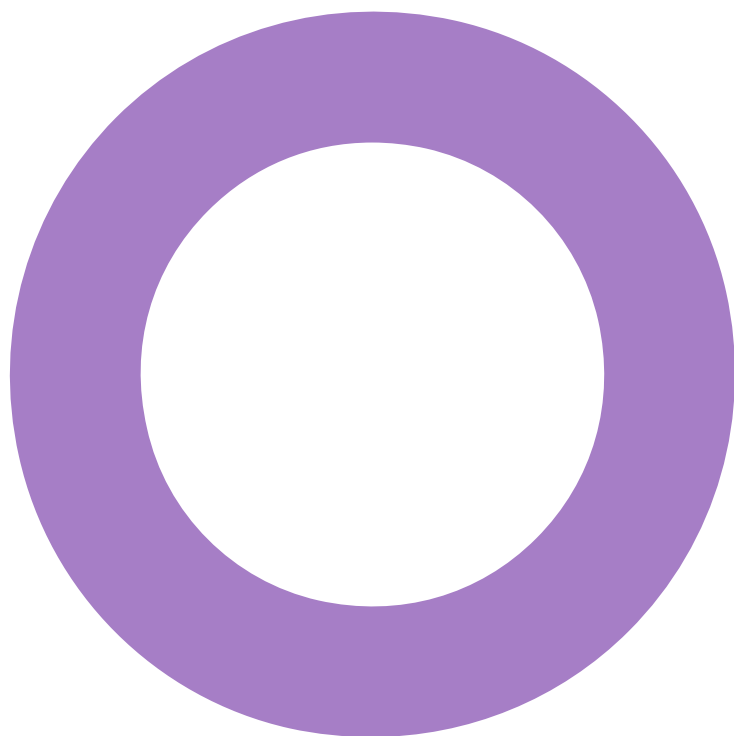


**Broad Street.
Reading.**

Inception (Reading) Sarl (c/o Moorgarth Group Ltd).

SUSTAINABILITY
SUSTAINABILITY STATEMENT

REVISION A – 17.12.2018



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
A	17.12.2018	For Submission	J. Nuttall	S. Weston	J. Ford

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Contents.

Audit sheet.	2
1. Executive Summary	4
2. Introduction	5
2.1 The Application	5
3. Policies and Drivers	6
4. A Sustainable Development	8
4.1 The Wider Context of Sustainability	8
4.2 Sustainable Vision	8
4.3 Proposed Development Targets	8
5. The Principles of Sustainable Design	9
5.1 Community Engagement and Facilities	9
5.2 Health and Wellbeing	10
5.3 Construction Management	11
5.4 Responsible Use of Materials	12
5.5 Minimisation of Waste	13
5.6 Energy and Carbon Emissions	14
5.7 Pollution Control	15
5.8 Minimising Water Use	16
5.9 Managing Flood Risk	17
5.10 Ecology	18
5.11 Sustainable Transport	19

1. Executive Summary

This Sustainability Strategy has been prepared in support of the full planning application for the residential development at Broad Street, Reading, hereafter referred to as the Proposed Development.

This strategy outlines how the Proposed Development would seek to meet the policy targets of Reading Borough Council (RBC).

This report includes a review of both national and local planning policies of Reading Borough Council (RBC). Specifically, the following policy documents have been reviewed:

National Policy and Guidance

- The National Planning Policy Framework (March 2012)
- Building Regulations Part L (October 2013)

Local Policy – Current and Emerging

- Reading Borough Council Core Strategy (Alteration January 2015)
- The Supplementary Planning Documents (SPD)
 - Reading Station Area Framework (December 2010)
 - Sustainable Design and Construction (July 2011)
 - The Sites and Detailed Policies Document (October 2012)
- Community Infrastructure Levy – Charging Schedule (January 2015)

Relevant policy requirements / targets; that is, those pertaining to energy and sustainability and how these are addressed by the Proposed Development are outlined in this report.

The Wider Context of Sustainability

The Proposed Development will bring benefits to the Borough by offering new employment opportunities and utilising re-developed land within city centre.

The Applicant seeks to optimise the potential of the site by bringing forward these development proposals.

Proposed Sustainability Targets

As a principal target, The Applicant is aspiring to target a BREEAM 'Very Good' rating (retail units) in line with RBC planning policy.

Principles of Sustainable Development

The Proposed Development intends to implement best practice principles of sustainable design, as follows:

Community Engagement and Facilities

Engage with the local community throughout design, construction and operation to deliver a sustainable development, built for purpose and well used and appreciated by future building occupants.

Health and Wellbeing

To safeguard the health and wellbeing of the future occupants of the residential spaces at the Proposed Development by ensuring that, amongst other things, people will not be exposed to excessive noise or flickering lights. The Proposed Development will seek to mitigate any negative effect to the acoustic environment that may arise nearby as a result of the Proposed Development.

Responsible Use of Materials

The Proposed Development will seek to reduce the effect of materials on the environment and on building users, and would seek to make the most sustainable choices in terms of material selection.

Minimisation of Waste

The Proposed Development will seek to reduce the amount (volume and mass) of waste sent to landfill throughout construction and operation of the Proposed Development over its lifetime, through effective management and regard to the waste management hierarchy.

It is intended that at least 80% of construction and demolition waste would be diverted from landfill, in line with BREEAM targets, with the aspiration to achieve higher where feasible. Likewise, it is intended that opportunities are provided to maximise the diversion of operational waste from landfill.

Reducing Energy Demand & CO₂ Emissions

The Proposed Development will have a reduced effect on climate change by reducing CO₂ emissions associated with energy use in buildings. The Proposed Development will reduce energy demand through passive design and energy efficiency measures such as best practice levels of insulation, and low fabric air permeability. Through these measures, the Proposed Development is anticipated to achieve an 4.4% reduction in regulated CO₂ emissions beyond the requirements of the Building Regulations Part L 2013 'baseline'.

A scenario was undertaken in which the proposed development utilises the proposed carbon emission factors detailed in 'SAP 10' to evaluate the future impact of the proposed strategy. Using the SAP 10 carbon emission factors, the Proposed Development achieves an ~55% reduction in regulated CO₂ emissions – over the current Part L 'baseline'.

Pollution Control

The Proposed Development aims to reduce pollution to ensure that the buildings do not have a negative effect on the local environment, the people coming into contact with the buildings during construction, or people using the buildings post construction. For example, the proposed strategy for the residential development includes the use of all-electric i.e. electric heating and hot water therefore no boilers and no emissions arising from combustion (NOx), and materials with low Volatile Organic Compounds (VOCs) will be selected where feasible.

Minimising Water Use

The Proposed Development aims to be water efficient and is aiming to achieving a water usage of less than 125 litres per person per day in the residential areas. This will be achieved through incorporating measures to reduce potable water consumption through use of efficient fixtures and fittings.

It is intended that water meters would also be provided to enable users to monitor usage and target reductions where feasible.

Improving Ecology & Biodiversity

The Proposed Development intends to maintain and improve ecology and biodiversity on the Site beyond pre-existing conditions, where feasible. As a minimum, it is intended that there is no negative effect on existing ecology and biodiversity.

Sustainable Transport

Accessible and safe pedestrian and cyclist routes will be provided to maximise sustainable transport options, while also having health and well-being benefits for future users of the Proposed Development.

2. Introduction

2.1 The Application

This sustainability strategy has been prepared on behalf of Inception (Reading) Sarl (c/o Moorgarth Group Ltd.) hereafter referred to as the Applicant, in support of a full planning application for the residential development at Broad Street, Reading, hereafter referred to as the Proposed Development.

Development Description

The Broad Street development consists of a mixture of residential and retail development. The residential elements are split over five blocks; Block A, B, C, D & E.

Block D is a change of use from an existing office to new residential development. On this basis the dwellings within Block D have been treated as new development are therefore assessed under Part L1A of the Building Regulations 2013. The total development area including retail areas is 36,330m².

Aim

This strategy summarises the pertinent regulatory and planning policies applicable to the Proposed Development, and sets targets commensurate with these policies, which the Proposed Development will seek to achieve. This strategy summarises the sustainability measures that will be implemented for the detailed application areas of the development.

Approach

The objective of this document is to set out the measures that are likely to be implemented to achieve the Proposed Development's targets. The approach of this strategy is therefore to describe how the design will seek to address the aspects of sustainability outlined in Figure 2.1.



Figure 2.1 Sustainability Wheel



Figure 2.2: Broad Street, Reading

3. Policies and Drivers

This section provides a summary of the relevant national and local sustainability planning policies (energy and sustainability) – including, the national planning policy framework and the local policies of the Reading Borough Council (RBC).

This strategy has endeavoured to respond positively to the targets set and achieve the requirements where feasible. The policy documents summarised below are applicable to this development and have been reviewed in this report.



Figure 3.1: Key Policy Documents.

The National Planning Policy Framework (March 2012)

The National Planning Policy Framework (NPPF) was published on 27th March 2012 and superseded all Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) documents.

The National Planning Policy Framework sets out the Government's economic, environmental and social planning policies for England. In combination, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.

It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities. The NPPF states that: "Proposed redevelopment that accords with an up-to-date Local Plan should be approved and proposed redevelopment that conflicts should be refused unless other material considerations indicate otherwise."

Building Regulations Part L (October 2013)

The assessment of the Proposed Development against policy targets has been carried out using the Building Regulations Part L 2013 methodology.

Criterion One of the current Building Regulations requires that the dwellings as designed does not generate CO₂ emissions in excess of that set by the Target Emission Rate (TER) calculated in accordance with the National Calculation Methodology for dwellings. Furthermore, Criterion 1b of the Building Regulations sets a minimum fabric energy efficiency referred to as the TFEF for each dwelling within the development.

Current Policy Framework

The policies of Reading Borough Council (RBC) are contained within the Local Plan documents:

Those applicable to the Development are:

- Reading Borough Council Core Strategy (Alterations Adopted January 2015)
- The Supplementary Planning Documents (SPD):
 - Reading Station Area Framework (December 2010)
 - Sustainable Design and Construction (July 2011)
 - The Sites and Detailed Policies Document (October 2012)

Summary of Reading Borough Council Core Strategy Policies

Policy Reference	Target
CS Policy CS1	– BREEAM ‘Very Good’ – All new commercial developments. – BREEAM ‘Excellent’ – 50% of all major developments (over 1,000m²). – Maximise the use of energy efficiency and energy conservation measures to reduce overall energy demand – 20% of CO₂ reduction to be achieved via passive design, on site renewables and CHP where appropriate. <i>The Sustainable Design & Construction SPD confirms that Part L 2013 Building Regulations have exceeded this target, therefore it no longer applies.</i>
CS Policy CS2	– Demonstrate measures to minimise the generation of waste in the construction, use and life of buildings and promote more sustainable approached to waste management including the reuse and recycling of construction waste. – Minimise construction waste and provide adequate space for operational waste.
CS Policy CS3	– Demonstrate measures to enhance social inclusion in terms of access to housing, employment, services, community facilities, leisure, health and education.
CS Policy CS5	– All buildings should 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 ac use them safely and easily.
CS Policy CS7	– Developments must be of high design quality that maintains and enhances the character and appearance of Reading. – Developments should ensure that they create safe and accessible environments where crime and disorder or fear of crime does not undermine quality of life or community cohesion.
CS Policy CS20 – CS24	– Provide alternatives to use of private cars and implement a Travel Plan.
CS Policy CS29	– All new development should make provision for the open space needs of the development.
CS Policy CS30	– New developments should make provision for, or contribute to, improvements to road and other crossings to improve access to green space.
CS Policy CS31	– Encouraging the development of new, extended or improved community facilities in accessible locations.
CS Policy CS32	– Limiting the impacts on Community Facilities.

Policy Reference	Target
CS Policy CS34	– Development will only be permitted where it would not be damaging to the environment through air, land, noise or light pollution.
CS Policy CS35	– No development in areas of high flood risk.
CS Policy CS36 & CS38	– Retain, protect and incorporate features of biodiversity or geological interest. – Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal.

Table 3.1: Summary of RBC Sustainability Policies.

4. A Sustainable Development

4.1 The Wider Context of Sustainability

The Proposed Development seeks to contribute to the business and sustainability ethos of the city centre through the provision of modern residential and retail buildings to attract new businesses to the area.

Place Making

New Open Spaces

The Proposed Development will develop an existing set of buildings around and above the existing Broad Street Mall. It is intended that spaces will be highly attractive and would seek to bring nature into the development by ensuring greenery are included.

Land Use

Responding to the Natural Context

The Proposed Development aims to maximise the greenery as far as practically possible.

Scale and Massing

The scale and massing of the Proposed Development seeks to respond to the context including the existing buildings and spaces that surround them with an appropriate scale.

4.2 Sustainable Vision

A Sustainable Vision

The Applicant has a clear vision for a sustainable development, and will strive during detailed design stages to include means to optimise the sustainability of the Proposed Development wherever practical and feasible to do so.

4.3 Proposed Development Targets

Good Practice Environmental Assessment

It is intended that the Proposed Development will be designed in reference to good practice industry recognised environmental assessment methodologies such as BREEAM, in line with RBC CS Policy 1.

BREEAM

BREEAM has been in use since 1990 and is considered to be one of the foremost environmental assessment methodologies for the benchmarking of sustainable design proposals.

The Proposed Development will aim to achieve an ‘Very Good’ rating (retail only).

Table 4.1 summarises some of the key elements of a BREEAM assessment that would likely be undertaken.

Consideration	General Principles
Energy	– The target for passive design and energy efficiency (before the implementation of LZC technologies) is to achieve compliance with Building Regulations Part L 2013 as a minimum. This will be applied to all use classes throughout the Proposed Development – Consideration of passive design, energy efficiency and LZC technologies will be given during detailed design stages to ensure compliance with relevant Part L CO₂ emission targets.

Consideration	General Principles
Waste	– Construction waste to be guided by a Site Waste Management Plan and best practice waste minimisation / recycling measures to be implemented. – Aim to utilise construction materials from recycled or reclaimed sources. – Dedicated storage for recyclable waste in each building, and specific storage allocated to recyclables in apartment blocks.
Water	– Best practice water efficiency: – At least a 40% reduction beyond the BREEAM ‘base building’ for commercial areas.
Flood Risk	– It is intended that the volume and run-off rates of storm-water would not increase beyond existing conditions. – The inclusion of green / brown roofs to be considered. – Watercourse pollution to be minimised by adopting appropriate techniques. – Attenuation of pre-development run-off rates including an allowance for climate change would be considered.
Transport	– Provision of sheltered, secure cycle storage provided across the Site. Storage to be available for staff and visitors. – Site layout to allow for safe and secure pedestrian / cyclist access routes.
Biodiversity	– An ecologist to be appointed (prior to the commencement of development works on-site) to undertake ecological surveys.
Materials	– ‘A+’ and ‘A’ rated materials (under the BRE Green Guide to Specification) to be preferred for selection where feasible. – 100% of non-reclaimed timber in permanent and temporary works to be FSC certified and legally sourced.

Table 4.1 BREEAM Targets.

5. The Principles of Sustainable Design

The overall aim of the Proposed Development is to deliver a sustainable residential development in the city centre.

5.1 Community Engagement and Facilities

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS7	– Developments must be of high design quality that maintains and enhances the character and appearance of Reading.
CS Policy CS29	– All new development should make provision for the open space needs of the development.
CS Policy CS30	– New developments should make provision for, or contribute to, improvements to road and other crossings to improve access to green space.
CS Policy CS31	– Encouraging the development of new, extended or improved community facilities in accessible locations.
CS Policy CS32	– Limiting the impacts on Community Facilities

Table 5.1: Summary of RBC Policies for Community.

Intent

Engage with the local community throughout design, construction and operation to deliver a sustainable development, built for purpose and well used.

To provide community facilities appropriate to the scale of the Proposed Development.

Approach

The following steps outline the approach that will be followed, to address RBC Core Strategic policies described in Table 5.1.



Local Community Engagement

As part of the planning application a well-considered consultation and engagement process will be undertaken.



Apprenticeship and Local Employment

The Proposed Development will seek to boost the local economy by using local business and suppliers where viable and consider schemes promoting local employment.

There will also be a commitment to jobs brokerage throughout the construction phase. As needs change, consideration would be given as to how local and long-term unemployed are given opportunities to gain appropriate skills. Additionally an employment skills plan will be prepared as part of any Section 106 agreement.



Improving Existing Sites

The Proposed Development is being built on an existing site. The Proposed Development will re-vitalise the area and enhance the existing area.

5.2 Health and Wellbeing

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS3	– Demonstrate measures to enhance social inclusion in terms of access to housing, employment, services, community facilities, leisure, health and education.
CS Policy CS5	– All buildings should 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 ac use them safely and easily.
CS Policy CS7	– Developments must be of high design quality that maintains and enhances the character and appearance of Reading. – Developments should ensure that they create safe and accessible environments where crime and disorder or fear of crime does not undermine quality of life or community cohesion.

Table 5.2: Summary of RBC Policies for Health and Wellbeing.

Intent

To safeguard the health and wellbeing of the future staff and visitors of the Proposed Development by ensuring that, amongst other things, there will be good indoor air quality and the people will not be exposed to excessive noise, flickering lights or overheating rooms.

Approach

In order to achieve a sustainable development, it will be vital to ensure that safety is considered to be high amongst users. The Proposed Development layout is configured to avoid unsighted dark corners or dead-ends, promoting a light and visible permeability.

The following steps outline the approach that will be followed by the Proposed Development to address RBC Core Strategic policies described in Table 5.1.



Secured by Design

In order to achieve a sustainable development which encourages visitors to the Proposed Development it will be vital to ensure that safety is considered to be high amongst staff and visitors.

The Site layout is configured to avoid unsighted dark corners or dead-ends, promoting a light and visible permeability.

Consideration will be given to the principles of ‘Secured by Design’ during the detailed design phase to ensure security is at the heart of the Proposed Development. It is understood that forthcoming amendments to the Building Regulations would incorporate elements of ‘Secured by Design’. These will be adhered to in the design of the Proposed Development.



Thermal Comfort

Thermal comfort contributes significantly to the perception of an individual to the quality of a space.

Thermal comfort varies depending on the amount of clothing people wear in different situations, and the extent to which a person is active.

During detailed design, calculations should be undertaken to demonstrate that through passive design and other measures, that the risk of overheating at the Proposed Development would be mitigated to ensure that compliance with Part L of the Building Regulations (2013) is achieved as a minimum.



Lighting Quality

Good quality lighting installations can work in tandem with good architecture to define great spaces.

During detailed design, an energy efficient lighting strategy will be devised for the Proposed Development, to be designed in line with good practice for visual performance and comfort.

As such, all fluorescent and compact fluorescent lamps will be fitted with high frequency ballasts to minimise the risk of health problems related to the flicker of fluorescent lighting for the Proposed Development in line with current industry standards.

Lighting may also be dimmable and linked to daylight sensors to minimise glare discomfort.



Noise

Transmission of internal noise within the residential spaces will be minimised.

Any negative effect to the acoustic environment nearby as a result of the Proposed Development will be mitigated as far as practically possible.

5.3 Construction Management

RBC Adopted Policy Summary

Policy Refer ence	Target
CS Policy CS2	– Demonstrate measures to minimise the generation of waste in the construction, use and life of buildings and promote more sustainable approach to waste management including the reuse and recycling of construction waste.

Table 5.3: Summary of RBC Policies for Construction Management

Intent

The Proposed Development seeks to manage the project in such a way that sustainability standards are assessed and maintained from the design stages through to end-of-life.

Approach

The Applicant will ensure that the contractors for the Proposed Development sign up to the Considerate Constructors Scheme (CCS) as outlined below.



Construction Management Plan & Considerate Constructors Scheme (CCS)

A construction management plan will be written to ensure construction of the Proposed Development achieves good practice. The plan will be written in reference to the CCS.

The CCS has worked well since introduction to ensure constructors implement practices which embody good neighbourliness and concern for the environment. The aim will be to require contractors to achieve at least a 'good practice' score under the CCS.

5.4 Responsible Use of Materials

RBC Adopted Policy Summary

Policy Reference	Target
CS policy CS1	– Use materials in an appropriate way to lower energy consumption and associated greenhouse gases. Have the materials meet BREEM “Very Good” and “Excellent” standards.
CS policy CS2	– Demonstrate measures to minimise the generation of waste and increasing the amount that is reused or recycled.
CS policy CS7	– Use of appropriate materials that are to a high standard and will maintain and enhance the area it is located in.

Table 5.4: Summary of RBC Policies for Materials.

Intent

The Proposed Development will minimise the effect of materials on the environment and on current buildings, and will seek to make the most sustainable choices in terms of material selection where feasible.

Approach

The following steps outline the way the targets can be met, for Proposed Development, by making the best choices in terms of material selection and reusability.



Reuse of Existing Materials

Reading Borough Council aims to reuse existing materials or waste, to reduce the future need on extracting the material. Reading Borough council suggests the beneficial restoration or use of existing buildings should be considered before demolition or redevelopment. This can be achieved by better waste management.



Material Sourcing

The Proposed Development will seek to source materials locally wherever possible. This will help reduce the embodied carbon of the materials by limiting transportation related emissions.



Minimising Waste of Materials

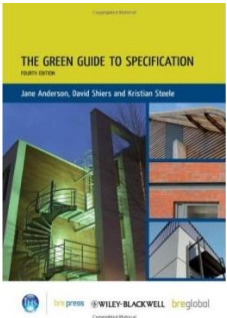
Waste of materials will seek to be reduced through exploring the use of standard size components in design detailing, considering the implementation of a ‘just-in-time’ material delivery system.



Maximise Recycled Content of Materials

A number of materials used commercially in the UK construction industry are manufactured using materials recycled from post-consumer waste. A detailed analysis of the materials available in the UK is outlined on the government ‘Waste & Resources Action Programme’ (WRAP) website and the ‘National Building Specification’ (NBS) ‘Greenspec’ website.

The Proposed Development will explore the opportunity to maximise the recycled content of materials where feasible.



The Green Guide to Specification

Materials used at the Proposed Development will be reviewed using the BRE’s online ‘Green Guide to Specification’ (www.bre.co.uk/greenguide), in line with BREEAM requirements, in order to maximise the proportion of materials which are A rated, and minimise materials with the lowest ratings (E).



FSC Certified Timber

Certain timber products and materials available in the UK use tropical hardwoods from endangered or illegal sources.

The Proposed Development will endeavour to use timber from a temperate, well managed source or manufactured from recycled timber waste.

Timber certified by the Forest Stewardship Council (FSC) which provides a product-specific chain of custody number confirming that the timber used in the manufacture of the product originates from a sustainably managed source.

For the Proposed Development it is intended that only FSC certified timber is used.

5.5 Minimisation of Waste

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS3	– Minimise construction waste and provide adequate space for operational waste

Table 5.5: Summary of RBC Policies for Waste.

Intent

The Proposed Development will seek to reduce the amount (volume and mass) of waste sent to landfill during construction and throughout the lifetime of the buildings, by effective management and with regard to the waste management hierarchy.

Approach

The Proposed Development will be provided with sufficient bin storage capacity to allow for storage of recyclable and non-recyclable waste streams.

The layout and location for the waste facilities is detailed on the current architectural plans.

Minimisation of Demolition & Construction Waste

The contractor will be required to produce a Site Waste Management Plan (SWMP), in line with BREEAM requirements, which would define measures for how to minimise the volume of waste arising from demolition and construction activities which is sent to landfill.

The design team would hold a ‘Design out Waste’ workshop in accordance with the requirements of the SWMP regulations. Therefore design, procurement and construction methodologies will be implemented to reduce waste arising at the construction stage.

Recycling of construction waste will be implemented. The Proposed Development will seek to divert at least 80% of construction, demolition and excavation waste from landfill with the aspiration to achieve a higher diversion rate if feasible.

The SWMP will ensure that the potential useful material arising from demolition waste is assessed before demolition takes place. The process for doing this may be carried out using the Institute of Civil Engineers (ICE) Demolition Protocol 2008. The SWMP will be written in compliance with ‘Department of the Environment, Food and Rural Affairs’ (DEFRA) guidance on SWMPs to implement best practice methods. It will aim to include targets and procedures to reduce waste generated on-site, develop and implement procedures to monitor, sort and recycle construction waste on-site, and follow the guidance given by bodies such as WRAP, Envirowise, DEFRA and the BRE.

Design for Recovery and Re-use

Where possible the Proposed Development will consider the use of locally sourced reclaimed materials. The use of recycled material, in particular for aggregates, will be maximised where feasible. Opportunities for the recycling of construction waste on-site will also be considered in conjunction with making this waste available for recycling elsewhere.

Optimising Materials Usage

Specifying materials in standard dimensions and reducing the number of different materials used on-site would result in reduced on-site wastage. Using design repetition, where appropriate, and simplifying construction details would reduce rework wastage and procurement costs as higher volume orders can be made.

Waste Efficient Procurement

To ensure that the design, materials, and waste strategy intent are realised during construction,

The feasibility of setting sub-contractors targets for material waste minimisation, material re-use and recycling will be explored. The design will aim to explore opportunities to incorporate pre-fabricated elements and recycled aggregates where feasible.

Operational Waste

The Proposed Development will be provided with sufficient bin storage capacity to allow storage of non-recyclable and comingled recyclable waste.

Internal recyclable bins will be provided in appropriate areas of the buildings.



Figure 5.1: 1,100 Litre Eurobin and Internal non-domestic Waste and Recycling Bins.

5.6 Energy and Carbon Emissions

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS1	– Maximise the use of energy efficiency and energy conservation measures to reduce overall energy demand – 20% of CO₂ reduction to be achieved via passive design, on site renewables and CHP where appropriate. <i>The Sustainable Design & Construction SPD confirms that Part L 2013 Building Regulations have exceeded this target, therefore it no longer applies.</i>

Table 5.6: Summary of RBC Policies for Energy and Carbon Emissions.

Note; it has been advised that the Proposed Development meets the energy and carbon targets set out in the Draft Reading Local Plan. In summary this calls for a 35% reduction in regulated CO₂ emissions for non-domestic building and zero carbon homes.

Intent

The Proposed Development will have a reduced effect on climate change by reducing CO₂ emissions associated with energy use. This section summarises the approach taken to reduce CO₂ emissions for the Proposed Development

Approach

The following steps outline the approach that will be followed by the proposed redevelopment when reducing CO₂ emissions and defines the structure of the Energy Strategy, submitted in support of this planning application. The Energy Strategy discusses future carbon scenarios and such the proposed building services strategy utilises an all-electric approach i.e. electric heating and hot water. With an all-electric strategy, the use of Combined Heat and Power (CHP) is not feasible i.e. no thermal demand and given that the national grid has decarbonised considerably, the of gas CHP does not offer any carbon savings.

Target

The target in terms of CO₂ emissions reduction for the Proposed Development is to achieve a 20% CO₂ emissions reductions beyond the requirements of the Building Regulations Part L 2013 by means of passive design and energy efficiency measures and the use of LZC technologies.

An updated version of the Sustainable Design and Construction SPD (July 2011) states the following: 'Recent changes to the Building Regulations mean that the requirement in policy CS1 to 'off-set at least 20% of predicted carbon dioxide emissions' has now been superseded for both residential and non-residential developments.

Appraisals

The Proposed Development has been assessed to determine the regulated energy requirements and associated CO₂ emissions. The Proposed Development have been modelled using approved Part L1A compliance software (NHER Plan Assessor) to demonstrate compliance with Building Regulations Part L2A (2013).

Passive Design & Energy Efficiency Measures

A number of passive design and energy efficiency measures are targeted at the Proposed Development:

- Suitable glazing ratio and glass g-value to balance heat losses, heat gains and daylight ingress. This is particularly important to limit reliance on artificial lighting.
- Fabric insulation and air permeability levels achieving improvements over the Building Regulations Part L (2013) requirements.
- Efficient low-energy lighting throughout all areas.
- Highly efficient space heating and mechanical ventilation systems.

Implementation of these measures throughout the Proposed Development is anticipated to exceed compliance with the requirements of the Building Regulations Part L (2013) with a 4.4% CO₂ emissions reduction, through passive design and energy efficiency measures, i.e. before the inclusion of any Low or Zero Carbon (LZC) technologies.

As discussed in the energy strategy, the future carbon emission factors detailed in SAP 10 were evaluated. Using the proposed carbon emission factors, the Proposed Development achieves an ~55% reduction in annual regulated CO₂ emissions over the current Part L baseline.

On-Site Renewable Energy Generation

The viability of installing renewable technologies in the Proposed Development has been assessed, to reach the zero carbon target. Given that the strategy is all-electric, the use of Photovoltaics would be the best fit. However, in order to reach the zero carbon target an array size much greater than the available roof space would be required and therefore does not form part of the energy strategy.

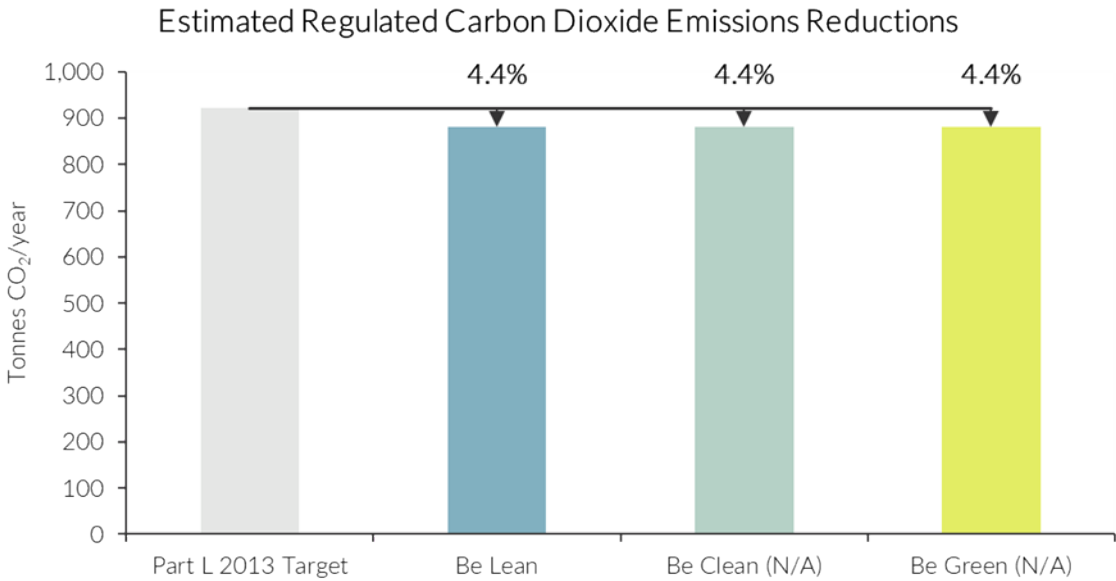


Figure 5.2: Summary of Regulated CO₂ Emissions Reductions.

Overall CO₂ Emissions Reduction

An overall reduction in regulated CO₂ emissions of 4.4% would be achieved when accounting for the benefits achieved through passive design and energy efficiency.

For further details – refer to the Energy Strategy document.

5.7 Pollution Control

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS34	– Development will only be permitted where it would not be damaging to the environment through air, land, noise or light pollution

Table 5.8: Summary of RBC Policies for Pollution.

Intent

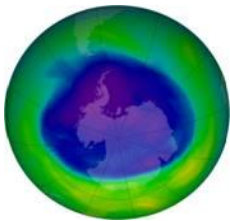
The Proposed Development aims to reduce pollution to prevent any negative effect on the local environment. Where pollution is found to exist on-site all reasonable efforts will be made to remedy conditions.

Approach

The following opportunities have been identified for The Proposed Development. These will be considered further during the detailed design stages:

- Night-time dimming of lights (where appropriate)
- Selection of luminaires to distribute light downwards
- Central plant will be selected to minimise emissions of Nitrous Oxide (NOx) and Particulate Matter (PM)

Other methods to minimise pollution include:



Zero ODP and GWP Insulation

Certain foamed plastic insulation materials available in the UK are manufactured with substances which deplete the Ozone layer and can contribute to global warming.

The Proposed Development will consider opportunities to give preference to insulation materials such as rock wool and mineral wool, which are manufactured to have an ‘Ozone Depletion Potential’ (ODP) of zero, and low ‘Global Warming Potential’ (GWP), while still giving consideration to thermal performance and fitness for purpose.



Low Formaldehyde MDF

‘Medium Density Fibreboard’ (MDF) is a timber panel product which can be manufactured with new or recycled timber.

Typically MDF is manufactured using Formaldehyde, which is hazardous to health and can be emitted to the building long after the building has been completed. MDF can be made without the use of Formaldehyde. The Proposed Development will seek to use low Formaldehyde MDF. The potential for the use of MDF manufactured using recycled materials will also be explored.



Low Solvent / Low VOC Paints

Certain paints contain high levels of solvents or ‘Volatile Organic Compounds’ (VOC). High VOC paints can emit organic compounds contained in the paint to the building, long after the building has been completed.

These chemicals which are inhaled by the building occupants are considered to be a contributing factor in sick building syndrome, leading to nausea and headaches. Low VOC products also have a benefit to construction workers in terms of health and safety. For the Proposed Development it is intended that materials with low percentage of VOC will be used.



Petrol interceptors

The use of petrol interceptors within car parks, loading bays and manoeuvring areas will be explored at detailed design, to minimise watercourse pollution by capturing oil and petrol that may leak from vehicles and potentially contaminate the ground and water supply.



Light Pollution

Potential sources of light pollution at the Site will be mitigated through measures such as night-time dimming of lights, and selection of luminaires to distribute light downwards.



Environmental Effects

The Proposed Development will aim to record no environmental incidents on-site. Examples of environmental incidents include pollution or contamination of ground and water sources through paint, oil or cement powder spillage.



Waste Storage

Adequate waste storage facilities will be provided at the Proposed Development with capacity to allow storage of non-recyclable and comingled recyclable waste. A collection strategy will also be developed to ensure that there is not excessive build-up. For further detail please refer to section 5.5: Waste.

5.8 Minimising Water Use

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS1	– Limit water consumption to levels set out in the BREEAM standards
CS Policy CS2	– Incorporate sustainable urban drainage facilities and techniques.
CS Policy CS35	– No development in areas of high flood risk

Table 5.9: Summary of RBC Policies for Water and Flood Risk.

Intent

The Proposed Development aims to be water efficient, incorporating measures to reduce potable water consumption through efficient fixtures, careful management and recycling strategies.

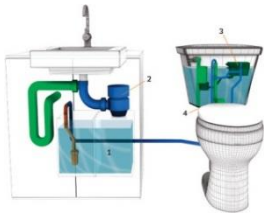
The following opportunities to reduce water use have been identified for the Proposed Development and will be considered further during the detailed design stages. The measures are listed and discussed further below:

- Water efficiency measures
- Major leak detection
- Sub-metering



Water Efficiency Measures

Water fixtures and fittings will have a high water efficiency in order to reduce water consumption by at least 40% beyond BREEAM ‘baseline’ building.



Grey-Water Recycling

The opportunity to include the use of a grey-water recycling system at the Proposed Development will be explored where feasible.

This could also potentially be used for WC flushing.



Major Leak Detection Systems

The proposed development will also include a leak detection system capable of detecting a major water leak on the main water supply within the office blocks and between the buildings and the utilities water meter.



Sustainable Drainage

Sustainable Urban Drainage (SUDs) systems will be considered for the Proposed Development. The opportunities for green roofs, permeable paving and attenuation tanks and other suitable measures to be advised by the drainage consultant.



Sub-Metering

The Proposed Development will be provided with analogue water meters to enable the facilities management to record their water consumption. Pulsed output meters will be provided in line with BREEAM requirements.

5.9 Managing Flood Risk

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS2	– Incorporate sustainable urban drainage facilities and techniques.
CS Policy CS35	– No development in areas of high flood risk

Table 5.10: Summary of RBC Policies for Water and Flood Risk.

Intent

The Proposed Development aims to identify and manage the flood risk level to minimise the risk of localised flooding both on- and off-site, watercourse pollution and other environmental damage.

Approach

Figure 5.3 shows that the Proposed Development is situated in an area which has a 'very low' risk of flooding.

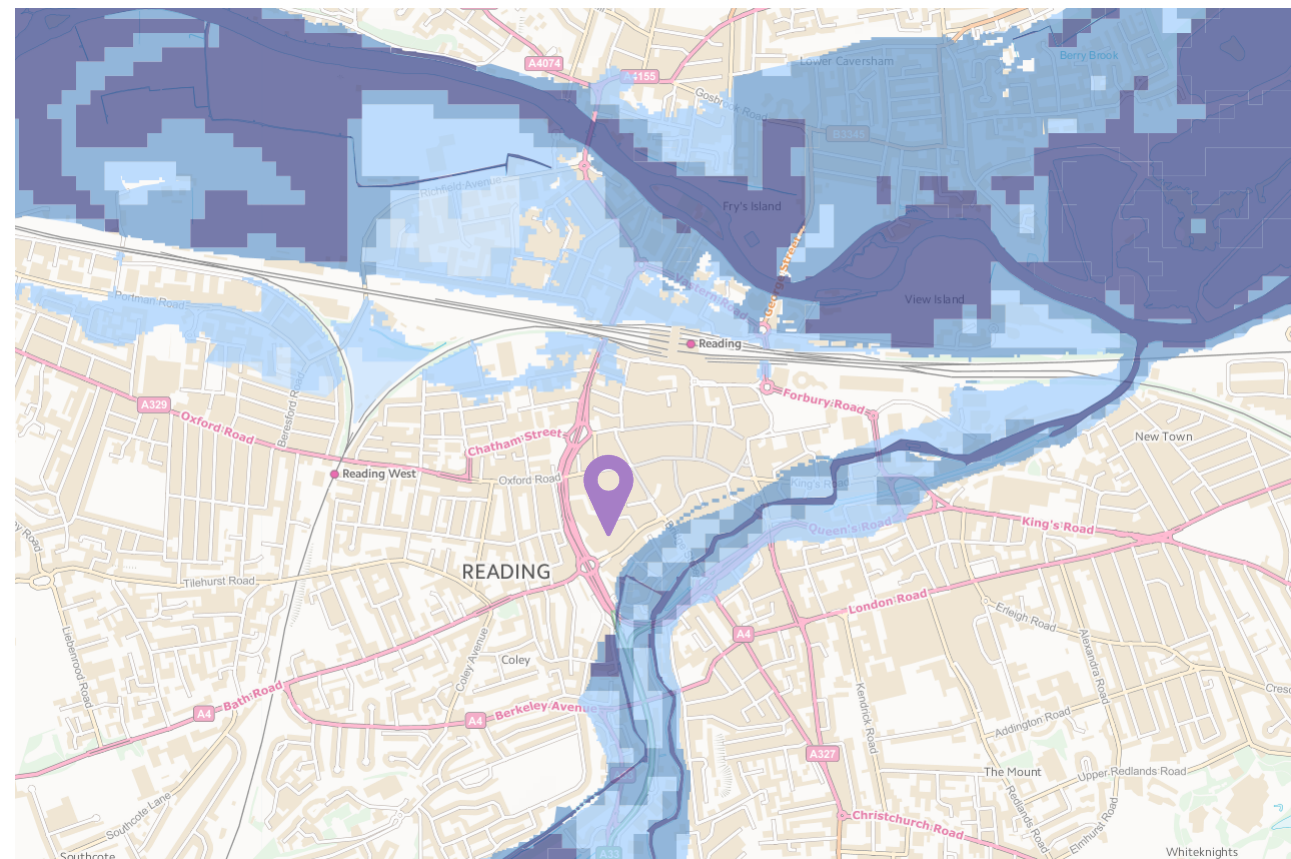


Figure 5.3: Extract from the Environment Agency Flood Risk Map.

The flood risk map indicates a 'very low' risk from flooding (0.1%). This takes into account the effect of any flood defence systems in the area.

5.10 Ecology

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS36 & CS38	– Retain, protect and incorporate features of biodiversity or geological interest. – Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal

Table 5.11 Summary of RBC Policies for Ecology.

Intent

The Proposed Development intends to maintain and improve upon the existing on-site ecology and biodiversity.

Approach

The following opportunities to improve ecology and biodiversity have been identified for the Proposed Development and will be considered further during the detailed design stages.



Native Planting

The Proposed Development will deliver ecological enhancement of habitats through the introduction of native tree and shrub planting and incorporation of areas of species-rich meadow grassland.



Retaining Trees

The tree strategy seeks to enhance and integrate the built form into the landscape, whilst providing accents and focal points to the key nodal spaces.



Opportunities for Nesting Birds

Opportunities to mitigate for the loss of habitat suitable for nesting birds will be incorporated as part of scheme design.



Environmental Effects

Appropriate controls will be adopted as part of construction to avoid impacts on protected species and nearby valued habitats.

5.11 Sustainable Transport

RBC Adopted Policy Summary

Policy Reference	Target
CS Policy CS20 – CS24	– Provide alternatives to use of private cars and implement a Travel Plan

Table 5.12: Summary of RBC Policies for Transport.

Intent

It is the intention that a Travel Plan identifying sustainable modes of transportation is provided, along with suitable facilities such as cycle storage space. The Travel Plan will assist in encouraging staff and visitors to travel sustainably.

The Proposed Development will endeavour to provide accessible, safe pedestrian and cyclist routes within the site to maximise sustainable transport options.

Approach

The site benefits from good access to local bus, cycling and walking routes. However, in addition, the following opportunities for sustainable transport have been identified for the Proposed Development will be considered further during the detailed design stages:

- The provision of cyclist’s facilities such as lockers and showers
- Suitable pedestrian access routes
- 260 cycle spaces are to be provided and 14 motorcycle spaces to encourage alternative forms of transport to work.



JON NUTTALL
SENIOR ASSOCIATE

+44 113 380 1944
jonnuttall@hoarelea.com

HOARELEA.COM

6th Floor
Town Centre House
Merrion Centre
Leeds
LS2 8LY
England

