
- 7.2.3 The assessment has been based on RBC's typical requirements, guidance detailed in *BS8233:2014* and documents published by the World Health Organisation.
- 7.2.4 The assessment demonstrates that the site is suitable for residential development, providing the suggested mitigation methods are employed. Mechanical ventilation and adequate control of summertime overheating are likely to be required to ensure suitable internal noise levels are achieved in some areas of the site (subject to detailed design assessment).
- 7.2.5 The exact layout and massing of the residential aspect of the development is yet to be determined and as such it is not possible to undertake a detailed assessment of future noise levels in amenity areas. However, based on the results of the environmental noise survey and noise model, noise levels in amenity spaces immediately adjacent to Basingstoke Road and Imperial Way are likely to exceed the proposed Significant Observed Adverse Effect Level (SOAEL) (as per the results of the computer noise model). Mitigation measures have been identified that, if correctly implemented, are likely to result in noise levels in external amenity areas approaching the proposed Lowest Observed Adverse Effect Level (LOAEL).
- 7.2.6 At this stage in the development process the future tenants of the proposed commercial units have not been identified. However, based on the results of the environmental sound surveys limits have been proposed that future tenants of the development should comply with to reduce the risk of noise impact on both the existing and future noise sensitive receptors.

7.3 Reducing Unnecessary Light Pollution

- 7.3.1 A Lighting Impact Appraisal has been prepared to support the hybrid planning application (PBA report 29734 October 2015). This provides a qualitative assessment of the existing light levels in and surrounding the site, and assesses the potential effects of temporary construction lighting and light arising from the development's operation.
- 7.3.2 A series of light pollution control measures are recommended for both temporary construction activities and during the operation of the development, including:

- Using appropriately designed luminaries for the task at hand;
- Using louvres and shields to prevent undesirable light break-out;
- Reducing light levels outside working hours to suitable levels for safety and security; and
- Using automated devices to switch lights on and off according to activity/ambient light levels.

7.3.3 Where external lighting is provided on commercial buildings, the following conditions will be met, where appropriate:

- The external lighting strategy will be designed in compliance with Table 2 (limitations for obtrusive light) of the *ILP Guidance notes for the reduction of obtrusive light, 2011* (the site has been assigned as Environmental Zone E3);
- All external lighting (except safety and security lighting) will be automatically switched off between 23.00 and 07.00;
- If safety or security lighting is provided, and will be used between 23.00 and 07.00, this part of the lighting system will comply with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes; and
- Illuminated advertisements, where specified, will be designed in compliance with *ILP Technical Report 5 – The Brightness of Illuminated Advertisements*.

7.4 Air Pollution

7.4.1 An Air Quality Assessment has been prepared to support the planning application (PBA Report 32618/3001, October 2015).

7.4.2 This shows that construction works have the potential to create dust. During construction it is recommended that a package of mitigation measures is put in place to minimise the risk of elevated PM₁₀ concentrations and dust nuisance in the surrounding area. With mitigation in place, the construction impacts are judged as not significant.

7.4.3 There are no predicted exceedances of any of the air quality strategy objectives at any of the existing receptor locations. There are also no predicted exceedances of the air quality strategy objectives at any of the future receptor locations on the site. Therefore, the site is considered suitable for residential development without the need for additional mitigation.

7.4.4 Overall, it is concluded that there are no air quality constraints to the proposed development.

7.5 Surface Water Run-off and Flooding

7.5.1 A Flood Risk Assessment (FRA) has been prepared to support the hybrid planning application (PBA report 32618/2001/R001, October 2015). This confirms that Worton Grange is outside of the 0.1% annual probability (1 in 1,000 year) flood extent and is in Flood Zone 1 for the purposes of planning. The FRA concludes:

- Vulnerability to flooding from all sources is low (including surface water and groundwater);
- There is a low risk of increased flood risk to third parties as a result of the development; and
- Surface water management will be required as part of the proposals.

7.5.2 Worton Grange will incorporate a surface water drainage strategy, designed to the 1 in 100 annual probability rainfall event, plus an appropriate allowance for climate change and limiting

runoff to 50% of the effective brownfield QBar (mean annual flood) rate, in accordance with the NPPF.

7.5.3 The proposed drainage design strategy demonstrates a robust solution that will minimise the risk of flooding to the proposed development and its occupants, and ensure the proposals do not cause an increase to flood risk to the surrounding area.

7.5.4 As such, the proposed works comply with the guidance in NPPF and are acceptable in terms of flood related risk.

7.6 Limiting Nitrogen Oxide Emissions

7.6.1 To reduce the emission of nitrogen oxide (NO_x) into the atmosphere, dwellings will be specified with high efficiency heating systems (e.g. condensing gas boilers) with dry NO_x emissions of less than 40 mg/kWh.

7.6.2 The space heating and hot water systems for non-residential buildings will be carefully chosen to reduce NO_x emissions as far as practicable.

7.7 Reducing the Global Warming Potential of Insulants

7.7.1 The buildings at Worton Grange will be specified with insulating materials with a low Global Warming Potential (GWP). The aim of this is to reduce the emission of greenhouse gases associated with the manufacture, installation, use and disposal of foamed insulating materials.

7.8 Reducing the Impact of Refrigerants

7.8.1 Commercial buildings that use refrigerants will have robust and tested refrigerant leak detection systems installed, which will be capable of continuously monitoring for leaks. The systems will be capable of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident.

8 Health and Well-being

8.1 Introduction

- 8.1.1 In accordance with RBC's sustainability checklist, the aim for Worton Grange is:
- 8.1.2 *"To improve the quality of life in homes through good daylight, improved south insulation, provision of outdoor space with good accessibility."*
- 8.1.3 And
- 8.1.4 *"To ensure a good quality amenity level is afforded to occupants of buildings."*

8.2 Sufficient Daylighting and External Views

- 8.2.1 There are a range of health benefits attributed to adequate daylighting in homes. For example, for those rarely able to go outside (e.g. elderly or disabled), window design is essential in providing the natural cycle of darkness and strong light required for health. Adequate daylighting can also reduce the energy requirements for lighting, and act as 'task lighting' for a variety of visual tasks (e.g. food preparation, reading, writing etc.).
- 8.2.2 Dwellings will be carefully designed to ensure the position and size of windows provides sufficient daylight to residents, especially in regularly used rooms such as living/dining rooms, kitchens and studies.
- 8.2.3 Daylighting is also an important consideration for non-residential buildings, in order to help ensure the comfort and well-being of staff. At Worton Grange, these buildings will be designed to help ensure sufficient access to daylight and external views, where it is appropriate to the building type.

8.3 Sound Insulation

- 8.3.1 Separating walls and floors in dwellings will be designed to achieve the airborne sound insulation and impact sound insulations specified in Part E of the Building Regulations and, where appropriate, improve on these values. This will help to reduce nuisance and the likelihood of noise complaints from neighbours. See **Section 7.2** for more information regarding minimising noise pollution.

8.4 Provision of Private Outdoor Space

- 8.4.1 Where appropriate, and within the constraints of the site, the new residents will have access to private outdoor space which may include private gardens, balconies in apartment blocks and communal gardens.
- 8.4.2 It is anticipated that an area (or areas) of public open space will also be provided for recreational purposes. This will be confirmed as the design of the residential development progresses.

8.5 Meeting the Needs of Future Occupants

- 8.5.1 While a high proportion of future need is likely to be for the accommodation of small households, Worton Grange will also include provision for family accommodation, the elderly, the disabled and those with special needs.
- 8.5.2 All buildings will be located, sited and designed to provide suitable access to, into and within its facilities for all potential users, including disabled people, so that they can use them safely and easily.

- 8.5.3 Dwellings will be designed to meet the new nationally described space standards⁶, which replace the existing different space standards used by local authorities.

8.6 Appropriate Light, Ventilation, Air Quality and Drinking Water Facilities

- 8.6.1 All external lighting located within the construction zone will be designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night, in accordance with *BS 5489-1:2013* and *BS EN 12464-2:2014*.
- 8.6.2 All fluorescent and compact fluorescent lamps will be fitted with high frequency ballasts. Internal lighting in relevant building areas will be designed to provide illuminance (lux) levels appropriate to the tasks undertaken, accounting for the building user concentration and comfort levels (e.g. designed in accordance with *SLL Code for Lighting 2012*). For areas in commercial buildings where computer screens are regularly used, lighting designs will comply with *CIBSE Lighting Guide 7* sections 3.3, 4.6, 4.7, 4.8 and 4.9.
- 8.6.3 The potential for disabling glare will be designed out of all relevant building areas using a glare control strategy, through either building form/layout or building design measures.
- 8.6.4 Through the detailed M&E design, all buildings at Worton Grange will have appropriate ventilation and air quality to suit their purpose. All buildings will be connected to the mains potable water supply and, where appropriate, non-residential buildings will have point-of-use drinking water facilities.

⁶ DCLG (2015) *Technical housing standards – nationally described space standard*. March 2015.

9 Management

9.1 Introduction

9.1.1 In accordance with RBC's sustainability checklist, the aim for Worton Grange is:

9.1.2 *"To manage the site in an environmentally and socially considerate manner."*

9.2 Responsible Construction Practices

9.2.1 To help ensure the construction site is managed in an environmentally considerate manner, the principal contractor will operate an Environmental Management System (EMS) covering their main operations. This will be certified to ISO 14001, the Eco-Management and Audit Scheme (EMAS) or an equivalent standard. All site timber used in the project will be sourced in accordance with the UK Government's Timber Procurement Policy. Furthermore, the principal contractor will implement 'best practice' pollution prevention policies and procedures on site in accordance with *Pollution Prevention Guidelines (PPG) 6 Working at construction and demolition sites*.

9.2.2 A Sustainability Champion will be appointed to monitor the project to ensure ongoing compliance with the relevant sustainability/process criteria during construction, handover and close-out stages. To do this, the Sustainability Champion will be either based on site or will visit the site regularly to carry out spot checks, and will require action to be taken to address shortcomings in compliance. The Sustainability Champion will monitor site activities with sufficient frequency to ensure that risks of non-compliance are minimised. They will report on progress at relevant project team meetings, including identifying areas of non-compliance and any action needed to mitigate.

9.2.3 The principal contractor will also use a recognised organisational local or national considerate constructors scheme (such as *the Considerate Constructors Scheme*⁷) and significantly exceed 'compliance' with its requirements. The Considerate Constructors Scheme awards points for operations that are considerate, environmentally aware, clean, a 'good neighbour', respectful, safe, responsible and accountable.

9.2.4 Responsibility will be assigned to an individual (or individuals) for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from on-site construction processes (and dedicated off-site monitoring) throughout the build programme. To ensure the robust collection of information, the individual will have appropriate authority and responsibility to request and access data required (e.g. the Sustainability Champion could perform this role).

9.3 Safe and Secure Design

9.3.1 The site-wide development and individual buildings will be designed to reduce opportunities for, and the fear of, crime.

9.4 Commissioning and Handover

9.4.1 A schedule of commissioning and testing will be established that identifies a suitable timescale for commissioning and re-commissioning of all building services and control systems and testing and inspecting of building fabric. The schedule will identify the appropriate standards that all commissioning activities will be conducted in accordance with (such as the current Building Regulations, BSRIA and CIBSE guidelines and other appropriate standards)

⁷ Considerate Constructors Scheme (2015) *Considerate Constructors Scheme* [online] available at: <http://www.ccscheme.org.uk/> [access 10/09/2015]

- 9.4.2 An appropriate project team member will be appointed to monitor and programme commissioning activities on behalf of the client. The principal contractor will account for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works, allowing the required time to complete commissioning and testing activities prior to handover.
- 9.4.3 For buildings with complex building services and systems, a specialist commissioning manager will be appointed during the design stage with responsibility for:
- Undertaking design reviews and giving advice on suitability for ease of commissioning;
 - Providing commissioning management input to construction programming and during construction installation stages; and
 - Management of commissioning, performance testing and handover/post-handover stages.
- 9.4.4 Where there are simple building services, this role will be carried out by an appropriate project team member.
- 9.4.5 The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths will be quality assured through the completion of post construction testing and inspection. Any defects identified will be rectified prior to the building handover and close out. Any remedial work will meet the required performance characteristics for the building/element.
- 9.4.6 A training schedule will be prepared for relevant personnel, timed appropriately around handover, which will include introduction to the building user guide and other relevant building documentation (including the maintenance strategy and the operations and maintenance (O&M) manual).

9.5 Building User Guides and Home User Guides

- 9.5.1 A building user guide will be developed for each commercial building prior to handover for distribution to the building occupiers and premises managers. This will provide site-specific guidance for non-technical building users with a view to helping them access, understand and operate the buildings efficiently and in a manner in keeping with the original design intent. The content of the guide is likely to include the following:
- Overview of the buildings and their environmental strategies (e.g. energy, water, waste efficiency strategies and how users should engage with strategies);
 - Building services overview and access to controls (e.g. where to find them, what they control, how to operate effectively and efficiently etc.);
 - Pre-arrival information for visitors (e.g. access and security procedures);
 - Safety and emergency information/instructions;
 - Building related operational procedures and incident reporting/feedback arrangements;
 - Provision of, and access to, transport facilities and local amenities;
 - Refit-refurbishment and maintenance arrangements and considerations; and
 - Links, references and relevant contact details.
- 9.5.2 A home user guide will be developed and distributed to all dwellings covering operational issues and issues relating to the site and surroundings.

9.6 Site Investigation and Remedial Action

9.6.1 A Geo-Environmental Assessment has been prepared which concludes that the overall environmental risk rating for the site is low (Waterman report EED14273-100-R-1-3-1-GH, September 2014). The Assessment includes a number of recommendations which will be considered at the site, including:

- Localised areas of soft landscaping in the residential area of the site may need to be capped to mitigate against risk to human health;
- Good working practices during construction, including damping down of soils, to minimise the migration of dust and suitable personal protective equipment (PPE) worn at all times by construction workers;
- No requirement for radon protection measures identified, but basic radon protection measures are recommended as standard in all new developments;
- Earthwork requirements including materials permitted for use in the works, should be detailed within an Earthworks Specification document; and
- Consideration given to reusing arisings from foundation trenches, drainage runs etc.

9.7 Community and Stakeholder Engagement

9.7.1 A public consultation took place on Friday 25 September 2015 at the Holiday Inn (Reading South), Imperial Way, Reading. A Statement of Community Involvement has been prepared by Savills (October 2015), which shows that Kier's proposals for the site are generally supported by those who attended the public consultation. Feedback received during and after the exhibition has been considered and the main points made have been identified and responded to in a positive manner.

10 Land Use and Ecology

10.1 Introduction

10.1.1 It is acknowledged that new developments should strive to be located in areas of low ecological value and, where possible, existing features of ecological value should be protected⁸. New development can also create opportunities for enhancing the ecological value of an area.

10.1.2 In accordance with RBC's sustainability checklist, the aim for Worton Grange is:

10.1.3 *"To retain, protect and enhance wildlife habitats and natural features."*

10.2 Retaining, Protecting and Enhancing Wildlife Habitats and Natural Features

10.2.1 A Preliminary Ecological Appraisal has been prepared to support the hybrid planning application (Waterman report WIB14723-101-R-1-1-3-HMB, July 2015).

10.2.2 It shows that the site is not subject to any statutory or non-statutory designations. There are designated sites within 5 km, but these will not be affected as a result of development due to their distance from the site and separation by roads and other built development. The River Kennet / Kennet and Avon Canal, though located 1.9 km from the site, are hydrologically connected to the wet ditch on the site via Foundry Brook.

10.2.3 The site has sites of local value (mature trees), of value within the boundary of the site only (running water, scrub, semi-improved grassland and semi-mature/immature trees) and of negligible value (hard standing and rubble piles). The site also has the potential to support notable and protected species including bats and nesting birds.

10.2.4 A series of protection measures are recommended to minimise any potential detrimental ecological impacts, including:

- Implementing a CEMP during demolition and construction phases, to include measures minimising potential pollution events affecting nearby watercourses; and
- Any retained trees to be protected in accordance with *BS 5837:2012 Trees in relation to design, demolition and construction – recommendations*.

10.2.5 The following measures to conserve and increase the ecological value of habitats were also recommended, and have been considered in the landscaping design:

- Where possible, retain trees onsite;
- Conserve, enhance and extend green corridors within landscape proposals to create and connect habitats of value to wildlife;
- Use native species or species of benefit to wildlife to provide foraging opportunities for birds, bats, invertebrates and other fauna; and
- Provision of bird and bat boxes to provide artificial nesting opportunities.

10.2.6 In accordance with the BREEAM strategy for the site, the early advice and recommendations of the ecology report will be implemented in the final design and build, where possible.

⁸ BRE (2014) *BREEAM UK New Construction Non-domestic Buildings (United Kingdom) Technical Manual SD5076: 3.0 – 2014*.

10.3 Using Previously Developed Land

- 10.3.1 Worton Grange is a brownfield site that was formally occupied by Hewlett Packard. All buildings have since been demolished and the site is currently vacant. Now the site consists mainly of hard-standing with a number of rubble piles. The proposed development therefore makes good use of previously developed land.
- 10.3.2 Worton Grange is also identified as a potential major development site in RBC's Sites and Detailed Policies Document.

10.4 Removal of Land Contamination

- 10.4.1 A Geo-Environmental Assessment has been undertaken, which concludes that the overall risk rating for the site is low (see **Section 9.6** for further information).

11 Transport

11.1 Introduction

11.1.1 The aim of RBC's sustainability checklist in relation to transport is:

11.1.2 *"To reduce the need to travel through appropriately located development."*

11.1.3 At Worton Grange, the aim is to ensure that residents and site users have access to sustainable modes of transport, including public transport, walking and cycling, in order to reduce private car use as far as practicable.

11.2 Access to Public Transport and Proximity to Local Amenities

11.2.1 A Transport Assessment has been prepared to support the hybrid planning application (PBA report 32618-5501, October 2015). The site is considered to be well connected to Reading's public transport network, as well as pedestrian and cycle networks.

11.2.2 There are a series of existing pedestrian and cycle facilities surrounding the site, including:

- The A33 Relief Road which encompasses a comprehensive footway and cycleway providing direct linkage between the site and Reading's town centre;
- The R1, an off-road cycle route that runs west of the site along the A33, linking to the south of the M4 and Reading town centre; and
- A significant element of the B3031 Basingstoke Road to the east is designed with on-road cycle/bus lanes, providing alternative connection to Reading centre connecting to R10 on quieter roads.

11.2.3 The north-south cycle routes also extend strategically with the NCN4 east-west route and the R23 to the south of the M4.

11.2.4 Several nearby bus service routes can also be accessed by site users and residents. This includes a high frequency bus service to the centre of Reading provided by the Emerald 6 service on the B3031 Basingstoke Road. This can be accessed from the Post House bus stop in Whitley Wood, approximately 250 m from the proposed site entrance. A number of night-time bus services also operate.

11.2.5 It is proposed that a proportion of local bus services are diverted to run through the site to serve the central bus stops following redevelopment. A strip of land is also being safeguarded for potential use in the Thames Valley Mass Rapid Transit (TVMRT) scheme.

11.2.6 Reading Railway Station is located approximately 5 km north of the site in Reading town centre and benefits from the bus connections detailed above. Though beyond convenient walking distance, cycling could present a practical option for some. The station offers connection to a range of key destinations including Twyford (6 minute journey time), Theale (8 minute), Basingstoke (25 minute) and London Paddington (28 minute).

11.2.7 Various improvements and enhancements are being implemented or are planned which will further improve the transport network, including a new railway station at Green Park on the Reading to Basingstoke line (subject to the delivery of the supporting Green Park Village).

11.2.8 There are therefore several non-car travel options for site visitors and residents that will help encourage sustainable travel behaviour.

11.3 Private Car Use and Promoting Sustainable Travel

- 11.3.1 Worton Grange will incorporate 589 car parking spaces (excluding residential and sales spaces for the car showrooms). This includes 16 dedicated spaces for disabled persons, which will be supplied in accordance with *Approved Document M: Access to and Use of Buildings*. As noted in **Section 11.2**, residents and site-users also have access to a number of sustainable travel models that offer an alternative to private car use.
- 11.3.2 In terms of cycle parking, the provision will be in line with RBC's minimum parking standards. This excludes the western retail zone, because a high level of cross utilisation between land uses is expected.

11.4 Deliveries and Manoeuvring of Vehicles

- 11.4.1 Each of the land uses across the site has been assessed in terms of accessibility by the appropriate vehicle. This includes a car transporter (articulated vehicle) for the car showrooms, as well as Heavy Goods Vehicles (HGVs) for the retail uses and trade city. Appropriate swept path analysis of the access junctions and internal road layouts has been undertaken. Each land use incorporates appropriate loading bay facilities across the site.

11.5 Travel Plan

- 11.5.1 A site-wide Travel Plan has been produced to promote sustainable travel, where possible, and to encourage forms of travel which improve the health and well-being of site users. A separate Residential Travel Plan has been prepared for the northern half of the site.

12 Conclusions

12.1.1 Kier Reading LLP are submitting a hybrid application for outline planning permission for the development of 175 new homes, including affordable housing (with all matters reserved apart from access) and full planning permission for the development of 12 commercial units to be used flexibly within Classes B1(c), B2 and B8 with ancillary retail sales to accommodate trade counters; two car showrooms with provision for MOT and servicing (Sui Generis); three retail warehouse units (Class A1); 120 bed hotel (Class C1); pub with restaurant facility (Class A4); coffee shop with drive through facility (Class A1); restaurant with drive through facility (Class A3); and bank with drive through facility (Class A2).

12.1.2 This Sustainability Statement has been prepared to support the hybrid planning application. In conclusion it demonstrates that Worton Grange will be a sustainable development, as defined by over-arching national sustainability goals and site-specific objectives as defined by Reading Borough council's policies for new development, which will incorporate the following target measures:

- Non-residential buildings to achieve a BREEAM score of 62.5%;
- Energy efficient and low carbon design to comply with Part L of the Building Regulations 2013;
- 50% of domestic properties to achieve an improvement of at least 19% over Part L 2013 (or a 9.5% improvement across all domestic properties);
- Water efficient design to comply with Part G of the Building Regulations and BREEAM requirements;
- Low environmental impact and responsible sourcing of materials;
- Appropriate management of construction and operational waste to minimise waste sent to landfill and provide increased opportunities for recycling;
- Low greenhouse gas emissions and pollution impact (including noise, air and light pollution);
- Appropriate surface water management to protect the receiving waters from pollution and minimise the risk of flooding;
- Designed to help ensure the health, comfort and well-being of residents and site users;
- Site managed in an environmentally and socially considerate manner;
- Bringing previously developed land into beneficial use;
- Protecting and enhancing ecological value, where possible; and
- Accessibility to sustainable modes of transport and opportunities to promote non-car travel.

Appendix A Site Layout Plan



NOTES
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Contractors, Sub-contractors and suppliers are to check all relevant dimensions and levels of the site and building before commencing any shop drawings or building work. Any discrepancies should be recorded to the Architect.
Where applicable this drawing is to be read in conjunction with the Consultants' drawings.

REV	DESCRIPTION	DATE	AUTHOR	CHK'D
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- KEY**
- Site Boundary
 - Built Form
 - Public open Space
 - Gardens
 - Pond / Swale
 - Residential Parking Courts
 - Commercial Parking Courts
 - Commercial Driveways
 - Clear zone to accommodate future MRT



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PROJECT
Worton Grange
Reading

DRAWING
Illustrative Masterplan - 01

SCALE 1:500 @ A0
DATE 29/10/15
AUTHOR CW/hm
CHK'D CW

JOB NO. PERS150509
DRAWING NO. MP-01
REV -

