

Victoria Transport Interchange 2

BREEAM Retail 2006, BREEAM Offices 2006, and Code for Sustainable Homes 2008
Pre-Assessment Summary Report

Applications 1 and 3

Land Securities
September 2008

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Executive Summary



1 Introduction

1.1 Background

Faber Maunsell's Sustainable Development Group has been commissioned by Land Securities to undertake a pre-assessment using the BREEAM Offices 2006, BREEAM Retail 2006 and Code for Sustainable Homes 2008 for the proposed development of Victoria Transport Interchange 2 (VTI2).

This report provides a summary of the pre-assessment exercise and identifies those credits which the design team and client have targeted to pursue at detailed design stage and achieve in the formal Design and Procurement assessment to be undertaken at detailed design stage.

1.2 Development details

The VTI2 application site encompasses land to the north of Victoria Station. The VTI2 Site is bounded by Bressenden Place to the north and east, Victoria Street to the south and Buckingham Palace Road to the west.,.

The proposed development comprises the demolition of the existing buildings on site and the comprehensive redevelopment of the site including new public realm and pedestrian routes and a mixed use development comprising four new buildings with 79,497 m² of offices (Use Class B1), 11,799 m² of retail (Use Class A1-A5) and 31,006 m² of residential development (Use Class C3) and associated highways, utilities and other ancillary works.

The location of the different buildings across the site is shown in Figure 1.



Figure 1: VTI2 Masterplan Scenario 3 (Planning Application boundaries 1 and 3).

1.2.1 Details of the office development

A key part of the development is to provide high quality office and residential accommodation in the heart of Victoria, adjacent to Victoria Station. Buildings 6a, 6b and 7a are to provide predominantly office space. The proposed area of office use within VT12 amounts to 79,497 m² net internal area.

1.2.2 Details of the residential development

A total of 31006 m² of net internal area of residential space is proposed as part of the development amounting up to some 170 dwellings, located in building 5.

Table 1a provide the split between different unit sizes for the residential building.

Table 1a: VT12 Development Schedule for Residential Units in building 5

Type	No. of units
Studios	16
1 Bed	46
2 Beds	65
3 Beds	23
Penthouse 1 bed	3
Penthouse 2 bed	1
Penthouse 3 bed	13
Penthouse 4 bed	3
Total	170

1.2.3 Details of the retail development

The proposals include provision of a number of retail facilities of A1 - A5 uses, distributed across the whole site on a maximum of two levels above ground.

2 Assessment Process

2.1 Overview of BREEAM

BREEAM (Building Research Establishment Environmental Assessment Method) seeks to minimise the adverse effects of new buildings on the environment at global and local scales, whilst promoting healthy indoor conditions for the occupants. The environmental implications of buildings are assessed and compared with good practice by independent assessors.

BREEAM is the BRE's environmental rating scheme for new, refurbished and operational commercial and public buildings including offices, retail and educational buildings.

BREEAM Retail provides a tailored assessment approach as a development is only assessed against the criteria that are under the influence of the assessment stakeholder. For example, where a development has no car parks, all assessment credits relevant to car parks will be filtered out of the scheme before conducting the assessment.

An overall rating of the building's performance is given using the terms Pass, Good, Very Good or Excellent. This is determined from the total number of BREEAM criteria met and their respective environmental weighting.

2.2 Overview of Code for Sustainable Homes

The Code for Sustainable Homes is an environmental assessment system for new housing in England which was introduced in April 2007 and based on the BRE's EcoHomes scheme. The Code assesses a development's environmental performance against a set of criteria under nine key categories.

The Code awards a rating to each dwelling type within the development from a scale consisting of Levels 1 to 6. The rating depends on whether the dwellings meet a set of mandatory standards for each level, as well as an overall score.

Mandatory requirements exist under the following credits:

- Energy;
- Water;
- Embodied Impacts of Construction Materials;
- Surface Water Runoff;
- Construction Site Waste Management;
- Household Waste Storage Space and Facilities.

The credits achieved for each dwelling type are then multiplied by the environmental weighting factor for each category to calculate the number of points achieved.

2.3 Summary of BREEAM 2006 and Code for Sustainable Homes 2008 Pre Assessment, VT12

Faber Maunsell's Sustainable Development Group has been commissioned by Land Securities to undertake a Design and Procurement pre-assessment for the retail, offices and residential units within the VT12 development in Victoria, London. Faber Maunsell's role was to identify and "set the route" to achieving the required rating and to inform the planning application.

2.3.1 Target ratings

The target ratings for the development are as follows:

- **BREEAM Offices 2006** **Excellent**
- **BREEAM Retail 2006** **Very Good**
- **Code for Sustainable Homes 2008** **Level 3**

2.3.2 VT12 Pre-Assessment

A series of building specific pre-assessment meetings were undertaken from April to June 2006 to discuss each building in turn and identify those credits that will be targeted to achieve based on current design intent and those which have potential to be achieved, if changes to the current design were implemented. The credit requirements of each credit were also discussed. These meetings included a review of the buildings performance within the August 2007 Victoria Transport Interchange 1 application (VT11) and an update to the performance in line with the design changes being implemented in the VT12 application. Following these meetings detailed pre-assessment guidance reports were produced for each building identifying those credits currently being targeted, based on current design intent and those which have potential to be achieved.

This report provides a summary of the pre-assessment exercise and reports those credits which the design team and client has targeted to pursue at detailed design stage and aims to achieve in the formal Design and Procurement assessment to be undertaken at detailed design stage.

It should be noted that the final rating achieved in a certified BREEAM assessment will be dependent on the provision of satisfactory evidence for each credit.

2.3.3 Buildings under assessment

The relevant assessment methodology for each building is as follows:

BUILDING	ASSESSMENT SCHEME		
	Code for Sustainable Homes	BREEAM Office	BREEAM Retail
5	Y		Y
6a		Y	Y
6b		Y	Y
7a		Y	Y

2.3.4 BREEAM Retail Assessment Scope

As mentioned above, in BREEAM Retail assessments the credits are filtered according to the type of retail development, level of fit out, and associated areas included such as delivery yards and car parks so that those included in the final assessment are relevant to the development in question.

A filtering exercise has been undertaken for each building within the development to enable relevant credits to be allocated for the assessments. The key influence on the scope of the assessment is that the retail units are only being fitted out to shell level, and no heating ventilation or air conditioning is to be provided. This will be carried out by the tenants at fit-out stage. In addition, only mains water supply connection is to be provided with sanitary fittings to be supplied by the tenant. The limited scope of works is reflected in the number of credits

selected as applicable to assess the scheme by. It can be seen within Appendix A1 that there are a larger number of Office credits compared to BREEAM Retail.

2.3.5 Code for Sustainable Homes Scope

Code for Sustainable Homes requires that groups of dwellings that share the same features are assessed together under a “Code Dwelling Type”, reducing the repetition of assessment that would otherwise be required at the individual dwelling level. For the purposes of the VT12 pre assessment a worst case assumption has been assumed by totalling the scores for the worst performing flat in each of the Code assessment categories discussed in Section 4 below.

3 Performance BREEAM Review

3.1 Management

All buildings on site are targeting 100% of the credits available under the Management section for BREEAM Offices and Retail.

Land Securities have committed to comply with the Considerate Constructors Scheme (CCS) and achieve formal certification. It is targeted to go beyond best practice site management principles and achieve a CCS score between 32 and 40, therefore all available credits are to be targeted under BREEAM credit M4.

BREEAM aims to recognise and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption, waste management and pollution. This is assessed under credit "Construction Site Impacts" credit M5 under BREEAM Offices and Retail. Land Securities have committed to implementing at least 6 of the environmentally sound practices recommended by BREEAM on site. In addition, they have committed to ensuring all site timber used during the construction phase will be responsibly sourced. Therefore all credits are to be targeted.

Compliant with BREEAM Offices and BREEAM Retail requirements a Building Users Guide will be developed for the offices and retail elements separately on site in line with BREEAM credit M12.

3.1.1 BREEAM Offices Specific Credits

Compliant with BREEAM Offices credit M1, an appropriate team member will be appointed to monitor commissioning on behalf of Land Securities to ensure commissioning will be carried out in line with current Building Regulations and best practice. A specialist commissioning agent is to be appointed for complex systems such as mechanical ventilation, building management systems and renewable energy sources. In addition, Land Securities have committed to ensuring seasonal commissioning is carried out during the first year of occupation. Therefore all available credits are to be targeted.

3.1.2 BREEAM Retail Specific Credits

BREEAM Retail has additional requirements which go beyond those of BREEAM Offices; this includes designation of an individual with environmental responsibility for monitoring and managing environmental impacts during the construction phase as assessed by credit M7. Land Securities have confirmed that this credit will be achieved and the contractor will be required to employ an individual on site to report on and influence environmental issues.

In line with credit M13, building user education is to be provided to the building occupiers of retail units on site. This training will cover the appropriate use of building controls and procedures to maintain efficient building operation, minimise operational environmental impacts, and will be based on the content of the building user guide.

BREEAM Retail also assesses whether the developer has effective environmental policies, environmental purchasing policies and environmental management systems (EMS) in place. Land Securities currently have environmental policies, environmental purchasing policies and an EMS which have been reviewed by Faber Maunsell and meet the requirements of BREEAM. If the contractor has been appointed at the time of the full assessment the contractor must also demonstrate that they have an environmental purchasing policy which meets BREEAM requirements.

3.2 Health and Wellbeing

The performance of the buildings under the Health and Wellbeing section vary under each assessment scheme and therefore are discussed separately in the sections below.

3.2.1 BREEAM Offices Specific Credits

The office element of the developments performs well under the Health and Wellbeing category with at over 69% of available credits being achieved for all buildings on site.

Credit HW3, Glare Control aims to reduce problems with glare in internal occupied areas. In line with BREEAM occupant glare control systems will be provided on each building on site.

For each building, it has been confirmed that high frequency ballasts are to be specified on all fluorescent and compact fluorescent lamps within the development as required under credit HW 4, High Frequency Lighting. This credit aims to reduce health problems related to high frequency ballasts. To optimise the level of occupant control over lighting within each workspace, lighting in all occupied areas will be zoned to allow separate control in line with credit requirements of HW6, Lighting Zones.

All internal and external lighting levels will be designed in line with best practice for suitability and visual comfort as defined by credit HW 5, Internal and External Lighting Levels. Lux levels for principal function areas will be in line with CIBSE Code for Lighting 2002 and its 2004 Addendum; in areas where computer screens are regularly used the lighting design will comply with CIBSE Lighting Guide 7; the external lighting levels are to be specified in accordance with CIBSE Lighting Guide 6.

All office buildings on site will have ventilation rates provided at a rate of over 12 litres per second in accordance with British Council for Offices Best Practice and BREEAM Offices credit HW 11.

Thermal comfort modelling is to be undertaken, in line with credit HW 14, Thermal Comfort. In compliance with BREEAM credit requirements, thermal modelling is to be carried out using software compliant with CIBSE AM 11. Furthermore, credits HW5, Thermal Zoning is predicted to be achieved as the heating controls within the office floors will be zoned to allow separate control of each perimeter area and central zone.

Credit HW 16, Microbial contamination aims to ensure that building services are designed and maintained to avoid risk of Legionellosis. In compliance with this credit all water, heating, ventilation and air conditioning systems are to be designed to meet the requirements of Health and Safety Executive (HSE) Approved Code of Practice (ACoP) and Guidance L8.

In line with credit HW17 each office's building design will be designed to enable indoor ambient noise levels fall within the specified BREEAM ranges of 45 – 50 dB L_{AeqT} .

3.2.2 BREEAM Retail Specific Credits

Within the retail units on site ventilation rates are to be provided in line with CIBSE Guide B2 "Ventilation and air-conditioning". As this is a shell level assessment the ventilation plant is to be specified and installed by the tenant. Therefore, to ensure this credit is achieved, it will be a requirement within the Tenant Handbook that fresh air is provided within all units at a rate in line with this requirement. On this basis credit HW 11, Ventilation Rates will be targeted.

Consistent with the Offices assessment, all water and HVAC (heating ventilation and air-conditioning) systems provided by the team will be designed to meet the requirements of HSE Approved Code of Practice (ACoP) and Guidance, L8 and therefore credit HW 16 is predicted to be achieved. Where these elements are not being fitted out as part of the works it will be a tenant requirement, incorporated into the Tenant Handbook to achieve these standards.

3.3 Energy

A key feature of the development is the provision of an on site energy centre which will supply heating, cooling and electricity to the VT12 development. The energy centre will include a gas fired combined heat and power plant linked to an absorption chiller and the Pimlico District Heating scheme. Photovoltaic panels (PV) will be incorporated on the roof of building 5 and will feed into the energy centre. The energy strategy for the development is discussed in further detail within the Energy Statement submitted in support of planning.

BREEAM Offices and Retail aim to encourage buildings that are designed to minimise the carbon dioxide (CO₂) emissions associated with their operational energy consumption. This is addressed by credit E1, Reduction of CO₂ Emissions in BREEAM. It is anticipated that a minimum of 12% improvements of the Building CO₂ Emission Rate (BER) over the Target CO₂ Emission Rate (TER), as defined by the Buildings Regulations will be achieved by the offices and retail buildings on site, equating to 7 credits.

Sub-metering of energy uses is assessed under both BREEAM Offices and Retail by credits E2 and E3. The aim is that the provision of sub-metering will facilitate monitoring of energy use within the operational building. Within VT12 sub metering of all major plant in the office elements of the building will be undertaken in line with credit E2. This credit is applicable to, and will be achieved in the retail use within buildings 5, 6a, 6b and 7a. In line with credit E3 the design team have committed to install meters to each separate tenancy area within the office and retail uses on site.

3.3.1 BREEAM Offices Specific Credits

BREEAM Offices encourages specification of energy efficient external lighting under credit E4. In line with BREEAM requirements the design team have confirmed that 80% of external luminaires will have efficacy in line with BREEAM requirement, being minimum of 50 lamp lumens/circuit watt for access ways and pathways and 70 lamp lumens/circuit watt for other external areas.

3.3.2 BREEAM Retail Specific Credits

Where buildings contain internal treated areas such as delivery yards or waste disposal areas BREEAM retail aims to encourage the building to be designed and constructed to maximise building fabric performance and minimise unnecessary air filtration associated with those areas. The filtering system in BREEAM retail determined that this credit is applicable to all buildings 5, 6a, 6b and 7a. Following discussions at the specific design team meetings 1 of the available 2 points available under this credit will be targeted.

Lifts are to be provided to serve the retail uses in buildings 5, 6a, 6b and 7a. In line with the BREEAM requirements under credit E17, the lift consultants D2E has confirmed that the lifts will employ variable voltage frequency drives and will have regenerative units to return excess energy back to the grid.

3.4 Transport

The development scores highly under the transport section of BREEAM and Code for Sustainable Homes due to the strong transport links adjacent to the site. Under BREEAM Offices 93% of available credits are targeted and over 54% of credits under Retail. All buildings on site are located within 250m of Victoria bus, rail and underground stations. In addition there are numerous bus stops around the site.

Safe pedestrian routes are to be provided to the transport nodes as part of the development. Provision of public transport is assessed by BREEAM under credit T1 under Retail and Offices; all credits are targeted.

Compliant with the requirements of BREEAM Offices and Retail credit T8 a travel plan is to be developed for the site which is tailored to the specific needs of the development, which has given consideration to a range of travel options for the site.

3.4.1 BREEAM Retail Specific Credits

Cycle facilities are to be provided within the development for retail staff and customers. It is currently intended that only 24 of the retail customer cycle spaces will be covered with the remaining 48 being uncovered. BREEAM requires 50 covered customer cycle spaces therefore the credit T5, Cyclist Facilities is not anticipated to be achieved.

BREEAM retail also aims to encourage the provision of safe and secure pedestrian and cycle access routes within credit T6, Pedestrian and Cyclist Safety. Pedestrian routes, lit in accordance with CIBSE Lighting Guidance 6, and which are sign posted to other local amenities off site are to be provided within the development. Therefore one credit is to be achieved under credit T6. It was confirmed that dedicated cycle lanes leading from the site

entrances to on site cycle facilities were not be provided, therefore the second credit would not be achieved.

3.4.2 BREEAM Offices Specific Credits

BREEAM offices assesses the CO₂ emissions resulting from commuter travel to and from the site by building users through the BREEAM Transport Calculator under credit T2. The location, number of car parking spaces and net lettable area have been input into the BREEAM Calculator and a score of 9 out of 10 has been predicted. Total commuting CO₂ emissions are estimated to be <500 kg/person/year. (Full marks cannot be achieved as BREEAM considers that the majority of people will travel to site via train or tube which are powered by electricity).

Comprehensive cycle facilities are to be provided for office users across the site. A cycle suite is to be provided in the central basement space serving the offices uses in buildings 6a, 6b and 7a site providing secure cycle storage facilities, showers, changing rooms and lockers for office users and will therefore achieved all available credits.

3.5 Water

BREEAM aim to encourage the reduction of water consumption in buildings. This is assessed within BREEAM Offices credit W1. This credit is not assessed under BREEAM Retail as the scope of works is only to shell and core and the filtering process has therefore removed this credit. The design teams have committed to specification of low water use fittings within the office and residential units on site.

Within BREEAM Offices water fittings will be specified to enable water consumption of less than 4.4m³, as calculated by the BREEAM Water calculator. Rainwater harvesting and or grey water recycling is proposed across the development, which may lead to improved water efficiency to be achieved and an increased number of credits to be achieved.

Water meter and major leak detection systems are to be specified within all retail units and offices on site thereby enabling credits W2, Water Meter and W3, Major Leak Detection under BREEAM Offices and Retail to be achieved.

3.5.1 BREEAM Offices Specific Credits

BREEAM Offices encourages provision of sanitary supply shut off to reduce risk of minor leaks within toilet areas under credit W4. The design teams have confirmed that every office unit on site will be provided with proximity detection shut off to all urinals and toilet areas in compliance with credit W4.

3.5.2 BREEAM Retail Specific Credits

The water efficiency of irrigation systems is assessed under BREEAM Retail credit W6. The filtering process undertaken has designated that this credit is applicable to all retail units as soft landscaping is to be provided as part of the retain element for all units on site. The design teams have confirmed that low water irrigation systems are to be specified and / or rainwater or grey water is to be used for the irrigation of planting on site thereby aching credit W06.

3.6 Materials and Waste

BREEAM Retail and Offices aim to encourage the use of construction materials with a low environmental impact over the full life cycle of the building within credit MW1 under BREEAM. At this stage in the design, detailed information on specification of materials are yet to be confirmed, therefore a worst case assumption has been taken in terms of BREEAM and no credits have been indicated as likely under this credit.

BREEAM also encourages specification of materials from a responsible source under credit MW8 in BREEAM. Each design team are committed to pursuing the requirements ensuring that the majority of the building elements are sourced from suppliers with certified environmental management system (EMS) at the process and extraction stages of material development. On this basis 1 of the 3 available credits under BREEAM Offices and Retail

are targeted for all buildings on site. More than one credit has not been targeted due to the bias of the BREEAM MW8 calculator towards timber and reused materials.

A comprehensive recycling strategy has been developed by ARUP for VT12. The strategy provides designated recycled waste storage provision for each building use and for each building. The Servicing and Waste Management Strategy² states that commercial segregated waste will be stored in the dedicated commercial recyclable waste room located in the basement. The storage areas are to be within easy reach of the area it serves. Therefore all available credits are to be achieved for storage of recyclable waste under all assessments.

3.6.1 BREEAM Offices Specific Credits

Credit MW3 under BREEAM Offices aims to avoid wastage of material by encouraging a single installation of floor finishes by the building occupant. In line with BREEAM requirements each office building will only provide floor finishes with a limited show area within the office. This area will be less than 25% of the net lettable floor area of the office and will ensure that large areas of carpet will not be disposed of once the tenant takes the building.

3.6.2 BREEAM Retail Specific Credits

BREEAM Retail encourages the provision of facilities that enable the efficient and hygienic operation of waste sorting and storage facilities within credit MW16. The Servicing and Waste Management Strategy² details that compactors provided in the service basement beneath buildings 5, 6a, 6b and 7a. ARUP have confirmed that this area will include waste outlets for cleaning in line with BREEAM requirements.

Credit MW10, Designing for Robustness aims to encourage the protection of exposed parts of the building so avoiding the need for frequent replacement. Throughout all retail units on site durability measures are to be incorporated such as protection rails to walls of corridors and kick plates provided on doors in line with this credit's requirements.

Low impact paints and varnishes are to be used throughout the decoration of the retail shell in line with the requirements of credit MW4. Examples of paints with low impact includes gloss water-borne paint styrene-acrylic resin which is 'A' rated in the Green Guide³.

3.7 Land Use and Ecology

VT12 performs well under Land use and Ecology section with 80% of all available of BREEAM Office and Retail credits predicted to be achieved. The absence of any features with ecological value on the existing site, the proposed green wall, green roofing and green pyramids proposed as part of the landscaping strategy has enabled the strong performance under this assessment area.

Confirmation has been provided by the BRE that a site wide Ecology assessment is acceptable and that credits can be awarded accordingly on a site wide basis.

The Land Use and Ecology credits within Offices and Retail are identical and therefore shall be discussed together. The existing site is currently occupied by a mix of buildings; therefore credit LE1, Reuse of Land will be achieved. An ecological survey has been undertaken of the site by Waterman as part of the VT11 application and confirmed that the site is of low ecological value and therefore qualifies to achieve credit LE3. All available credits are predicted to be achieved under credit LE 4, Mitigating Ecological Impact as initial calculations on the change in species per hectare on site as a result of the development undertaken by the ecologist for VT11 indicated that there will be a positive increase in the number of species on site. With the inclusion of the green pyramids, green wall and green roofs in VT12 a positive increase is anticipated for this application. As a result 2 credits are also targeted under credit LE 5, Enhancing Site Ecology.

Land Securities have committed to minimising the long term impact of the development upon biodiversity in line with BREEAM requirements. Measures will include the development of an appropriate management plan to cover at least 5 years after the developments' completion to manage the new habitat areas provided on site.

² Document ref REP-LOG-004 DRAFT 1 (dated June 2008)

³ The Green Guide to Specification. J Anderson and D Shiers. Blackwell publishing 2002.

3.8 Pollution

BREEAM aims to reduce the impact buildings have on pollution of the environment. One of the key areas addressed is the potential for global warming from substances used in the manufacture or composition of insulating materials which is assessed under credit P4 in BREEAM. For every building on site insulation materials will be required to have an ODP of 0 and a GWP of <5. This requirement is to be included in the specifications documents. Therefore these credits will be targeted.

Credit P7 under BREEAM aim to encourage the development of buildings in areas with reduced risk of flooding. The site is protected by the Thames Barrier and is considered by the BRE to have a low flood risk; therefore 2 of the available credits can be achieved under credit P7.

The importance of local renewable energy generation is recognised by BREEAM Offices credit P11. A feasibility study, compliant with BREEAM requirements has been undertaken in support of the planning application. As a result of the feasibility study photovoltaics are to be incorporated within the scheme as well as the gas fired CCHP. CO2 savings of greater than 12% are predicted. However, as the BRE do not recognise CHP as a low energy technology only 1 of the available 3 credits are targeted as a result of the PV.

The minimisation of water course pollution is assessed under BREEAM credit P8. On site treatment including oil interceptors are to be provided to all areas within the development at risk from pollution, including vehicle delivery areas and car parks. Therefore this credit is targeted.

3.8.1 BREEAM Offices Specific Credits

To reduce the emissions of refrigerant to the atmosphere arising from leakages in cooling plant credit P2 rewards development that have taken measures to reduce risk. All buildings on site will provide refrigerant leak detection in line with BREEAM requirements and will provide automatic shut off and pump down of refrigerant, and therefore 2 credits are to be targeted.

Although significant energy savings are to be achieved through the provision of on site energy centre and CHP system, CHP systems are known to produced higher levels of nitrogen oxides (NO_x) emissions than low NO_x boilers and therefore no credits can be awarded under credits P6.

BREEAM Offices encourages the reduction of night-time light pollution. In line with BREEAM requirements under credit P12 all external lighting associated with the offices will be designed in compliance with the Institute of Lighting Engineers Guidance notes on the reduction of obtrusive light, 2004. Therefore this credit will be achieved.

3.8.2 BREEAM Retail Specific Credits

Credit P13, Noise Attenuation under BREEAM retail aims to reduce the likelihood of noise complaints resulting from an operational retail development. Hann Tucker has been appointed as noise consultants for VT12 and have confirmed that sources of noise from the development are not predicted to give rise to the likelihood of noise complaints, and therefore this credit is targeted.

4 Performance Review - Code for Sustainable Homes

4.1 Energy

Building 5 is targeting a Level 4 performance on the mandatory elements of the Code energy credits, with an anticipated improvement in carbon dioxide emissions of at least 44% over Part L1A of the Building Regulations 2006. Central to achieving this is an energy strategy based around the Energy Centre incorporating CCHP.

The residential building is also targeting all the available credits for energy efficient internal lighting, with 75% or more of light fittings anticipated to be dedicated energy efficient. Maximum credits for external lighting are to be targeted through provision of energy efficient space lighting, and wattage limited security lighting fitted with appropriate controls. The anticipated provision of a clothes drying space, and provision of space and services for a home office achieves all the available credits for these issues. These measures serve to reduce the energy consumption and associated carbon dioxide emissions associated with lighting, drying of clothes, and commuting.

Building 5 is targeting half of the available credits for provision of energy efficient white goods and cycle storage. Building 5 is anticipated to have a designated basement cycle storage area providing storage for 180 cycles for 170 dwellings. It is currently anticipated that information on the EU Energy Efficiency Labelling Scheme will also be provided to all flats.

The only energy credits not currently anticipated to be achieved are those for the Heat Loss Parameter for the upper and lower flow flats, although many of the mid-floor flats are anticipated to achieve 1 credit.

4.2 Water

Building 5 is anticipated to meet the mandatory requirements to reach Code Level 4 for internal water consumption, which requires an internal water consumption rate no greater than 105 litres/person/day. Building 5 is anticipated to achieve this through water efficient WCs, baths, and showers, and a greywater recycling system using water from wash-hand basins, baths and showers to flush WCs.

The credit for external water use relates to rainwater storage for irrigation of gardens and planted areas. The rainwater storage requirement for building 5 is approximately 500L to serve the communal roof garden and will be met through the use of a centralised storage tank for the rainwater recycling.

4.3 Materials

The materials credits within the Code for Sustainable Homes seek to reward use of building materials which have a low environmental impact (as indicated by the Green Guide to Specification rating system), and which are responsibly sourced (i.e. by use of an appropriate certification scheme).

The construction of building 5 is to be based on a post-tensioned concrete frame, glazing and stone-cladding and aluminium frame windows. The number of credits awarded will depend on the details of the final constructions, however a third of the possible credits are targeted for building 5.

4.4 Surface Water Run-off

Under the Code, surface water run-off credits are awarded to developments featuring Sustainable Urban Drainage Systems (SUDS), and developments located in areas of low flood risk. The credits therefore relate to the site as whole rather than to individual dwellings. Both credits aim to reduce the risk of flooding within new dwellings.

The VT12 site incorporates both green roofs and rainwater recycling. Both measures count as SUDS under the Code for Sustainable Homes. Maximum credits can therefore be targeted for Sur 1 provided an agreement for the long-term ownership, management and operation of all the SUDS on site is put in place. It is anticipated that this will occur.

As discussed in Section 3, land above the VT12 scheme is protected from flooding by the Thames Barrier. Provided that written confirmation is obtained from the Environment Agency that the flood risk is suitably reduced, 1 credit is available and has been targeted.

4.5 Waste

The Code credits relating to Waste seek to reward residential developments which provide adequate storage for recyclable and non-recyclable waste (Was 1), implement a construction site waste management plan (Was 2), and facilitate composting of garden and kitchen waste (Was 3).

Building 5 will be served by a Local Authority post-collection sorting recycling scheme collecting more than 3 different types of recyclable materials. It is anticipated that adequate external storage for both non-recyclable and recyclable waste will be provided in the basement areas of each building, and adequate dedicated internal storage for recyclable waste will be provided within the apartments themselves. The maximum 4 credits for Was 1 are therefore targeted.

It is anticipated that a Site Waste Management Plan will be implemented, and that this will contain commitments and procedures to both minimise construction site waste, and also to divert waste from landfill by re-use and recycling. The maximum available credits have been targeted.

Most of the dwellings on site do not have a private garden, and the local authority does not currently operate a kitchen waste collection scheme. It is therefore considered that it would be impractical to implement composting for the VT12 scheme in a Code-compliant fashion.

4.6 Pollution

The Pollution category within the Code for Sustainable Homes rewards residential developments that contain insulants with a low Global Warming Potential (GWP) (Pol 1), and heating plant with a low level of NO_x emissions (Pol 2).

It is anticipated that building 5 will target the credits for low GWP of insulants through suitable agreements with the contractor. However, it is unlikely that any credits for NO_x emissions will be achieved owing to the use of Combined Heat and Power to meet the energy needs of the site. Although this provides considerable carbon dioxide emissions savings, it performs less well than gas boilers on NO_x emissions.

4.7 Health and Wellbeing

The Health and Wellbeing credits within the Code for Sustainable Homes aim to ensure that new dwellings can be lived in sustainably from the perspective of the inhabitants as well as from an environmental perspective. This is achieved by rewarding dwellings that provide superior levels of daylighting (Hea 1), sound insulation (Hea 2), private space (Hea 3) and adaptability to changes in circumstances (Lifetime Homes standard, Hea 4).

It is anticipated that large numbers of the dwellings in building 5 will achieve credits for daylighting. However, it is also likely that a small number will not achieve any credits. Therefore, taking the worst case dwelling, no daylighting credits have been assumed for building 5.

There is a design team aspiration to achieve an improvement in sound insulation 3dB greater than that required by Part E of the Building Regulations 2006. The current anticipated wall and floor constructions mean that such an improvement is possible in principle to achieve, although not via the Robust Details method. Therefore 1 credit is targeted.

The residential element of building 5 is to target all available credit for private space. This will be achieved through provision of private balconies to many of the flats on the west side of the building and to the top floor penthouses. Additionally 375m² of communal amenity space will be provided on the 9th floor roof terrace.

All flats within building 5 are anticipated to comply with Lifetime Homes, and full Hea 4 credits have therefore been targeted.

4.8 Management

The Code for Sustainable Homes Management category rewards the sound management of new residential dwellings and their construction from environmental and quality of life standpoints. This is achieved by encouraging provision of a Home User Guide (Man 1), adherence to the Considerate Constructors' Scheme (Man 2), management of construction

site impacts (Man 3) and increased security of dwellings through adherence to the principles of the Secured By Design scheme (Man 4).

All the available credits in the Management category are to be targeted. Home User Guides covering both the operation and maintenance of the dwellings and the surrounding areas are anticipated to be provided to all dwellings. There is also a design team aspiration to ensure that the contractor signs up to the Considerate Constructors' Scheme (CCS) and goes significantly beyond construction site management best practice (achieving a CCS score of 32+). In addition, it is anticipated that the contractor will be required to manage at least 4 of the construction site impacts listed within the Man 3 credit criteria for maximum credits in that category. Finally, it is also anticipated that an Architectural Liaison Officer/Crime Prevention Design Advisor will be appointed and their recommendations followed in order to follow the principles of the Secure by Design scheme.

4.9 Ecology

The Ecology category of the Code for Sustainable Homes rewards residential developments that preserve and enhance the ecological value of the site. This is achieved through recognition of developments that: are on sites of inherently low ecological value (Eco 1); provide ecological enhancement (Eco 2); protect existing features (Eco 3); have a positive influence on the number of species present on-site (Eco 4); and make efficient use of building footprint (Eco 5).

Building 5 is located on an almost completely built up site which was confirmed by Waterman, as part of the VTI1 application, as having low ecological value, enabling Eco 1 credit to be targeted. It is anticipated that a suitably qualified ecologist will be appointed to recommend appropriate ecological enhancements and that all the key recommendations and 30% of the additional recommendations will be implemented. It is likely that because the site is of low ecological value, the credit available for protection of ecological features will be achieved by default. The change in species per hectare is thought to be unlikely to drop as a result of the development, leading to the award of 2 out of 4 possible credits for change in ecological value of the site. Finally, the high rise nature of building 5 (11 floors of residential) mean that the building footprint credit is targeted.

5 Target Ratings

The target ratings for the development are presented below:

5.1 BREEAM Offices

BUILDING	TARGET SCORE	TARGET RATING
BUILDING 6a, 6b and 7a Offices	70.2%	Excellent

5.2 BREEAM Retail

BUILDING	TARGET SCORE	TARGET RATING
BUILDING 5 Retail	63.84%	Very Good

5.3 Code for Sustainable Homes

BUILDING	TARGET SCORE	TARGET RATING
BUILDING 5 Code for Sustainable Homes	65.16%	Level 3

NOTE: The scores given here are indicative only and based on discussions at the building specific meeting and subsequent correspondence with the design team. At the time of the full assessment, in order for the credits to be assessed, suitable supporting evidence must be provided by the design team.



Appendix A1 – Credit Summary Tables

BREEAM Offices 2006 Summary table

Credit Summary BREEAM 2006		Credit no.	Credits Available	Building 6a, 6b and 7a Office
Management Credit Value 1.67%	Commissioning Responsibilities	M 1	2	2
	Considerate Contractor	M4	2	2
	Construction Site Impacts	M 5	4	4
	Building User Guide	M12	1	1
Section Credit Total			9	9
Weighted Section Total			15%	15.0%
Health Credit Value 1.15%	Daylighting	HW 1	1	0
	View Out	HW 1	1	0
	Glare Control	HW 3	1	1
	High Frequency Lighting	HW 4	1	1
	Internal and External Lighting Levels	HW 5	1	1
	Lighting Zones	HW 6	1	1
	Potential for Natural Ventilation	HW 8	1	0
	Internal Air Pollution	HW 9	1	0
	Ventilation Rates	HW 11	1	1
	Thermal Comfort	HW 14	1	1
	Thermal Zoning	HW 15	1	1
	Microbial Contamination (Legionella)	HW 16	1	1
	Acoustic Performance (Indoor Noise)	HW 17	1	1
	Section Credit Total			13
Weighted Section Total			15%	10.4%
Energy Credit Value 0.76%	Reduction of CO ₂ Emissions	E 1	15	7
	Sub-metering of Energy Uses	E 2	1	1
	Sub-metering of Areas / Tenancy	E 3	1	1
	External Lighting	E 4	1	1
Section Credit Total			18	10
Weighted Section Total			14%	7.6%
Transport Credit Value 0.76%	Provision of Public Transport	T 1	2	2
	Transport CO ₂	T 2	10	9
	Cyclist Facilities	T 5	2	2
	Travel Plan	T 8	1	1
Section Credit Total			15	14
Weighted Section Total			11%	10.6%
Water Credit Value 0.83%	Water Consumption	W 1	3	2
	Water Meter	W 2	1	1
	Major Leak Detection	W 3	1	1
	Sanitary Supply Shut Off	W 4	1	1
Section Credit Total			6	5
Weighted Section Total			5%	4.2%
Materials Credit Value 0.83%	Material Specs - Major Elements	MW 1	4	0
	Floor Finishes	MW 3	1	1
	Reuse of Building Façade	MW 5	1	0
	Reuse of Building Structure	MW 6	1	0
	Recycled Aggregates.	MW 7	1	0
	Responsible Sourcing of Materials	MW 8	3	1
	Storage of Recyclable Waste	MW 12	1	1
Section Credit Total			12	3
Weighted Section Total			10%	2.5%

Land use & Ecology Credit Value 1.50%	Re-Use of Land	LE 1	1	1
	Reclaimed Contaminated land	LE 2	1	0
	Ecological Value	LE 3	1	1
	Mitigating Ecological Impact	LE 4	2	2
	Enhancing Site Ecology	LE 5	3	2
	Long Term Impact on Biodiversity	LE 6	2	2
Section Credit Total			10	8
Weighted Section Total			15%	12.0%
Pollution Credit Value 1.00%	Refrigerant GWP	P 1	1	0
	Preventing Refrigerant Leaks	P 2	2	2
	Insulant GWP	P 4	1	1
	NOx Emissions of Heating Source	P 6	3	0
	Flood Risk / Water Run-Off	P 7	3	2
	Minimising Water Course Pollution	P 8	1	1
	Renewable & Low Emission Energy	P 11	3	1
	Reduction of Light Pollution	P 12	1	1
Section Credit Total			15	8
Weighted Section Total			15%	8.0%
TOTALS:			100%	70.2%
RATING:				Excellent

BREEAM Retail 2006 Summary Table

BREEAM Retail 2006 Assessment					
Section	Credit Title	Credit no.	Available Credits	B 5 Target Credits	B 6a, 6b, 7a Target Credits
(Value per credit)%					
Management	Considerate Constructors	M4	2	2	2
Credit Value (%):	Construction Site Impacts	M5	4	4	4
1.15	Environmental Responsibility	M7	1	1	1
	Building User Guide	M12	1	1	1
	Building User Education	M13	1	1	1
	Environmental Policy	M18	1	1	1
	Environmental Purchasing Policy	M19	1	1	1
	Environmental Management System	M22	2	2	2
Section Credit Total			13	13	13
Weighted Total for Management			15	15	15
Health and Wellbeing	Daylighting	HW1	2	0	0
Credit Value (%):	Internal Air Pollution	HW9	1	0	0
2.5	Ventilation Rates	HW11	1	1	1
	Thermal Comfort	HW14	1	0	0
	Microbial Contamination	HW16	1	1	1
Section Credit Total			6	2	2
Weighted Total for Health and Wellbeing			15	5	5
Energy	Reduction of CO ₂ Emissions	E1	15	7	7
Credit Value (%):	Sub-metering - Uses	E2	1	1	1
0.625	Sub-metering - Areas	E3	1	1	1
	Fabric Performance/Infiltration	E5	2	1	1
	Lifts	E17	1	1	1
Section Credit Total			20	11	11
Weighted Total for Energy			12.5	6.88	6.88
Transport	Provision of Public Transport	T1	4	4	4
Credit Value (%):	Cyclist Facilities	T5	2	0	0
1.136	Pedestrian and Cyclist Safety	T6	2	1	1
	Travel Plan	T8	1	1	1
	Travel Information Space	T10	2	0	0
Section Credit Total			11	6	6
Weighted Total for Transport			12.5	6.8	6.8
Water	Water Meter	W2	1	1	1
Credit Value (%):	Mains Leak Detection	W3	1	1	1
1.67	Irrigation Systems	W4	1	1	1
Section Credit Total			3	3	3
Weighted Total for Water			5	5	5
Materials and	Materials Specification - Building Elements	MW1	4	0	0

BREEAM Retail 2006 Assessment					
Section	Credit Title	Credit no.	Available Credits	B 5 Target Credits	B 6a, 6b, 7a Target Credits
<i>(Value per credit)%</i>					
Waste	Hard Landscaping and Boundary	MW2	1	0	0
Credit Value (%):	Low Impact of Paints and Varnishes	MW4	1	1	1
0.625	Reuse of Existing Façade	MW5	1	0	0
	Reuse of Existing Structure	MW6	1	0	0
	Recycled Aggregates	MW7	1	0	0
	Responsible Sourcing of Materials	MW8	3	1	1
	Designing for Robustness	MW10	1	1	1
	Storage of Recyclable Retailers Waste	MW13	1	1	1
	Compactor and Cleaning Facilities	MW16	1	1	1
	Composting	MW17	1	0	0
Section Credit Total			16	5	5
Weighted Total for Materials and Waste			10	3.125	3.125
Land Use and Ecology	Reuse of Land	LE1	1	1	1
Ecology	Contaminated Land	LE2	1	0	0
Credit Value (%):	Ecological Value and Protection	LE3	1	1	1
1.5	Mitigating Ecological Impact	LE4	2	2	2
	Enhancing Site Ecology	LE5	3	2	2
	Long Term Impact on Biodiversity	LE6	2	2	2
Section Credit Total			10	8	8
Weighted Total for Land Use and Ecology			15	12	12
Pollution	Insulant ODP and GWP	P4	1	1	1
Credit Value (%):	Flood Risk	P7	3	2	2
1.67	Minimising Watercourse Pollution	P8	1	1	1
	Renewable/Low carbon Energy	P11	3	1	1
	Noise Attenuation	P13	1	1	1
Section Credit Total			9	6	6
Weighted Total for Pollution			15	10	10
TOTALS:			100	63.81	63.82
RATING				VERY GOOD	VERY GOOD

Code for Sustainable Homes 2008 Summary Table

Code for Sustainable Homes 2008 Points Summary		Points Available	Target score Building 5
Energy	Dwelling Emission Rate	18.83	10.04
	Building Fabric	2.51	0.00
	Internal Lighting	2.51	2.51
	Drying Space	1.26	1.26
	Energy Labelled White Goods	2.51	1.26
	External Lighting	2.51	2.51
	Low or Zero Carbon (LZC) Technologies	2.51	2.51
	Cycle Storage	2.51	1.26
	Home Office	1.26	1.26
Section Total		36.40	22.59
Percentage of points achieved within this section			62.1%
Water	Indoor Water Use	7.50	4.50
	External Water Use	1.50	1.50
Section Total		9.00	6.00
Percentage of points achieved within this section			66.7%
Materials	Environmental Impact of Materials	4.50	1.50
	Responsible Sourcing of Materials - Basic Building Elements	1.80	0.60
	Responsible Sourcing of Materials - Finishing Elements	0.90	0.30
Section Total		7.20	2.40
Percentage of points achieved within this section			33.3%
Surface Water	Management of Surface Water Run-off from developments	1.10	1.10
	Flood Risk	1.10	0.55
Section Total		2.20	1.65
Percentage of points achieved within this section			75.0%
Waste	Storage of non-recyclable waste and recyclable household waste	3.66	3.66
	Construction Site Waste Management	1.83	1.83
	Composting	0.91	0.00
Section Total		6.40	5.49
Percentage of points achieved within this section			85.7%
Pollution	Global Warming Potential (GWP) of Insulants	0.70	0.70
	NO _x Emissions	2.10	0.00
Section Total		2.80	0.70
Percentage of points achieved within this section			25.0%
Health & Wellbeing	Daylighting	3.50	0.00
	Sound Insulation	4.67	1.17
	Private Space	1.17	1.17
	Lifetime Homes	4.67	4.67
Section Total		14.00	7.00
Percentage of points achieved within this section			16.7%
Management	Home User Guide	3.33	3.33
	Considerate Constructors Scheme	2.22	2.22
	Construction Site Impacts	2.22	2.22
	Security	2.22	2.22
Section Total		10.00	10.00
Percentage of points achieved within this section			100.0%
Ecology	Ecological Value of the Site	1.33	1.33
	Ecological Enhancement	1.33	1.33
	Protection of Ecological Features	1.33	1.33
	Change in Ecological Value of Site	5.33	2.67
	Building Footprint	2.67	2.67
Section Total		12.00	9.33
Percentage of points achieved within this section			77.8%
Total Score		100.00	65.16 Level 3 ★★★