



Greggs Bakery / Twickenham

BREEAM Pre-assessment Report

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Energy & Environmental Consultants

BREEAM Pre-assessment Report

Greggs Bakery, Twickenham

For London Square

BREEAM UK 2018 New Construction Non-Domestic Buildings

Commercial Building – Office – Shell and Core Assessment

Date

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Executive Summary

This report provides a route to a minimum BREEAM score of 70% which will lead to an Excellent rating if minimum standards are also met. A number of additional credits have also been identified which may be sought in order to provide a margin over this score. Experience shows that this is good practice at this stage in the project.

The development proposals consist of the demolition of the existing former Greggs factory buildings and the construction of 65 apartments, 51 townhouses and a new 2-storey office block with 175m² GIA. This report primarily refers to the commercial element of this development but will cover any communal or common facilities which are provided for both residential and commercial aspects.

This report summarises the features and design criteria to be incorporated to achieve BREEAM *Excellent* certification for the project under the BREEAM New Construction 2018 scheme and assumes that the commercial space will be completed to a shell and core level with works to include the construction of the building sub, superstructure and external works and any core building services; with tenanted area fit out by others. It does not include for a typical Category A fit-out of the spaces which it is assumed will be by any future tenants.

It is proposed to achieve planning for the units based on the following Use Class E. For the purposes of this report, the pre-assessment has been completed based on the following use type: Commercial – Offices.

Based upon information available from the design team, this development is predicted to obtain the score below and the pre-assessment provides a route to achieving the required rating, although specific credits may be subject to change through the design development process.

| Scheme Assessment Type | BREEAM Pre-assessment Score |
|------------------------|-----------------------------|
| Commercial Office | 74.38% - Excellent |

Refer to Appendix A for the Pre-assessment Summary Document.

Appendix B includes a more detailed summary of the credit requirements.

Introduction to BREEAM

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for buildings, with over 260,000 buildings now certified. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building's environmental performance. Credits are awarded in ten categories according to performance. These credits are then added together to produce a single overall score on a scale of Pass, Good, Very Good, Excellent and Outstanding.

Aims of BREEAM

- To mitigate the impacts life cycle impacts of buildings on the environment.
- To enable buildings to be recognised according to their environmental benefits.
- To provide a credible, environmental label for buildings.
- To stimulate demand and create a value for sustainable buildings, building products and supply chains.

Objectives of BREEAM

- To provide market recognition to low environmental impact buildings.
- To ensure best environmental practice is incorporated in the planning, design, construction and operation of buildings and the wider built environment.
- To define a robust, cost effective performance standard surpassing that required by regulations.
- To challenge the market to provide innovative, cost effective solutions that minimise the environmental impact of buildings.
- To raise the awareness of owners, occupants, designers and operators of the benefits of buildings with a reduced life cycle impact on the environment.
- To allow organisations to demonstrate progress towards corporate environmental objectives.

The performance of a building is quantified by a number of individual measures and associated criteria stretching across a range of environmental issues as listed below:

- Management
- Health and Wellbeing
- Energy

- Transport
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution
- Innovation

BREEAM Rating Benchmarks

The BREEAM rating benchmarks for new construction projects assessed using the 2014 version of BREEAM are as follows:-

| BREEAM Rating | % Score |
|----------------------|----------------|
| Outstanding | ≥ 85 |
| Excellent | ≥ 70 |
| Very Good | ≥ 55 |
| Good | ≥ 45 |
| Pass | ≥ 30 |
| Unclassified | < 30 |

Table 2.1: BREEAM Rating Benchmarks

Each of these credits is awarded based on the available evidence and its compatibility with the specific requirements for each of the issues.

Within each category there are a number of credit requirements that reflect the options available to designers and managers of buildings. Credits are awarded where evidence has been provided to confirm that the specific requirements have been met. Each of the categories is given a further weighting which reflects the relative importance of the issues and the effect that they will have on the overall score (see Table 2.2 overleaf).

| Environmental Section | Weighting | | |
|-----------------------|------------------|---------------------|------------|
| | Fully Fitted Out | Shell and Core Only | Shell Only |
| Management | 11.0% | 11.0% | 12.0% |
| Health and Wellbeing | 14.0% | 8.0% | 7.0% |
| Energy | 16.0% | 14.0% | 9.5% |
| Transport | 10.0% | 11.5% | 14.5% |
| Water | 7.0% | 7.0% | 2.0% |
| Materials | 15.0% | 17.5% | 22.0% |
| Waste | 6.0% | 7.0% | 8.0% |
| Land Use and Ecology | 13.0% | 15.0% | 19.0% |
| Pollution | 8.0% | 9.0% | 6.0% |
| Total | 100.0% | 100.0% | 100.0% |
| Innovation | 10.0% | 10.0% | 10.0% |

Table 2.2: BREEAM 2018 Environmental Weightings

BREEAM Minimum Standards

To ensure that performance against fundamental environmental issues is not overlooked in the pursuit of a particular rating, BREEAM sets minimum standards of performance in key areas. These are shown in table 2.3 below:

| BREEAM Issue | Minimum Standards by BREEAM Rating Level | | | | |
|---|--|------|------------------------------------|--|--|
| | Pass | Good | Very Good | Excellent | Outstanding |
| Man03: Responsible Construction Practices | None | None | None | One Credit (responsible construction management) | One Credit (responsible construction management) |
| Man04: Commissioning and Handover | None | None | Criterion 11 (Building User Guide) | Criterion 11 (Building User Guide) | Criterion 11 (Building User Guide) |
| Man04: Aftercare | None | None | None | One Credit (commissioning – implementation) | One Credit (commissioning - implementation) |

| | | | | | |
|---|------------------------------------|--|--|--|--|
| Ene01: Reduction of Energy Use and Carbon Emissions | None | None | None | Four Credits (energy performance) | Six Credits (energy performance) and Four Credits (energy modelling and reporting) |
| Ene02: Energy Monitoring | None | None | One Credit (First sub-metering credit) | One Credit (First sub-metering credit) | One Credit (First sub-metering credit) |
| Wat01: Water Consumption | None | One Credit | One Credit | One Credit | Two Credits |
| Wat02: Water Monitoring | None | Criterion 1 only (water meter on the mains supply) | Criterion 1 only (water meter on the mains supply) | Criterion 1 only (water meter on the mains supply) | Criterion 1 only (water meter on the mains supply) |
| Mat03: Responsible Sourcing of Construction Materials | Criterion 1 only (timber sourcing) | Criterion 1 only (timber sourcing) | Criterion 1 only (timber sourcing) | Criterion 1 only (timber sourcing) | Criterion 1 only (timber sourcing) |
| Wst01: Construction Waste Management | None | None | None | None | One Credit |
| Wst03: Operational Waste | None | None | None | One Credit | One Credit |

Table 2.3: Minimum BREEAM Standards

Appendix A - BREEAM Pre-assessment Summary Document

Appendix B - BREEAM Detailed Pre-assessment Report

Management

Man01 - Project Brief and Design

Stakeholders (Project Delivery)

The client, design team and contractor will have defined roles and responsibilities and will contribute to the decision-making process from Concept Design Stage (RIBA Stage 2). This will ensure an integrated design process that will hopefully optimise the buildings' performance.

Stakeholder Consultation (Third Party)

Prior to the end of the Concept Design Stage (RIBA Stage 2) and as part of the planning process, all relevant third parties and stakeholders will be consulted. This will include: building users, FM staff, representative consultation groups from existing community, potential users of any shared facilities, existing partnerships and networks that have knowledge and experience working on existing buildings of the same type and local or national heritage groups. Where deemed relevant, local or national historic/heritage groups will also be consulted. As part of the planning process, consultation with the local community has taken place along with public exhibitions. The introduction of the commercial element within this development is a result of the consultation process.

BREEAM Advisory Professional (AP) (Concept and Developed Design)

A BREEAM Advisory Professional has been appointed from the Concept Design Stage of the office block (RIBA Stage 2) to facilitate the setting and achievement of BREEAM performance targets for the project. The BREEAM AP will also be appointed to monitor progress throughout the design process and formally report on progress. This is to ensure that any amendments through design development will not have a detrimental impact on the building achieving the targeted rating. A target rating of excellent has been set and a route to achieving this is set out within the pre-assessment in Appendix A.

Man02 – Life Cycle Cost and Service Life Planning

Capital Cost Reporting in terms of cost of the building in pounds per square metre will be available covering the construction (including preparatory works, materials, equipment and labour), site management, construction financing and insurance and taxes during construction but excluding costs relating to land procurements, clearance, design, statutory approvals and post occupancy aftercare. This data will be used by the BRE to inform on future BREEAM performance benchmarking.

Man03 – Responsible Construction Practices

The project will aim to be managed in an environmentally and socially considerate and accountable manner by achieving all 6 available credits within this section.

Temporary Site Timber

It is a pre-requisite for all temporary site timber to be legally harvested and traded timber. This will include any timber used for site hoarding or shuttering.

Environmental Management

The Principal Contractor and demolition contractor will operate an ISO 14001 Environmental Management System. Best practice pollution policies and procedures will be implemented on site in line with Pollution Prevention Guidelines: Working at Construction and Demolition Sites: PPG6.

BREEAM Advisory Professional (Site)

A BREEAM AP will be appointed to oversee the construction phase to ensure ongoing compliance with the performance criteria by attending key meetings, site visits and providing regular updates/reports. Their role will be to monitor construction progress against the performance targets, advise on the impact of any changes and monitor and coordinate the gathering of site evidence.

Responsible Construction Management

The project will be registered under the Considerate Constructor Scheme prior to commencing on site. There is a commitment to achieve 'Performance Beyond Compliance' with a score of 35 and a minimum of 7 scored under each section. The construction process will be managed to minimise nuisance and inconvenience during the build.

Utility Consumption

The Principal Contractor will be required to monitor and record energy consumption (kWh or litres of fuel) to report the total carbon dioxide emissions (kg/CO₂) and water consumption (m³) from construction plant, equipment (mobile and fixed) and site accommodation during the construction works. Targets will be set for the project of 350kgCO₂e/£100k for energy consumption and 8m³/£100k for water consumption during the construction process. By monitoring these it will enable company targets to be set to minimise water usage and CO₂ emissions from site activities.

Transport of Construction Materials and Waste

The Principal Contractor will be required to monitor and record data on transport movements from the delivery of the majority of construction materials to site and construction waste from site. Using this collated data, the total fuel consumption (litres), total carbon dioxide emissions (kg/CO₂e) and total distance travelled (km) will be reported to the BRE for future benchmarking.

Man04 – Commissioning and Handover

Commissioning – Testing, Schedule and Responsibilities

A schedule of commissioning and testing will be produced to identify and include a timescale for any commissioning and re-commissioning works and testing and inspection of the building fabric. This will identify the appropriate standards to which the commissioning will be conducted in accordance with. An appropriate member of the design team will be appointed to monitor and programme the commissioning process. This is to ensure that the building services are working efficiently and installed to the correct settings.

Training Schedule

Appropriate training will be provided to the future building users and facilities management team upon completion of the building; covering the building design intent, aftercare provision, demonstration of the installed systems and maintenance requirements. This will be tailored to the needs of the building occupants, to ensure they understand how to use and manage the building effectively and efficiently.

Building User Guide (BUG)

A compliant Building User Guide will be produced, separate to the O&M manuals. This will be a dedicated building/site specific guidance for the non-technical building user to help them access, understand and operate the building efficiently and in a manner in keeping with the original design intent. This will be passed to the fit-out contractor to complete for tenanted areas.

Health and Well-being

Hea01 – Visual Comfort

These credits are to ensure that daylighting, artificial lighting and occupant control are considered at the design stage to ensure best practice in visual performance and comfort for building occupants.

Daylighting

The buildings will be designed to ensure natural daylighting is optimised thereby improving the quality of life for occupants and reducing the reliance upon artificial lighting. Daylight Calculations will be carried out as soon as possible to show that good practice daylighting levels have been met. This includes the requirement for at least 80% of the relevant areas to have a daylight factor of 2%.

View Out

95% of the floor area in 95% of relevant areas will be provided with an adequate view out, being either within 8m of an external wall with a window/opening which forms at least 20% of the surrounding wall area, or where depths are over 8m the window to wall ratio will be in accordance with Table 1 of BS 8206. An external view out offers positive effects on the health and wellbeing of occupants.

External Lighting

All lighting installed will be designed to meet the required BREEAM standard i.e. BS EN 12464-2:2014 for external lighting.

Hea04 – Thermal Comfort

A full dynamic thermal model analysis will be carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling to ensure that appropriate thermal comfort levels are achieved through design and controls will be selected to maintain a thermally comfortable environment for occupants of the building in accordance with the criteria set out within CIBSE Guide A. The thermal model will include an allowance for a projected climate change.

Hea05 – Acoustic Performance

Paragon Acoustics have been appointed to act as a Suitably Qualified Acoustician to advise on performance criteria and set out testing regimes for indoor ambient noise levels for non-residential areas. Any recommendations will be incorporated within the design. Pre-completion testing will be carried out to ensure the performance standards have been met.

Hea06 – Security

To promote secure use and access to and from the building a Security Specialist (e.g. ALO or CPDA) has been consulted during the Concept Design Stages (RIBA Stage 2) to carry out a Security Needs Assessment of the proposed site and their recommendations and comments incorporated into the final design.

Hea07 – Safe and Healthy Surroundings

Outside Space

An adequately sized outdoor space will be provided for building users of the commercial unit as an external amenity area with seating. This will be located behind the commercial unit, adjacent to the cycle store.

Energy

Ene01 – Reduction of Energy Use and Carbon Emissions

Credits are awarded for buildings designed to minimise operational energy demand, primary energy consumption and CO2 emissions. These credits recognise improvements in energy performance of the building above that of the national building regulations. A calculation of the energy performance ratio (EPR) of the building compared to a benchmark level will determine the number of credits from a possible twelve maximum. The SBEM Brukl document will provide the information required to establish the building EPR rating. 6 credits currently targeted and the minimum 4 credits required for an excellent rating.

The Desco Energy Strategy report ref: 1823-50-RPT-05-Rev 5 sets out the proposed strategy for a heating and cooling system using VRF air conditioning and air source heat pumps. Renewable energies will be provided in the form of high efficiency photovoltaic panels. For further details please refer to the Desco Energy Strategy report.

Summary of Proposals:

| | |
|-----------------------------|--|
| Heating and Cooling System: | Variable refrigerant flow (VRF) air conditioning |
| Domestic Hot Water: | Electric point of use hot water heaters |
| Ventilation: | Mechanical ventilation with heat recovery |
| Insulation: | Enhanced u-values to all elements as set out below |
| Air Tightness: | APR = 3m ³ /m ² /hr @ 50pa |
| Lighting: | High efficiency lamps throughout |
| On Site LZC Technology: | Air source heat pumps and photovoltaics |

Ene02 – Energy Monitoring

This credit is to encourage the installation of sub-metering that facilitates the monitoring of operational energy consumption.

Sub-metering of Major Energy Consuming Systems

All major energy consuming systems will be sub-metered or monitored by BEMS as follows (where applicable): space heating, domestic hot water, lighting, small power, humidification, cooling, major fans, renewable or low carbon systems, controls and other major energy consuming items.

Sub-metering of High Energy Load and Tenancy Areas

Each incoming energy supply will be sub-metered or monitored by BEMS. These will be sub-metered by floor plates or tenancy/function areas.

Ene03 - External Lighting

External lighting will be designed to have an average luminous efficacy of not less than 70 luminaire lumens per circuit watt and be controlled to prevent operation during daylight hours through the use of daylight sensors and time clocks. Presence detection will be specified for areas of intermittent pedestrian traffic.

Ene04 - Low Carbon Design

An initial Passive Design Analysis and Low Zero Carbon Feasibility Study (LZC) has been carried out as part of the planning process. This identifies the opportunities for incorporating passive design measures such as thermal insulation, air tightness, maximised daylighting and passive solar gain in order to reduce the total heating and cooling demand of the building. Renewable energies will be specified in accordance with the recommendations of the LZC Study to ensure clean, green energy is provided to the building where feasible. The LZC currently recommends the use of an air source heat pump for heating and cooling and high efficiency photovoltaic panels delivering the building's electricity. The building is unable to be naturally ventilated due to external noise and insufficient cross ventilation.

Below is a summary of the predicted carbon dioxide savings resulted from passive design measures and the use of on-site renewable energy.

Summary of regulated carbon dioxide savings from each stage of the Energy Hierarchy:

| | % regulated carbon dioxide savings |
|---|---|
| Savings from energy demand reduction | 20% |
| Savings from ASHP (Be Lean): | 15% |
| Savings from renewable energy (Be Clean): | 13% |
| Total cumulative savings (Be Green): | 48% |

Travel

Tra01 – Transport Assessment and Travel Plan

A travel plan has been developed for the site at pre-planning stage which gives consideration to a range of transport options for building users to encourage a reduction on the reliance on forms of travel that have the highest environmental impact. It includes a site-specific assessment on existing travel patterns; the travel patterns and transport impact of future building users; current and future facilities for pedestrians, cyclists and disabled users and public transport links. From this a package of measures has been provided to encourage the use of more sustainable modes of transport and movement of goods and people during the building's operation and use. These include car parking restricted for blue bay parking only, cycle storage to encourage cycling, promotion and free membership to a car club and a travel pack provided to each resident and building user promoting the local transport network and public services.

Tra02 – Sustainable Transport Measures

This credit is to encourage development in proximity of good public transport networks and amenities, helping to reduce transport related pollution and congestion. It also seeks to promote more sustainable modes of travel such as walking, cycling, public transport, car sharing and electric cars.

Up to 10 credits are available based upon how many sustainable transport measures have been incorporated within the scheme. The number of points required is related to a building's Accessibility Index (AI) i.e. more sustainable transport measures will be encouraged where there are poor transport links. This site has an AI of 9.51 and as such falls within the lowest scoring bracket. In the table below, the available transport measures have been summarised, along with some comments on how or if the measure can be/will be achieved and confirmation of the points scored for each item to be implemented.

| Transport Option | Sustainable Transport Measures | Comments | Points Awarded |
|------------------|---|---|----------------|
| 1 | Existing AI of ≥ 8 | The existing AI has been calculated using the Transport for London Planning Information Database. The AI is confirmed as 9.51 and the PTAL for the site is 2. | 1 |
| 2 | An increase in the AI has been achieved through additional or enhanced services or a dedicated service or bus route is provided | There are no improvements proposed to the existing services which are sufficient to serve the site. | 0 |

| | | | |
|----|--|---|---|
| 3 | Provide a public transport information system in a publicly accessible area to allow up-to-date information on public services and transport infrastructure | This will not be provided as part of the shell and core fit-out | 0 |
| 4 | Provide electric recharging stations of a minimum of 3kW for at least 10% of the total car parking capacity for the development | The car parking space allocated to the commercial unit, will be provided with infrastructure for future installation of car charging point i.e. cabling and network capacity will be made available | 1 |
| 5 | Provision and promotion of car share group, 5% of total car parking to be priority spaces for car sharers and to be located nearest the development entrance | This cannot be provided as the car parking space allocated to the commercial unit will be a blue badge parking space. | 0 |
| 6 | Make improvements, in consultation with the LA, to the either the existing pedestrian routes or cycle network | Improvements to the existing footways and cycle networks are not proposed | 0 |
| 7 | Install compliant cycle storage spaces | The space is designated as an office space and as such will require 1 cycle space per 10 staff. Based on a NIFA of 175m ² and assumed use as a general office, a default occupancy rate of 0.111 has been used to calculate building user numbers of 20. This means that the minimum cycle provision of 4 compliant spaces must be applied. These spaces will be covered and accessible to the users of the commercial unit. The cycle storage will be provided in the form of secure, easily accessible cycle racks with an overhead covering | 1 |
| 8 | Install two compliant cyclists' facilities – showers, changing facilities, lockers or drying space | Cyclist facilities are proposed in the form of a shower and changing space | 1 |
| 9 | At least 3 existing amenities are present where relevant for a Building Group | It is confirmed that the building will be within 500m of a food outlet and access to cash (Tesco Express on Heath Road) and Pharmacy (on The Green) | 1 |
| 10 | Ensure at least one new accessible amenity is provided | None to be provided | 0 |

| | | | |
|----|--|---|---|
| 11 | Implement one site-specific improvement measure, not listed above, in line with the recommendations of the Travel Plan | No additional sustainable transport improvement measures are proposed | 0 |
|----|--|---|---|

The above table shows that 5 of the available points will be achieved, equating to 5 credits for this issue. A possible additional credit may be available for the provision of up to date travel information.

Water

Wat01 – Water Consumption

To reduce the consumption of potable water for sanitary use in buildings from all sources through the use of water efficient components and water recycling systems, through the specification of low flush toilets/urinals, low flow rates for taps/showers and water efficient dishwashers.

A 50% improvement over the baseline building water consumption is targeted.

Wat02 – Water Monitoring

Water consumption will be monitored and managed in order to encourage reductions in use. A pulsed water meter will be fitted to the mains water supply to the commercial unit and each tenancy area will be sub-metered.

Wat03 – Major Leak Detection & Prevention

Water leak detection and prevention measures will be adopted to reduce the impact of water leaks which may otherwise go undetected.

A compliant water leak detection system will be installed on the mains water supply within the building and between the building and the utilities meter. This will alert the building occupants when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time (programmable to suit the building occupier's water consumption needs).

Flow control devices in the form of sanitary supply shut off will be installed on the water supply to each WC area/facility (regardless of whether areas are to be fitted out or not). These will generally be controlled by presence detectors which will switch the water on when movement is detected within an area and turn it off when that presence is removed. This will reduce the risk of leaks and flooding through appliances such as taps being left running or dripping.

Materials

Mat01 – Life Cycle Impacts

A life cycle analysis of the building has been completed at Concept Design to establish how the building performs against a BREEAM benchmark building. Options appraisals have been carried out on at least 3 different superstructure design options. Options appraisals have also been completed to advise on the substructure and hard landscaping constructions. Where required a detailed life cycle analysis will also be completed at Technical Design to review further construction options and their impact on the embodied carbon over the life cycle of the building.

Mat03 - Responsible Sourcing

The principal contractor will have a sustainable procurement plan and materials will be sourced in line with this, for instance selecting local suppliers or those who can show responsible sourcing through CoC or EMS certification.

All timber and timber products used on the project will be legally harvested and traded timber with Chain of Custody certification (e.g. FSC, PEFC). All non-timber products will be sought to be from suppliers/manufacturers with Environmental Management System (EMS) certification (e.g. ISO 14001, BES 6001). Elements covered include ceilings (including finishes), doors and windows, floors (including finishes), insulation, internal partitions/walls (including finishes), roof, structure (primary and secondary), external walls, building services and hard landscaping.

Mat05 – Designing for Durability and Resilience

The exposed elements of the buildings and landscape will be designed to be durable or incorporate protection measures in order to minimise damage, wear and tear and the frequency of replacement, maximising the materials optimisation. This includes the:

- a) Protection from the effects of high pedestrian traffic in main entrances, public areas and circulation spaces (through the specification of hardwearing and easily washable floor finishes, barrier matting to entrances, kick plates to doors, robust wall constructions, etc).
- b) Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas (protection rails to walls, impact protection to doors)
- c) Protection against, or prevention from, any potential vehicular collision where vehicular parking and maneuvering occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas (specification of bollards/barriers/raised kerbs, robust external wall construction up to 2m).
- d) Protection from potential malicious damage to building materials and finishes in public and communal areas.

Suitable building materials will be specified for the locations or measures incorporated which will limit material degradation due to environmental factors.

Waste

Wst01 - Construction Waste Management

The development will minimise the impact of construction waste on the environment through the promotion of resource efficiency via effective management and the reduction of waste.

An initial pre-demolition audit will be completed prior to any strip out or demolition works. This will be used to determine the potential for refurbishment, reuse or recovery. The audit will identify the materials within the building, their amount and their potential waste management routes. At least 80% by volume or 90% by tonnage of demolition waste will be diverted from landfill. It is proposed that any bricks or concrete demolition waste will be crushed on site and used to backfill. Any insulation, plasterboard, mixed waste and hard landscaping will be collected by a waste management contractor for off-site recycling where possible. Copper and metal will be set aside and sold as scrap metal. Timber from floors, structural timber and internal joinery will be reclaimed where possible, with any remaining timber sent for shredding/firewood.

The Contractor will prepare a compliant Resource Management Plan (RMP/ SWMP) setting out waste targets, procedures for minimising waste and for monitoring and recording site waste. Waste targets for non-hazardous construction waste (excluding demolition and excavation waste) will be targeted at no more than 3.4m³ or 3.2tonnes per 100m² of GIFA. 70% by volume or 80% by tonnage of non-hazardous construction waste will be diverted from landfill.

Wst03 – Operational Waste

The development will provide adequate space for the provision of dedicated storage facilities for a building's operational-related recyclable waste streams to encourage the diversion of waste from landfill or incineration.

A minimum of 2m² per 1000m² NIFA will be provided for buildings of less than 5000m² for the storage of recyclable waste. This is in addition to the provision of adequate storage for general waste.

A minimum space of at least 3m² (2m² of which will be for recyclable waste) will be allocated for the commercial space. It is assumed, at this stage, that the end use of the building will be such that a compactor/baler or compost facilities are not required. A bin store sufficient for 3 x 1100 litre wheelie bins is currently proposed.

Wst04 – Speculative Finishes

Floor and ceiling finishes will only be installed to the core areas unless specifically agreed with the tenants.

Land Use and Ecology

LE01 - Site Selection

The proposed building footprint is located more than 75% on previously occupied or developed land. The site was formerly occupied by Greggs Bakery with a number of buildings including offices, sheds, production buildings, two tall silos and hard standings. The site is currently nearly entirely developed and a brownfield site.

A credit is also available where the site is significantly contaminated and requires remediation. Initial ground investigation works confirm there is likely to be no ground contamination and therefore it is doubtful the requirements of this credit will be met.

LE02 – Identifying and Understanding the Risks and Opportunities for the Project

A Suitably Qualified Ecologist has been appointed during the very early design stages to complete a Phase 1 habitat assessment. The survey showed the site is generally of low ecological value consisting of buildings and hard standing with the exception of some buddleia, ivy and bramble.

Although the site is of low ecological values, the survey shows that there is a low risk of bats roosting and also some scope for nesting birds. Nesting birds a protected species under the Wildlife and Countryside Act 1981 and therefore building demolition will take place outside the bird nesting season or the building inspected by an ecologist prior to demolition. Toolbox talks will be given to site operatives in relation to any ecological issues. Any nests found will be reported to the ecologist.

The development bounds the River Crane which supports a variety of protected and notable species. Therefore, appropriate measures will be taken to protect them from pollution during the construction works. These procedures will be set out within the Construction Management Plan and will include limiting lighting, construction dust and noise so as not to cause disturbance to nearby wildlife and habitats. Construction activities will be appropriately managed in line with current best practice to minimise pollution from surface water run-off to nearby watercourses.

LE03 – Managing Negative Impacts on Ecology

The proposed development intends to demonstrate a 'neutral' impact on the ecological value of the site. This calculation will be demonstrated by the Suitably Qualified Ecologist commissioned to carry out the BREEAM specific ecological assessment.

LE04 – Change and Enhancement of Ecological Value

A suitably Qualified Ecologist has been appointed to make recommendations for the enhancement of the site ecology. Landscape proposals will include native species in new landscape planting, the creation of diverse green roofs and the installation of bird nesting and bat roosting provision and stag beetle loggeries. Improvements are also proposed to the River Crane as suitable locations. The scheme overall will show a positive change in the ecological value of the site through enhancement measures.

LE05 – Long Term Ecology Management and Maintenance

During the construction phase, the contractor will monitor and report on the effectiveness of the ecological management, monitoring, protection and remedial measures. All relevant UK and EU legislation relating to the protection and enhancement of ecology will be complied with during the design and construction process. The contractor will appoint a Biodiversity Champion to ensure detrimental impacts on the site diversity are minimised in line with the Ecologist's recommendations, train workforce on how to avoid damaging the site ecology, record actions taken to protect biodiversity and programme site works to minimise disturbance to wildlife.

A 5-year landscape and ecology management plan will be developed in accordance with BS 42020:2013 to ensure the landscaping and ecology is maintained appropriately.

Pollution

Pol02 – Local Air Quality

It is assumed that all heating and hot water will be supplied by non-combustion systems such as electricity and therefore the credits are awarded on this basis. The current proposal is for an air source heat pump.

Pol03 – Flood and Surface Water Management

The aim of this category is to avoid, reduce and delay the discharge of rainfall to watercourses and public sewers, thereby minimising the risk and impact of localized flooding, through the use of sustainable drainage systems (SuDS).

Flood Resilience

The Environment Agency Flood Risk map shows that the site is classified as being in Zone 1 with a corresponding low annual risk of flooding. A site-specific flood risk assessment has been carried out and this shows that the site is of low risk of flooding from all other sources including surface water, ground water, sewers and any artificial water sources such as reservoirs or canals.

Surface Water Run-Off – Rate

This development will incorporate drainage measures to ensure a reduction in the peak rate of run-off of at least 30% from that pre-development and the design will incorporate an allowance for climate change. The drainage strategy includes the use of green roofs and permeable paving as complimentary sustainable drainage measures. The surface water drainage will have run off will discharge through a combination of infiltration and a pumped outfall into the River Crane.

Surface Water Run-Off – Volume

The impermeable area of the site will be decreased through the development and therefore this should be achieved by default.

Minimising Watercourse Pollution

In areas of low risk source of water pollution, an appropriate level of pollution prevention treatment will be provided using SuDs techniques. In areas at high risk of contamination or spillages of substances such as petrol or oil, separators will be installed in surface water drainage systems, although there are no high-risk areas currently proposed within the development. All water pollution systems will be designed and installed in accordance with the recommendations of the Pollution Prevention Guideline 3 (PPG3) and/or where applicable the SuDs manual.

Pol04 – Reduction of Night Time Light Pollution

Any external lighting will be designed in accordance with the ILP Guidance Notes to ensure it is concentrated in the appropriate areas and to minimise upward lighting, reducing unnecessary light pollution and nuisance to neighbouring properties. All external lighting will be automatically switched off between the hours of 23:00 and 07:00, with the exception of security and safety lighting, which will be switched to compliant lower levels during these periods. Any illuminated advertisements will be designed in accordance with ILP PLG05.

Pol05 – Noise Attenuation

There are residential/noise sensitive buildings within an 800m radius of the site. An Acoustician will be appointed to undertake a Noise Impact Assessment and advise on any attenuation measures that may be required should the noise levels exceed the minimum BREEAM requirements. In order to comply, noise levels from the proposed buildings should not be at least 5dB lower than the background noise levels throughout the day and night. The acoustician will identify the maximum levels to which any plant must meet or be attenuated to.