Regents Wharf, N1
Sustainable Design and Construction Statement

May 2017

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Regent's Wharf

Sustainable Design and Construction Statement

For Planning Submission

Client Name:	Regents Wharf Unit Trust
Client Address:	4 Sloane Terrace London SH1X 9DQ
Property:	Regent's Wharf London
Project Reference:	3840
Issue:	For Planning Submission
Date:	May 2017
Prepared by:	SEJ
Checked by:	SEJ
Validated by:	SRM

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1.00 Introduction

Watkins Payne Partnership has been instructed by Regent's Wharf Unit Trust to provide a Sustainable Design and Construction (SDC) Statement. This statement has been prepared in support of a detailed Planning Application for the Regent's Wharf development.

We have produced self-contained Energy Strategy and BREEAM Pre-assessment reports which form part of the appendices to this report. The business employs Low Carbon Consultants, BREEAM Assessors, Code for Sustainable Homes Assessors as well as Accredited Sustainability Consultants.

The ecology of the site has been considered and recommendations made by the Ecology Consultancy which are being incorporated into the development.

The development seeks to provide sustainable buildings with office and supporting uses within buildings which meet the relevant sustainability requirements within current planning policy. The team have focused on providing low energy buildings with excellent sustainability credentials and have worked collectively in achieving these goals.

The requirements of the London Borough of Islington Core Strategy and Development Management Policies DPD (incl DM7.1) have been observed and considered in the scheme design development as well as The GLA London Plan and the SPG on sustainable design and construction.

2.00 Energy Strategy Statement

The buildings have been analysed and an Energy Strategy report produced. The detail of the Energy Strategy Report is contained within the appendices of the report.

The analysis has taken a hierarchical view looking at optimising the buildings envelopes by the use of solid sections and external high performance glazing.

The energy strategy demonstrates that the building envelopes produce a lean solution following the recommendations of BREEAM to achieve an **Excellent** criteria under the BREEAM (New Construction) 2014 assessment scheme.

The development has been considered for sustainability in relation to energy and CO_2 by the adoption of passive energy design principles.

The development has been designed to achieve a lean envelope by utilising high efficiency glazing and excellent fabric thermal performance. The envelope design has reduced energy consumption whilst maximizing daylight lighting. Other lean features have been incorporated in to the design including mixed mode ventilation and very efficient lighting incorporating LED technology through the commercial areas. This has substantially reduced the CO_2 emissions of the development and the scheme is substantially better that Building Regulations 2013 through energy efficiency measures.

The building systems have been designed using a clean approach to supply energy efficiently. Communal heating and cooling systems with high efficiency equipment will reduce the CO_2 emissions.

The use of renewable technologies have been adopted to deliver a green solution. Photovoltaic panels are proposed to supply electricity to the building infrastructure.

Consideration has been given to connecting the development to a district heating source. The development is not positioned close to a district heating system but provisions will be provided on the communal heating and cooling systems so that should a district system become available in the future then this could be connected to the development as a heat source.

The scheme incorporates both heating and cooling to the office and retail units. Centralised heating and cooling system will serve all parts of the development. The scheme has a common basement where heating and cooling water to all areas of the development will be distributed.

The renewable energy technologies applied to the scheme have been analysed against Building Regulations 2013 considering regulated power and also consider including unregulated power as detailed in the appendices.

3.00 BREEAM Pre-Assessment

A BREEAM 2014 (New Construction) Offices pre-assessment for the development has been undertaken by Jamie Daniel of Watkins Payne Partnership, a registered BREEAM Assessor and an accredited sustainability professional. The BREEAM pre-assessment has taken the form of three meetings with the design team to iterate the best sustainable solutions for the development. The BREEAM pre-assessment report identifies that an **Excellent** rating will be achieved which meets the planning requirements and in accordance with Islington Policy DM7.4.

The scheme design incorporates the features outlined in the BREEAM pre-assessment report and the detailed design will follow these through.

BREEAM 2014 has some mandatory features particularly in relation to Energy and the mandatory elements of BREEAM 2014 will all be achieved.

The detailed BREEAM assessment report is appended to the document and will be followed through to the completion of the project when a post construction review will be undertaken and submitted to the BRE for final certification.

4.00 Biodiversity

A site ecology study and inspection of the site has been undertaken by The RPS Group. They have recommended ecology and biodiversity enhancements to the site which are to be adopted and form the basis of achieving points within the BREEAM assessment. The RPS Group are recognised Ecology consultants and have made recommendations commensurate with the needs of the development integrating with the scheme design and sympathetic to the overall landscaping scheme.

The scheme includes landscaped and green roof areas as indicated on the planning drawings and to comply with policy documents CS10, DM3.5 and DM6.5
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5.00 Site Wide Heating and Cooling

The development incorporates a site wide heating and cooling system serving the office and retail areas.

The systems utilise clean technologies including water cooled, variable speed pumps, high efficiency boilers and high efficiency chillers coupled to roof mounted adiabatic coolers.

The site wide heating and cooling plant is located within the basement of the development and heating and cooling water distributes to the office and retail elements through the common basement.

6.00 Low and Zero Carbon Technologies

The development incorporates low and zero carbon technologies to reduce the CO_2 emissions. Photovoltaic panels are located on the roof areas of the development to supply electricity to the respective buildings. Due to the high efficiency of the communal heating and cooling equipment the use of combined heat and power or ground source heat pumps has not been proposed.

7.00 Water Usage

The development incorporates technologies to reduce the water consumption of the buildings to meet the requirements of the policy document DM7.4. The development includes a rainwater harvesting system which supplies irrigation systems, serving the landscaped areas.

Sub-metering of water is to be installed and leak detection technologies implemented to see that water wastage is minimised and water use within the building can be managed throughout the life of the development. These features will be connected to the Building Management system.

Low water demand taps and sanitaryware / appliances will be provided to the development so that the scheme meets the necessary credits detailed within the BREEAM pre-assessment report.

Due to the low water usage of office buildings incorporating low flow rate fittings a greywater harvesting installation is has been deemed not appropriate.

The office areas will be provided with PIR operated sanitary shut off facilities to each toilet accommodation area so that water supplies are shut off when the toilets are not in use. This feature is required for credits identified within the BREEAM pre-assessment.

8.00 Climate Change Adaptation

The development will be provided with sustainable urban drainage systems (SUDS) for the collection of rainwater and waste water. The rainwater collection system will include the discharge of rainwater to the canal. The discharge of rainwater to the canal will total 50 % of the overall rainwater discharge of the development. The remainder of the rainwater will be discharged to the local authority system. Green roof and landscaped areas will be provided to retain water and therefore provide further attenuation.

A successful application has been made to the Canal and Rivers Trust (CRT) to discharge rainwater to the canal and a license will be obtained from the Environment Agency.

Bridges Pound have undertaken a flood risk assessment for the site and attenuation will be provided reducing the run off from the development by 50% and as described above.

Overheating has been minimized through the use of excellent façade design and thermal modelling. Passive ventilation measures have been implemented through the use of mixed mode ventilation to the perimeter zones within the office spaces.

9.00 Pollution

The development site wide heating system will utilise low NOx gas fired boiler equipment to minimize air quality pollution. The boiler will be located in the basement and the stacks will discharge vertically to atmosphere at roof level and in accordance with the Building Regulations and Clean Air Act. The development will not be provided with biomass fuel combustion equipment.

The surface water from hard standing areas will be discharged to the sewer network to protect against water pollution to the Regent's Canal.

The building lighting will be designed to ensure that the lighting systems do not cause annoyance or have detrimental effects on health.

Diesel fuel for standby generation equipment will be stored in the basement plant area and delivered by tanker in accordance with the Environment Agency regulations. The tanker delivery will be via the refuse bay.

The pollution from the development has been considered by a desk based site investigation to ensure compliance with the "Sustainable Design and Construction SPG". Equipment will be specified to minimise pollution.

10.00 Cycle Storage

The development will be provided with cycle storage. The quantity of cycle storage and facilities will be provided to achieve the commercial building BREEAM Excellent and planning requirements and is shown on the planning drawings.

11.00 Mixed Mode Ventilation

The new build office building will be provided with a mixed mode ventilation system. The system will comprise the provision of natural ventilation to the perimeter zones of the building via openable windows / cladding in the building façade. When natural ventilation is put into use the mechanical fresh air ventilation systems and comfort conditioning systems to the perimeter zones will be turned-off to conserve energy.

12.00 Canal Heat Pump Study

The feasibility of utilising the Regent's Canal water for the rejection and provision of heat to the development has been investigated. The Canal and Rivers Trust (CRT) were employed to carry out a modelling exercise with written report to determine if the canal water can be utilised. The report concluded that there is insufficient water flow in the canal to reject heat from the building without effecting the ecology of the canal system. For this reason canal source heating or cooling has not been proposed for the development.

13.00 Materials, Waste and Construction Impacts

The development construction will ensure that 70 % by volume of non-hazardous construction waste will be diverted from landfill. Good construction waste management will be implemented with less than 3.4 m^3 waste per 100 m^2. The demolition will ensure that 80 % by volume of no-hazardous demolition waste will be diverted from landfill.

A sustainable procurement policy will be implemented including the low embodied impact selection of insulation, all timber to be legally sourced and FSC certified and as per the BREEAM schedule requirements incorporating the BRE Green Guide.

A Site Waste Management Plan (SWMP) is included in the Construction Management Plan and a BSRIA soft landings approach will be adopted.

14.00 Operational Sustainability

The development will be operated to ensure that the sustainable systems operate effectively and that the building meets the requirements of changing user demands. Operational sustainability will be implemented in accordance with the policy documents (C10(G) and DM7.1. The Draft Green Performance Plan (GPP) is included in Appendix 3 of this document.

15.00 Conclusion

The scheme has been considered for sustainability aspects and the following guidance has been reviewed for achieving sustainability:

- Islington Core Strategy incl Policy CS10
- Islington Design Planning Guidance
- Islington Development Management Policies DPD
- SPG on sustainable design and construction.
- The London Plan

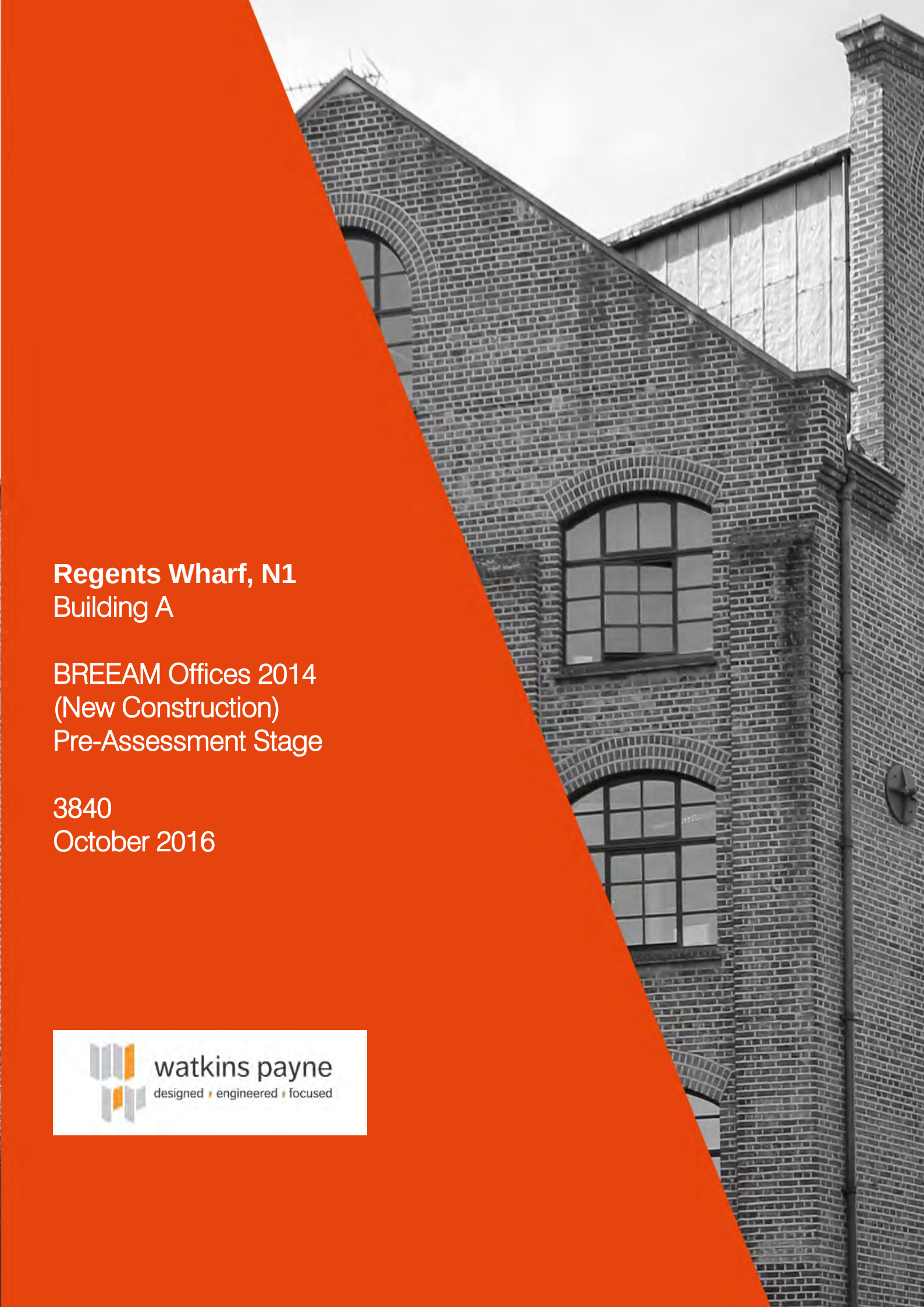
The scheme will incorporate the following sustainable features:

- BREEAM Excellent 2014
- 35% reduction in regulated CO_2 emissions (Part L 2013) for the development area as required for the London Plan and 27 % reduction in regulated and unregulated CO_2 emissions (Part L 2006) to achieve Islington policy compliance
- Improvements in energy efficiency for the refurbished and retained building elements
- Excellent façade design with high performance glass to minimise heat gains and eliminate overheating
- Centralised site wide heating and cooling systems
- Mixed mode ventilation
- Renewable energy in the form of photovoltaic panels
- Ecology enhancements
- Rainwater attenuation by discharging to the canal
- Recyclable waste facilities
- Rainwater harvesting for irrigation
- Low water use appliances
- Water monitoring with internal sub-meters
- Major water leak detection facilities

- Efficient water irrigation systems
- Cyclist facilities
- Responsible sourcing of materials
- Responsible construction process
- LED lighting with daylight dimming and presence detection
- Good indoor air quality
- Materials/finishes with low emissions of volatile organic compounds
- Excellent water quality
- Good indoor acoustic performance and compliance with Islington guidance on outdoor noise
- Inclusion of the Architectural Liaison officer or Crime Prevention officers recommendations
- Energy monitoring and sub-metering of energy in use
- Energy efficient lifts with regenerative drives and lighting control
- Good thermal comfort
- Low embodied impact selection of insulation and to be responsibly resourced.
- All timber to be legally sourced and FSC certified.
- 80% by volume of non-hazardous demolition waste to be diverted from landfill
- Good construction waste management with less than 3.4m^3 per 100m^2
- 70% by volume of non-hazardous construction waste to be diverted form landfill
- Low NOx boiler plant
- Reduction in night time pollution
- Sustainable procurement and responsible construction practices
- Provision of a travel plan
- Flood risk analysis
- No increase in rainwater run-off from the development

APPENDICES

Appendix 1 – BREEAM Assessments



Regents Wharf, N1
Building A

BREEAM Offices 2014
(New Construction)
Pre-Assessment Stage

3840
October 2016

watkins payne
designed · engineered · focused

Prepared on behalf of Watkins Payne Partnership by

Name Yasmin Spain 

Position Sustainability Engineer [BREEAM Assessor]

Checked on behalf of Watkins Payne Partnership by

Name Jamie Daniel 

Position Senior Sustainability Engineer [BREEAM AP]

Watkins Payne Partnership
51 Staines Road West
Sunbury-on-Thames
Middlesex TW16 7AH
T +44 (0) 1932 781 641
F +44 (0) 1932 765 590
wpp@wppgroup.co.uk
www.wppgroup.co.uk

Issue and Date	Reason for Issue
Issue Draft – 22/07/2016 [undertaken at RIBA Stage 1]	For Project Team Comment & Review
Issue Planning – 19/10/2016	For Planning Purposes

Executive Summary

Sustainability is defined as the ability to meet the needs of today, without compromising the ability of future generations to provide for the needs of tomorrow. It can be described as the equilibrium between environmental and financial considerations, and the needs of the community. A truly sustainable development will achieve a balance between fitness-for-purpose, value-for-money and environmental impact together with the integration as part of a larger, sustainable community.

Watkins Payne Partnership have been commissioned by Regents Wharf Unit Trust to carry out a BREEAM (New Construction) 2014 Offices Pre-Assessment of the proposed Regents Wharf development located at All Saints Road, London, N1 9RL which consists of:

- Building A: New build office space (including a basement, ground to six floors)
- Building B & C: Major refurbishment with new build areas (including ground to five floors)

This report details the performance of the new build Building A against the BREEAM (New Construction) 2014 Offices criteria. The development's performance is in accordance with specification documentation and verbal expressions of credit conformity/non-conformity established with members of the design team prior to issue of this pre-assessment report.

A BREEAM pre-assessment workshop was held on 20th June [RIBA Stage 1 – Preparation & Brief] at the office of Watkins Payne Partnership, 7 – 8 Conduit St, London, W1S 2XF.

The office development is to be fitted out to a Cat A standard, therefore a 'fully fitted' BREEAM assessment is applicable.

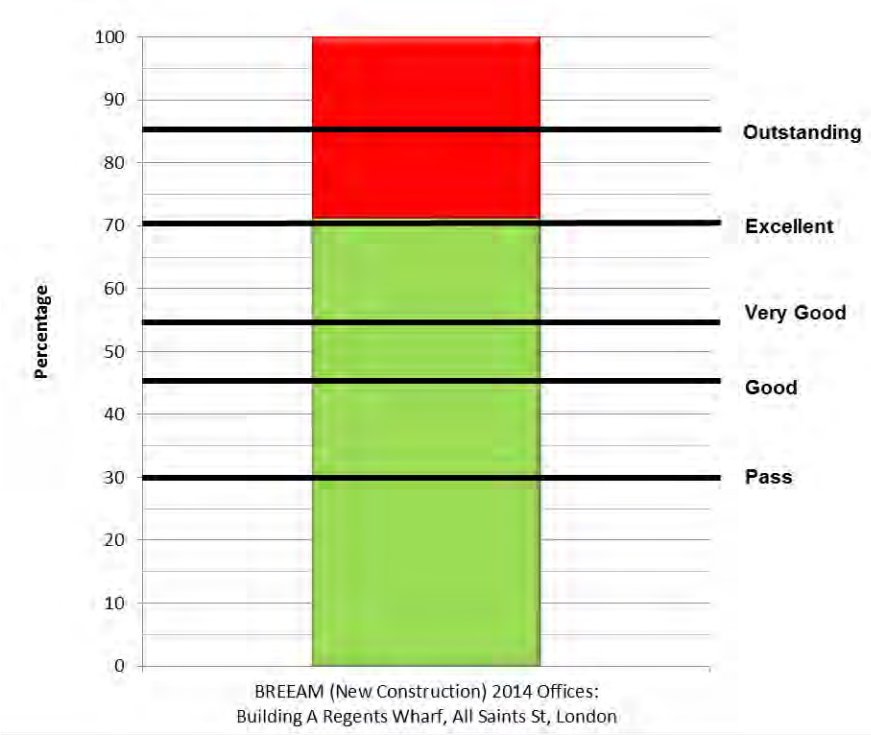
The proposed servicing strategy will be as follows:

- Comfort Cooling & Heating to the offices areas: Communal gas fired boilers and water cooled chillers serving underfloor Hiross system with perimeter trench heating
- Domestic hot water: Centralised gas fired boiler system with LTHW calorifiers
- Heating to core areas: LTHW radiators
- Renewable energy technologies: Photovoltaics panels (PVs) providing electrical energy
- Lighting to Offices: LED with PIR controls and daylight dimming with occupant control override

Pre-Assessment Score Results

This report details the **BREEAM 'ACHIEVABLE'** scheme and how this equates to the attainment of specific BREEAM (New Construction) 2014 Offices credits. The **BREEAM 'ACHIEVABLE'** scheme is defined as what the Baseline project could most likely achieve under the current design proposals taking into account minor further modifications to the design / specification. The credits detailed within this report as **'ACHIEVABLE'** need to be included within the current design proposals with the need to **moderately** improve the building's performance or increase the current specifications / project cost.

The **BREEAM 'ACHIEVABLE''** development scheme could currently attain a score of **71.07%,** which translates into an **EXCELLENT** BREEAM (New Construction) 2014 Offices rating.



Pre-Assessment Score Calculation - The tables below illustrate how the BREEAM score has been calculated.

Mandatory credits are to be achieved to reach the **Various BREEAM Ratings** - these credits with mandatory requirements are detailed in the far left column in **Bold BLUE**

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 01 Project Brief & Design	4	**3**	City South Projects / Full Design Team / Regents Wharf Unit Trust / Consultation Team / BREEAM AP	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. **Prior to the end of RIBA Stage 2**, the project delivery stakeholders (full design team, client etc) meet to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery 2. In defining the roles and responsibilities for each key phase of the project, the following will be considered: a. End user requirements b. Aims of the design and design strategy c. Particular installation and construction requirements/limitations d. Occupiers budget and technical expertise in maintaining any proposed systems e. Maintainability and adaptability of the proposals f. Requirements for the production of project and end user documentation g. Requirements for commissioning, training and aftercare support 3. The project team will demonstrate how the project delivery stakeholder contributions and the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design. ***Second Credit: (NOT SOUGHT)*** 1. **Prior to the end of RIBA Stage 2**, all relevant third party stakeholders will **NOT** be consulted by the design team and this covers the minimum consultation content in line with the credit requirements 2. The project will **NOT** demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design. 3. **Prior to end of RIBA Stage 4**, consultation feedback will **NOT** be given to, and received by, all relevant parties. ***Third Credit: (ACHIEVABLE)*** 1. That a BREEAM AP is appointed **no later than RIBA Stage 1** to facilitate the setting and achievement of the desired BREEAM rating for the project 2. The BREEAM rating for the project is formally agreed between the client and the design team ***Fourth Credit: (ACHIEVABLE)*** That the BREEAM AP is appointed to monitor progress against the targeted rating throughout **RIBA Stages 2 – 4** by: a. Producing formal progress reports for the client/design team b. Attend key project/design team meetings throughout **RIBA Stages 2 – 4**

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 02 Life Cycle Costing & Service Life Planning	4	**1**	MPG Shreeves	Evidence will be provided demonstrating that: ***First – Second Credits: (NOT SOUGHT)*** 1. An outline, entire asset elemental life cycle cost (LCC) analysis will **NOT** be carried out, **at RIBA Stage 2** in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008 (supplement of BS ISO 15686-5:2008). 2. The elemental LCC analysis must: a. Provides an indication of future replacement costs over a period of analysis as required by the client (e.g. 20, 30, 50 or 60 years); b. Includes service life, maintenance and operation cost estimates. 3. **In addition to the above**, the design team are **NOT** to demonstrate using appropriate examples, how the elemental LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value ***Third Credit: (NOT SOUGHT)*** **In addition to the above**, A component level LCC plan will **NOT** be developed by **the end of RIBA Stage 4** in line with PD 156865:2008 and includes the following component types (where present): a. Envelope, e.g. cladding, windows, and/or roofing b. Services, e.g. heat source cooling source, and/or controls c. Finishes, e.g. walls, floors and/or ceilings d. External spaces, e.g. alternative hard landscaping, boundary protection. 3. **In addition to the above**, the design team are **NOT** to demonstrate using appropriate examples, how the component level LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value. ***Fourth Credit: (ACHIEVABLE)*** The capital cost for the building in pounds per square metre (£k/m2), is reported and included within the main BREEAM Assessment Reporting tool. **Predicted Capital Cost:** The capital cost for the building includes the expenses related to the initial construction of the building: - Construction, including preparatory works, materials, equipment and labour - Site management - Construction financing - Insurance and taxes during construction - Inspection and testing *Costs relating to land procurement, clearance, design, statutory approvals and post occupancy aftercare should not be included.*

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 03 Responsible Construction Practices **[MANDATORY 3rd Credit for EXCELLENT]**	6	**6**	City South Projects / MPG Shreeves / BREEAM AP / Main Contractor	Evidence will be provided demonstrating that: ***Pre-requisite: (ACHIEVABLE)*** All timber and timber based products used on the project is 'Legally harvested and traded timber as outlined in the Central Point of Expertise on Timber (CPET) 5th Edition report on the UK Government Timber Procurement Policy ***First Credit: (ACHIEVABLE)*** 1. The Main Contractor operates an environmental management system (EMS), the EMS must be third party certified to ISO 14001 2. The Main Contractor implements best practice pollution prevention policies and procedures on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG6 ***Second Credit: (ACHIEVABLE)*** The BREEAM AP is appointed to monitor progress against the targeted rating throughout **RIBA Stages 5 – 6** by: a. Carrying out site visits regularly to carry out spot checks, with the relevant authority to do so and require action to address shortcomings in compliance a. Producing formal progress reports for the client/design team c. Attend key site progress meetings ***Third – Fourth Credits: (ACHIEVABLE)*** Main Contractor is to be registered and certified under the Considerate Constructor's Scheme – Code of Considerate Practice; the contractor is to achieve a score of **35 out of 50** or more, with a score of at least **7** in of the 5 sections ***Fifth Credit: (ACHIEVABLE)*** Main Contractor is to implement the following construction site management principles (in line with the specific BREEAM requirements); 1. Monitor, record & report Energy consumption (kWh) from the use of construction plant, equipment & site accommodation necessary for project completion. 2. Monitor, record & report Water consumption (m3) from the use of construction plant, equipment & site accommodation necessary for project completion.

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 03 Responsible Construction Practices **[MANDATORY 3rd Credit for EXCELLENT]**	6	**Continued**	City South Projects / MPG Shreeves / BREEAM AP / Main Contractor	Evidence will be provided demonstrating that: ***Sixth Credit: (ACHIEVABLE)*** Main Contractor is to implement the following construction site management principles (in line with the specific BREEAM requirements); 1. Monitor, record & report data on transport resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum this must cover: a. Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution. The scope of this monitoring must cover the following as a minimum: i. Materials used in major building elements (i.e. those defined in BREEAM issue Mat 01), including insulation materials, ii. Ground works and landscaping materials
Man 04 Commissioning & Handover **[MANDATORY 4th Credit for EXCELLENT]**	4	**4**	WPP / City South Projects / MPG Shreeves / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. A schedule of commissioning and testing is produced identifying a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and testing and inspecting building fabric. 2. All commissioning is carried out in accordance with current Building Regulations, BSRIA/CIBSE guidelines. BMS is commissioned in line with credit requirements. 2. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of the client. 3. The principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works. ***Second Credit: (ACHIEVABLE)*** 1. For complex building services and systems, a specialist commissioning manager is appointed during the design stage (by either the client or the principal contractor) with responsibility for: a. Undertaking design reviews and giving advice on suitability for ease of commissioning. b. Providing commissioning management input to construction programming and during installation stages. c. Management of commissioning, performance testing and handover/post-handover stages. ***Third Credit: (ACHIEVABLE)*** 1. The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of post construction testing and inspection. This is to be demonstrated through the completion of a Thermographic survey **AND** airtightness test & inspection. 2. Any defects identified in the thermographic survey **AND** the airtightness testing reports are rectified by the main contractor prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building/element

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 04 Commissioning & Handover **[MANDATORY 4th Credit for EXCELLENT]**	4	**Continued**	WPP / City South Projects / MPG Shreeves / Main Contractor	Evidence will be provided demonstrating that: ***Fourth Credit: (ACHIEVABLE)*** 1. A Building User Guide is to be developed by the main contractor to the required BREEAM standard. 2. A training schedule is to be prepared by the main contractor for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum: a. The building's design intent b. The available aftercare provision and aftercare team main contact(s), including any scheduled seasonal commissioning and post occupancy evaluation c. Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces d. Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations and maintenance (O&M) manual, commissioning records, log book etc. e. Maintenance requirements, including any maintenance contracts and regimes in place
Man 05 Aftercare **[MANDATORY 2nd Credit for EXCELLENT]**	3	**2**	WPP / City South Projects / MPG Shreeves / Main Contractor / Facilities Management / Regents Wharf Unit Trust / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupier(s), which includes the following as a minimum: a. A meeting programmed to occur between the aftercare team/individual and the building occupier/management (prior to initial occupation, or as soon as possible thereafter) to: i. Introduce the aftercare team or individual to the aftercare support available, including the Building User Guide and training schedule/content. ii. Present key information about the building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible. b. On-site facilities management training, to include a walkabout of the building and introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands. c. Initial aftercare support provision for at least the first month of building occupation, e.g. on-site attendance on a weekly basis to support building users and management (this could be more or less frequent depending on the complexity of the building and building operations). d. Longer term aftercare support provision for occupants for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users/management. 2. There is (or will be) operational infrastructure and resources in place to co-ordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is occupied. This is done to facilitate analysis of discrepancies between actual and predicted performance, with a view to adjusting systems and/or user behaviours accordingly.

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 05 Aftercare **[MANDATORY 2nd Credit for EXCELLENT]**	3	**Continued**	WPP / City South Projects / MPG Shreeves / Main Contractor / Facilities Management / Regents Wharf Unit Trust / Main Contractor	Evidence will be provided demonstrating that: ***Second Credit: (ACHIEVABLE)*** The following seasonal commissioning activities will be completed over a minimum 12-month period by the main Contractor, once the building becomes substantially occupied: a. Complex systems - Specialist Commissioning Manager: i. Testing of all building services under full load conditions, i.e. heating equipment in mid-winter, cooling/ventilation equipment in mid-summer, and under part load conditions (spring/autumn). ii. Where applicable, testing should also be carried out during periods of extreme (high or low) occupancy. iii. Interviews with building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. iv. Re-commissioning of systems (following any work needed to serve revised loads), and incorporating any revisions in operating procedures into the operations and maintenance (O&M) manuals ***Third Credit: (NOT SOUGHT)*** 1. The client is **NOT** to make a commitment to carry out a post-occupancy evaluation (POE) exercise one year after initial building occupation. The POE is carried out by an independent party and needs to cover the following in line with the credit requirements: a. A review of the design intent and construction process (review of design, procurement, construction and handover processes). b. Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building c. Sustainability performance (energy/water consumption, performance of any sustainable features or technologies e.g. materials, renewable energy, rain- water harvesting etc.). 2. The client or building occupier makes a commitment to carry out the appropriate dissemination of information on the building's post-occupancy performance in line with the credit requirements
Section Credit Total	**21**	**16**		
Section Weighted Total	**12.00%**	**9.14%**		

<table>
<tr><th>Health & Wellbeing

Credit Value 0.88%</th><th>Max No. of Credits Available</th><th>ACHIEVABLE Credits</th><th>Responsible Party</th><th><u>BREEAM New Construction 2014 (Offices)</u> Credit Requirements</th></tr>
<tr><td><u>Hea 01</u>

Visual Comfort</td><td>4</td><td>1</td><td>Daylight Consultant / City South Projects / MPG Shreeves / WPP</td><td>
Evidence will be provided demonstrating that:

<u>First Credit: (NOT SOUGHT)</u>
1. The potential for disabling glare is <u>NOT</u> to be designed out of all relevant building areas using a glare control strategy, either through building form and layout and/or building design measures including:
- Building integrated measures (e.g. low eaves)
- Occupant controlled devices such as blinds (where transmittance value is <0.1 (10%))
- Bioclimatic design
- External shading or brise soleil
2.The glare control strategy avoids increasing lighting energy consumption, by ensuring that:
a. The glare control system is designed to maximise daylight levels under all conditions while avoiding disabling glare in the workplace or other sensitive areas. The system should not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the facade.
AND
b. The use or location of shading does not conflict with the operation of lighting control systems.

<u>Second Credit: (NOT SOUGHT)</u>
Daylight calculations will <u>NOT</u> be undertaken to demonstrate credit compliance as follows:
<table>
<tr><th>Building/Area Type</th><th>Average Daylight Factor required</th><th>Minimum Area (m2) to comply</th><th>Other Requirements</th></tr>
<tr><td>Internal association or atrium</td><td>3%</td><td>80%</td><td>EITHER a uniformity ratio of at least 0.7 OR a minimum point daylight factor of 2.1%</td></tr>
<tr><td>All occupied spaces (offices areas)</td><td>2%</td><td>80%</td><td>EITHER (a) OR (b) and (c) as per below</td></tr>
<tr><td colspan="4">(a) A uniformity ratio of at least 0.3 or a minimum point daylight factor of at least 0.3 times the relevant average daylight factor value of 2%.
Spaces with glazed roofs, such as atria, must achieve a uniformity ratio of at least 0.7 or a minimum point daylight factor of at least 0.7 times the relevant average daylight factor value of 2%</td></tr>
<tr><td colspan="4">(b) At least 80% of the room has a view of sky from desk or table top height of 0.7m</td></tr>
<tr><td colspan="4">(c) The room depth criterion d/w +d/HW < 2/(1-RB) is satisfied, where:
d = room depth,
w = room width,
HW = window head height from floor level,
RB = average reflectance of surfaces in the rear half of the room</td></tr>
</table>
</td></tr>
</table>

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 01 Visual Comfort	4	**Continued**	Daylight Consultant / City South Projects / MPG Shreeves / WPP	Evidence will be provided demonstrating that: ***Third Credit: (NOT SOUGHT)*** 1. 95% of the floor area in relevant building areas will **NOT** be within 7m of a wall which has a window or permanent opening that provides an adequate view out. 2. The window/opening will **NOT** be ≥ 20% of the surrounding wall area. Where the room depth is greater than 7m, compliance is only possible where the percentage of window/opening is the same as, or greater than, the values in table 1.0 of BS 8206 ***Fourth Credit: (ACHIEVABLE)*** 1. There will be the specification of high frequency ballasts on all fluorescent & compact fluorescent luminaries for the development. 2. There will be the specification of illuminance levels for lighting in all internal & external areas within the construction zone are to be in accordance with: - SLL Code for Lighting 2012 for all internal relevant building areas - CIBSE LG7 sections 3.3, 4.6, 4.7, 4.8 and 4.9 where computer screens are regularly used - BS EN 5489-1:2013 'Lighting of roads and public amenity areas for all external areas' and where relevant BS EN 12464-2:2012 'Light & Lighting – Lighting in Workplaces – Part 2: Outdoor workplaces' 3. Furthermore, the lighting installation is be zoned, in all appropriate occupied areas, to allow separate control in line with the BREEAM requirements
Hea 02 Indoor Air Quality	5	**3**	Suitable Consultant / City South Projects / MPG Shreeves / WPP / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** An Indoor Air Quality Plan is produced, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building. The indoor air quality plan must consider the following: a. Removal of contaminant sources b. Dilution and control of contaminant sources c. Procedures for pre-occupancy flush out d. Third party testing and analysis e. Maintaining indoor air quality in-use ***Second Credit: (NOT SOUGHT)*** The building is **NOT** to be designed to minimise the concentration and recirculation of pollutants in the building as follows: 1. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation. 2. Design ventilation pathways to minimise the build-up of air pollutants for air conditioned and mixed mode buildings/spaces via the building's air intakes and exhausts are **over 10m apart** to minimise re-circulation and intakes are **over 20m** from sources of external pollution.

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 02 Indoor Air Quality	5	**Continued**	Suitable Consultant / City South Projects / MPG Shreeves / WPP / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***Third Credit: (ACHIEVABLE)*** 1. All decorative paints and varnishes specified meet the VOC content level as per EU Directive 2004/42/CE (Paints Directive) 2. At least five of the seven remaining product categories listed in Table-18 of the BREEAM 2014 Technical manual meet the testing requirements and emission levels criteria for volatile organic compound (VOC) emissions ***Fourth Credit: (ACHIEVABLE)*** 1. The formaldehyde concentration level is measured post construction (but pre-occupancy) and is found to be less than or equal to 100µg/m3 averaged over 30 minutes (WHO guidelines for indoor air quality: Selected pollutants, 2010). 2. The total volatile organic compound (TVOC) concentration level is measured post construction (but pre-occupancy) and found to be less than 300µg/m3 over 8 hours, in line with the building regulation requirements. 3. Where VOC and formaldehyde levels are found to exceed the limits detailed above, the project team confirms the measures that have, or will be taken, in accordance with the IAQ plan, to reduce the levels to within these limits. 4. The testing and measurement of the above pollutants are in accordance with the following standards where relevant: a. BS ISO 16000-4: 2011 Diffusive sampling of formaldehyde in air b. BS ISO 16000-6: 2011 VOCs in air by active sampling c. BS EN ISO 16017-2: 2003 VOCs - Indoor, ambient and workplace air by passive sampling d. BS ISO 16000-3: 2011 formaldehyde and other carbonyls in air by pumped sampling. ***Fifth Credit: (NOT SOUGHT)*** 1. That the building's ventilation strategy is **NOT** to be designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. This can be demonstrated as follows: a. Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy. The following are methods deemed to satisfy this criterion dependent upon the complexity of the proposed system: Room depths are designed in accordance with CIBSE AM10 (section 2.4) to ensure effectiveness of any natural ventilation system. The openable window area in each occupied space is equivalent to 5% of the gross internal floor area of that room/floor plate; 2. The natural ventilation strategy is capable of providing at least two levels of user-control on the supply of fresh air to the occupied space, the two levels of ventilation must be able to achieve the following: Higher level: higher rates of ventilation achievable to remove short term odours and/or prevent summertime overheating Lower level: adequate levels of draught-free fresh air to meet the need for good indoor air quality throughout the year, sufficient for the occupancy load and the internal pollution loads of the space.

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 04 Thermal Comfort	3	**2**	WPP	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. A thermal comfort assessment utilising software that is CIBSE AM11 compliant will be undertaken demonstrating that the services strategy can deliver thermal comfort levels in accordance CIBSE Guide A – Table 1.5 2. For air-conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the modelling are reported. ***Second Credit: (NOT SOUGHT)*** 1. Thermal modelling is **NOT** to demonstrate that the services strategy can deliver thermal comfort levels in accordance CIBSE Guide A – Table 1.5 are achieved for a projected climate change environment. 2. Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrate how the building has been adapted, or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements in point 1. ***Third Credit: (ACHIEVABLE)*** The thermal modelling analysis will inform the temperature control strategy for the building and the heating/cooling strategy will be zoned and controlled to allow separate control in line with the BREEAM requirements
Hea 05 Acoustic Performance	3	**3**	Clarke Saunders Associates / City South Projects / MPG Shreeves Hawkins Brown / WPP / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. A programme of pre-completion acoustic testing is undertaken to demonstrate that the sound insulation between acoustically sensitive rooms and other occupied spaces comply with the performance criteria given in Section 7 of BS8233:2014 2. If testing is to be carried out where the office is not yet furnished, then Section 7.5 of BS 8233:2014 should be referred to when determining the performance criteria. Where the office is to be furnished at the time testing is carried out, then Section 7.7.6 of BS 8233:2014 should be referred to for the relevant performance criteria. ***Second Credit: (ACHIEVABLE)*** A programme of pre-completion acoustic testing is undertaken to demonstrate that the indoor ambient noise levels comply with the design ranges given in Section 7 of BS 8233:2014 ***Third Credit: (ACHIEVABLE)*** A programme of pre-completion acoustic testing is undertaken to demonstrate that the acoustic environment (control of reverberation, sound absorption and speech transmission index) achieve the requirements relating to sound absorption and reverberation times, where applicable, set out in Section 7 of BS 8233:2014

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 06 Safety & Security	2	**0**	N/A	Evidence will **NOT** be provided demonstrating that: ***First Credit: (NOT SOUGHT)*** Where external site areas form part of the assessed development the following apply: 1. Dedicated cycle paths provide direct access from the site entrance(s) to any cycle storage provided, without the need to deviate from the cycle path and, if relevant, connect to off-site cycle paths (or other appropriate safe route) where these run adjacent to the development's site boundary. 2. Footpaths on-site provide direct access from the site entrance(s) to the building entrance(s) and connect to public footpaths off-site (where existing), providing practical and convenient access to local transport nodes and other off-site amenities (where existing). 3. Where provided, drop-off areas are designed off/adjoining to the access road and provide direct access to pedestrian footpaths, therefore avoiding the need for the pedestrian to cross vehicle access routes. 4. Dedicated pedestrian crossings are provided where pedestrian routes cross vehicle access routes, and appropriate traffic calming measures are in place to slow traffic down at these crossing points. 5. For large developments with a high number of public users or visitors, pedestrian footpaths must be signposted to other local amenities and public transport nodes off-site (where existing). 6. The lighting for access roads, pedestrian routes and cycle lanes is compliant with the external lighting criteria is in accordance with BS 5489-1:20131 Lighting of roads and public amenity areas. Where vehicle delivery access and drop-off areas form part of the assessed development, the following apply: 1. Delivery areas are not directly accessed through general parking areas and do not cross or share pedestrian and cyclist routes and other outside amenity areas accessible to building users and general public. 2. There is a dedicated parking/waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking. Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting. 3. There is a dedicated space for the storage of refuse skips and pallets away from the delivery vehicle manoeuvring area and staff/visitor car parking (if appropriate given the building type/function).

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 06 Safety & Security	2	**Continued**	N/A	Evidence will **NOT** be provided demonstrating that: ***Second Credit: (NOT SOUGHT)*** 1. Prior to the **end of RIBA Stage 2**, either a Suitably Qualified Security Specialist (SQSS) **OR** an Architectural Liaison Officer (ALO) **OR** a Crime Prevention Design Advisor (CPDA) conducts an evidence-based Security Needs Assessment (SNA) and develops a set of recommendations or solutions aimed to ensure that the design of the development is planned, designed and specified to address the issue identified in the Security Needs Assessment. 2. The recommendations or solutions are implemented into the final scheme construction. **Definition of a Security Needs Assessment (SNA)** The project and site specific assessment of security needs, including: 1. A visual audit of the site and surroundings, identifying environmental cues and features pertinent to the security of the proposed development. 2. Formal consultation with relevant stakeholders, including the local ALO, CPDA & CTSA (as applicable), in order to obtain a summary of crime and disorder issues in the immediate vicinity of the proposed development. 3. Identify risks specific to the proposed, likely or potential use of the building(s). 4. Identify risks specific to the proposed, likely or potential user groups of the building(s). 5. Identify any detrimental effects the development may have on the existing community. The purpose of the assessment is to inform stakeholder decision-making and allow the identification and evaluation of security recommendations and solutions.
Section Credit Total	**17**	**9**		
Section Weighted Total	**15.00%**	**7.94%**		

Energy Credit Value 0.65%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Ene 01 Reduction of Energy Use & Carbon Emissions **[MANDATORY 5 Credits for EXCELLENT]**	12	**6**	WPP	Evidence will be provided demonstrating that: ***Six Credits: (ACHIEVABLE)*** Subject to the building's fabric and M&E services design, a calculated Energy Performance Ratio for New Constructions (EPR_{NC}) [calculated from the building's modelled heating & cooling energy demand, primary energy consumption and total resulting CO2 emissions] of 0.45 will be achieved; equal to 6 credits.
Ene 02 Energy Monitoring **[MANDATORY 1st Credit for VERY GOOD]**	2	**2**	WPP	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. Energy metering systems are installed that enable at least **90%** of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems (where present): a. Space heating b. Domestic hot water heating c. Humidification d. Cooling e. Ventilation i.e. fans (major) f. Pumps g. Lighting h. Small power i. Renewable or low carbon systems j. Controls k. Other major consuming items i.e. lifts etc 2. The energy consuming systems in buildings with a total useful floor area greater than 1000m2 are metered using an appropriate energy monitoring and management system. 3. The end consuming uses are identifiable to the building users, for example through labelling or data outputs. ***Second Credit: (ACHIEVABLE)*** An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, 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 building/unit.

Energy Credit Value 0.65%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Ene 03 External Lighting	1	**1**	WPP / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: 1. The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt. 2. All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic
Ene 04 Low Carbon Design	3	**1**	WPP	Evidence will be provided demonstrating that: ***First Credit: (NOT SOUGHT)*** 1. The first credit within issue Hea 04 - Thermal comfort has been achieved to demonstrate the building design can deliver appropriate thermal comfort levels in occupied spaces. 2. The project team is **NOT** to carry analysis of the proposed building design/development to influence decisions made during at **RIBA Stage 2** and identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services. 3. The building is **NOT** to use passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis and the analysis demonstrates a meaningful reduction in the total energy demand as a result **at least 5% of overall building energy demand and/or CO2 emissions** ***Second Credit: (NOT SOUGHT)*** 1. The first credit is achieved 2. The passive design analysis is **NOT** to be carried out includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions. 3. The building is **NOT** to use ANY of the free cooling strategies listed in the BREEAM technical manual to reduce the cooling energy demand, i.e. it does not use active cooling. ***Third Credit: (ACHIEVABLE)*** 1. A feasibility study has been carried out by the completion of **RIBA Stage 2** by an energy specialist to establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy source(s) for the building/development. 2. A local LZC technology/technologies has/have been specified for the building/development in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated carbon dioxide (CO2) emissions **of at least 5% of overall building energy demand and/or CO2 emissions)**

Energy Credit Value 0.65%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Ene 06 Energy Efficient Transportation Systems	3	**3**	WPP	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. An analysis of the transportation demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators and/or moving walks. 2. The energy consumption has been calculated in accordance with BS EN ISO 25745 Energy performance of lifts, escalators and moving walks, Part 2 : Energy calculation and classification for lifts (elevators), for one of the following: i. At least two types of system (for each transportation type required); OR ii. An arrangement of systems (e.g. for lifts, hydraulic, traction, machine room-less lift (MRL)); OR iii. A system strategy which is 'fit for purpose'. 3. The use of regenerative drives should be considered. 4. The transportation system with the lowest energy consumption is specified. ***Second – Third Credits: (ACHIEVABLE)*** 1. For each lift, the following three energy efficient features are specified: a. The lifts operate in a standby condition during off-peak periods. For example the power side of the lift controller and other operating equipment such as lift car lighting, user displays and ventilation fans switch off when the lift has been idle for a prescribed length of time. b. The lift car lighting and display lighting provides an average lamp efficacy, (across all fittings in the car) of > 55 lamp lumens/circuit Watt. c. The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor. 2. Where the use of regenerative drives is demonstrated to save energy, they are specified.

Energy Credit Value 0.65%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Ene 08 Low Carbon Design	3	**2**	WPP	Evidence will be provided demonstrating the following **only applicable to the developer's scope of works / Cat A fit-out** ***First – Second Credits: (ACHIEVABLE)*** 1. An Identification of the building's unregulated energy consuming loads and estimation of their contribution to the total annual unregulated energy consumption of the building, assuming a typical/standard specification will be undertaken. 2. Identification of the systems and/or processes that use a significant proportion of the total annual unregulated energy demand of the development and its operation will be undertaken. 3. A meaningful reduction in the total annual unregulated energy demand of the building will be demonstrated by: **For example:** Small Power, Plug in equipment: - Office equipment (Computer monitor, desktop monitors, scanners, photocopiers, printers, workstations etc) - Domestic scale white goods (washing machines, fridges & freezers) & other small powered equipment - Supplementary electric heating (air movement fans / heaters) The above needs to be procured in line with **EITHER** of the following: a. qualifies for an *Enhanced Capital Allowance Scheme claim* (i.e. is on the *Energy Technology Product List, ETPL*) b. has been awarded an *Energy Star* rating c. has been procured in accordance with the *Government Buying Standards* d. are identified as products with at least a *Green Tick on the Buying Solutions Website*
Section Credit Total	**23**	**15**		
Section Weighted Total	**15.00%**	**9.78%**		

Transport Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Tra 01 Public Transport Accessibility	3	**3**	WPP	***First – Third Credits: (ACHIEVABLE)*** Evidence will be provided demonstrating that the distance from the building entrance to multiple bus stops/train stations AND average no. of services per hour at each public transport node will achieve an Accessibility Index of ≥8; equal to 3 credits. The Accessibility Index is a BREEAM specific method of calculation which demonstrates the level of public transport available for the site.
Tra 02 Proximity to Amenities	1	**1**	Hawkins Brown	Evidence will be provided demonstrating that the building is located within **500m** (along safe pedestrian routes) of the following amenities: Core amenities: At least **two** of the following: - Appropriate food outlet - Cash machine - Access to a recreation/leisure facility for fitness/sports Amenities relevant to building type: At least **one** of the following: - Access to an outdoor open space (i.e. park) - Publicly available postal facility - Community facility (e.g. public house) - Over the counter services associated with a pharmacy - Child care facility or school

Transport Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Tra 03 Cyclist Facilities	2	**2**	Hawkins Brown	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** BREEAM compliant cycle storage spaces will be provided meeting the minimum levels set out in the BREEAM guidance as follows: For 1-200 users/occupancy @ 1 space per 10 users For 201-300 users/occupancy @ 1 space per 15 users (standard unit of measure x 1.5) For 301-400 users/occupancy @ 1 space per 20 users (standard unit of measure x 2) For 401+ users/occupancy @ 1 space per 25 users (standard unit of measure x 2.5) **Calculation of estimated total number of BREEAM compliant cycle spaces based on building default occupancy** Total NIA of the building is **6470m2**, therefore 6470 X 0.111 = **720 (rounded up)** **Therefore, a total of 46 cycle spaces would need to be provided** However the total compliant cycle storage spaces required can be reduced by 50% where the project is a city centre location (and achieves >2 credits under Tra 01) **Therefore 23 spaces are required to achieve the first credit.** ***Second Credit: (ACHIEVABLE)*** At least **two** of the following types of compliant cyclist facilities will be provided for all staff use: - Showers (1 shower per 10 cycle spaces and **not** located in Disabled/Doc M toilet areas) - Changing facilities (Toilet/shower cubicles cannot be counted as changing facilities) - Lockers (equal to number of cycle spaces) - Drying space

Transport Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Tra 04 Maximum Car Parking Capacity	2	**2**	Hawkins Brown	***First – Second Credits: (ACHIEVABLE)*** Evidence will be provided demonstrating that **no more than 1 car parking space is provided for 6 building users** (staff who work in the building) Parking spaces set aside for the following building users can be excluded provided these spaces are dedicated for that use, i.e. sized accordingly with the appropriate signage/markings: - Disabled - Parent and baby - Motorbike - Car share In the case of excluding car share spaces, the future building occupier will need to confirm they have an enforceable car share policy
Tra 05 Travel Plan	1	**1**	Travel Consultant / Hawkins Brown / Regents Wharf Unit Trust	Evidence will be provided demonstrating that a Travel Consultant is to be appointed to develop a Travel Plan to the BREEAM requirements and the development is to implement the recommendations of the Travel Plan AND a copy of the Travel Plan is to be handed over to the building end occupiers so that it may inform their own travel plan/strategy.
Section Credit Total	**9**	**9**		
Section Weighted Total	**9.00%**	**9.00%**		

Water Credit Value 0.78%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wat 01 Water Consumption **[MANDATORY One Credit for GOOD]**	5	**4**	Hawkins Brown / WPP / Main Contractor	Evidence will be provided demonstrating that: ***Four Credits: (ACHIEVABLE)*** That the efficiency of the building's domestic water consuming items and the off-set from any rainwater/grey water systems will result in a calculated water consumption (litres/person/day) of at least **50%** improvement over the notional baseline performance, which is equal to 4 credits
Wat 02 Water Monitoring **[MANDATORY One Credit for GOOD]**	1	**1**	WPP / Main Contractor	Evidence will be provided demonstrating that: 1. The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source. 2. Water-consuming plant or building areas, consuming **10%** or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area. 3. Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption
Wat 03 Major Leak Detection & Prevention	2	**2**	WPP / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** A compliant leak detection system which is capable of detecting a major leak water leak on the mains water supply within the building and utilities water meter is installed. ***Second Credit: (ACHIEVABLE)*** Flow control devices that regulate the supply of water to each WC area/facility according to demand are installed (and therefore minimise water leaks and wastage from sanitary fittings).

Water Credit Value 0.78%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wat 04 Water Efficient Equipment	1	**1**	Suitably Qualified Ecologist / Hawkins Brown/ WPP	Evidence will be provided demonstrating that: 1. The design team has identified all unregulated water demands that could be realistically mitigated or reduced. 2. System(s) or processes have been identified to reduce the unregulated water demand, and demonstrate, through either good practice design or specification, a meaningful reduction in the total water demand of the building. For example, **one** of the following could be used for compliance: - Drip-fed subsurface irrigation incorporating soil moisture sensors. The irrigation control should be zoned to permit variable irrigation to different planting assemblages. - Reclaimed/recovered water from a rainwater collection or waste water recovery system, with appropriate storage - External landscaping and planting that relies solely on precipitation, during all seasons of the year. - All planting specified is restricted to contextually appropriate species that thrive without irrigation and will continue to do so in those conditions likely as a result of climate change, i.e. typically warmer and drier conditions.
Section Credit Total	**9**	**8**		
Section Weighted Total	**7.00%**	**6.22%**		

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 01 Life Cycle Impacts	5	**2**	Hawkins Brown / Bridges Pound	Evidence will be provided demonstrating that: ***First – Second Credits: (ACHIEVABLE)*** That the *Green Guide to Specification* ratings of the external walls, windows, roof, upper floor slabs and floor finishes will result in the attainment of two credits. ***Three – Fifth Credits: (NOT SOUGHT)*** That the *Green Guide to Specification* ratings of the external walls, windows, roof, upper floor slabs and floor finishes will **NOT** result in the attainment of three or more credits. ***In order to maximise credits consideration should be made to specify as many of the building elements as possible with A+ or A green guide ratings*** Please refer to http://www.bre.co.uk/greenguide/podpage.jsp?id=2126 in order to ascertain the applicable Green Guide ratings
Mat 02 Hard Landscaping & Boundary Protection	1	**1**	Hawkins Brown / Landscape Architect	Evidence will be provided demonstrating that **EITHER**: 1. At least 80% of all external hard landscaping and 80% of all boundary protection (by area) in the construction zone achieve an A or A+ rating, as defined in the *Green Guide to Specification* **OR** 2. If one of the elements is not present, e.g. boundary protection, then the credit must be assessed on the basis of the specification of the single element, e.g. hard landscaping. Where the development has neither element, the credit can be awarded by default.

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 03 Responsible Sourcing of Materials **[MANDATORY Pre-requisite for any Certification]**	4	**2**	City South Projects / MPG Shreeves / Hawkins Brown / Bridges Pound / Main Contractor	**Mandatory Pre-requisite** All timber and timber based products used on the project is 'Legally harvested and traded timber as outlined in the Central Point of Expertise on Timber (CPET) 5th Edition report on the UK Government Timber Procurement Policy ***First Credit: (ACHIEVABLE)*** Evidence will be provided demonstrating that the main contractor sources materials for the project in accordance with a documented Sustainable Procurement Plan as follows: A plan that sets out a clear framework for the responsible sourcing of materials to guide procurement throughout a project and by all involved in the specification and procurement of construction materials. The plan may be prepared and adopted at an organisational level or be site/project specific and for the purposes of BREEAM compliance, will cover the following as a minimum: 1. Risks and opportunities are identified against a broad range of social, environmental and economic issues. BS 8902:2009 Responsible sourcing sector certification schemes for construction products- Specification can be used as a guide to identify these issues. 2. Aims, objectives and targets to guide sustainable procurement activities. 3. The strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible. 4. Procedures are in place to check and verify that the sustainable procurement plan is being implemented/adhered to on individual projects. These could include setting out measurement criteria, methodology and performance indicators to assess progress and demonstrate success. ***Second Credit: (ACHIEVABLE)*** Evidence will be provided demonstrating that careful consideration is required to ensure the specification and sourcing materials from certified Manufacturers/Suppliers (i.e. BES 6001 – Excellent or Very Good /ISO 14001 etc). A programme of responsible sourcing will be undertaken for the majority of materials making up the relevant building elements listed below in order to achieve one credit: 1. Ceiling (including ceiling finishes) 2. Door/window 3. Floor (including floor finishes) 4. Insulation (fabric & services) 5. Internal partition/internal walls (including finishes) 6. Roof (including roof finishes) 7. Structure, primary and secondary 8. External wall (e.g. cladding, lining, render, including finishes) 9. Building services 10. Hard landscaping

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 03 Responsible Sourcing of Materials **[MANDATORY Pre-requisite for any Certification]**	4	**Continued**	City South Projects / MPG Shreeves / Hawkins Brown / Bridges Pound / Main Contractor	***Third – Fourth Credits: (NOT SOUGHT)*** Evidence will be provided demonstrating that a significant programme of responsible sourcing will **NOT** be undertaken for the majority of materials making up the relevant building elements listed above in order to achieve two credits.
Mat 04 Insulation	1	**1**	Hawkins Brown / WPP / Main Contractor	Evidence will be provided demonstrating that thermal insulation products used in the external walls, ground floor, roof and building services are to be specified with a low embodied impact relative to their thermal properties in order to an that Insulation Index greater than 2.5 as defined by the BREEAM calculation methodology is achieved
Mat 05 Designing for Durability and Resilience	1	**1**	Hawkins Brown / Bridges Pound	Evidence will be provided demonstrating that: **Part 1 – Protecting vulnerable parts of the building from damage** The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This must include, but is not necessarily limited to: a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.). b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. c. Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas **Part 2 – Protecting exposed parts of the building from material degradation** The **relevant building elements** (listed below) incorporate appropriate design and specification measures to limit **material degradation** (listed below) due to **environmental factors** (listed below) 1. Foundation/substructure/lowest floor/retaining walls 2. External walls 3. Roof/balconies 4. Glazing: windows, skylight 5. External doors 6. Railings/balusters (where exposed to external environment) 7. Cladding (where exposed to external environment) 8. Staircase/ramps (where exposed to external environment) 9. Hard landscaping

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 05 Designing for Durability and Resilience	1	**Continued**	Hawkins Brown / Bridges Pound	**CONTINUED** **Environmental factors:** 1. Environmental agents, including: a. Solar radiation b. Temperature variation c. Water/moisture d. Wind e. Precipitation, e.g. rain and snow f. Extreme weather conditions: high wind speeds, flooding, driving rain, snow 2. Biological agents, including: a. Vegetation b. Pests, insects c. Pollutants, including: d. Air contaminants e. Ground contaminants **Material degradation effects (includes, but not necessarily limited to the following):** 1. Corrosion 2. Dimensional change, e.g. swelling or shrinkage 3. Fading/discolouration 4. Rotting 5. Leaching 6. Blistering 7. Melting 8. Salt crystallisation 9. Abrasion

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 06 Materials Efficiency	1	**0**	N/A	***Credit: (NOT SOUGHT)*** Evidence will **NOT** be provided demonstrating that: 1. Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life 2. The above is carried out by the design/construction team in consultation with the relevant parties (listed below) at **each of the following RIBA stages**: a. Preparation and Brief – Stage 1 b. Concept Design – Stage 2 c. Developed Design – Stage 3 d. Technical Design – Stage 4 e. Construction – Stage 5 All parties (as relevant to the project stage) involved in the design, specification and/or construction of the building should be consulted. This includes but is not limited to the following: - Client/developer - Cost consultant - Architect - Structural/civil engineers - Building services engineers - mechanical, electrical - Principal contractor - Project management consultant - Materials/component manufacturers/suppliers. The evidence required to demonstrate compliance will vary according to RIBA stage. A few examples are provided below: a. reports (at Preparation and Brief stage) outlining the activity relating to material efficiency (ideas discussed, analysis and decisions taken) b. drawings or building integrated model (BIM), calculations showing reduction of material use through design (Concept Design/Developed Design stages) c. meeting notes, construction program, responsibilities schedule (indicating parties consulted).
Section Credit Total	**13**	**7**		
Section Weighted Total	**13.50%**	**7.27%**		

Waste Credit Value 0.94%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wst 01 Construction Waste Management	4	**4**	City South Projects / MPG Shreeves / Main Contractor / Demolition Contractor	Evidence will be provided demonstrating that: ***First – Third Credits: (ACHIEVABLE)*** 1. The main contractor is to produce a BREEAM compliant Resource Management Plan (RMP) covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture/fabrication (including demolition and excavation waste) generated by the building's design and construction 2. Where non-hazardous construction related to on-site construction and dedicated off-site manufacture/fabrication (excluding demolition and excavation waste) meets or is lower than **<3.4m^3** or **<3.2 tonnes per 100m2 of gross internal floor area** and is proven at project completion ***Fourth Credit: (ACHIEVABLE)*** The main contractor is to demonstrate that following percentages of non-hazardous construction (on-site and off-site manufacture/fabrication in a dedicated facility), demolition and excavation waste (where applicable) generated by the project have been diverted from landfill: Non-demolition: **70% by volume or 80% by tonnage** Demolition: **80% by volume or 90% by tonnage** **In addition to the above - The below must form part of a contract for either the main contractor or the demolition contractor:** Where existing buildings on the site will be demolished a pre-demolition audit of any existing buildings, structures or hard surfaces must be completed to determine how to maximise the recovery of material from demolition for subsequent high grade/value applications. The audit must be referenced in the RMP / SWMP and cover: a. Identification of the key refurbishment/demolition materials. b. Potential applications and any related issues for the reuse and recycling of the key refurbishment and demolition materials in accordance with the waste hierarchy.

<table>
<tr><th>Waste

Credit Value
0.94%</th><th>Max No. of Credits Available</th><th>ACHIEVABLE Credits</th><th>Responsible Party</th><th>BREEAM New Construction 2014 (Offices) Credit Requirements</th></tr>
<tr><td>Wst 02

Recycled Aggregates</td><td>1</td><td>0</td><td>Bridges Pound / Main Contractor</td><td>Credit: (NOT SOUGHT)

Evidence will NOT be provided demonstrating that the total amount of recycled AND/OR secondary aggregate is to be greater than 25% of the total high-grade aggregate specified in line with the following minimum levels per application (where present):

Please note In order to contribute to the overall amount of recycled and/or secondary aggregate to be greater than 25% of the total high grade aggregate used for the development, the below minimum % per application (where present) must be met in order to be included in the overall calculation of the 25% amount. Where the minimum % levels per application are not met for an application, all the aggregate in that application must be considered as primary/virgin aggregate when calculating the total high grade aggregate specified.

<table>
<tr><th>Application</th><th>Min % for one credit</th><th>Min % for Innovation Level Credit</th></tr>
<tr><td>BOUND</td><td></td><td></td></tr>
<tr><td>Structural Frame</td><td>15%</td><td>30%</td></tr>
<tr><td>Bitumen or hydraulically bound base, binder and surface courses for paved areas & roads</td><td>30%</td><td>75%</td></tr>
<tr><td>Building foundations</td><td>20%</td><td>35%</td></tr>
<tr><td>Concrete road surfaces</td><td>15%</td><td>45%</td></tr>
<tr><td>UNBOUND</td><td></td><td></td></tr>
<tr><td>Pipe bedding</td><td>100%</td><td>100%</td></tr>
<tr><td>Granular fill and capping</td><td>100%</td><td>100%</td></tr>
</table>
</td></tr>
<tr><td>Wst 03

Operational Waste
[MANDATORY Credit for EXCELLENT]</td><td>1</td><td>1</td><td>Hawkins Brown</td><td>Evidence will be provided demonstrating there will be provision of a central (clearly labelled), dedicated storage space for the recycling of materials which is:

- At least 2m2 per 1000m2 of net floor area for buildings < 5000m2
- A minimum of 10m2 for buildings with a net floor area >5000m2
- An additional 2m2 per 1000m2 of net floor area where catering is provided in size
- located accessible to building occupants or facilities operators for the deposit of materials and collection by waste management contractors

The above provision must also be in addition to the general waste area provision</td></tr>
</table>

Waste Credit Value 0.94%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wst 04 Speculative Floor & Ceiling Finishes	1	**1**	Hawkins Brown / BREEAM AP	Evidence will be provided demonstrating: 1. Prior to full Cat B fit-out works, floor finishes **AND** ceiling finishes in the tenanted areas of the building will only be provided within a show area (less than 25% of the total net lettable floor area) **OR** 2. That **NO** floor finishes **AND** ceiling finishes in the tenanted areas of the building are provided within the base build contract
Wst 05 Adaption to Climate Change	1	**1**	Hawkins Brown / Bridges Pound	Evidence will be provided demonstrating that: A climate change adaptation strategy appraisal will be conducted for structural and fabric resilience by the **end of RIBA Stage 2**, in accordance with the following approach: Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages: i. Hazard identification ii. Hazard assessment iii. Risk estimation iv. Risk evaluation v. risk management. **Please see next page for methodology of a climate change adaptation strategy appraisal**

Waste Credit Value 0.94%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wst 05 Adaption to Climate Change	1	**Continued**	Hawkins Brown / Bridges Pound	**CONTINUED** **Hazard identification:** 1. Review the evidence/information from relevant bodies to identify and understand the expected impacts of increased extreme weather events climate change for on the building. 2. Identify likely hazards **Hazard assessment:** 1. Identify the scale of the hazards identified. **Risk estimation:** 1. Identify the risk presented by these hazards to the building and the likely impact of the hazards taking into account the following aspects as a minimum: a. Structural stability b. Structural robustness c. Weather proofing and detailing d. Material durability e. Health and safety of building occupants and others f. Impacts on building contents and business continuity. **Risk evaluation:** 1. Evaluate the potential impact of these risks on the building. 2. Determine the tolerable risk threshold. 3. Check the sensitivity of the risk assessment. 4. Identify areas where the risks are unacceptable in health and safety, life cycle assessment and financial terms. **Risk management:** 1. Identify risk reduction measures. 2. Mitigate the hazards as far as is practically feasible. 3. Adapt the design/specification to incorporate the measures identified by the risk assessment in the final design.

Waste Credit Value 0.94%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wst 06 Functional Adaptability	1	**1**	Hawkins Brown / WPP / Bridges Pound	Evidence will be provided demonstrating that: 1. A building-specific Functional Adaptation Strategy Study has been undertaken by the client and design team by **RIBA Stage 2** or equivalent), which includes recommendations for measures to be incorporated to facilitate future adaptation. 2. Functional adaptation measures have been implemented by **RIBA Stage 4** in accordance with the functional adaptation strategy recommendations, where practical and cost effective. The Functional Adaptation Strategy Study should consider: a. The potential for major refurbishment, including replacing the façade. b Design aspects that facilitate the replacement of all major plant within the life of the building e.g. panels in floors/walls that can be removed without affecting the structure, providing lifting beams and hoists. c. The degree of adaptability of the internal environment to accommodate changes in working practices. d. The degree of adaptability of the internal physical space and external shell to accommodate change in-use. e. The extent of accessibility to local services, such as local power, data infrastructure etc. The implementation will be specific to the building and scope of project, but information should cover: a. The feasibility for multiple/alternative building uses and area functions e.g. related to structural design of the building b. Options for multiple building uses and area functions based on design details e.g. modularity c. Routes and methods for major plant replacement e.g. networks and connections have flexibility and capacity for expansion d. Accessibility for local plant and service distribution routes e.g. detailed information on building conduits and connections infrastructure e. The potential for the building to be extended, horizontally and/or vertically.
Section Credit Total	**9**	**8**		
Section Weighted Total	**8.50%**	**7.56%**		

Land Use & Ecology Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
LE 01 Site Selection	2	**1**	Hawkins Brown	***First Credit: (ACHIEVABLE)*** Evidence will be provided demonstrating that tt least **75%** of the proposed development footprint is on an area of land previously developed within the past 50 years. ***Second Credit: (NOT SOUGHT)*** Evidence will **NOT** be provided demonstrating that the site is to be classed as 'significantly contaminated' and a programme of remediation is to be undertaken.
LE 02 Ecological Value of Site and Protection of Ecological Features	2	**0**	N/A	Evidence will **NOT** be provided demonstrating that: ***First Credit: (NOT SOUGHT)*** A Suitably Qualified Ecologist (SQE) who has identified the land as being of 'low ecological value' within an ecological assessment report, based on a site survey. ***Second Credit: (NOT SOUGHT)*** **EITHER** 1. Where existing features of ecological value within and surrounding the construction zone and site boundary area are present, adequate protection from damage is undertaken during clearance, site preparation and construction activities in line with BS42020: 2013 2. In all cases, the main contractor is required to construct ecological protection recommended by the SQE, prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities). **OR** 3. Where there are no features of ecological value, the credit for the protection of ecological features can only be awarded if the construction zone is defined as 'land of low ecological value'.
LE 03 Minimising Impact on Existing Site Ecology **[MANDATORY One Credit for VERY GOOD]**	2	**2**	Suitably Qualified Ecologist / City South Projects / MPG Shreeves / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***First – Second Credits: (ACHIEVABLE)*** A Suitably Qualified Ecologist is appointed to provide an Ecology Report based on their site survey confirming the change in the ecological value of the site as a result of development is equal to or greater than zero plant species, i.e. no negative change This is to be determined by the following information and input of data into the BREEAM LE 03/LE 04 calculator: i. The habitat type(s) that define the landscape of the assessed site in its existing pre-developed state and proposed state ii. Area (m2) of the existing and proposed broad habitat types

Land Use & Ecology Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
LE 04 Enhancing Site Ecology	2	**2**	Suitably Qualified Ecologist / City South Projects / MPG Shreeves / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***First – Second Credits: (ACHIEVABLE)*** 1. A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the **end of the RIBA Stage 1** to advise on enhancing the ecology of the site at an early stage. 2. The SQE has provided an Ecology Report with appropriate recommendations for the enhancement of the site's ecology at **RIBA Stage 2**. The report is based on a site visit/survey by the SQE 3. The early stage advice and recommendations of the Ecology Report for the enhancement of site ecology have been, or will be, implemented in the final design and build. 4. The recommendations of the Ecology Report for the enhancement of site ecology have been implemented in the final design and build, and the SQE confirms that this will result in an increase in ecological value of the site, **with an increase of six plant species or greater**
LE 05 Long Term Impact on Biodiversity	2	**2**	Suitably Qualified Ecologist / City South Projects / MPG Shreeves / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. Where a Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and enhancement of ecology has been complied with during the design and construction process. 2. Where a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS 42020:2013, Section 11.1. This is to be handed over to the building owner/occupants for use by the grounds maintenance staff. ***Second Credit: (ACHIEVABLE)*** A Suitably Qualified Ecologist's will be appointed to produce an Ecology Report demonstrating that the Main Contractor/Architect is to confirm compliance with all relevant *Additional requirements* deemed applicable by the ecologist.
Section Credit Total	**10**	**7**		
Section Weighted Total	**10.00%**	**7.00%**		

Pollution Credit Value 0.77%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Pol 01 Impact of Refrigerants	3	**1**	WPP / Main Contractor	Evidence will be provided demonstrating that: **Pre-requisite** All systems (with electric compressors) comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice ***First Credit: (NOT SOUGHT)*** 1. The systems using refrigerants will have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤ 1000 kgCO2e/kW cooling capacity. ***Second Credit: (NOT SOUGHT)*** 1.The systems using refrigerants will **NOT** have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤ 100 kgCO2e/kW cooling capacity. ***Third Credit: (ACHIEVABLE)*** 1. Where systems using refrigerants have a permanent automated refrigerant leak detection system installed; **OR** where an in-built automated diagnostic procedure for detecting leakage is installed. In all instances a robust and tested refrigerant leak detection system must be installed and must be capable of continuously monitoring for leaks. 2. The system must be capable of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident 3. The permanent refrigerant leak detection will be a robust and tested automated system, normally defined as that included on the Enhanced Capital Allowance (ECA) Energy Technology Product List 4. Automatic pump down to either a storage tank or into a heat exchanger is acceptable, but only where automatic isolation valves are fitted to contain the refrigerant once fully pumped down
Pol 02 NOx Emissions	3	**2**	WPP / Main Contractor	Evidence will be provided demonstrating: ***First – Second Credits: (ACHIEVABLE)*** The plant installed to the building's delivered heating **AND** hot water demand has, under normal operating conditions, a NOx emission level (measured on a dry basis at 0% excess O2) of **≤70 mg/kWh.** ***Third Credit: (NOT SOUGHT)*** The plant installed to the building's delivered heating **AND** hot water demand will **NOT**, under normal operating conditions, have a NOx emission level (measured on a dry basis at 0% excess O2) of **≤40 mg/kWh.**

Pollution Credit Value 0.77%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Pol 03 Surface Water Run-Off	5	**4**	Bridges Pound	Evidence will be provided demonstrating that: ***First – Second Credits: (ACHIEVABLE)*** Where a site-specific flood risk assessment (FRA) confirms the development is situated in a flood zone that is defined as having a low annual probability of flooding (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration. ***Third Credit: (ACHIEVABLE)*** A suitable consultant is to demonstrate that drainage measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events ***Fourth Credit: (ACHIEVABLE)*** A suitable consultant is to demonstrate that flooding will not occur in the event of local drainage failure **AND** **EITHER** a. The post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. b. Any additional predicted volume of run-off for the 100 year 6 hour event must be prevented from leaving the site by using infiltration or other SuDS techniques **OR** (only where point b for this credit cannot be achieved) c. Justification from the suitable consultant indicating why the above criteria cannot be achieved i.e. where infiltration or other SuDS techniques are not technically viable options. d. The post development peak rate of run-off is reduced to a limiting discharge. The limiting discharge is defined as the following and the option with the highest flow rate must be achieved; 1. The pre development 1-year peak flow rate OR 2. The mean annual flow rate Qbar OR 3. 2l/s/ha ***Please Note*** The third & fourth credit can be achieved by default where the man-made impermeable area draining to the watercourse (natural or municipal) has decreased or remains unchanged post development ***Fifth Credit: (NOT SOUGHT)*** A suitable consultant is **NOT** to confirm that there is no discharge from the developed site for rainfall up to 5mm there is the specification of appropriate pollution prevention measures in surface water drainage systems in accordance with the specific BREEAM requirements

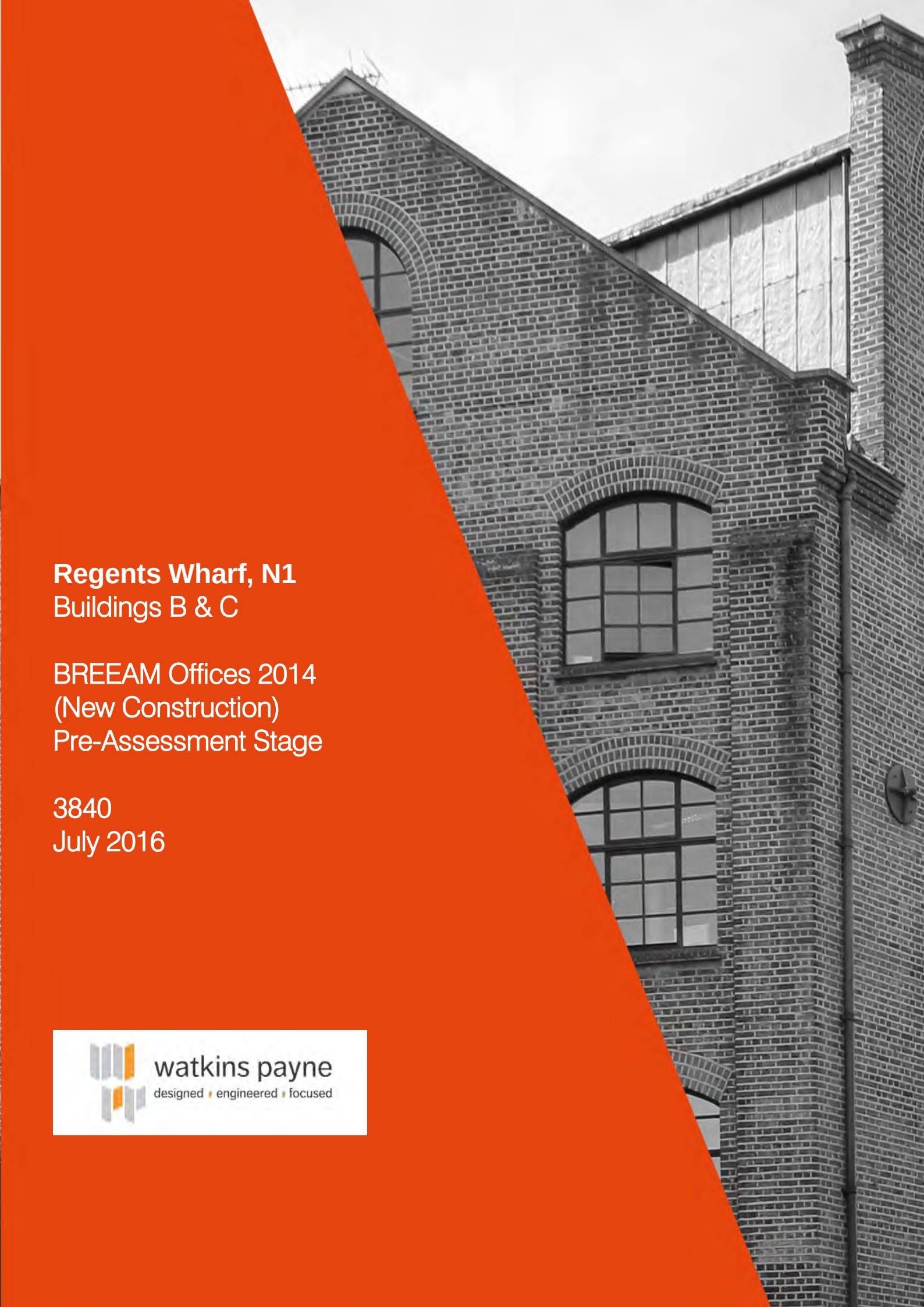
Pollution Credit Value 0.77%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Pol 04 Reduction of Night Time Light Pollution	1	**0**	N/A	Evidence will **NOT** be provided demonstrating that the external lighting design is to designed to be in accordance with the following: 1. Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011; 2. All external lighting (except for safety and security lighting) will be automatically switched off between 23:00 to 07:00; 3. If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes 4. Illuminated advertisements, where specified, are designed in accordance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements
Pol 05 Noise Attenuation	1	**1**	Clarke Saunders Associates / WPP / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that a suitable qualified Acoustician will be appointed to undertake a noise impact assessment in compliance with BS 7445 confirming that new sources of noise from the development, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level.
Section Credit Total	**13**	**8**		
Section Weighted Total	**10.00%**	**6.15%**		

Innovation Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Inn Man 03 Responsible Construction Practices	1	**1**	City South Projects / MPG Shreeves / Main Contractor	Evidence will be provided demonstrating that the main contractor is to be registered and certified under the Considerate Constructor's Scheme – Code of Considerate Practice; the contractor is to achieve a score of **40 out of 50** or more, with a score of at least **7** in of the 5 sections
Section Credit Total	**10**	**1**		
Section Weighted Total	**10.00%**	**1.00%**		

BREEAM (New Construction) Offices 2014 Pre-Assessment Results for: BUILDING A - Regents Wharf, All Saints St, London	
Results	**ACHIEVABLE CREDITS**
Final Predicted Score:	**71.07%**
Final Predicted BREEAM Ratings:	**EXCELLENT**

RATING	SCORE
UNCLASSIFIED	<30
PASS	≥30
GOOD	≥45
VERY GOOD	≥55
EXCELLENT	≥70
OUTSTANDING	≥85

Summary of Minimum Standards by BREEAM 2014 by Rating Level					
BREEAM Issue	**PASS**	**GOOD**	**VERY GOOD**	**EXCELLENT**	**OUTSTANDING**
Man 03 – Responsible Construction Practices	None	None	None	One Credit (Considerate Construction)	Two Credits (Considerate Construction)
Man 04 – Commissioning & Handover	None	None	None	Building User Guide	Building User guide
Man 05 – Aftercare	None	None	None	One Credit (Seasonal Commissioning)	One Credit (Seasonal Commissioning)
Ene 01 – Reduction of Energy Use & Carbon Emissions	None	None	None	Five Credits	Eight Credits
Ene 02 – Energy Monitoring	None	None	One Credit (First Sub-metering Credit)	One Credit (First Sub-metering Credit)	One Credit (First Sub-metering Credit)
Wat 01 – Water Consumption	None	One Credit	One Credit	One Credit	Two Credits
Wat 02 – Water Monitoring	None	One Credit	One Credit	One Credit	One Credit
Mat 03 – Responsible Sourcing of Materials	Legally Sourced Timber requirement	Legally Sourced Timber requirement	Legally Sourced Timber requirement	Legally Sourced Timber requirement	Legally Sourced Timber requirement
Wst 01 – Construction Waste Management	None	None	None	None	One Credit
Wst 03 – Operational Waste	None	None	None	One Credit	One Credit
LE 03 – Minimising Impact on Existing Site Ecology	None	None	One Credit	One Credit	One Credit



Regents Wharf, N1
Buildings B & C

BREEAM Offices 2014
(New Construction)
Pre-Assessment Stage

3840
July 2016

watkins payne
designed · engineered · focused

Prepared on behalf of Watkins Payne Partnership by

Name Yasmin Spain 

Position Sustainability Engineer [BREEAM Assessor]

Checked on behalf of Watkins Payne Partnership by

Name Jamie Daniel 

Position Senior Sustainability Engineer [BREEAM AP]

Watkins Payne Partnership
51 Staines Road West
Sunbury-on-Thames
Middlesex TW16 7AH
T +44 (0) 1932 781 641
F +44 (0) 1932 765 590
wpp@wppgroup.co.uk
www.wppgroup.co.uk

Issue and Date	Reason for Issue
Issue Draft – 22/07/2016 [undertaken at RIBA Stage 1]	For Project Team comment & review
Issue Planning – 19/10/2016	For Planning Purposes

Executive Summary

Sustainability is defined as the ability to meet the needs of today, without compromising the ability of future generations to provide for the needs of tomorrow. It can be described as the equilibrium between environmental and financial considerations, and the needs of the community. A truly sustainable development will achieve a balance between fitness-for-purpose, value-for-money and environmental impact together with the integration as part of a larger, sustainable community.

Watkins Payne Partnership have been commissioned by Regents Wharf Unit Trust to carry out a BREEAM (New Construction) 2014 Offices Pre-Assessment of the proposed Regents Wharf development located at All Saints Road, London, N1 9RL which consists of:

- Building A: New build office space (including a basement, ground to six floors)
- Building B & C: Major refurbishment with new build areas (including ground to five floors)

This report details the performance of the Buildings B & C against the BREEAM (New Construction) 2014 Offices criteria. The development's performance is in accordance with specification documentation and verbal expressions of credit conformity/non-conformity established with members of the design team prior to issue of this pre-assessment report.

A BREEAM pre-assessment workshop was held on 20th June [RIBA Stage 1 – Preparation & Brief] at the office of Watkins Payne Partnership, 7 – 8 Conduit St, London, W1S 2XF.

The office development is to be fitted out to a Cat A standard, therefore a 'fully fitted' BREEAM assessment is applicable.

The proposed servicing strategy will be as follows:

- Comfort Cooling & Heating to the offices areas: Water cooled VRF feeding FCUs and served from the communal gas fired boilers and water cooled chillers
- Domestic hot water: Point of use water heaters
- Heating to core areas: Electric panel heaters
- Renewable energy technologies: Photovoltaics panels (PVs) providing electrical energy
- Lighting to Offices: LED with PIR controls and daylight dimming with occupant control override

BREEAM Assessment Routes

For developments that are a mixture of new-build and refurbished areas the choice of scheme depends on the scope of the new build and refurbishment works.

The following details the various assessment routes which could be undertaken:

Route 1: Single BREEAM New Construction assessment

For larger projects (i.e more than a 1000m²) a single New Construction assessment can be undertaken, as the refurbished areas would then have to reach the more challenging New Construction criteria.

Where a single assessment for a part new-build part refurbishment development is not appropriate, there are two further routes as described below:

Route 2: Separate BREEAM New Construction and BREEAM Refurbishment and Fit-out assessments

Under route 1, two separate BREEAM assessments would be conducted with a BREEAM New Construction assessment undertaken on the new extension and a BREEAM Refurbishment and Fit-out assessment undertaken on the existing building refurbishment or fit-out. Two separate certificates and ratings can be obtained to indicate the performance of both the new extension and existing building refurbishment or fit-out.

Route 3: Bespoke BREEAM combined New Construction and Refurbishment and Fit-out assessment

Under route 3, one single assessment is conducted and certified under BREEAM Bespoke. Under this option the new extension is assessed against the BREEAM New Construction criteria and the refurbishment or fit-out aspects are assessed against the BREEAM Refurbishment and Fit-out criteria. The category score for the refurbished area and extension are area weighted in order to provide a combined New Construction and Refurbishment rating and single BREEAM Bespoke certificate issued for the building.

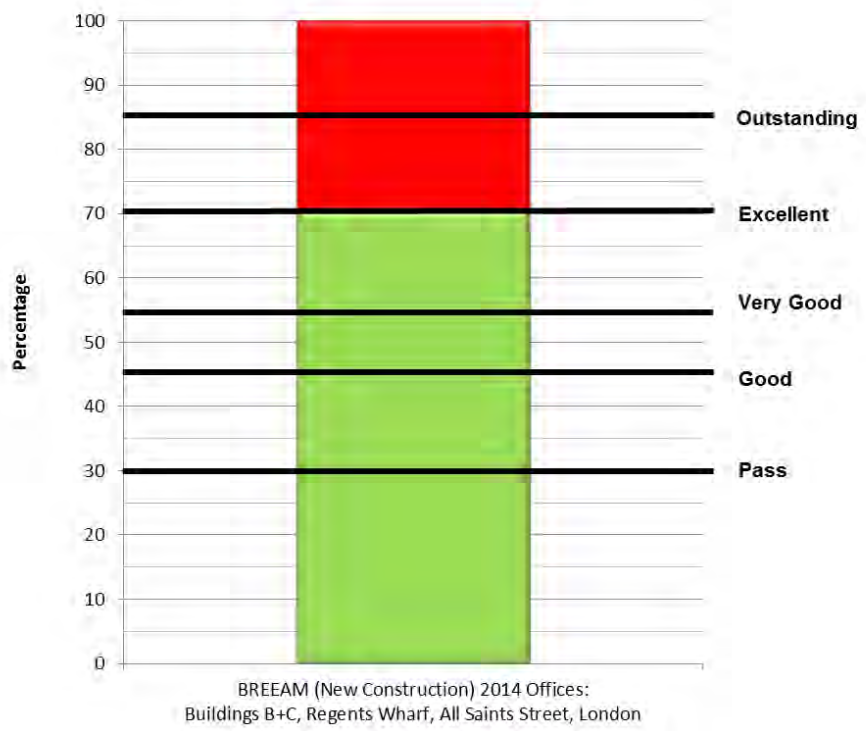
In determining the appropriate option for a part new build part-refurbishment project, the BREEAM assessor should review the scope of the proposed works and consider in particular the scope of the refurbished elements, i.e. is it major refurbishment, will there be a significant change of use and will the building's thermal and structural elements remain ‘as existing’. Using this information the assessor should advise the client on the most suitable option in terms of which BREEAM version/scheme is most appropriate for maximising the building's environmental performance.

Based on the above, it has been deemed that Route 1: Single BREEAM New Construction assessment covering both the refurbished and new build area is the most appropriate assessment to be undertaken for Buildings B+C, Regents Wharf.

Pre-Assessment Score Results

This report details the **BREEAM 'ACHIEVABLE'** scheme and how this equates to the attainment of specific BREEAM (New Construction) 2014 Offices credits. The **BREEAM 'ACHIEVABLE'** scheme is defined as what the Baseline project could most likely achieve under the current design proposals taking into account minor further modifications to the design / specification. The credits detailed within this report as **'ACHIEVABLE'** need to be included within the current design proposals with the need to **moderately** improve the building's performance or increase the current specifications / project cost.

The **BREEAM 'ACHIEVABLE''** development scheme could currently attain a score of **70.59%,** which translates into an **EXCELLENT** BREEAM (New Construction) 2014 Offices rating,



Pre-Assessment Score Calculation - The tables below illustrate how the BREEAM score has been calculated.

Mandatory credits are to be achieved to reach the **Various BREEAM Ratings** - these credits with mandatory requirements are detailed in the far left column in **Bold BLUE**

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 01 Project Brief & Design	4	**3**	City South Projects / Full Design Team / Regents Wharf Unit Trust / Consultation Team/ BREEAM AP	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. **Prior to the end of RIBA Stage 2**, the project delivery stakeholders (full design team, client etc) meet to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery 2. In defining the roles and responsibilities for each key phase of the project, the following will be considered: a. End user requirements b. Aims of the design and design strategy c. Particular installation and construction requirements/limitations d. Occupiers budget and technical expertise in maintaining any proposed systems e. Maintainability and adaptability of the proposals f. Requirements for the production of project and end user documentation g. Requirements for commissioning, training and aftercare support 3. The project team will demonstrate how the project delivery stakeholder contributions and the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design. ***Second Credit: (NOT SOUGHT)*** 1. **Prior to the end of RIBA Stage 2**, all relevant third party stakeholders will **NOT** be consulted by the design team and this covers the minimum consultation content in line with the credit requirements 2. The project will **NOT** demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design. 3. **Prior to end of RIBA Stage 4**, consultation feedback will **NOT** be given to, and received by, all relevant parties. ***Third Credit: (ACHIEVABLE)*** 1. That a BREEAM AP is appointed **no later than RIBA Stage 1** to facilitate the setting and achievement of the desired BREEAM rating for the project 2. The BREEAM rating for the project is formally agreed between the client and the design team ***Fourth Credit: (ACHIEVABLE)*** That the BREEAM AP is appointed to monitor progress against the targeted rating throughout **RIBA Stages 2 – 4** by: a. Producing formal progress reports for the client/design team b. Attend key project/design team meetings throughout **RIBA Stages 2 – 4**

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 02 Life Cycle Costing & Service Life Planning	4	**1**	MPG Shreeves	Evidence will be provided demonstrating that: ***First – Second Credits: (NOT SOUGHT)*** 1. An outline, entire asset elemental life cycle cost (LCC) analysis will **NOT** be carried out, **at RIBA Stage 2** in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008 (supplement of BS ISO 15686-5:2008). 2. The elemental LCC analysis must: a. Provides an indication of future replacement costs over a period of analysis as required by the client (e.g. 20, 30, 50 or 60 years); b. Includes service life, maintenance and operation cost estimates. 3. **In addition to the above**, the design team are **NOT** to demonstrate using appropriate examples, how the elemental LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value ***Third Credit: (NOT SOUGHT)*** **In addition to the above**, A component level LCC plan will **NOT** be developed by **the end of RIBA Stage 4** in line with PD 156865:2008 and includes the following component types (where present): a. Envelope, e.g. cladding, windows, and/or roofing b. Services, e.g. heat source cooling source, and/or controls c. Finishes, e.g. walls, floors and/or ceilings d. External spaces, e.g. alternative hard landscaping, boundary protection. 3. **In addition to the above**, the design team are **NOT** to demonstrate using appropriate examples, how the component level LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value. ***Fourth Credit: (ACHIEVABLE)*** The capital cost for the building in pounds per square metre (£k/m2), is reported and included within the main BREEAM Assessment Reporting tool. **Predicted Capital Cost:** The capital cost for the building includes the expenses related to the initial construction of the building: - Construction, including preparatory works, materials, equipment and labour - Site management - Construction financing - Insurance and taxes during construction - Inspection and testing *Costs relating to land procurement, clearance, design, statutory approvals and post occupancy aftercare should not be included.*

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 03 Responsible Construction Practices **[MANDATORY 3rd Credit for EXCELLENT]**	6	**6**	City South Projects / MPG Shreeves / BREEAM AP / Main Contractor	Evidence will be provided demonstrating that: ***Pre-requisite: (ACHIEVABLE)*** All timber and timber based products used on the project is 'Legally harvested and traded timber as outlined in the Central Point of Expertise on Timber (CPET) 5th Edition report on the UK Government Timber Procurement Policy ***First Credit: (ACHIEVABLE)*** 1. The Main Contractor operates an environmental management system (EMS), the EMS must be third party certified to ISO 14001 2. The Main Contractor implements best practice pollution prevention policies and procedures on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG6 ***Second Credit: (ACHIEVABLE)*** The BREEAM AP is appointed to monitor progress against the targeted rating throughout **RIBA Stages 5 – 6** by: a. Carrying out site visits regularly to carry out spot checks, with the relevant authority to do so and require action to address shortcomings in compliance a. Producing formal progress reports for the client/design team c. Attend key site progress meetings ***Third – Fourth Credits: (ACHIEVABLE)*** Main Contractor is to be registered and certified under the Considerate Constructor's Scheme – Code of Considerate Practice; the contractor is to achieve a score of **35 out of 50** or more, with a score of at least **7** in of the 5 sections ***Fifth Credit: (ACHIEVABLE)*** Main Contractor is to implement the following construction site management principles (in line with the specific BREEAM requirements); 1. Monitor, record & report Energy consumption (kWh) from the use of construction plant, equipment & site accommodation necessary for project completion. 2. Monitor, record & report Water consumption (m3) from the use of construction plant, equipment & site accommodation necessary for project completion.

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 03 Responsible Construction Practices **[MANDATORY 3rd Credit for EXCELLENT]**	6	**Continued**	City South Projects / MPG Shreeves / BREEAM AP / Main Contractor	Evidence will be provided demonstrating that: ***Sixth Credit: (ACHIEVABLE)*** Main Contractor is to implement the following construction site management principles (in line with the specific BREEAM requirements); 1. Monitor, record & report data on transport resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum this must cover: a. Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution. The scope of this monitoring must cover the following as a minimum: i. Materials used in major building elements (i.e. those defined in BREEAM issue Mat 01), including insulation materials, ii. Ground works and landscaping materials
Man 04 Commissioning & Handover **[MANDATORY 4th Credit for EXCELLENT]**	4	**4**	WPP / City South Projects / MPG Shreeves / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. A schedule of commissioning and testing is produced identifying a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and testing and inspecting building fabric. 2. All commissioning is carried out in accordance with current Building Regulations, BSRIA/CIBSE guidelines. BMS is commissioned in line with credit requirements. 2. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of the client. 3. The principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works. ***Second Credit: (ACHIEVABLE)*** 1. For complex building services and systems, a specialist commissioning manager is appointed during the design stage (by either the client or the principal contractor) with responsibility for: a. Undertaking design reviews and giving advice on suitability for ease of commissioning. b. Providing commissioning management input to construction programming and during installation stages. c. Management of commissioning, performance testing and handover/post-handover stages. ***Third Credit: (ACHIEVABLE)*** 1. The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of post construction testing and inspection. This is to be demonstrated through the completion of a Thermographic survey **AND** airtightness test & inspection. 2. Any defects identified in the thermographic survey **AND** the airtightness testing reports are rectified by the main contractor prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building/element

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 04 Commissioning & Handover **[MANDATORY 4th Credit for EXCELLENT]**	4	**Continued**	WPP / City South Projects / MPG Shreeves / Main Contractor	Evidence will be provided demonstrating that: ***Fourth Credit: (ACHIEVABLE)*** 1. A Building User Guide is to be developed by the main contractor to the required BREEAM standard. 2. A training schedule is to be prepared by the main contractor for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum: a. The building's design intent b. The available aftercare provision and aftercare team main contact(s), including any scheduled seasonal commissioning and post occupancy evaluation c. Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces d. Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations and maintenance (O&M) manual, commissioning records, log book etc. e. Maintenance requirements, including any maintenance contracts and regimes in place
Man 05 Aftercare **[MANDATORY 2nd Credit for EXCELLENT]**	3	**2**	WPP / City South Projects / MPG Shreeves / Main Contractor / Facilities Management / Regents Wharf Unit Trust/ Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupier(s), which includes the following as a minimum: a. A meeting programmed to occur between the aftercare team/individual and the building occupier/management (prior to initial occupation, or as soon as possible thereafter) to: i. Introduce the aftercare team or individual to the aftercare support available, including the Building User Guide and training schedule/content. ii. Present key information about the building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible. b. On-site facilities management training, to include a walkabout of the building and introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands. c. Initial aftercare support provision for at least the first month of building occupation, e.g. on-site attendance on a weekly basis to support building users and management (this could be more or less frequent depending on the complexity of the building and building operations). d. Longer term aftercare support provision for occupants for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users/management. 2. There is (or will be) operational infrastructure and resources in place to co-ordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is occupied. This is done to facilitate analysis of discrepancies between actual and predicted performance, with a view to adjusting systems and/or user behaviours accordingly.

Management Credit Value 0.57%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Man 05 Aftercare **[MANDATORY 2nd Credit for EXCELLENT]**	3	**Continued**	WPP / City South Projects / MPG Shreeves / Main Contractor / Facilities Management / Regents Wharf Unit Trust	Evidence will be provided demonstrating that: ***Second Credit: (ACHIEVABLE)*** The following seasonal commissioning activities will be completed over a minimum 12-month period by the main Contractor, once the building becomes substantially occupied: a. Complex systems - Specialist Commissioning Manager: i. Testing of all building services under full load conditions, i.e. heating equipment in mid-winter, cooling/ventilation equipment in mid-summer, and under part load conditions (spring/autumn). ii. Where applicable, testing should also be carried out during periods of extreme (high or low) occupancy. iii. Interviews with building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. iv. Re-commissioning of systems (following any work needed to serve revised loads), and incorporating any revisions in operating procedures into the operations and maintenance (O&M) manuals ***Third Credit: (NOT SOUGHT)*** 1. The client is **NOT** to make a commitment to carry out a post-occupancy evaluation (POE) exercise one year after initial building occupation. The POE is carried out by an independent party and needs to cover the following in line with the credit requirements: a. A review of the design intent and construction process (review of design, procurement, construction and handover processes). b. Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building c. Sustainability performance (energy/water consumption, performance of any sustainable features or technologies e.g. materials, renewable energy, rain- water harvesting etc.). 2. The client or building occupier makes a commitment to carry out the appropriate dissemination of information on the building's post-occupancy performance in line with the credit requirements
Section Credit Total	**21**	**16**		
Section Weighted Total	**12.00%**	**9.14%**		

<table>
<tr><th>Health & Wellbeing

Credit Value 0.88%</th><th>Max No. of Credits Available</th><th>ACHIEVABLE Credits</th><th>Responsible Party</th><th><u>BREEAM New Construction 2014 (Offices)</u> Credit Requirements</th></tr>
<tr><td><u>Hea 01</u>

Visual Comfort</td><td>4</td><td>2</td><td>Daylight Consultant / City South Projects / MPG Shreeves / WPP</td><td>
Evidence will be provided demonstrating that:

<u>First Credit: (NOT SOUGHT)</u>
1. The potential for disabling glare is <u>NOT</u> to be designed out of all relevant building areas using a glare control strategy, either through building form and layout and/or building design measures including:
- Building integrated measures (e.g. low eaves)
- Occupant controlled devices such as blinds (where transmittance value is <0.1 (10%))
- Bioclimatic design
- External shading or brise soleil
2.The glare control strategy avoids increasing lighting energy consumption, by ensuring that:
a. The glare control system is designed to maximise daylight levels under all conditions while avoiding disabling glare in the workplace or other sensitive areas. The system should not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the facade.
AND
b. The use or location of shading does not conflict with the operation of lighting control systems.

<u>Second Credit: (NOT SOUGHT)</u>
Daylight calculations will <u>NOT</u> be undertaken to demonstrate credit compliance as follows:
<table>
<tr><th>Building/Area Type</th><th>Average Daylight Factor required</th><th>Minimum Area (m2) to comply</th><th>Other Requirements</th></tr>
<tr><td>Internal association or atrium</td><td>3%</td><td>80%</td><td>EITHER a uniformity ratio of at least 0.7 OR a minimum point daylight factor of 2.1%</td></tr>
<tr><td>All occupied spaces (offices areas)</td><td>2%</td><td>80%</td><td>EITHER (a) OR (b) and (c) as per below</td></tr>
<tr><td colspan="4">(a) A uniformity ratio of at least 0.3 or a minimum point daylight factor of at least 0.3 times the relevant average daylight factor value of 2%.
Spaces with glazed roofs, such as atria, must achieve a uniformity ratio of at least 0.7 or a minimum point daylight factor of at least 0.7 times the relevant average daylight factor value of 2%</td></tr>
<tr><td colspan="4">(b) At least 80% of the room has a view of sky from desk or table top height of 0.7m</td></tr>
<tr><td colspan="4">(c) The room depth criterion d/w +d/HW < 2/(1-RB) is satisfied, where:
d = room depth,
w = room width,
HW = window head height from floor level,
RB = average reflectance of surfaces in the rear half of the room</td></tr>
</table>
</td></tr>
</table>

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 01 Visual Comfort	4	**Continued**	Hawkins Brown / Daylight Consultant / City South Projects / MPG Shreeves / WPP	Evidence will be provided demonstrating that: ***Third Credit: (ACHIEVABLE)*** 1. 95% of the floor area in relevant building areas is to be within 7m of a wall which has a window or permanent opening that provides an adequate view out. 2. The window/opening must be ≥ 20% of the surrounding wall area (refer to Relevant definitions in the Additional information section). Where the room depth is greater than 7m, compliance is only possible where the percentage of window/opening is the same as, or greater than, the values in table 1.0 of BS 8206 ***Fourth Credit: (ACHIEVABLE)*** 1. There will be the specification of high frequency ballasts on all fluorescent & compact fluorescent luminaries for the development. 2. There will be the specification of illuminance levels for lighting in all internal & external areas within the construction zone are to be in accordance with: - SLL Code for Lighting 2012 for all internal relevant building areas - CIBSE LG7 sections 3.3, 4.6, 4.7, 4.8 and 4.9 where computer screens are regularly used - BS EN 5489-1:2013 'Lighting of roads and public amenity areas for all external areas' and where relevant BS EN 12464-2:2012 'Light & Lighting – Lighting in Workplaces – Part 2: Outdoor workplaces' 3. Furthermore, the lighting installation is be zoned, in all appropriate occupied areas, to allow separate control in line with the BREEAM requirements
Hea 02 Indoor Air Quality	5	**3**	Suitable Consultant / City South Projects / MPG Shreeves / WPP / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** An Indoor Air Quality Plan is produced, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building. The indoor air quality plan must consider the following: a. Removal of contaminant sources b. Dilution and control of contaminant sources c. Procedures for pre-occupancy flush out d. Third party testing and analysis e. Maintaining indoor air quality in-use ***Second Credit: (NOT SOUGHT)*** The building is **NOT** to be designed to minimise the concentration and recirculation of pollutants in the building as follows: 1. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation. 2. Design ventilation pathways to minimise the build-up of air pollutants for air conditioned and mixed mode buildings/spaces via the building's air intakes and exhausts are **over 10m apart** to minimise re-circulation and intakes are **over 20m** from sources of external pollution.

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 02 Indoor Air Quality	5	**Continued**	Suitable Consultant / City South Projects / MPG Shreeves / WPP / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***Third Credit: (ACHIEVABLE)*** 1. All decorative paints and varnishes specified meet the VOC content level as per EU Directive 2004/42/CE (Paints Directive) 2. At least five of the seven remaining product categories listed in Table-18 of the BREEAM 2014 Technical manual meet the testing requirements and emission levels criteria for volatile organic compound (VOC) emissions ***Fourth Credit: (ACHIEVABLE)*** 1. The formaldehyde concentration level is measured post construction (but pre-occupancy) and is found to be less than or equal to 100µg/m3 averaged over 30 minutes (WHO guidelines for indoor air quality: Selected pollutants, 2010). 2. The total volatile organic compound (TVOC) concentration level is measured post construction (but pre-occupancy) and found to be less than 300µg/m3 over 8 hours, in line with the building regulation requirements. 3. Where VOC and formaldehyde levels are found to exceed the limits detailed above, the project team confirms the measures that have, or will be taken, in accordance with the IAQ plan, to reduce the levels to within these limits. 4. The testing and measurement of the above pollutants are in accordance with the following standards where relevant: a. BS ISO 16000-4: 2011 Diffusive sampling of formaldehyde in air b. BS ISO 16000-6: 2011 VOCs in air by active sampling c. BS EN ISO 16017-2: 2003 VOCs - Indoor, ambient and workplace air by passive sampling d. BS ISO 16000-3: 2011 formaldehyde and other carbonyls in air by pumped sampling. ***Fifth Credit: (NOT SOUGHT)*** 1. That the building's ventilation strategy is **NOT** to be designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. This can be demonstrated as follows: a. Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy. The following are methods deemed to satisfy this criterion dependent upon the complexity of the proposed system: Room depths are designed in accordance with CIBSE AM10 (section 2.4) to ensure effectiveness of any natural ventilation system. The openable window area in each occupied space is equivalent to 5% of the gross internal floor area of that room/floor plate; 2. The natural ventilation strategy is capable of providing at least two levels of user-control on the supply of fresh air to the occupied space, the two levels of ventilation must be able to achieve the following: Higher level: higher rates of ventilation achievable to remove short term odours and/or prevent summertime overheating Lower level: adequate levels of draught-free fresh air to meet the need for good indoor air quality throughout the year, sufficient for the occupancy load and the internal pollution loads of the space.

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 04 Thermal Comfort	3	**2**	WPP	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. A thermal comfort assessment utilising software that is CIBSE AM11 compliant will be undertaken demonstrating that the services strategy can deliver thermal comfort levels in accordance CIBSE Guide A – Table 1.5 2. For air-conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the modelling are reported. ***Second Credit: (NOT SOUGHT)*** 1. Thermal modelling is **NOT** to demonstrate that the services strategy can deliver thermal comfort levels in accordance CIBSE Guide A – Table 1.5 are achieved for a projected climate change environment. 2. Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrate how the building has been adapted, or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements in point 1. ***Third Credit: (ACHIEVABLE)*** The thermal modelling analysis will inform the temperature control strategy for the building and the heating/cooling strategy will be zoned and controlled to allow separate control in line with the BREEAM requirements
Hea 05 Acoustic Performance	3	**3**	Clarke Saunders Associates/ City South Projects / MPG Shreeves Hawkins Brown / WPP / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. A programme of pre-completion acoustic testing is undertaken to demonstrate that the sound insulation between acoustically sensitive rooms and other occupied spaces comply with the performance criteria given in Section 7 of BS8233:2014 2. If testing is to be carried out where the office is not yet furnished, then Section 7.5 of BS 8233:2014 should be referred to when determining the performance criteria. Where the office is to be furnished at the time testing is carried out, then Section 7.7.6 of BS 8233:2014 should be referred to for the relevant performance criteria. ***Second Credit: (ACHIEVABLE)*** A programme of pre-completion acoustic testing is undertaken to demonstrate that the indoor ambient noise levels comply with the design ranges given in Section 7 of BS 8233:2014 ***Third Credit: (ACHIEVABLE)*** A programme of pre-completion acoustic testing is undertaken to demonstrate that the acoustic environment (control of reverberation, sound absorption and speech transmission index) achieve the requirements relating to sound absorption and reverberation times, where applicable, set out in Section 7 of BS 8233:2014

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 06 Safety & Security	2	**0**	N/A	Evidence will **NOT** be provided demonstrating that: ***First Credit: (NOT SOUGHT)*** Where external site areas form part of the assessed development the following apply: 1. Dedicated cycle paths provide direct access from the site entrance(s) to any cycle storage provided, without the need to deviate from the cycle path and, if relevant, connect to off-site cycle paths (or other appropriate safe route) where these run adjacent to the development's site boundary. 2. Footpaths on-site provide direct access from the site entrance(s) to the building entrance(s) and connect to public footpaths off-site (where existing), providing practical and convenient access to local transport nodes and other off-site amenities (where existing). 3. Where provided, drop-off areas are designed off/adjoining to the access road and provide direct access to pedestrian footpaths, therefore avoiding the need for the pedestrian to cross vehicle access routes. 4. Dedicated pedestrian crossings are provided where pedestrian routes cross vehicle access routes, and appropriate traffic calming measures are in place to slow traffic down at these crossing points. 5. For large developments with a high number of public users or visitors, pedestrian footpaths must be signposted to other local amenities and public transport nodes off-site (where existing). 6. The lighting for access roads, pedestrian routes and cycle lanes is compliant with the external lighting criteria is in accordance with BS 5489-1:20131 Lighting of roads and public amenity areas. Where vehicle delivery access and drop-off areas form part of the assessed development, the following apply: 1. Delivery areas are not directly accessed through general parking areas and do not cross or share pedestrian and cyclist routes and other outside amenity areas accessible to building users and general public. 2. There is a dedicated parking/waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking. Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting. 3. There is a dedicated space for the storage of refuse skips and pallets away from the delivery vehicle manoeuvring area and staff/visitor car parking (if appropriate given the building type/function).

Health & Wellbeing Credit Value 0.88%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Hea 06 Safety & Security	2	**Continued**	N/A	Evidence will **NOT** be provided demonstrating that: ***Second Credit: (NOT SOUGHT)*** 1. Prior to the **end of RIBA Stage 2**, either a Suitably Qualified Security Specialist (SQSS) **OR** an Architectural Liaison Officer (ALO) **OR** a Crime Prevention Design Advisor (CPDA) conducts an evidence-based Security Needs Assessment (SNA) and develops a set of recommendations or solutions aimed to ensure that the design of the development is planned, designed and specified to address the issue identified in the Security Needs Assessment. 2. The recommendations or solutions are implemented into the final scheme construction. **Definition of a Security Needs Assessment (SNA)** The project and site specific assessment of security needs, including: 1. A visual audit of the site and surroundings, identifying environmental cues and features pertinent to the security of the proposed development. 2. Formal consultation with relevant stakeholders, including the local ALO, CPDA & CTSA (as applicable), in order to obtain a summary of crime and disorder issues in the immediate vicinity of the proposed development. 3. Identify risks specific to the proposed, likely or potential use of the building(s). 4. Identify risks specific to the proposed, likely or potential user groups of the building(s). 5. Identify any detrimental effects the development may have on the existing community. The purpose of the assessment is to inform stakeholder decision-making and allow the identification and evaluation of security recommendations and solutions.
Section Credit Total	**17**	**10**		
Section Weighted Total	**15.00%**	**8.82%**		

Energy Credit Value 0.65%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Ene 01 Reduction of Energy Use & Carbon Emissions **[MANDATORY 5 Credits for EXCELLENT]**	12	**6**	WPP	Evidence will be provided demonstrating that: ***Six Credits: (ACHIEVABLE)*** Subject to the building's fabric and M&E services design, a calculated Energy Performance Ratio for New Constructions (EPR_{NC}) [calculated from the building's modelled heating & cooling energy demand, primary energy consumption and total resulting CO2 emissions] of 0.45 will be achieved; equal to 6 credits.
Ene 02 Energy Monitoring **[MANDATORY 1st Credit for VERY GOOD]**	2	**2**	WPP	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. Energy metering systems are installed that enable at least **90%** of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems (where present): a. Space heating b. Domestic hot water heating c. Humidification d. Cooling e. Ventilation i.e. fans (major) f. Pumps g. Lighting h. Small power i. Renewable or low carbon systems j. Controls k. Other major consuming items i.e. lifts etc 2. The energy consuming systems in buildings with a total useful floor area greater than 1000m2 are metered using an appropriate energy monitoring and management system. 3. The end consuming uses are identifiable to the building users, for example through labelling or data outputs. ***Second Credit: (ACHIEVABLE)*** An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, 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 building/unit.

Energy Credit Value 0.65%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Ene 03 External Lighting	1	**1**	WPP / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: 1. The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt. 2. All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic
Ene 04 Low Carbon Design	3	**1**	WPP	Evidence will be provided demonstrating that: ***First Credit: (NOT SOUGHT)*** 1. The first credit within issue Hea 04 - Thermal comfort has been achieved to demonstrate the building design can deliver appropriate thermal comfort levels in occupied spaces. 2. The project team is **NOT** to carry analysis of the proposed building design/development to influence decisions made during at **RIBA Stage 2** and identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services. 3. The building is **NOT** to use passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis and the analysis demonstrates a meaningful reduction in the total energy demand as a result **at least 5% of overall building energy demand and/or CO2 emissions** ***Second Credit: (NOT SOUGHT)*** 1. The first credit is achieved 2. The passive design analysis is **NOT** to be carried out includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions. 3. The building is **NOT** to use ANY of the free cooling strategies listed in the BREEAM technical manual to reduce the cooling energy demand, i.e. it does not use active cooling. ***Third Credit: (ACHIEVABLE)*** 1. A feasibility study has been carried out by the completion of **RIBA Stage 2** by an energy specialist to establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy source(s) for the building/development. 2. A local LZC technology/technologies has/have been specified for the building/development in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated carbon dioxide (CO2) emissions **of at least 5% of overall building energy demand and/or CO2 emissions)**

Energy Credit Value 0.65%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Ene 06 Energy Efficient Transportation Systems	3	**3**	WPP	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. An analysis of the transportation demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators and/or moving walks. 2. The energy consumption has been calculated in accordance with BS EN ISO 25745 Energy performance of lifts, escalators and moving walks, Part 2 : Energy calculation and classification for lifts (elevators), for one of the following: i. At least two types of system (for each transportation type required); OR ii. An arrangement of systems (e.g. for lifts, hydraulic, traction, machine room-less lift (MRL)); OR iii. A system strategy which is 'fit for purpose'. 3. The use of regenerative drives should be considered. 4. The transportation system with the lowest energy consumption is specified. ***Second – Third Credits: (ACHIEVABLE)*** 1. For each lift, the following three energy efficient features are specified: a. The lifts operate in a standby condition during off-peak periods. For example the power side of the lift controller and other operating equipment such as lift car lighting, user displays and ventilation fans switch off when the lift has been idle for a prescribed length of time. b. The lift car lighting and display lighting provides an average lamp efficacy, (across all fittings in the car) of > 55 lamp lumens/circuit Watt. c. The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor. 2. Where the use of regenerative drives is demonstrated to save energy, they are specified.

Energy Credit Value 0.65%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Ene 08 Low Carbon Design	3	**2**	WPP	Evidence will be provided demonstrating the following **only applicable to the developer's scope of works / Cat A fit-out** ***First – Second Credits: (ACHIEVABLE)*** 1. An Identification of the building's unregulated energy consuming loads and estimation of their contribution to the total annual unregulated energy consumption of the building, assuming a typical/standard specification will be undertaken. 2. Identification of the systems and/or processes that use a significant proportion of the total annual unregulated energy demand of the development and its operation will be undertaken. 3. A meaningful reduction in the total annual unregulated energy demand of the building will be demonstrated by: **For example:** Small Power, Plug in equipment: - Office equipment (Computer monitor, desktop monitors, scanners, photocopiers, printers, workstations etc) - Domestic scale white goods (washing machines, fridges & freezers) & other small powered equipment - Supplementary electric heating (air movement fans / heaters) The above needs to be procured in line with **EITHER** of the following: a. qualifies for an *Enhanced Capital Allowance Scheme claim* (i.e. is on the *Energy Technology Product List, ETPL*) b. has been awarded an *Energy Star* rating c. has been procured in accordance with the *Government Buying Standards* d. are identified as products with at least a *Green Tick on the Buying Solutions Website*
Section Credit Total	**23**	**15**		
Section Weighted Total	**15.00%**	**9.78%**		

Transport Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Tra 01 Public Transport Accessibility	3	**3**	WPP	***First – Third Credits: (ACHIEVABLE)*** Evidence will be provided demonstrating that the distance from the building entrance to multiple bus stops/train stations AND average no. of services per hour at each public transport node will achieve an Accessibility Index of ≥8; equal to 3 credits. The Accessibility Index is a BREEAM specific method of calculation which demonstrates the level of public transport available for the site.
Tra 02 Proximity to Amenities	1	**1**	Hawkins Brown	Evidence will be provided demonstrating that the building is located within **500m** (along safe pedestrian routes) of the following amenities: Core amenities: At least **two** of the following: - Appropriate food outlet - Cash machine - Access to a recreation/leisure facility for fitness/sports Amenities relevant to building type: At least **one** of the following: - Access to an outdoor open space (i.e. park) - Publicly available postal facility - Community facility (e.g. public house) - Over the counter services associated with a pharmacy - Child care facility or school

Transport Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Tra 03 Cyclist Facilities	2	**2**	Hawkins Brown	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** BREEAM compliant cycle storage spaces will be provided meeting the minimum levels set out in the BREEAM guidance as follows: For 1-200 users/occupancy @ 1 space per 10 users For 201-300 users/occupancy @ 1 space per 15 users (standard unit of measure x 1.5) For 301-400 users/occupancy @ 1 space per 20 users (standard unit of measure x 2) For 401+ users/occupancy @ 1 space per 25 users (standard unit of measure x 2.5) **Calculation of estimated total number of BREEAM compliant cycle spaces based on building default occupancy** Total NIA of the building is **4523m2,** therefore 4523 X 0.111 = **504 (rounded up)** **Therefore, a total of 37 cycle spaces would need to be provided** However the total compliant cycle storage spaces required can be reduced by 50% where the project is a city centre location (and achieves >2 credits under Tra 01) **Therefore 19 spaces are required to achieve the first credit.** ***Second Credit: (ACHIEVABLE)*** At least **two** of the following types of compliant cyclist facilities will be provided for all staff use: - Showers (1 shower per 10 cycle spaces and **not** located in Disabled/Doc M toilet areas) - Changing facilities (Toilet/shower cubicles cannot be counted as changing facilities) - Lockers (equal to number of cycle spaces) - Drying space

Transport Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Tra 04 Maximum Car Parking Capacity	2	**2**	Hawkins Brown	***First – Second Credits: (ACHIEVABLE)*** Evidence will be provided demonstrating that **no more than 1 car parking space is provided for 6 building users** (staff who work in the building) Parking spaces set aside for the following building users can be excluded provided these spaces are dedicated for that use, i.e. sized accordingly with the appropriate signage/markings: - Disabled - Parent and baby - Motorbike - Car share In the case of excluding car share spaces, the future building occupier will need to confirm they have an enforceable car share policy
Tra 05 Travel Plan	1	**1**	Travel Consultant / Hawkins Brown / Regents Wharf Unit Trust	Evidence will be provided demonstrating that a Travel Consultant is to be appointed to develop a Travel Plan to the BREEAM requirements and the development is to implement the recommendations of the Travel Plan AND a copy of the Travel Plan is to be handed over to the building end occupiers so that it may inform their own travel plan/strategy.
Section Credit Total	**9**	**9**		
Section Weighted Total	**9.00%**	**9.00%**		

Water Credit Value 0.78%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wat 01 Water Consumption **[MANDATORY One Credit for GOOD]**	5	**4**	Hawkins Brown / WPP / Main Contractor	Evidence will be provided demonstrating that: ***Four Credits: (ACHIEVABLE)*** That the efficiency of the building's domestic water consuming items and the off-set from any rainwater/grey water systems will result in a calculated water consumption (litres/person/day) of at least **50%** improvement over the notional baseline performance, which is equal to 4 credits
Wat 02 Water Monitoring **[MANDATORY One Credit for GOOD]**	1	**1**	WPP / Main Contractor	Evidence will be provided demonstrating that: 1. The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source. 2. Water-consuming plant or building areas, consuming **10%** or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area. 3. Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption
Wat 03 Major Leak Detection & Prevention	2	**2**	WPP / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** A compliant leak detection system which is capable of detecting a major leak water leak on the mains water supply within the building and utilities water meter is installed. ***Second Credit: (ACHIEVABLE)*** Flow control devices that regulate the supply of water to each WC area/facility according to demand are installed (and therefore minimise water leaks and wastage from sanitary fittings).

Water Credit Value 0.78%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wat 04 Water Efficient Equipment	1	**1**	Suitably Qualified Ecologist / Hawkins Brown/ WPP	Evidence will be provided demonstrating that: 1. The design team has identified all unregulated water demands that could be realistically mitigated or reduced. 2. System(s) or processes have been identified to reduce the unregulated water demand, and demonstrate, through either good practice design or specification, a meaningful reduction in the total water demand of the building. For example, **one** of the following could be used for compliance: - Drip-fed subsurface irrigation incorporating soil moisture sensors. The irrigation control should be zoned to permit variable irrigation to different planting assemblages. - Reclaimed/recovered water from a rainwater collection or waste water recovery system, with appropriate storage - External landscaping and planting that relies solely on precipitation, during all seasons of the year. - All planting specified is restricted to contextually appropriate species that thrive without irrigation and will continue to do so in those conditions likely as a result of climate change, i.e. typically warmer and drier conditions.
Section Credit Total	**9**	**8**		
Section Weighted Total	**7.00%**	**6.22%**		

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 01 Life Cycle Impacts	5	**2**	Hawkins Brown / Bridges Pound	Evidence will be provided demonstrating that: ***First – Second Credits: (ACHIEVABLE)*** That the *Green Guide to Specification* ratings of the external walls, windows, roof, upper floor slabs and floor finishes will result in the attainment of two credits. ***Three – Fifth Credits: (NOT SOUGHT)*** That the *Green Guide to Specification* ratings of the external walls, windows, roof, upper floor slabs and floor finishes will **NOT** result in the attainment of three or more credits. ***In order to maximise credits consideration should be made to specify as many of the building elements as possible with A+ or A green guide ratings*** Please refer to http://www.bre.co.uk/greenguide/podpage.jsp?id=2126 in order to ascertain the applicable Green Guide ratings
Mat 02 Hard Landscaping & Boundary Protection	1	**1**	Hawkins Brown / Landscape Architect	Evidence will be provided demonstrating that **EITHER**: 1. At least 80% of all external hard landscaping and 80% of all boundary protection (by area) in the construction zone achieve an A or A+ rating, as defined in the *Green Guide to Specification* **OR** 2. If one of the elements is not present, e.g. boundary protection, then the credit must be assessed on the basis of the specification of the single element, e.g. hard landscaping. Where the development has neither element, the credit can be awarded by default.

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 03 Responsible Sourcing of Materials **[MANDATORY Pre-requisite for any Certification]**	4	**2**	City South Projects / MPG Shreeves / Hawkins Brown / Bridges Pound / Main Contractor	**Mandatory Pre-requisite** All timber and timber based products used on the project is 'Legally harvested and traded timber as outlined in the Central Point of Expertise on Timber (CPET) 5th Edition report on the UK Government Timber Procurement Policy ***First Credit: (ACHIEVABLE)*** The main contractor sources materials for the project in accordance with a documented Sustainable Procurement Plan as follows: A plan that sets out a clear framework for the responsible sourcing of materials to guide procurement throughout a project and by all involved in the specification and procurement of construction materials. The plan may be prepared and adopted at an organisational level or be site/project specific and for the purposes of BREEAM compliance, will cover the following as a minimum: 1. Risks and opportunities are identified against a broad range of social, environmental and economic issues. BS 8902:2009 Responsible sourcing sector certification schemes for construction products- Specification can be used as a guide to identify these issues. 2. Aims, objectives and targets to guide sustainable procurement activities. 3. The strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible. 4. Procedures are in place to check and verify that the sustainable procurement plan is being implemented/adhered to on individual projects. These could include setting out measurement criteria, methodology and performance indicators to assess progress and demonstrate success. ***Second Credit: (ACHIEVABLE)*** Careful consideration is required to ensure the specification and sourcing materials from certified Manufacturers/Suppliers (i.e. BES 6001 – Excellent or Very Good /ISO 14001 etc). A programme of responsible sourcing will be undertaken for the majority of materials making up the relevant building elements listed below in order to achieve one credit: 1. Ceiling (including ceiling finishes) 2. Door/window 3. Floor (including floor finishes) 4. Insulation (fabric & services) 5. Internal partition/internal walls (including finishes) 6. Roof (including roof finishes) 7. Structure, primary and secondary 8. External wall (e.g. cladding, lining, render, including finishes) 9. Building services 10. Hard landscaping

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 03 Responsible Sourcing of Materials **[MANDATORY Pre-requisite for any Certification]**	4	**Continued**	City South Projects / MPG Shreeves / Hawkins Brown / Bridges Pound / Main Contractor	***Third – Fourth Credits: (NOT SOUGHT)*** Evidence will be provided demonstrating that a significant programme of responsible sourcing will **NOT** be undertaken for the majority of materials making up the relevant building elements listed above in order to achieve two credits.
Mat 04 Insulation	1	**1**	Hawkins Brown / WPP / Main Contractor	Evidence will be provided demonstrating that thermal insulation products used in the external walls, ground floor, roof and building services are to be specified with a low embodied impact relative to their thermal properties in order to an that Insulation Index greater than 2.5 as defined by the BREEAM calculation methodology is achieved
Mat 05 Designing for Durability and Resilience	1	**1**	Hawkins Brown / Bridges Pound	Evidence will be provided demonstrating that: **Part 1 – Protecting vulnerable parts of the building from damage** The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This must include, but is not necessarily limited to: a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.). b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. c. Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas **Part 2 – Protecting exposed parts of the building from material degradation** The **relevant building elements** (listed below) incorporate appropriate design and specification measures to limit **material degradation** (listed below) due to **environmental factors** (listed below) 1. Foundation/substructure/lowest floor/retaining walls 2. External walls 3. Roof/balconies 4. Glazing: windows, skylight 5. External doors 6. Railings/balusters (where exposed to external environment) 7. Cladding (where exposed to external environment) 8. Staircase/ramps (where exposed to external environment) 9. Hard landscaping

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 05 Designing for Durability and Resilience	1	**Continued**	Hawkins Brown / Bridges Pound	**CONTINUED** **Environmental factors:** 1. Environmental agents, including: a. Solar radiation b. Temperature variation c. Water/moisture d. Wind e. Precipitation, e.g. rain and snow f. Extreme weather conditions: high wind speeds, flooding, driving rain, snow 2. Biological agents, including: a. Vegetation b. Pests, insects c. Pollutants, including: d. Air contaminants e. Ground contaminants **Material degradation effects (includes, but not necessarily limited to the following):** 1. Corrosion 2. Dimensional change, e.g. swelling or shrinkage 3. Fading/discolouration 4. Rotting 5. Leaching 6. Blistering 7. Melting 8. Salt crystallisation 9. Abrasion

Materials Credit Value 1.04%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Mat 06 Materials Efficiency	1	**0**	N/A	***Credit: (NOT SOUGHT)*** Evidence will **NOT** be provided demonstrating that: 1. Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life 2. The above is carried out by the design/construction team in consultation with the relevant parties (listed below) at **each of the following RIBA stages**: a. Preparation and Brief – Stage 1 b. Concept Design – Stage 2 c. Developed Design – Stage 3 d. Technical Design – Stage 4 e. Construction – Stage 5 All parties (as relevant to the project stage) involved in the design, specification and/or construction of the building should be consulted. This includes but is not limited to the following: - Client/developer - Cost consultant - Architect - Structural/civil engineers - Building services engineers - mechanical, electrical - Principal contractor - Project management consultant - Materials/component manufacturers/suppliers. The evidence required to demonstrate compliance will vary according to RIBA stage. A few examples are provided below: a. reports (at Preparation and Brief stage) outlining the activity relating to material efficiency (ideas discussed, analysis and decisions taken) b. drawings or building integrated model (BIM), calculations showing reduction of material use through design (Concept Design/Developed Design stages) c. meeting notes, construction program, responsibilities schedule (indicating parties consulted).
Section Credit Total	**13**	**7**		
Section Weighted Total	**13.50%**	**7.27%**		

Waste Credit Value 0.94%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wst 01 Construction Waste Management	4	**4**	City South Projects / MPG Shreeves / Main Contractor / Demolition Contractor	Evidence will be provided demonstrating that: ***First – Third Credits: (ACHIEVABLE)*** 1. The main contractor is to produce a BREEAM compliant Resource Management Plan (RMP) covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture/fabrication (including demolition and excavation waste) generated by the building's design and construction 2. Where non-hazardous construction related to on-site construction and dedicated off-site manufacture/fabrication (excluding demolition and excavation waste) meets or is lower than **<3.4m^3** or **<3.2 tonnes per 100m2 of gross internal floor area** and is proven at project completion ***Fourth Credit: (ACHIEVABLE)*** The main contractor is to demonstrate that following percentages of non-hazardous construction (on-site and off-site manufacture/fabrication in a dedicated facility), demolition and excavation waste (where applicable) generated by the project have been diverted from landfill: Non-demolition: **70% by volume or 80% by tonnage** Demolition: **80% by volume or 90% by tonnage** **In addition to the above - The below must form part of a contract for either the main contractor or the demolition contractor:** Where existing buildings on the site will be demolished a pre-demolition audit of any existing buildings, structures or hard surfaces must be completed to determine how to maximise the recovery of material from demolition for subsequent high grade/value applications. The audit must be referenced in the RMP / SWMP and cover: a. Identification of the key refurbishment/demolition materials. b. Potential applications and any related issues for the reuse and recycling of the key refurbishment and demolition materials in accordance with the waste hierarchy.

<table>
<tr><th>Waste

Credit Value
0.94%</th><th>Max No. of Credits Available</th><th>ACHIEVABLE Credits</th><th>Responsible Party</th><th>BREEAM New Construction 2014 (Offices) Credit Requirements</th></tr>
<tr><td>Wst 02

Recycled Aggregates</td><td>1</td><td>1</td><td>Bridges Pound / Main Contractor</td><td>Evidence will be provided demonstrating that the total amount of recycled AND/OR secondary aggregate is to be greater than 25% of the total high-grade aggregate specified in line with the following minimum levels per application (where present):

Please note In order to contribute to the overall amount of recycled and/or secondary aggregate to be greater than 25% of the total high grade aggregate used for the development, the below minimum % per application (where present) must be met in order to be included in the overall calculation of the 25% amount. Where the minimum % levels per application are not met for an application, all the aggregate in that application must be considered as primary/virgin aggregate when calculating the total high grade aggregate specified.

<table>
<tr><th>Application</th><th>Min % for one credit</th><th>Min % for Innovation Level Credit</th></tr>
<tr><td>BOUND</td><td></td><td></td></tr>
<tr><td>Structural Frame</td><td>15%</td><td>30%</td></tr>
<tr><td>Bitumen or hydraulically bound base, binder and surface courses for paved areas & roads</td><td>30%</td><td>75%</td></tr>
<tr><td>Building foundations</td><td>20%</td><td>35%</td></tr>
<tr><td>Concrete road surfaces</td><td>15%</td><td>45%</td></tr>
<tr><td>UNBOUND</td><td></td><td></td></tr>
<tr><td>Pipe bedding</td><td>100%</td><td>100%</td></tr>
<tr><td>Granular fill and capping</td><td>100%</td><td>100%</td></tr>
</table>

Please Note where existing construction elements are reused, the aggregate content within those elements can be considered as recycled</td></tr>
<tr><td>Wst 03

Operational Waste
[MANDATORY Credit for EXCELLENT]</td><td>1</td><td>1</td><td>Hawkins Brown</td><td>Evidence will be provided demonstrating there will be provision of a central (clearly labelled), dedicated storage space for the recycling of materials which is:

- At least 2m2 per 1000m2 of net floor area for buildings < 5000m2
- A minimum of 10m2 for buildings with a net floor area >5000m2
- An additional 2m2 per 1000m2 of net floor area where catering is provided in size
- located accessible to building occupants or facilities operators for the deposit of materials and collection by waste management contractors

The above provision must also be in addition to the general waste area provision</td></tr>
</table>

Waste Credit Value 0.94%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wst 04 Speculative Floor & Ceiling Finishes	1	**1**	Hawkins Brown / BREEAM AP	Evidence will be provided demonstrating: 1. Prior to full Cat B fit-out works, floor finishes **AND** ceiling finishes in the tenanted areas of the building will only be provided within a show area (less than 25% of the total net lettable floor area) **OR** 2. That **NO** floor finishes **AND** ceiling finishes in the tenanted areas of the building are provided within the base build contract
Wst 05 Adaption to Climate Change	1	**1**	Hawkins Brown / Bridges Pound	Evidence will be provided demonstrating that: A climate change adaptation strategy appraisal will be conducted for structural and fabric resilience by the **end of RIBA Stage 2**, in accordance with the following approach: Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages: i. Hazard identification ii. Hazard assessment iii. Risk estimation iv. Risk evaluation v. risk management. **Please see next page for methodology of a climate change adaptation strategy appraisal**

Waste Credit Value 0.94%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wst 05 Adaption to Climate Change	1	**Continued**	Hawkins Brown / Bridges Pound	**CONTINUED** **Hazard identification:** 1. Review the evidence/information from relevant bodies to identify and understand the expected impacts of increased extreme weather events climate change for on the building. 2. Identify likely hazards **Hazard assessment:** 1. Identify the scale of the hazards identified. **Risk estimation:** 1. Identify the risk presented by these hazards to the building and the likely impact of the hazards taking into account the following aspects as a minimum: a. Structural stability b. Structural robustness c. Weather proofing and detailing d. Material durability e. Health and safety of building occupants and others f. Impacts on building contents and business continuity. **Risk evaluation:** 1. Evaluate the potential impact of these risks on the building. 2. Determine the tolerable risk threshold. 3. Check the sensitivity of the risk assessment. 4. Identify areas where the risks are unacceptable in health and safety, life cycle assessment and financial terms. **Risk management:** 1. Identify risk reduction measures. 2. Mitigate the hazards as far as is practically feasible. 3. Adapt the design/specification to incorporate the measures identified by the risk assessment in the final design.

Waste Credit Value 0.94%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Wst 06 Functional Adaptability	1	**1**	Hawkins Brown / WPP / Bridges Pound	Evidence will be provided demonstrating that: 1. A building-specific Functional Adaptation Strategy Study has been undertaken by the client and design team by **RIBA Stage 2** or equivalent), which includes recommendations for measures to be incorporated to facilitate future adaptation. 2. Functional adaptation measures have been implemented by **RIBA Stage 4** in accordance with the functional adaptation strategy recommendations, where practical and cost effective. The Functional Adaptation Strategy Study should consider: a. The potential for major refurbishment, including replacing the façade. b Design aspects that facilitate the replacement of all major plant within the life of the building e.g. panels in floors/walls that can be removed without affecting the structure, providing lifting beams and hoists. c. The degree of adaptability of the internal environment to accommodate changes in working practices. d. The degree of adaptability of the internal physical space and external shell to accommodate change in-use. e. The extent of accessibility to local services, such as local power, data infrastructure etc. The implementation will be specific to the building and scope of project, but information should cover: a. The feasibility for multiple/alternative building uses and area functions e.g. related to structural design of the building b. Options for multiple building uses and area functions based on design details e.g. modularity c. Routes and methods for major plant replacement e.g. networks and connections have flexibility and capacity for expansion d. Accessibility for local plant and service distribution routes e.g. detailed information on building conduits and connections infrastructure e. The potential for the building to be extended, horizontally and/or vertically.
Section Credit Total	**9**	**9**		
Section Weighted Total	**8.50%**	**8.50%**		

Land Use & Ecology Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
LE 01 Site Selection	2	**1**	Hawkins Brown	***First Credit: (ACHIEVABLE)*** Evidence will be provided demonstrating that tt least **75%** of the proposed development footprint is on an area of land previously developed within the past 50 years. ***Second Credit: (NOT SOUGHT)*** Evidence will **NOT** be provided demonstrating that the site is to be classed as 'significantly contaminated' and a programme of remediation is to be undertaken.
LE 02 Ecological Value of Site and Protection of Ecological Features	2	**0**	N/A	Evidence will **NOT** be provided demonstrating that: ***First Credit: (NOT SOUGHT)*** A Suitably Qualified Ecologist (SQE) who has identified the land as being of 'low ecological value' within an ecological assessment report, based on a site survey. ***Second Credit: (NOT SOUGHT)*** **EITHER** 1. Where existing features of ecological value within and surrounding the construction zone and site boundary area are present, adequate protection from damage is undertaken during clearance, site preparation and construction activities in line with BS42020: 2013 2. In all cases, the main contractor is required to construct ecological protection recommended by the SQE, prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities). **OR** 3. Where there are no features of ecological value, the credit for the protection of ecological features can only be awarded if the construction zone is defined as 'land of low ecological value'.
LE 03 Minimising Impact on Existing Site Ecology **[MANDATORY One Credit for VERY GOOD]**	2	**2**	Suitably Qualified Ecologist / City South Projects / MPG Shreeves / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***First – Second Credits: (ACHIEVABLE)*** A Suitably Qualified Ecologist is appointed to provide an Ecology Report based on their site survey confirming the change in the ecological value of the site as a result of development is equal to or greater than zero plant species, i.e. no negative change This is to be determined by the following information and input of data into the BREEAM LE 03/LE 04 calculator: i. The habitat type(s) that define the landscape of the assessed site in its existing pre-developed state and proposed state ii. Area (m2) of the existing and proposed broad habitat types

Land Use & Ecology Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
LE 04 Enhancing Site Ecology	2	**2**	Suitably Qualified Ecologist / City South Projects / MPG Shreeves / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***First – Second Credits: (ACHIEVABLE)*** 1. A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the **end of the RIBA Stage 1** to advise on enhancing the ecology of the site at an early stage. 2. The SQE has provided an Ecology Report with appropriate recommendations for the enhancement of the site's ecology at **RIBA Stage 2**. The report is based on a site visit/survey by the SQE 3. The early stage advice and recommendations of the Ecology Report for the enhancement of site ecology have been, or will be, implemented in the final design and build. 4. The recommendations of the Ecology Report for the enhancement of site ecology have been implemented in the final design and build, and the SQE confirms that this will result in an increase in ecological value of the site, **with an increase of six plant species or greater**
LE 05 Long Term Impact on Biodiversity	2	**2**	Suitably Qualified Ecologist / City South Projects / MPG Shreeves / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that: ***First Credit: (ACHIEVABLE)*** 1. Where a Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and enhancement of ecology has been complied with during the design and construction process. 2. Where a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS 42020:2013, Section 11.1. This is to be handed over to the building owner/occupants for use by the grounds maintenance staff. ***Second Credit: (ACHIEVABLE)*** A Suitably Qualified Ecologist's will be appointed to produce an Ecology Report demonstrating that the Main Contractor/Architect is to confirm compliance with all relevant *Additional requirements* deemed applicable by the ecologist.
Section Credit Total	**10**	**7**		
Section Weighted Total	**10.00%**	**7.00%**		

Pollution Credit Value 0.77%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Pol 01 Impact of Refrigerants	3	**0**	N/A	Evidence will **NOT** be provided demonstrating that: **Pre-requisite** All systems (with electric compressors) comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice ***First Credit: (NOT SOUGHT)*** 1. The systems using refrigerants will have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤ 1000 kgCO2e/kW cooling capacity. ***Second Credit: (NOT SOUGHT)*** 1.The systems using refrigerants will **NOT** have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤ 100 kgCO2e/kW cooling capacity. ***Third Credit: (NOT SOUGHT)*** 1. Where systems using refrigerants have a permanent automated refrigerant leak detection system installed; **OR** where an in-built automated diagnostic procedure for detecting leakage is installed. In all instances a robust and tested refrigerant leak detection system must be installed and must be capable of continuously monitoring for leaks. 2. The system must be capable of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident 3. The permanent refrigerant leak detection will be a robust and tested automated system, normally defined as that included on the Enhanced Capital Allowance (ECA) Energy Technology Product List 4. Automatic pump down to either a storage tank or into a heat exchanger is acceptable, but only where automatic isolation valves are fitted to contain the refrigerant once fully pumped down
Pol 02 NOx Emissions	3	**0**	N/A	Evidence will **NOT** be provided demonstrating: ***First Credit: (NOT SOUGHT)*** The plant installed to the building's delivered heating **AND** hot water demand has, under normal operating conditions, a NOx emission level (measured on a dry basis at 0% excess O2) of **≤100 mg/kWh.** ***Second Credit: (NOT SOUGHT)*** The plant installed to the building's delivered heating **AND** hot water demand has, under normal operating conditions, a NOx emission level (measured on a dry basis at 0% excess O2) of **≤70 mg/kWh.** ***Third Credit: (NOT SOUGHT)*** The plant installed to the building's delivered heating **AND** hot water demand has, under normal operating conditions, a NOx emission level (measured on a dry basis at 0% excess O2) of **≤40 mg/kWh.**

Pollution Credit Value 0.77%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Pol 03 Surface Water Run-Off	5	**4**	Bridges Pound	Evidence will be provided demonstrating that: ***First – Second Credits: (ACHIEVABLE)*** Where a site-specific flood risk assessment (FRA) confirms the development is situated in a flood zone that is defined as having a low annual probability of flooding (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration. ***Third Credit: (ACHIEVABLE)*** A suitable consultant is to demonstrate that drainage measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events ***Fourth Credit: (ACHIEVABLE)*** A suitable consultant is to demonstrate that flooding will not occur in the event of local drainage failure **AND** **EITHER** a. The post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. b. Any additional predicted volume of run-off for the 100 year 6 hour event must be prevented from leaving the site by using infiltration or other SuDS techniques **OR** (only where point b for this credit cannot be achieved) c. Justification from the suitable consultant indicating why the above criteria cannot be achieved i.e. where infiltration or other SuDS techniques are not technically viable options. d. The post development peak rate of run-off is reduced to a limiting discharge. The limiting discharge is defined as the following and the option with the highest flow rate must be achieved; 1. The pre development 1-year peak flow rate OR 2. The mean annual flow rate Qbar OR 3. 2l/s/ha ***Please Note*** The third & fourth credit can be achieved by default where the man-made impermeable area draining to the watercourse (natural or municipal) has decreased or remains unchanged post development ***Fifth Credit: (NOT SOUGHT)*** A suitable consultant is **NOT** to confirm that there is no discharge from the developed site for rainfall up to 5mm there is the specification of appropriate pollution prevention measures in surface water drainage systems in accordance with the specific BREEAM requirements

Pollution Credit Value 0.77%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Pol 04 Reduction of Night Time Light Pollution	1	**0**	N/A	Evidence will **NOT** be provided demonstrating that the external lighting design is to designed to be in accordance with the following: 1. Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011; 2. All external lighting (except for safety and security lighting) will be automatically switched off between 23:00 to 07:00; 3. If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes 4. Illuminated advertisements, where specified, are designed in accordance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements
Pol 05 Noise Attenuation	1	**1**	Clarke Saunders Associates / WPP / Hawkins Brown / Main Contractor	Evidence will be provided demonstrating that a suitable qualified Acoustician will be appointed to undertake a noise impact assessment in compliance with BS 7445 confirming that new sources of noise from the development, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level.
Section Credit Total	**13**	**5**		
Section Weighted Total	**10.00%**	**3.85%**		

Innovation Credit Value 1.00%	**Max No. of Credits Available**	**ACHIEVABLE Credits**	**Responsible Party**	**BREEAM New Construction 2014 (Offices) Credit Requirements**
Inn Man 03 Responsible Construction Practices	1	**1**	City South Projects / MPG Shreeves / Main Contractor	Evidence will be provided demonstrating that the main contractor is to be registered and certified under the Considerate Constructor's Scheme – Code of Considerate Practice; the contractor is to achieve a score of **40 out of 50** or more, with a score of at least **7** in of the 5 sections
Section Credit Total	**10**	**1**		
Section Weighted Total	**10.00%**	**1.00%**		

BREEAM (New Construction) Offices 2014 Pre-Assessment Results for: Buildings B & C, Regents Wharf, All Saints Street, London	
Results	**ACHIEVABLE CREDITS**
Final Predicted Score:	**70.59%**
Final Predicted BREEAM Ratings:	**EXCELLENT**

RATING	SCORE
UNCLASSIFIED	<30
PASS	≥30
GOOD	≥45
VERY GOOD	≥55
EXCELLENT	≥70
OUTSTANDING	≥85

Summary of Minimum Standards by BREEAM 2014 by Rating Level					
BREEAM Issue	**PASS**	**GOOD**	**VERY GOOD**	**EXCELLENT**	**OUTSTANDING**
Man 03 – Responsible Construction Practices	None	None	None	One Credit (Considerate Construction)	Two Credits (Considerate Construction)
Man 04 – Commissioning & Handover	None	None	None	Building User Guide	Building User guide
Man 05 – Aftercare	None	None	None	One Credit (Seasonal Commissioning)	One Credit (Seasonal Commissioning)
Ene 01 – Reduction of Energy Use & Carbon Emissions	None	None	None	Five Credits	Eight Credits
Ene 02 – Energy Monitoring	None	None	One Credit (First Sub-metering Credit)	One Credit (First Sub-metering Credit)	One Credit (First Sub-metering Credit)
Wat 01 – Water Consumption	None	One Credit	One Credit	One Credit	Two Credits
Wat 02 – Water Monitoring	None	One Credit	One Credit	One Credit	One Credit
Mat 03 – Responsible Sourcing of Materials	Legally Sourced Timber requirement	Legally Sourced Timber requirement	Legally Sourced Timber requirement	Legally Sourced Timber requirement	Legally Sourced Timber requirement
Wst 01 – Construction Waste Management	None	None	None	None	One Credit
Wst 03 – Operational Waste	None	None	None	One Credit	One Credit
LE 03 – Minimising Impact on Existing Site Ecology	None	None	One Credit	One Credit	One Credit

Appendix 2 – Ecology Report

REGENT'S WHARF, LONDON:

ECOLOGY REPORT

REGENT'S WHARF, LONDON:

ECOLOGY REPORT

September 2016

Our Ref: JSL2617_873

RPS
Lakesbury House
Hiltingbury House
Chandlers Ford
Hampshire
S053 5SS

Tel: 023 8081 0440
Email: rpsso@rpsgroup.com

QUALITY MANAGEMENT

Prepared by:	**Dr Nicholas Betson**
Authorised by:	**Kerry Shakespeare**
Date:	**September 2016**
Project Number/Document Reference:	**JSL2617_873: Regent's Wharf, London: Ecology Report**
Status:	**For planning**

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EXECUTIVE SUMMARY

- RPS Southampton was commissioned by RPS London to undertake a Preliminary Ecological Appraisal (PEA), of Regent's Wharf, King's Cross, London, and associated grounds to help inform the re-development of the site into an office scheme with ancillary retail.
- The site consisted of hardstanding and buildings with the only vegetation represented by three mature ornamental alder trees, four small vegetated roof gardens, a short length of yew hedge and a large, climbing ivy. The site was considered to be of generally low ecological value.
- The site is directly adjacent to Regent's Canal (a Site of Importance for Nature Conservation, SINC). The canal is an important wildlife corridor within an otherwise urban setting and is known to support a diverse range of wildlife. Therefore, it will be important that the development avoid indirect impacts via dust generation/accidental pollution etc. during construction. The development should avoid lighting the canal above the levels at which it is currently lit to ensure that the use of the canal by nocturnal wildlife is not compromised.
- The building, trees, climbing ivy and hedgerow offer suitable habitat for common species of nesting birds. It is recommended that demolition be carried out outside of the breeding bird season. If this is not possible, the building should be checked for nesting birds by a suitably qualified ecologist immediately prior to demolition. If any nests are found, they would have to be left undisturbed until the chicks had fledged (usually around six weeks).
- Following the PEA, Black Redstart surveys of the site were undertaken. No black redstart were seen or heard at the Regent's Wharf site during the five survey visits between April and June 2016. Therefore, the Regent's Wharf survey area was not considered as being used by nesting Black Redstart at the time of the survey.
- Management of the site could be undertaken to reduce the site's suitability for back redstart, especially as there is a known breeding population <500 m from the site which potentially could establish territories in adjacent suitable habitat.
- Although three of the sections of the Regent's Wharf building were considered to have no potential to support roosting bats, two sections facing onto Regent's Canal had a moderate number of features that could be used by roosting bats. Therefore, further surveys to quantify the use of the site by bats were undertaken. No bat roosts were identified as present within the proposed development area. One species of bat was recorded as foraging and commuting adjacent to the site, along the Regent's Canal - common pipistrelle.
- Recommendations are also made with regards to the enhancement of the site with respect to biodiversity.

1 INTRODUCTION

Background to the Study

1.1 RPS Southampton was commissioned by RPS London to undertake a Preliminary Ecological Appraisal (PEA) of Regent's Wharf, King's Cross, London and associated grounds, to help inform the re-development of the site.

1.2 Following from this, RPS were also commissioned to undertake surveys for black redstart and bat roosts.

Site Description

1.3 The site is located adjacent to Regent's Canal near to King's Cross, London (OS Grid reference TQ 300 789). The site covers an area of approximately 0.1 ha, and comprises hardstanding, several buildings, along with small amounts of ornamental vegetation.

1.4 The site is bound by All Saints Street to the south, Regent's Canal to the north and further office buildings to the east and west. The area is highly urbanised although Regent's Canal forms an important green corridor through this area of London, linking several areas of green space, including the Camley Street Nature Park Local Nature Reserve, 0.4 km to the west.

1.5 The wider landscape beyond this is very urban in nature.

Aims, Objectives and Legislation

1.6 The purpose of the Preliminary Ecological Appraisal was to identify the habitats currently present within and around the site (to Phase 1 standard) in order to obtain baseline ecological information for the site. The Appraisal also assessed the potential for the site and adjoining habitats to be used by species that receive legal protection (at a UK and / or European level) and species that are otherwise notable including Species of Principal Importance and Birds of Conservation Concern.

1.7 The aims and objectives of the survey were to assess the suitability of the site to support breeding black redstart and, through targeted surveys, identify whether there was any evidence of the species breeding on site.

1.8 The objective of the bat survey was to determine the current use of the site by bats, to inform the future development of the site. The study aimed to determine the potential impacts (if any) of the development by establishing:

- whether any bats were roosting on site;
- general level of bat activity on the site;
- range of species using the site; and
- best course of action to minimise the impacts of the development on the local bat population.

1.9 All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. It is an offence to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- intentionally take or destroy the egg of any wild bird.

1.10 Black redstart *Phoenicurus ochruros* is also listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). The Act protects the bird, its eggs and nestlings from killing, injury, and damage or destruction to its nest. Listing on Schedule 1 provides additional protection against intentional or reckless disturbance to the bird while it is building its nest, or is in, on or near a nest containing eggs or young, or disturbance of the dependent young of such a bird. Black redstart is listed as a Red List species of conservation concern and listed in the London Biodiversity Action Plan (2010 – 2015).

1.11 All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as amended. All bat species are also included on Schedule 2 of the Conservation of Species and Habitats Regulations 2010. Taken together, these pieces of legislation make it an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts.

1.12 A roost is defined as 'any structure or place which [a bat] uses for shelter or protection'. As bats tend to reuse the same roosts, it is considered within legal opinion that a roost is protected whether or not bats are present at the time of survey.

1.13 Barbastelle bats *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, *noctule Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe *bat Rhinolophus hipposideros* are also listed as being species of principle importance to the conservation of biodiversity in England under Section 41 of the Natural Environment and Rural Communities Act 2006.

1.14 This report presents the ecology survey information and provides ecological baseline information for the site. It provides an evaluation of the results and, also, recommendations for protecting and enhancing the biodiversity of the site.

2 METHODS

Desk study

2.1 Records of protected and notable species and information on designated sites within 2 km of the proposal site were requested from the local biological records centre, Greenspace Information for Greater London (GIGL). Records were screened for relevance and age with only those from the last 10 years and of species that could occur on site considered further.

2.2 Aerial photos of the site (Google 2015) were examined to determine habitats surrounding the site and hence species likely to be present in order to make appropriate recommendations in the wider landscape context.

PEA Survey

2.3 The survey was conducted in accordance with The Handbook for Phase 1 Habitat Survey (JNCC 2003), and included searches for signs of protected species, as described in the Guidelines for Preliminary Ecological Assessment (IEEM, 2012).

2.4 A walkover of the application site and surrounding area was undertaken on 23rd March 2016 by an experienced ecologist, Dr Nicholas Betson CEnv MCIEEM. Habitats within the site were classified, mapped and described, with respect to their structure and floristic composition.

2.5 In addition, the habitats within the survey area were assessed for their potential to support legally protected or otherwise notable flora and fauna. Where suitable habitat was identified on site, a search was conducted for signs indicating the presence of protected species such as droppings, burrows, tracks and evidence of feeding. Where species are not specifically evaluated, this indicates that no habitat of potential value for these species was identified during the survey.

2.6 Consideration was also given to habitats outside the site, in order to evaluate the ecological context of the site within the wider landscape. Adjacent habitats were also considered with respect to their own ecological value and their potential to enhance the ecological value of habitats within the site.

2.7 Any buildings and or trees were classified according to their potential to support bat roosts following the methodology described in Hundt, 2012. The trees were categorised according to the number of features which had bat roost potential, such as woodpecker holes, or crevices within the trunk. Categories 1 and 1* refer to trees with either medium or high potential for roosts respectively, and would require further surveys to assess the use of the tree by bats, if it was to be impacted by the final development. Category 2 trees require no further survey.

2.8 Searches were made for invasive non-native plant species focussing on those species currently listed in the revised Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

2.9 The plant species nomenclature follows that of Stace (1997). Plant species observed within each habitat type were recorded using the DAFOR system which stands for Dominant, Abundant, Frequent, Occasional or Rare.

Black redstart

2.10 The Black Redstart survey consisted of five survey visits and followed standard methodology as detailed in Gilbert *et al*. (1998). The surveys were carried out by experienced ornithologists on the following dates:

- Visit 1 – 25th April 2016; Alan Bull
- Visit 2 – 9th May 2016; Alan Bull
- Visit 3 – 17th May 2016; Andrew Seth
- Visit 4 – 31st May 2016; Andrew Seth
- Visit 5 – 10th June 2016; Andrew Seth

2.11 Surveys began no later than an hour after sunrise and lasted for approximately 2-3 hours. After this time, noise from the adjacent residential areas made hearing any singing birds difficult.

2.12 Surveys were carried out in fine and dry weather with wind strength below Beaufort scale 3.

2.13 The site was observed using vantage points located along All Saints Street to the south of the proposed development and along the Regent's Canal towpath to the north. These vantage points enabled the surveyor to observe any birds present and listen carefully for song / calls throughout. The perimeter was also walked several times in case birds were only singing for a brief period. This method ensured that all areas of the site were visited to within 100 m on each visit.

Bat emergence survey

2.14 Two emergence / re-entry surveys were undertaken in total, due to the low roost potential of the building. These surveys were carried out through May and June 2016. The north side of the building offered possible bat roost potential and therefore was the only side which was observed. Surveyors observed the building from the north side, positioned on Regent's Canal Towpath, facing south. The emergence survey commenced 10 minutes before sunset, and lasted for approximately 120 minutes, in order to record any bats that may have emerged from the building.

2.15 Time-expansion bat detectors (Pettersson D 240x and Elkon Batlogger) were used to record bat echolocation calls of any emerging bats and identify species where possible. Recordings were made using Edirol recording devices (R-09HR and R-05) and built in recorders within the detectors, which were later analysed using the computer software 'BatSound'.

Constraints

2.16 It is considered that the survey was carried out at an appropriate time of year in order to assess the site's potential to support legally protected or otherwise notable species of wildlife. Therefore, there were no perceived constraints to the interpretation of the results of the survey.

3 RESULTS

Desk Study

Designated Sites

3.1 There are two statutory designated sites within 2 km of the application boundary:

- Barnsbury Wood Local Nature Reserve (LNR) – 0.9 km north east;
- Camley Street Nature Park LNR – 0.4 km west.

3.2 Barnsbury Wood LNR was originally a garden belonging to George Thornhill who built the surrounding houses in the 1840s. The area was eventually abandoned to nature and then became woodland. Records of both rare and notable species have since been recorded within the area.

3.3 Camley Street Nature Park LNR hosts a variety of habitats, providing a valuable resource within a predominantly urban setting. It has records of amphibians, birds, butterflies, and also a rich variety of flora species.

Non-statutory designated sites

3.4 There are 42 non-statutory designated sites located within 2 km of the application boundary, a mixture of Sites of Importance for nature Conservation (SINC's). Refer to Table 1, Appendix 1 for full details of these.

Protected Species

3.5 See Figure 3.2 for the locations of records of protected species.

Birds

3.6 There are seven records of protected bird species occurring within 2 km of the application site over the last ten years.

Mammals

3.7 There have been nine records of protected mammal, eight of bats, one of otter *Lutra lutra*, occurring within 2 km of the application boundary over the last ten years.

Other protected species

3.8 There have been no records of protected or notable reptile, plants, invertebrates or amphibian species occurring within 2 km of the application site over the last ten years.

Phase 1 Habitat Survey

3.9 The results of the Phase 1 Habitat Survey are detailed below broadly in order of their extent and are shown on Figure 3.3.

Buildings

3.10 The site comprised principally the Regent's Wharf building. This was five-six stories high, brick built and of a variety of ages. It formed a rectangle around a central courtyard of hard standing used for carparking.

3.11 Section 1 (adjacent to Regent's Canal) appeared to be the oldest and comprised what appeared to be a former warehouse converted to office use. The roof comprised lead sheeting with dormer windows.

3.12 Section 2 (also adjacent to the canal) was newer with an apparently flat roof. A section of the building within the central courtyard was wood-clad. Four small vegetated roof gardens were present (from an inspection of an aerial photograph) on this section.

3.13 Section 3 formed the northern-most area fronting All Saints Street. This was modern, brick-built and in use as offices. It had a pitched, stone roof.

3.14 Section 4 formed the western boundary and was also of modern construction with a flat, metal roof.

3.15 Section 5 formed the eastern site boundary and was an extension of the older warehouse building also in use as offices. The roof was flat and not visible from the ground. The western, courtyard-facing elevation of this building supported a large, climbing ivy *Hedra helix* (Target Note TN1, Figure 3.3).

Hardstanding

3.16 The majority of the remainder of the site comprised hard standing in use as carparking.

Scattered trees within bare ground

3.17 A small area of bare ground occurred in the north west corner of the site which supported three mature ornamental alder *Ulnus* spp. trees.

Hedgerow

3.18 A short length (circa 4 m) of well-managed yew *Taxus baccata* hedgerow (H1 on Figure 3.3) was present towards the centre of the site. The hedgerow was approximately 1.5 m high and around 1 m in width.

Off-site habitats

3.19 The Regent's Canal ran along the northern boundary of the site. This supported a range of floating, caged vegetation islands dominated by pendulous sedge *Carex pendula* with a variety of other aquatic/marginal species present including purple loosestrife *Lythrum salicaria*.

Protected Species Scoping

Breeding birds

3.20 The building, trees, hedgerow and climbing ivy provide suitable habitat for common species of breeding birds. This may include black redstart and other notable urban species.

Bats

3.21 The scattered trees were considered to have no potential to support bats, lacking suitable features.

3.22 Sections 3 – 5 of the Regent's Wharf building were all in good condition and were therefore considered to have no bat roost potential.

3.23 Several sections of lead flashing around dormer windows on the oldest Section 1 were lifted while there were a small number of gaps in the mortar of Section 2; all features were on the northern building elevation adjacent to Regent's Canal. Therefore, while the buildings are in a highly urban location, the proximity of the building with respect to the canal and the known presence of several species of bat in the surrounding area mean these sections of the building are considered to have medium-high potential to support bat roosts.

3.24 While the site itself is considered to be of negligble value for foraging/commuting bats, the adjacent Regent's Canal is known to be used by several species for foraging/commuting.

Black Redstart

3.25 The survey area contained buildings with many features that are considered as suitable to support nesting black redstart. These features included open ended pipes, gaps in brickwork or gaps under window balconies.

3.26 No black redstart were seen or heard within the survey area during the five survey visits.

3.27 The buildings on site do, however, support other nesting bird species, including starling *Sturnus vulgaris* and feral pigeon *Columba livia domestica*, and the canal area immediately adjacent to the proposed development area supported nesting moorhen *Gallinula chloropus*, coot *Fulica atra* and mallard *Anas platyrynchos*.

3.28 Other bird species were recorded using the survey area, but were not considered as breeding within the proposed development area. These included blackbird *Turdus merula*, blue tit *Cyanistes caeruleus*, goldfinch *Carduelis carduelis*, great tit, *Parus major*, robin *Erithacus rubecula* and wren *Troglodytes troglodytes*.

Bat Emergence Survey

3.29 Bat activity can be strongly dependent on weather conditions. The surveys were therefore only carried out in favourable conditions when bat activity was deemed to be likely (dry, little to no wind and temperatures greater than 8ºC). Table 3.1 summarises the weather during the surveys.

Table 3.1 Weather conditions during bat emergence / re-entry surveys at Regent's Wharf, Kings Cross, London.

Survey date	Temperature ºC	Sunset/Sunrise Time	Weather
11/05/2016	18.2	20:41	100% cloud cover, wind: Beaufort 4, no rain
19/05/2016	18	20:52	Zero cloud cover, wind: Beaufort zero, no rain.
08/06/2016	20	21:15	Zero cloud cover, wind: Beaufort zero, no rain.

Bat emergence survey 11th May 2016

3.30 The survey began at 20:26 and finished at 22:16. Two surveyors observed the same side of the buildings, see Figure 3.4 for the surveyor locations.

3.31 No bats were recorded emerging from the building.

3.32 Fifteen common pipistrelles were recorded; Surveyor 1 heard a total of nine common pipistrelles and Surveyor 2 heard a total of six common pipistrelles mainly foraging over the Regent's Canal.

Bat emergence survey 19th May 2016

3.33 The survey began at 20:32 and finished at 23:00. Two surveyors observed the building, see Figure 3.5 for the surveyor locations.

3.34 Surveyor 1 and Surveyor 2 did not hear or see any bats during the survey.

Bat emergence survey 8th June 2016

3.35 The survey began at 21:00 and finished at 23:15. Two surveyors observed the building, see Figure 3.6 for the surveyor locations.

3.36 Surveyor 1 and Surveyor 2 did not hear or see any bats during the survey.

4 EVALUATION

Designated Sites

4.1 The majority of designated sites in the area are not ecologically linked to the development. Therefore, given the highly urban nature of the surrounding landscape, it is highly unlikely that any impact to such sites would occur as a result of the proposed redevelopment.

4.2 The site is directly adjacent to Regent's Canal Site of Interest for Nature Conservation (SINC). The canal is an important green corridor within an otherwise urban setting and is therefore considered to be of significant ecological value. The close proximity of the development to the canal means there is potential for direct impacts through both dust generation and pollution from accidental spillage, for example. Further, there is the potential for impacts due to increased lighting during both the construction and operational phases.

4.3 Recommendations are therefore made in Section 5 to ensure the canal is suitably protected during construction.

Habitats

4.4 The habitats present comprised buildings and hardstanding. These are considered to be of little ecological value.

4.5 The scattered trees, hedgerow and climbing ivy are considered to be of some local (albeit limited) ecological value as a green resource within an otherwise highly urban landscape. Therefore, recommendations are made in Section 5 to ensure their protection.

Species

Breeding Birds

4.6 Breeding birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill, injure or take the birds or their eggs; or to intentionally disturb or destroy a nest, when it is in use or being built.

4.7 The building, trees, hedgerow and climbing ivy provide cover and suitable nesting opportunities for a range of bird species and will provide a resource for nesting birds in the wider area including species such as black redstart. However, the site is not of a size necessary to support an assemblage of breeding birds of conservation significance. Notwithstanding this, recommendations are made in Section 5 to protect birds during demolition.

4.8 The site was considered to have some potential to support breeding black redstart. No black redstart were seen or heard at the Regent's Wharf site during the five survey visits between April and June 2016. Therefore, the Regent's Wharf survey area was considered as not being used by nesting black redstart at the time of the survey. However, features within buildings were considered as offering suitable nesting locations for black redstart.

4.9 Black redstart is unique as a rare breeding bird in Britain in that its population is concentrated, in the main, in urban centres (particularly Greater London and Birmingham). The national

population was estimated at 54 pairs (five-year mean) in 2012, with 20 territories in Greater London (Holling *et. al*., 2012).

4.10 The majority of breeding black redstart in the UK use urban and industrial habitats, and the survey area provides suitable potential nesting locations. The site is also close to suitable feeding areas, with adjacent parkland providing adequate foraging habitat.

4.11 Historically, sightings of black redstart have been made at Kings Cross Station (RPS, 2010) and were confirmed breeding in this location in 2010 (Alan Bull, pers. obs.). Kings Cross Station is <500m from the proposed development area at Regent's Wharf. It is considered that this breeding population still occurs at Kings Cross (per local observers), however is not reported in London bird reports (London Natural History Society, 2013, 2014, & 2015) owing to its status as a rare breeding bird. A nearby breeding population of black redstarts potentially offers a source of birds that could establish territories at Regent's Wharf.

4.12 There is a distinct relationship between the decline of the species population and regeneration of run down and derelict sites, which provide appropriate foraging and nesting habitat. This has led to the development of the London Biodiversity Partnerships Black Redstart Action Plan, which aims to reduce the adverse impact of regeneration on black redstarts and ensure that its present population is not adversely effected by such schemes and, where possible, enhanced.

4.13 The factors listed below are given on http://www.blackredstarts.org (Accessed 16th June 2016) as being the key ecological principles affecting black redstarts breeding in the UK.

- *Areas of sparse wasteland vegetation and stony ground are necessary for feeding. Many of the brownfield sites they are associated with in London and Birmingham adequately provide this habitat requirement.*
- *Complex structures. Extensive areas of open brownfield land are not favoured by black redstarts. They appear to require many vertical features whether they are buildings gantries, flood defence structures, or gasometers. Such structures correlate to the gorges and cliff faces which are their natural habitat in continental Europe, and also provide high singing posts.*
- *A variety of ledges or holes, preferable within structures, in order to build their nests.*
- *Proximity to open water, such as canals, that provide midge, gnat and other insect food. In addition, the importance of weatherworn and dilapidated flood defences and jetties provide foraging areas and nest sites.*

4.14 The provision of black redstart habitat on site through a mosaic of vegetated and open space should be included as part of any landscape design for the site, including garden roof where feasible. This will provide a greater area of suitable habitat for black redstart than currently exists.

Bats

4.15 All species of bat present in the UK receive full protection under The Conservation of Habitats and Species Regulations 2010, and the Wildlife and Countryside Act 1981 (as amended). A number of bat species are also listed in Section 41 of the NERC Act 2006. These include the widespread species soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus*

auritus, and the rarer woodland species such as Bechstein *Myotis bechsteinii* and barbastelle *Barbastella barbastellus*s.

4.16 Two sections of the Regent's Wharf building adjacent to Regent's Canal had some potential to support roosting bats and therefore further surveys have been undertaken.

4.17 No bats were recorded emerging from the buildings during any of the survey visits.

4.18 One species of bat was recorded present in and around the site during one of the survey dates: common pipistrelle. During the emergence surveys bat activity was low on site.

4.19 The majority of what little activity was present was focused along the Regent's Canal, adjacent to the site. Therefore, it is considered unlikely that the development of the site would have a significant impact on the local bat population.

4.20 Specific measures are outlined in Section 5 to ensure the long-term survival of any species using the site, both during and after construction of the development.

Other Protected/Notable Species

4.21 There was no other habitat on site to support protected or otherwise notable species.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 The site consisted of hardstanding and buildings with the only vegetation represented by three mature ornamental alder trees, a short length of yew hedge and a large, climbing ivy. The site was considered to be of generally low ecological value.

5.2 The site is directly adjacent to Regent's Canal (a Site of Importance for Nature Conservation, SINC). The canal is an important wildlife corridor within an otherwise urban setting and is known to support a diverse range of wildlife. Therefore, it will be important that the development avoids indirect impacts via dust generation/accidental pollution etc. during construction. The development should avoid lighting the canal above the levels at which it is currently lit to ensure that the use of the canal by nocturnal wildlife is not compromised.

5.3 The trees, small hedgerow and climbing ivy are of some local importance as a green resource in an otherwise highly urbanised area of central London. Therefore, if possible, these features should be retained and protected during construction. If this is not possible, it is recommended that replacement features of similar or greater size are included within the final development.

5.4 The building, trees, climbing ivy and hedgerow offer suitable habitat for common species of nesting birds. It is recommended that demolition be carried out outside of the breeding bird season. If this is not possible, the building should be checked for nesting birds by a suitably qualified ecologist immediately prior to demolition. If any nests are found, they would have to be left undisturbed until the chicks had fledged (usually around six weeks).

5.5 Although the site is considered unlikely to support a significant foraging population of the locally-important black redstart, it was considered possible that this species nests on site (it is known to breed in other locations around the King's Cross area). Therefore, suitable surveys were undertaken. No black redstart were recorded during surveys.

5.6 The following steps could be undertaken to make the buildings as unsuitable for nesting black redstart as possible during demolition and construction:

- management of the site to reduce the suitability of the site for black redstarts during the construction phase of the development. Ideally, any buildings which are demolished should be cleared of rubble off-site within a week to avoid creating suitable habitat for black redstart to nest within. If clearance of demolished buildings off-site is not possible within a week, any retained building rubble on-site should be covered with tarpaulin, as soon after demolition as possible; and
- erection of nest boxes away from the construction area during winter months to encourage any birds present in the area to nest away from construction.

5.7 There is known to be a breeding population of black redstarts <500 m from the site, which potentially could act as a source of birds that might establish territories in adjacent suitable habitat. Therefore, if it is not possible to manage the site during construction works to reduce the site's suitability for black redstart and works are scheduled within the breeding season, it is considered necessary before demolition activities occur, to ensure that black redstarts have not

colonised the site. This would be in the form of a presence / absence survey and would seek to determine:

- if any black redstart are present on site;
- if black redstart are present on site, determine if there is a breeding pair on site, or a solitary male; or
- if a breeding pair is present on site, where they are nesting on site.

5.8 Any additional surveys should be undertaken fortnightly, and before and during demolition activities. Surveys would commence an hour before sunrise and continue up to an hour after sunrise to listen for singing males and look for signs of breeding behaviour.

5.9 Further measures which could be included in the design, to enhance the site for black redstart and other breeding bird species are:

- use of native plant species in landscaping and habitat creation where practical;
- provision of bird boxes including specific black redstart boxes in suitable locations (precise locations and numbers to be determined during design); and
- production of a landscape and ecology management plan to include management of vegetated areas in an ecologically sensitive manner and maintenance of bird boxes.

5.10 Black redstarts require relatively small areas of very sparsely vegetated ground as a feeding habitat (within which they hunt for their food by eye, pecking it off the ground) with structures within it that will provide cavities and crevices in which they can nest. In urban areas this is provided by 'wasteland', derelict land and land undergoing redevelopment. The precise area required has not been clearly defined by research and it is considered to vary with the quality of the habitat and the extent of unsuitable habitat within a territory. In the process of redevelopment of such land it is possible to replace lost habitat for black redstart through the creation of similar open, gravelly or rocky ground within landscaped areas and on roof tops. The use of 'green roofs' has been identified as a particular means to provide habitat for black redstart. There are four main types of "green roof" and these differ in their intensity of management and suitability for use by black redstart. The types are:

- Brown roof
- Sedum roof
- Extensive green roof (roof meadow)
- Intensive green roof (roof garden)

5.11 It is the 'brown roof' type with its very sparse vegetation and dominance of open ground and rubble that provides an alternative habitat for black redstart. The following should be considered when designing a brown roof for black redstart:

- It should be based on an aggregate mix present on the original site. In general in London this would necessitate the use of a mixture of crushed brick, graded from 25 mm to dust.

- It should consist of material from the site itself which has been allowed to sit on the site during construction. This will help speed the colonisation process and also assist in the recycling of materials and reduce costs.
- It should be contoured from heights of at least 5 cm to 15 cm.
- It should be allowed to colonise naturally.
- The application of sedum mats should be avoided (only be used as a last resort) but if sedums are desired they should be planted into the aggregate base.
- A-frame solar panels could be installed on part of the brown roof as the shelter will provide micro-habitats for invertebrates.

5.12 Nest boxes can be installed adjacent to the roof garden to provide potential nest sites close to feeding areas. The nest boxes should be of an open fronted design. They should be placed under structures, such as over hangs, balconies and escape routes and within utility buildings. Boxes should preferably be placed at least 3m above ground level. Several nest boxes should be used to give pairs some selection. Nest boxes should be placed in sites where they are sheltered from the prevailing wind, rain and strong sunlight. Any position between north to south-east is likely to provide the greatest protection

5.13 Although three of the sections of the Regent's Wharf building were considered to have no potential to support roosting bats, two sections facing onto Regent's Canal had a moderate number of features that could be used by roosting bats. Therefore, further surveys to quantify the use of the site by bats were undertaken.

5.14 No bat roosts were identified as present within the proposed development area. One species of bat was recorded foraging and commuting along the Regent's Canal area. The level of bat activity on site was deemed to be low.

5.15 In order to ensure that bat foraging across the site and the adjacent Regent's Canal is not compromised, additional lighting above and beyond that already present in the area should be minimised where practicable, as this would deter bats from using the site.

5.16 To enhance bat roost potential bat boxes suitable for common pipistrelle, such as the Schwegler 2F, could be installed at suitable locations on and around the site

5.17 Also, in order to enhance the site with respect to bird nesting opportunities, a range of bird boxes should be incorporated into the final scheme. These will include those suitable for black redstart (such as the Schwegler 2H Half Box) and should be sited with the advice of a suitably qualified ecologist.

5.18 Also, the development will include areas of roof garden that will be planted to be of wildlife value with a variety of flowering plant species to encourage invertebrate activity that will in turn provide a foraging resource for other animals, including black redstart.

5.19 The inclusion of roof gardens, bat boxes and bird boxes within the building will ensure that, overall, the development delivers an enhancement to local ecology in line with the requirements of both local and national planning policy.

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FIGURES

FIGURE 3.1

Designated Sites Location Plan

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Legend

- Application boundary
- 2 km radius from application site
- LNR
- SINC

Rev	Description	Date	Initial	Checked

RPS

Lakesbury House, Hiltingbury Road, Chandlers Ford,
Hampshire. SO53 5SS
T: +44(0)2380 810 440 E: rpsso@rpsgroup.com F: +44(0)2380 810 449

Client RPS London

Project Regents' Wharf, London

Title Designated Site Location Plan

Status	Drawn By	PM/Checked By
Information	HK	NB
Job Ref	**Scale @ A3**	**Date Created**
JSL2617	1:15,000	MARCH '16

Figure Number **3.1** Rev **-**

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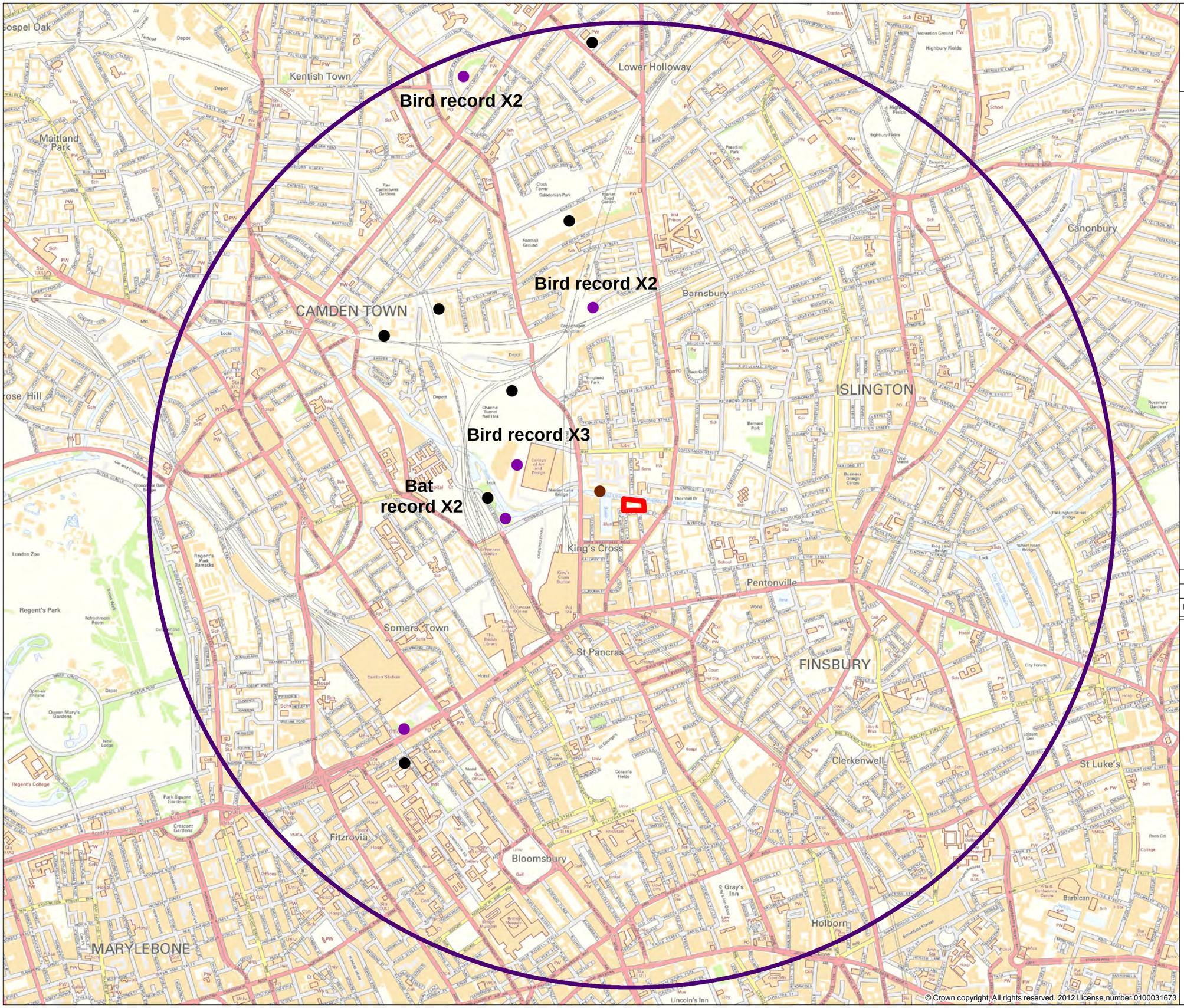
FIGURE 3.2

Protected Species Distributions



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Legend

- 2 km radius from application site
- Application boundary

Species

- Bat
- Bird
- Mammal (otter)

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Hampshire. SO53 5SS
T: +44(0)2380 810 440 E: rpsso@rpsgroup.com F: +44(0)2380 810 449

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Project Regents' Wharf, London

Title Protected Species Distributions

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FIGURE 3.3

Phase 1 Habitat Survey Map

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Legend

- Building with number
- Hardstanding
- Regent's Canal
- Hedgerow
- Scattered trees
- Target note (TN)

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Lakesbury House, Hiltingbury Road, Chandlers Ford, Hampshire. SO53 5SS
T: +44(0)2380 810 440 E: rpsso@rpsgroup.com F: +44(0)2380 810 449

Client RPS London

Project Regents Wharf London

Title Phase 1 Habitat Map

Status	Drawn By	PM/Checked by
For information	JB	NB
Job Ref	**Scale @ A3**	**Date Created**
JSL2617	NTS	17/05/2016

Figure Number 3.3

Rev -

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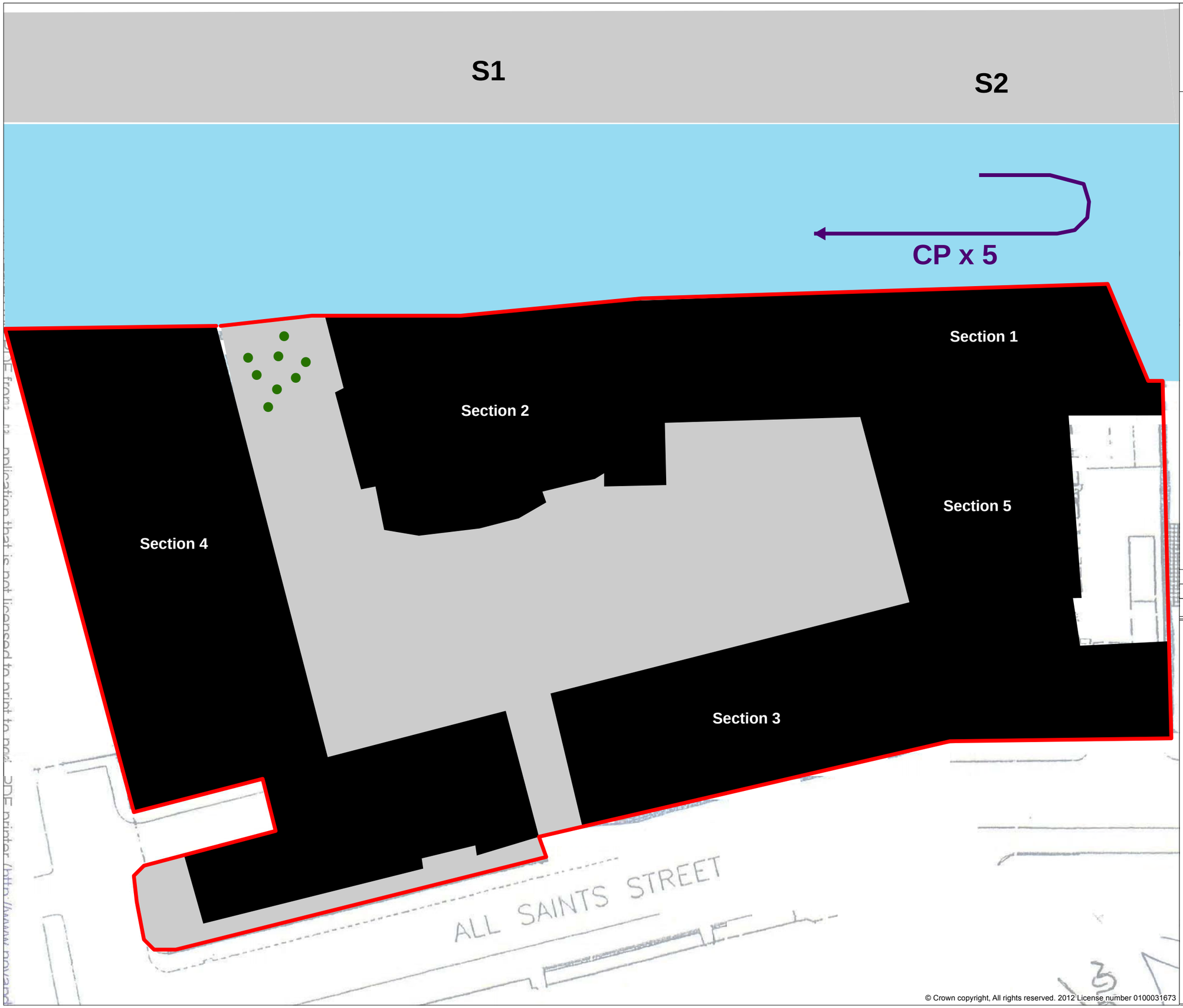
FIGURE 3.4

Emergence survey 11/05/16



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Legend

- Application boundary
- S1 Surveyor locations
- Common pipistrelle foraging
- Building

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Lakesbury House, Hiltingbury Road, Chandlers Ford,
Hampshire. SO53 5SS
T: +44(0)2380 810 440 E: rpsso@rpsgroup.com F: +44(0)2380 810 449

Client RPS London

Project Regents' Wharf, London

Title Bat Emergence Survey, 11th May 2016

Status	Drawn By	PM/Checked By
For Planning	HK	NB
Job Ref	**Scale @ A3**	**Date Created**
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Figure Number **3.4** Rev **-**

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FIGURE 3.5

Emergence survey 19/05/16

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Legend

- Application boundary
- **S1** Surveyor locations
- Building

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Lakesbury House, Hiltingbury Road, Chandlers Ford,
Hampshire. SO53 5SS
T: +44(0)2380 810 440 E: rpsso@rpsgroup.com F: +44(0)2380 810 449

Client RPS London

Project Regents' Wharf, London

Title Bat Emergence Survey, 19th May 2016

Status	Drawn By	PM/Checked By
For Planning	HK	NB
Job Ref	**Scale @ A3**	**Date Created**
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Figure Number **3.5** Rev **-**

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FIGURE 3.6

Emergence survey 08/06/16

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Legend

- Application boundary
- S1 Surveyor locations
- Building

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RPS

Lakesbury House, Hiltingbury Road, Chandlers Ford,
Hampshire. SO53 5SS
T: +44(0)2380 810 440 E: rpsso@rpsgroup.com F: +44(0)2380 810 449

Client RPS London

Project Regents' Wharf, London

Title Bat Emergence Survey, 8th June 2016

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For Planning	HK	NB
Job Ref	**Scale @ A3**	**Date Created**
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Figure Number **3.6** Rev **-**

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APPENDIX 1: NON-STATUTORY DESIGNATED SITES

Reference in Figure 3.1	Name of site	Reason for designation
1	London's Canals	London's canals support a wide range of aquatic flora, amongst which are found a number of locally uncommon species. These include narrow-leaved water plantain *Alisma lanceolatum*, rigid hornwort *Ceratopyllum demersum* and shining pondweed *Potomageton lucens*, all species of clean, clear waters. Many waterside plants, including several London rarities, also grow on the brickwork and banks of the canal. The canals also support an important invertebrate fauna (including several species of dragon/damselflies), a diverse fish community, and breeding waterfowl.
2	Camley Street Natural Park	One of Britain's oldest and most influential urban ecology parks, internationally renowned as centre of excellence in environmental education. Created on previously derelict land in 1984, the park now features a valuable mosaic of habitats and supports a remarkable diversity of wildlife for its inner city location. Over 300 higher plants have been recorded, including common broomrape *Orobanche minor*, hairy buttercup *Ranunculus sardous* and common spotted-orchid *Dactylorhiza fuchsii*. Breeding birds have included reed warbler.
3	Regent's Park	One of the most charismatic and varied of the central Royal Parks, the Regent's is particularly important for its wide variety of breeding birds. The park's size and range of habitats is primarily responsible, especially its mature trees and ornamental lake. The heronry on one of the islands is one of London's larger breeding colonies, while the lake itself supports a nationally significant breeding population of pochard alongside the captive wildfowl collection. A surprising diversity of migrant birds is recorded every spring and autumn. In recent years, an informally-managed wildlife area has been established in the north-west of the park, which various common butterflies and other invertebrates have quickly colonised.
4	Barnsbury Wood	Barnsbury Wood is surrounded on all sides by the residential Victorian villas of Thornhill Square, presumably left as open space when the area was first developed in 1850. It is today composed of mature secondary woodland, mostly of sycamore *Acer pseudoplatanus* and ash *Fraxinus excelsior*. A dense understorey of elder *Sambucus nigra*, privet *Ligustrum ovalifolium* and blackthorn *Prunus spinosa* provides valuable cover for common breeding birds.
5	New River Walk	Between 1609 and 1615, Sir Hugh Myddelton embarked on an ambitious project to bring drinking water to London from springs in the chalk hills of Hertfordshire. Part of his 'New River' still functions for water supply and is described as the New River Metropolitan site, located mainly in Enfield and Haringey.
6	Caledonian Park	Caledonian Park began life as the original venue of the 19th century Metropolitan Cattle Market, from which its majestic Victorian clock tower dates. The park, although still managed on a largely formal basis, has nevertheless been steadily

		transformed in recent years to become a haven for wildlife. The perimeter shrubberies include mainly native species, many of them berry-bearing to feed hungry thrushes and blackbirds in the winter.
7	Holloway Road to Caledonian Road Railsides	The various sections of active railway line crossing Islington are of immense importance to its wildlife, as their cuttings and embankments support a significant proportion of the borough's undeveloped land. The network supports an extensive mosaic of open and wooded habitats, valued by birds, mammals and insects, as well as by rail travellers for the deceptively rural outlook that these afford. The vegetation which develops naturally alongside railways in Islington is influenced by the underlying substrate and the frequency and nature of management.
8	Copenhagen Junction	The various sections of active railway line crossing Islington are of immense importance to its wildlife, as their cuttings and embankments support a significant proportion of the borough's undeveloped land. The network supports an extensive mosaic of open and wooded habitats, valued by birds, mammals and insects, as well as by rail travellers for the deceptively rural outlook that these afford. The vegetation which develops naturally alongside railways in Islington is influenced by the underlying substrate and the frequency and nature of management. Their linear character and connectivity with less-developed parts of London enables more mobile wildlife to disperse and penetrate deep within the city.
9	North London Line in Islington (east)	The various sections of active railway line crossing Islington are of immense importance to its wildlife, as their cuttings and embankments support a significant proportion of the borough's undeveloped land. The network supports an extensive mosaic of open and wooded habitats, valued by birds, mammals and insects, as well as by rail travellers for the deceptively rural outlook that these afford. The vegetation which develops naturally alongside railways in Islington is influenced by the underlying substrate and the frequency and nature of management.
10	North London Line in Islington (west)	The various sections of active railway line crossing Islington are of immense importance to its wildlife, as their cuttings and embankments support a significant proportion of the borough's undeveloped land. The network supports an extensive mosaic of open and wooded habitats, valued by birds, mammals and insects, as well as by rail travellers for the deceptively rural outlook that these afford.
11	London Zoo	The zoo plays a significant role in the ecology of Regent's Park, providing an important refuge for many of the capital's native species. The landscape of the zoo can be considered an extension of the 'parkland' within Regent's Park; its habitats supporting many species of birds, invertebrates and mammals. House sparrow populations are declining rapidly, but London Zoo is a stronghold for these birds and has one of the largest populations in the capital. Nest boxes and feeding stations are sited to encourage the population to grow.
12	North London Line	This area is all that remains of the extensive 'wasteland' habitats of the former King's Cross Goods Yard, most of which has been redeveloped. The surviving habitat is still of importance in a borough context and links in with a larger area of trackside in Islington, known as Copenhagen

		Junction.
13	St Pancras Gardens	This old churchyard has had many headstones moved to the perimeter and only the larger important monuments left in situ. A few of these have a sparse covering of lichens and mosses. The site contains some fine mature trees particularly London plane *Platanus x hispanica*, common lime *Tilia x europaea* and poplar *Populus sp*. and diverse planted shrubberies.
14	Market Road Garden	This is a small garden adjacent to Caledonian Park. It includes the Hayward Adventure Playground and an area of parkland with mature trees. The playground has a small wildlife area, with resident hedgehogs and grey squirrels, and several colourful wild flowers in the seeded meadow area, including oxeye daisy *Leucanthemum vulgare* and musk mallow *Malva moschata*.
15	Freightliners Farm	Situated at Paradise Park in the heart of the Borough, Freightliners is Islington's only city farm and an important facility for local schools. There is an on-site classroom here with permanent staff, and a small wildlife area with a pond. Sheep, goats and dairy cattle all graze in the farm's grounds.
16	Claremont Square Reservoir	This small covered reservoir is viewable through its perimeter railings. The grassland on the top and sides of the reservoir supports a surprising diversity of wild flowers, including yarrow *Achillea millefolium*, common sorrel *Rumex acetosa* and an abundance of yellow composites. The locally uncommon spiked sedge *Carex spicata* is also present. At the base of the reservoir's sloping sides, various exotic shrubs have been planted, adding to the overall habitat value of the site.
17	Culpeper Community Garden	A former bomb site, the Culpeper Community Garden was created in the 1980s to provide underprivileged local residents with a facility to pursue horticultural interests. An area of communal allotments combines with a more decorative garden, part of which is managed for wildlife. Three ponds feature strongly, all of which support common amphibians and insects, including damselflies.
18	Claremont Close Lawns	In perhaps the most unlikely situation for a wildlife site, the lawns of Claremont Close are of importance for their diversity of wild flowers. Although the lawns are managed as amenity grassland, they include quantities of lady's bedstraw *Galium verum*, selfheal *Prunella vulgaris*, buttercups *Ranunculus spp.,* wild strawberry *Fragaria vulgaris* and goat's-beard *Tragopogon arvensis*.
19	St Mary's Church Gardens	The parish churchyard of St Mary's on Upper Street is a well-kept public garden with lawns, flower beds and many mature London plane *Platanus x hispanica* and lime *Tilia spp.* trees. Four species of ferns have been recorded here, growing in the damp shade behind perimeter tombstones, including lady-fern *Athyrium filix-femina*, which is extremely uncommon in inner London, and hart's-tongue *Phyllitis scolopendrium*.
20	Park Square Gardens	This is a large private square lying between Regent's Park and the heavily congested Marylebone Road. It contains a large number of mature trees, including London plane, lime, horse chestnut *Aesculus hippocastanum,* sycamore, copper beech *Fagus sylvatica var purpurea*, silver birch *Betula pendula*, and hornbeam *Carpinus betulus.*
21	Calthorpe Community Garden	This garden is located in a very built up area of London just off the Grays Inn Road. The site contains a number of scattered trees, including young beech, ash, hawthorn

		Crataegus monogyna, flowering cherry *Prunus sp.* and oak *Quercus robur*.
22	St Andrew's Gardens	This former churchyard is now managed as a small public park. Only the larger monuments have been left in place; headstones have been moved to the perimeter. Lawns, flower beds and shrubberies combine to make this a particularly attractive site.
23	St George's Gardens	This is an old churchyard site that is now managed as a public park. It contains many mature trees, particularly London plane, weeping ash, and common lime. There are areas of shrubbery which contain insect-attracting plants.
24	St James's Garden	This former churchyard is now a public garden. The garden contains a good number of mature trees. In addition there are extensive shrubberies, providing nest sites for birds.
25	Russell Square	This square is one of the largest in central London and contains many mature trees.
26	Lincoln's Inn Fields	This is the largest of the London squares, laid out by Inigo Jones in the 17th century. It is famous for its many specimens of London plane, some of them of great antiquity, possibly being amongst the first planted in this country.
27	Gordon Square	This is a small but very well used and typically urban, London square with numerous London plane trees.
28	Coram's Fields	This sizeable park is intended for children, and adults are permitted entry only if accompanying a child. Although this site is primarily aimed at providing sports facilities for children, it contains several features which ensure that visiting children and parents have plenty of opportunity for contact with nature.
29	Rochester Terrace Gardens	This small public garden has a good number of (mostly non-native) trees. Native shrubs have been planted around the perimeter; these will be allowed to develop into areas of scrub and hedges.
30	Bingfield Park	Bingfield Park is a relatively large open space consisting mainly of amenity grassland, and includes the Crumbles Castle Adventure Playground. At the eastern end of the park are some dense ornamental.
31	St Mary Magdalene Garden	This attractive park surrounds St Mary Magdalene Church in Highbury. It has a pleasant, secluded atmosphere, despite the proximity of the busy Holloway Road, providing a sharp contrast with the much more open character of nearby Highbury Fields.
32	Spa Green Garden	Situated opposite the Sadler's Wells Theatre on the former site of a popular 18th century tea-garden, this linear public garden is made up of amenity grassland, rose-beds and shrub borders.
33	Highbury Fields	The largest open space in Islington, Highbury Fields is primarily a recreation area. The idea for a park at Highbury was first mooted in 1850, originally to include an area of over 200 hectares. By the time it was opened in 1885, most of the intended land had already been built on and today's park represents the little that was saved from all-engulfing 19th century development.
34	St John's Gardens	This tiny park is the most southerly-placed site of nature conservation importance in Islington. It was formerly part of the graveyard of nearby St John's Chapel, but since 1881 has been set aside as 'a garden for the quiet enjoyment and

		refreshment of the dwellers in its densely peopled neighbourhood', according to the inscription near the park entrance.
35	Thornhill Square	Thornhill Square was built in the 1850s, being designed around St Andrew's Church at the northern end. It is one of the largest squares in Islington and possesses many densely planted shrubberies and mature trees
36	Lloyd Square	Built in 1828, Lloyd Square is fairly small and is privately managed by the local residents living in surrounding properties. It has a rather charming, unkempt feel which of course is just the right approach for encouraging wildlife.
37	Barnsbury Square	Barnsbury Square is another very attractively laid-out square with a high density of trees, almost enough to merit it being termed a 'woodland park'. The square has strong Roman associations, being built on the site of a military camp.
38	Wilmington Square	This is a very picturesque town square which has a pedestrian walkway rather than a road along its northern edge; an unusual feature resulting from the original developers running out of funding. Being south-facing this square benefits greatly as a sun-trap, and has been planted with a wide range of native trees and shrubs.
39	King Square Garden	Although not strictly a 'town square' of Regency or Victorian origins, this is one of the largest open spaces in the south of Islington borough and is overlooked by several tall residential estate buildings. A central playground, covered way and paved sitting-out area are surrounded by open lawns partitioned by borders and shrubberies. The high density of trees offers plenty of cover for common birds.
40	Moreland Primary School Garden	This small school nature garden is situated in the school's central courtyard. It includes a pond, a wildflower bank and a vegetable patch. There is no public access, but the garden is well used by the school for environmental education.
41	St Mary's Church of England School Garden	This small but attractive nature garden is a valuable educational amenity for St Mary's School. The garden includes a small woodland area and bramble scrub, which provide habitat for birds and other animals. A sizeable pond supports dragonflies and is well-used for pond-dipping.
42	Winton Primary School Garden	This small school nature has recently been refurbished. It contains a pond and dipping platform, and is well used by the school for environmental education. Access is for members of the school only, but there is a good view into the nature garden from the adjacent park.

Appendix 3 – Draft Green Performance Plan

DRAFT GREEN PERFORMANCE PLAN

A3.1 Introduction

The development comprises office accommodation and retail units at ground level. Sustainable design measures have been incorporated into the design and include the following:

- Commercial heating and cooling systems
- Mixed mode ventilation
- Photovoltaic panels
- LED lighting and daylight dimming control
- High efficiency facades/glazing
- Low air permeability

The development will be operated by the Regents Wharf Unit Trust who are experienced in operating commercial buildings in a sustainable and efficient manner.

A3.2 Performance Targets and Indicators

The energy usage and emissions of the building will be monitored by the implementation of this GPP. The following indicators will be monitored:

	Target
• Gas consumption	16.26 kW.h.m^{-2}/year
• Electrical consumption (regulated)	20.91 kW.h.m^{-2}/year
• Water consumption	5560 m^3/year
• CO_2 emissions	135.77 Tonnes CO_2/year

The energy and CO_2 targets have been derived from the thermal modelling of the development and including unregulated power requirements as per the CIBSE guidance. The water consumption is based on the design of the water systems.

Designations of specific tenanted areas will be known when the building is occupied. The full GPP will include targets broken down for each specific tenanted area.

The GPP will be implemented over a 3-year period. Interim targets will be provided for gas, electricity, LTHW, chilled water and domestic water services.

A3.3 Data Collection, Analysis and Reporting

The target/indicator information will be measured by electrical metering and heating/cooling energy meters. The metering will comply with the Building Regulations and Heat Metering Legislation. Meters readings will be recorded by and analysed by the building management energy specialist.

The metered data/indicators will be analysed against the target data and against historical energy usage to identify anomalies and improvements. The energy usage analysis will form the bans of reports.

Analysis of data will be carried out by the building management against the predicted energy usage, utilities usage and CO_2 emissions. The analysis will be included in a report which will be issued to the Landlord's energy specialist.

A3.4 Management and Monitoring

The GPP co-ordinator will be appointed by the Regents Wharf Unit Trust. The GPP co-ordinator will deliver the requirements of the GPP and produce the reporting documents.

The GPP process will be managed by the Regents Wharf Unit Trust building management team, who will be responsible throughout the lifespan subject to a change of management organisation.

It is envisaged that the GPP will be monitored quarterly and the meter readings recorded monthly. Annual reports will be provided to the council

A3.5 Arrangement for Addressing Performance

In the event that the targeted performance is not achieved at the end of the two year monitoring period the building management will appoint an energy specialist to carry out an analysis of the systems. The specialist shall utilise historical metering data and parameters recorded by the building management system (BMS) to assess the operation of the systems and to advise remedial works/recommissioning to improve the performance of the systems in line with the target parameters.