PRP

St Michael's Convent, Ham Common

Sustainability Statement

September 2016

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Architecture
Urban Design
Masterplanning
Landscape
Sustainability
Project Services
Planning
Transport Planning
Interiors
Research

Project	St Michael's Convent (Applications 1 and 2)
PRP Reference	AE6250
Location	Ham, London
Local Authority	London Borough of Richmond upon Thames
Client	Beechcroft Developments Ltd
Issue	Final for Planning
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Executive Summary

1.1 Beechcroft Developments Ltd is proposing to submit two planning applications to the London Borough of Richmond upon Thames for the development of the St Michael's Convent site, in Ham, London. The developer is submitting two proposed schemes:

- Application 1 - Ham Common (26 dwellings)
- Application 2 - Martingales Close (2 dwellings)

1.2 Application 1 delivers 26 dwellings which include retirement houses and flats. Application 2 delivers 2 retirement houses.

1.3 The Sustainability Team at PRP has been appointed to produce a Sustainability Statement identifying how each development will address national and regional planning policies, as well as the relevant current and emerging policies set out by the London Borough of Richmond upon Thames to support and deliver Sustainable Development.

1.4 Overall the proposed developments achieve a good standard of sustainability which seeks to minimise its impact on the local environment and provide scope and encouragement for the future residents to adopt a sustainable lifestyle. This is broadly achieved through the following key attributes:

Socio-economic credentials

1.5 The site for both Application 1 and 2 is in close proximity to local amenities (both existing and new) with good pedestrian, cycle and public transport access, as well as being within easy reach of local services.

1.6 In Application 1 there is an appropriate use of an existing building within Greater London that meets a local housing need in the area with minimal detrimental impact to the local community.

1.7 The proposed dwelling density for its urban location and site which makes efficient use of available land and improves the visual amenity of the site, whilst ensuring that the population increase will provide increased spending to support the local economy but won't affect the biodiversity integrity of the wider area.

1.8 The buildings and sites will be designed to be secure as spaces will be overlooked and main entrances will be controlled. A manned reception area will be created, which will not only be the first port of call for visitors but will also ensure residents will have access to support if required.

1.9 The development has been structured around the principles of interaction and community relationships. Several amenities will be introduced and/or renovated for benefit of the occupants, these will include a lounge, tea room, terrace, cycle storage spaces, walled garden and allotment and enhanced orchard. The aim is to increase community spirit and social relations amongst the residents. These amenities will be available to the residents occupying the dwellings of both Application 1 and 2.

Environmental Credentials

1.10 All of the new units will be designed to reduce their emissions by at least 35% below the minimum mandatory requirements, where the building envelope is also designed to minimise the impact of future energy price increases on the residents.

1.11 Every dwelling will be provided with water conservation measures to make efficient use of potable water to meet every day needs. The surface water and flood management plans will account for future climate change projections. The design team endeavours to implement measures who will allow for surface water runoff rates to be attenuated to 50% of the brownfield flow rate, such that the developed site imposes no additional reinforcement to the local drainage network.

1.12 Recycled, responsibly sourced and sustainably manufactured building materials will be used for the main building elements. Where practicable, materials will be sourced locally and most of the key construction materials will be specified to have a low environmental impact throughout their life-cycle. The building service technologies and insulation materials used to blanket the buildings against the cold and excessive heat will be specified to have low global warming potential and zero CFC/HCFC emissions.

1.13 The redevelopment will be constructed with minimal waste generation, through the efficient use of materials, recycling any waste that arises throughout the construction process, and minimising the amount of waste sent to landfill. Every unit will be provided with waste recycling facilities to encourage and enable all residents to recycle their household waste.

1.14 The landscaping strategy provides a harmonious integration with existing local ecological features as well as providing habitats suitable for existing wildlife through the creation of private soft landscaped gardens, communal garden with a grassed area, and the introduction of green roofs and planting of native species of trees and shrubs.

1.15 The Sustainable Construction Checklist SPD forms part of the assessment for planning applications for new build, conversion and retrofit properties within the London Borough of Richmond upon Thames. According to the results of the checklists prepared for Applications 1 and 2, the proposed changes to the site will be making a major contribution to achieving sustainable development within the Borough. Please refer to Chapter 7 for additional information.

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1. Introduction

1.1 This Sustainability Statement has been prepared by PRP on behalf of Beechcroft Developments Ltd in respect of two planning applications for the St Michael's Convent site in Ham, London. The Sustainability Team at PRP has been appointed to produce a Sustainability Statement identifying how the St Michael's Convent development will address national and regional planning policies, as well as the relevant current and emerging policies set out by the London Borough of Richmond upon Thames to support and deliver sustainable development.

1.2 The proposal seeks two separate planning permissions for:

Application 1 – Ham Common

- 6 flats in retained listed building;
- 1 house in retained listed building
- 3 flats in extension to retained building;
- 1 cottage in listed Coach House;
- Further15 houses across the site;
- Car parking
  A total of 26 units

Application 2 – Martingales Close

- 2 houses in stable buildings next to Orchards
- Car parking
  A total of 2 units

1.3 In support of this application and in accordance with the London Borough of Richmond upon Thames requirements, PRP has prepared this Sustainability Statement , which includes the following sections:

- Site and Surroundings
- Planning Policy Requirements
- Socio-Economic Credentials
- Environmental Credentials
- Sustainable Construction Checklist

Achieving a Sustainable Outcome

Facilitating Sustainable Lifestyles

1.4 Sustainable development is often thought of solely in terms of its environmental impact, however as stated in the National Planning Policy Framework (NPPF), there are three elements to sustainable development: social, economic and environmental. It is therefore important to realise that these roles are mutually dependent and that each element should be addressed and carry equal importance.

1.5 By providing integrated and mutual support across each of the elements, local communities can be given the tools that will enable them to be self-sustaining and not draw unnecessarily on a diminishing supply of resources.

1.6 Developments should be assessed for their potential to contribute to the local community, and to ensure that they provide a sufficient and balanced contribution across each of the social, economic and environmental attributes. This in turn will underpin the necessary integration required to ensure the sustained success of the development, and deliver a commensurate quality of life for the people it is designed to support.

1.7 This report addresses the socio-economic and environmental impact that the development will have on the surrounding area. The sustainability strategy shows that St Michael's Convent has been designed to respond to the planning policies it is subject to, and where possible surpasses their requirements.

1.8 Creating a successful new development is not just about building high quality homes and amenities; equally important is building a cohesive and sustainable new community. The government recognises this in its vision for the Big Society and is empowering communities to build better neighbourhoods.

2. Site and Surroundings

Context

2.1 St Michael's Convent forms part of the regeneration of the existing site occupied by the Community of the Sisters of the Church in Ham, London Borough of Richmond upon Thames. It occupies a site of approximately 1.53 ha of mature grounds including an 18th Century walled garden, formal garden and an orchard.

2.2 The site, which will be subject to two separate planning applications, is located within a mainly residential conservation area (Ham Common Conservation Area, number 7). It is bounded by Ham Common to the south (public space, classed as a site of nature importance), the pedestrian historic route to Ham House to the West, and a 'no-through' residential access road to the East and the North.

2.3 Buildings in the immediate neighbourhood vary in use and period, however the area is characterised by low urban density. There are several amenities nearby such as schools, shops, nursery, golf club, churches and a hospital. Along the Upper Ham Road bus stops are located. The nearest train station is in Richmond, with fast trains to central London (16 minutes away by bus), including access to the Overground trains and the District Tube line. The River Thames is less than a mile away, and Ham House is 850m away or within a 10-minute walking distance.

Figure 1 – Site Context

Description of Proposal

2.4 The site itself is mainly occupied by Orford House (the original part of the main house), which was built between 1730 and 1734, and is now a Grade II listed building. It has been the home of the Community of the Sisters of the Church and has been in their ownership since 1949. In addition to the main house, there is also a small coach house (to the right of the main entrance) and some outbuildings around the walled garden.

2.5 The grounds feature large expanses of open spaces (grassland) immediately to the North of the house. Part of the outbuildings delineates the boundaries of the walled garden. The North part of the grounds features a mature orchard.

Figure 2- Aerial Photograph of Site (red outline)

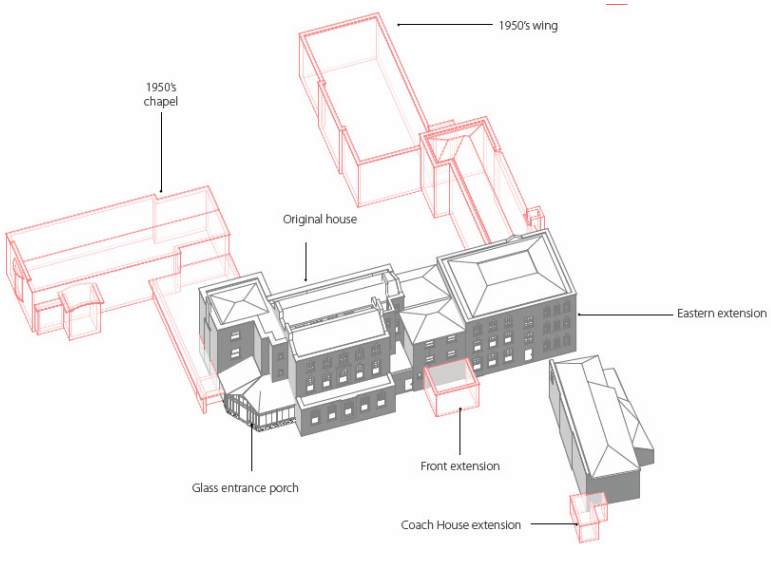

Figure 3 - Existing Main Buildings

2.6 The development proposals by Beechcroft Developments Ltd include the refurbishment of original house, demolition of the 1950's extensions and the construction of new dwellings, as detailed below:

Application 1 – Ham Common

2.7 This planning application will cover the proposed 26no. dwellings on the site, located in the refurbished main building and in some new buildings.

2.8 The restoration of the main building and the nearby Coach House will be the central focus of the project. The main building will be converted into 6 spacious 1-2 bed flats, with high quality finishes and 1- 4 bed house. The ground floor will feature a hall, tea room, lounges and WCs. From the ground floor there will be access to the terrace and its wildflower staircase.

2.9 The Coach House will be refurbished into a 2-bed house.

2.10 The mews houses will be mainly located at the centre of the grounds, or located around the walled garden. Blocks E and F are two parallel rows, where two 2-bed dwellings will be created. These will be 1-storey high with a proportion of green roof. Off the walled garden (perpendicularly adjacent to it) 3 more rows of houses will be built (Blocks D and H). Block D will be a mews type of arrangement, 2 storeys high, with all houses having 2 double bed plus an office space and double pitch roofs. Block H will be similar to Blocks E and F with a full green roof. The architecture will be traditional construction techniques with brick facades. Blocks C and I are located along the East site boundary and are connected to the main building. These are similar to the houses in Block D.

Figure 4 - St Michael's Convent, Application 1 and 2 site plans

Figure 5 - Proposed Site Plan (Application 1)

Table 1 – Accommodation schedule

Count of Unit Number		Block			
Residential	Dwelling Type	New Build	Coach House	Existing Building	Grand Total
Residential	Flat	3		6	9
	House	15	1	1	17
Grand Total		**18**	**1**	**7**	**26**

Application 2 – Martingales Close

2.11 The second planning application proposes the construction of two houses (Stable Block G, see Figure 4 above) between the orchard and the site's West border. Each will feature an open plan kitchen living space, 4 bedrooms. They will be 1 ½ storey high.

2.12 Outside a small parking area is proposed and access to these houses will be via Martingales Close.

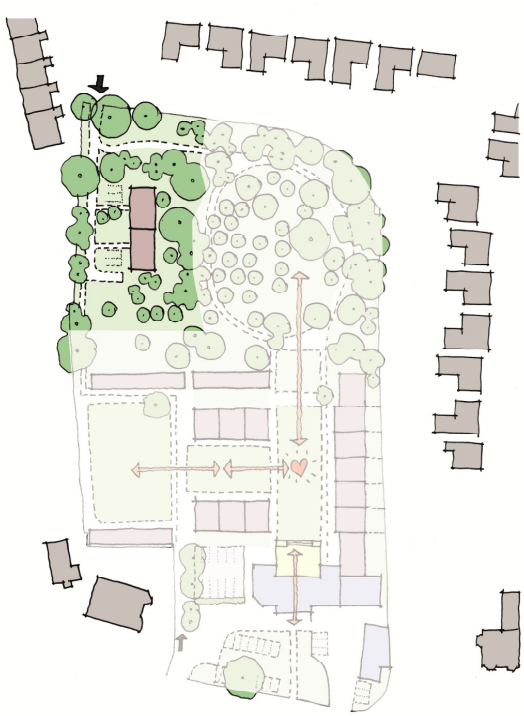

Figure 6 - Proposed Site Plan

3. Planning Policy

3.1 The purpose of this report is to demonstrate the measures that are being proposed to reduce the negative environmental impact of the development, and to highlight the measures being taken to create a more sustainable and prosperous local community. This report illustrates the strategies and approaches employed to create:

- Social Responsibility
- Environmental Stewardship
- Economic Prosperity

3.2 The government has recognised the need to ensure the long term sustainability of new developments and their communities, and as a policy response, has published the National Planning Policy Framework (March 2012) to replace the suite of existing material policies and guidance documents.

3.3 The following section sets out the current main policies and guidance documents on sustainability issues, including emerging local policies, where they are known.

3.4 Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires planning applications to be determined in accordance with the provisions of the Development Plan unless material considerations indicate otherwise.

3.5 The development proposal outlined in Sections 7 and 8 will be assessed against prevailing National Planning Policy Framework (NPPF) and policies contained within London Borough of Richmond upon Thames adopted Core Planning Strategy.

National Planning Policy Framework

3.6 The National Planning Policy Framework here on referred to as the NPPF, was adopted on 27th March2012 and sets out the Government's planning policies for England and how these are expected to be applied. The adoption of the NPPF also triggered the revocation of a number of documents including Planning Policy Statements and Planning Policy Guidance (listed within Annex 3 of the NPPF). While the NPPF has amended certain aspects of the planning system, it does not change the statutory status of the Development Plan as the starting point for decision making. The NPPF constitutes guidance for local planning authorities and decision takers and therefore acts as a material planning consideration in determining applications.

3.7 The provisions within the Framework that are relevant to this application include the presumption in favour of sustainable development which is seen as the golden thread running through the planning and decision-making process. For the decision-making process the Framework seeks decision takers to approve development proposals that accord with the Development Plan without delay. Paragraph 49 of the NPPF states that housing applications should be considered in the context of the presumption in favour of sustainable development. Furthermore, policies relevant to the supply of housing should not be considered up-to-date if the LPA cannot demonstrate a 5 year supply of housing.

3.8 A key objective of the Framework is focused on delivering a wide choice of high quality houses outlined in Chapter 6 and in particular the Framework's emphasis is on local authorities to boost significantly the supply of housing.

3.9 The Framework (Paragraph 14) gives strong policy emphasis through the presumption in favour of sustainable development in that planning applications which accord with the aspirations set out in the Framework should be approved unless adverse impacts significantly and demonstrably outweigh the benefits of development. The presumption should be at the centre of all planning application decisions.

3.10 The definition of sustainable development within NPPF refers both to the Brundtland definition as "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs", and the 'Securing the Future' - five guiding principles set out in the UK Sustainable Development Strategy. These five 'guiding principles' of sustainable development look at sustainability in its wider context, addressing not only environmental sustainability but also social and economic concerns:

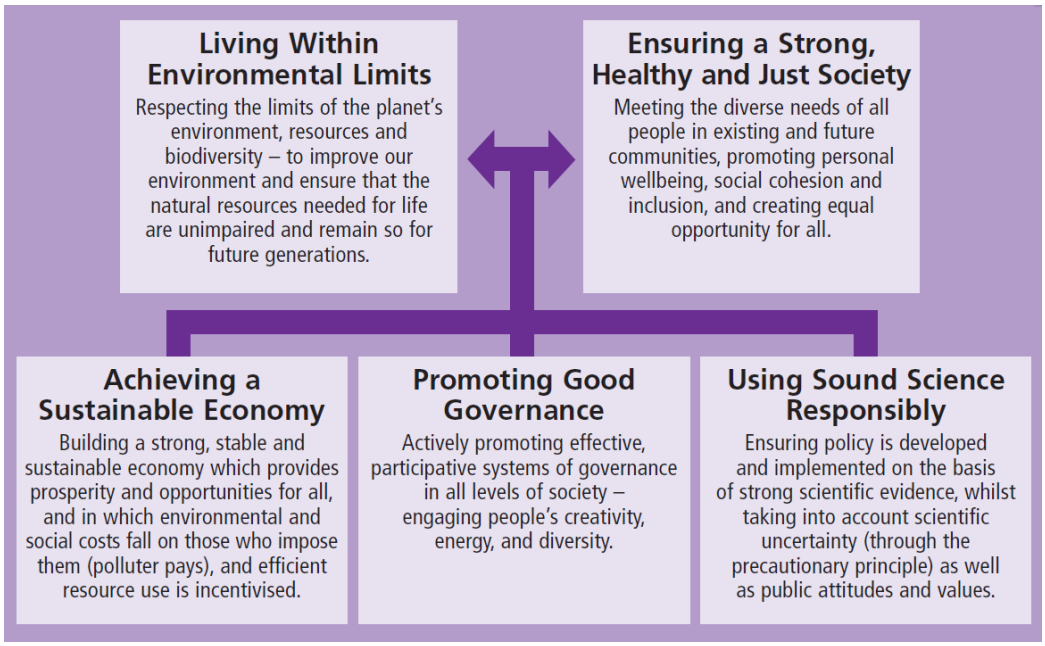

Figure 7 - The five guiding principles under the UK Sustainable Development Strategy[1]

Regional Policy

Application 1 (Ham Common) Only

3.11 The following regional policies apply to Application 1, which, for the purpose of these policies, will features 15 new houses and 3 new build flats on the site:

- The London Plan, Spatial Development Strategy for London (Adopted Jul 2011)
- GLA Housing Supplementary Planning Guidance (Adopted Nov 2012)
- Mayor of London SPG on Sustainable Design and Construction (Adopted April 2014)
- London Housing Supplementary Planning Guidance (Adopted Nov 2012)

[1] HM Government (2005) Securing the Future: delivering UK sustainable development strategy.

Local Policy

Application 1 (Ham Common) Only

3.12 London Borough of Richmond upon Thames

Core Strategy – Local Development Framework (Adopted in April 2009)

- Policy CP1 – Sustainable Development
- Policy CP 2 - Reducing Carbon Emissions
- Policy CP3 - Climate Change - Adapting to the Effects
- Policy CP4 - Biodiversity
- Policy CP5 - Sustainable Travel
- Policy CP6 - Waste

Development Management Plan - Local Development Framework (Adopted in November 2011)

- Policy DM SD 1- Sustainable Construction
- Policy DM SD 2 - Renewable Energy and Decentralised Energy Networks
- Policy DM SD 4 - Adapting to Higher Temperatures and Need for Cooling
- Policy DM SD 5 - Living Roofs
- Policy DM SD 6 - Flood Risk
- Policy DM SD 7 - Sustainable Drainage
- Policy DM SD 9 - Protecting Water Resources and Infrastructure
- Policy DM OS 5 - Biodiversity and new development
- Policy DM TP 6 - Walking and the Pedestrian Environment
- Policy DM TP 7 - Cycling
- Policy DM TP 8 - Off Street Parking - retention and provision
- Policy DM DC 5 - Neighbourliness, Sunlighting and Daylighting

Supplementary Planning Document, Sustainable Construction Checklist - Guidance Document (Adopted January 2016)

Application 2 (Martingales Close) Only

3.13 London Borough of Richmond upon Thames, the policies listed below may apply to just the two new build houses:

Core Strategy – Local Development Framework (Adopted in April 2009)

- Policy CP1 – Sustainable Development
- Policy CP 2 - Reducing Carbon Emissions
- Policy CP3 - Climate Change - Adapting to the Effects
- Policy CP4 - Biodiversity
- Policy CP5 - Sustainable Travel
- Policy CP6 - Waste

Development Management Plan - Local Development Framework (Adopted in November 2011)

- Policy DM SD 1- Sustainable Construction
- Policy DM SD 2 - Renewable Energy and Decentralised Energy Networks
- Policy DM SD 4 - Adapting to Higher Temperatures and Need for Cooling
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- ¬ Policy DM DC 5 - Neighbourliness, Sunlighting and Daylighting

Supplementary Planning Document, Sustainable Construction Checklist - Guidance Document (Adopted January 2016)

4. Socio-economic Credentials

Density and Tenure

Application 1 - Ham Common

4.1 The proposed dwelling mix includes 26 dwellings with the following mix of houses and flats: 10 flats and 16 houses (new build and renovated). The whole development is aimed at retirement housing, independent people with minor support available on site. The houses will have a maximum 2 storey height and the renovated building maintains the existing 3 storeys.

4.2 The Ham Common (Application 1) development covers an area of approximately 1.20 ha. The plan proposes a low density development, with forms to make efficient use of the available land (and previously occupied land) and deliver inherently efficient building forms, whilst preserving valuable assets like views and access to open space for the residents on the site.

4.3 The proposed site provides a notional density figure of 21 dwellings per hectare.

4.4 The density of the development will have a positive impact on the local economy as it will result in a population increase which will utilise local businesses and services. The proposed density is considered to be appropriate for this site and is in keeping with the overall vision of the development and neighbourhood.

Table 2 – Density (Application 1)

Ham Common	Site specific Density
No. of dwellings	• 26
• Hectares	• 1.20
• Density *(DPH)*	• 21

Application 2 - Martingales Close

4.5 The proposed dwelling mix includes 2 new build dwellings (houses), with a maximum 1 ½ storey height, which are to be occupied by older people.

4.6 The Martingales Close development covers an area of approximately 0.33 ha. The plan proposes a very low density development and will deliver inherently efficient building forms, whilst preserving valuable assets like views and access to open space for the residents on the site.

The proposed site provides an efficient built form with a ratio of 1.8 for the building footprint. The low rise proposed dwellings are considered to be appropriate for this site and is in keeping with the overall vision of the development and neighbourhood.

Design Standards

Application 1 and 2 - Ham Common and Martingales Close

4.7 The proposals both aim to respond to the local context and provide a design of individuality and landmark quality. Careful and detailed attention to layout, massing and materials has been made to reconcile any contradictions between the two basic objectives of providing enclosure and continuity.

4.8 All new residential units exceed the minimum space standards proposed in the nationally-described space standards (2015).

4.9 Residential units will be designed to make optimum use of internal space:

- Layouts, open plan living areas, have been designed to allow flexible arrangements.
- Generous storage spaces are allocated to all units: walk-in wardrobes, utility rooms or storage spaces in corridors and under stairs.
- The open plan living space provides ultimate flexibility.
- Glazing factors of the glass are set to ensure minimum daylighting requirements are met for living spaces without increasing the risk of overheating.

4.10 All houses will benefit from private amenity space in the form of a garden on the ground floor which will be accessed from the living and dining spaces.

4.11 The majority of flats and houses are dual aspect in order to maximise natural light and cross ventilation. The design ensures generous windows to bedrooms and living rooms to achieve optimum levels of natural light. The largest windows are located on the existing building North façade. A Daylight, Sunlight and Overshadowing analysis has been prepared by PRP. The results of the assessment show that the development will not reduce the neighbouring buildings access to daylight and sunlight.

Outdoor Space Standards

4.12 Safe, legible and accessible open spaces will be provided in order to improve quality of life and community cohesion. The landscape proposals aim to create a safe, attractive and legible communal realm that maximises the amenity and biodiversity within the site.

4.13 The site plans in section 1 above highlight the communal and private amenity spaces proposed, showing the openness and permeability within the development.

Application 1 Ham Common

4.14 A wide variety of private open spaces are to be delivered as part of the development for enjoyment by residents. The majority of the existing amenity spaces are to be retained and improved. Landscaping designs along with choices of materials will be designed to minimise maintenance requirements.

4.15 It is proposed that the existing walled garden will be enhanced so that the residents can use it for growing food. This area will include vegetable beds and fruit bushes.

4.16 New fruit trees are to be planted in the existing orchard, where grounds will be mowed and maintained. A nature trail and a walk will be created along the orchard's border and across it. These will allow a closer contact between the residents and nature, with obvious benefits for health.

4.17 The grassland areas between the orchard and the existing building will have enhanced visual and olfactory appeal and wider species diversity. The top of the main lawn will have a wildflower

staircase and a Mulberry bosque at the end of the main lawn. The houses and flats along the lawn will be lined with lavender bushes and small hedges/shrubs.

4.18 All dwellings have access to the communal gardens. Level access is provided along all areas of the communal gardens. Level access is provided to private amenity spaces to satisfy requirements for Accessible Homes as defined in Part M of the Building Regulations.

4.19 Each house will also benefit from private open amenity space, which exceeds the desired requirement of 3m2 per dwelling and is provided for all houses. All units exceed the minimum requirements for external amenity as defined by the London Housing Standards.

Application 2 - Martingales Close

4.20 The site for Application 2 will not be separated from the overall development. The residents for the two proposed new dwellings will still have access to all open spaces amenities (both existing and proposed) on the overall St Michael's Convent grounds.

4.21 The two dwellings will have views over the orchard. Each will also have access to private amenity spaces which exceeds the desired requirement of 3m2 per dwelling as defined by the London Housing Standards. Level access is provided to private amenity spaces to satisfy requirements for Accessible Homes as defined in Part M of the Building Regulations.

4.22 The car park at the back of the houses will be made by reinforced turf and will be covered by planted pergolas, that will soften the visual impact of creating the parking spaces. To the side of the houses a species rich wildflower meadow will be planted, increasing both sites appeal for existing animals.

Wellbeing & Quality of Life

4.23 To achieve a socially responsive and economically prosperous community, there needs to be recognition of the diversity within the society to ensure on-going cultural enrichment, support social interaction, and positive economic activity. A socio-economically sustainable community must have the ability to maintain and build on its own resources in areas such as health, education, retail and leadership, and the ability to facilitate action to improve the quality of life of its residents and occupants.

4.24 Key indicators can act as tools to measure socio-economic sustainability, for example, issues such as sustained economic growth, equity, security and social interaction and social inclusion.

4.25 A separate Health Impact assessment, prepared by Indigo Planning is submitted with both planning applications.

Application 1 and 2 - Ham Common and Martingales Close

4.26 It is important that the development enhances the character of the immediate local area; therefore consideration has been given to the scale, mass and height of existing buildings in the surrounding area when seeking to develop the proposed site. Please refer to the Design and Access Statement prepared by PRP.

4.27 The development, which is marketed for retired people, aims at providing an array of communal facilities and design solutions to increase wellbeing and facilitate social cohesion and interaction amongst the residents. A large terrace is being proposed, at ground floor of the renovated building. This terrace will be furnished with tables and chairs for use by the residents. The terrace will overlook the wildflower staircase and subsequent lawn, providing opportunities for watching

wildlife. The extensive lawns will be the perfect setting for different types of sport related uses such petanque, bocce, croquet, kanjam, horseshoes, lawn darts, etc. Its versatility also means the lawns can simply be used for outdoor picnics, to read a book in a lounger or to catch some sun.

4.28 The walled garden also provides the opportunity for every resident to grow their own food and the orchard will encourage an active lifestyle with the nature trail and the orchard walk.

4.29 On the main existing building ground floor, communal areas have been created. A member of staff will be at hand to provide support and receive residents and visitors.

4.30 The site location also means that the residents will have access to an extensive range of nearby amenities such as: the River Thames, Ham Common, Richmond Park, Ham House, and across the Thames (via boat crossing), Marble Hill, York House and Gardens, Orleans House Galleries, Richmond Adult Community College (which provides a vast range of educational courses), pubs, golf course, churches, pharmacy, etc. Please refer to the Transport section below for detailed information.

Safety and Security

Applications 1 and 2 - Ham Common and Martingales Close

4.31 Compliance with Secure by Design principles has been accounted for in the designs. Features incorporated to achieve this security include well-overlooked access routes, within the development and amenity spaces, providing passive surveillance of the 'active street life'. Seating for all ages provided to create space for all ages (Refer to the Landscape section in the Design and Access statement).

4.32 Access to dwellings has been designed to ensure increased security at all times with front doors of the building facing onto communal areas and car parking spaces located with easy and secure access of each building. The communal gardens are overlooked by those accessing these spaces. The public spaces are also overlooked to provide passive surveillance and improve public security of the area.

4.33 An Architectural Liaison Officer (ALO) will be consulted throughout the design process.

Inclusive Design

Applications 1 and 2 - Ham Common and Martingales Close

4.34 Giving residents a sense of home and accommodating their future needs is integral to a self-sustaining community.

4.35 All Dwellings have been designed to comply with Part M of the Building Regulations (2013 edition), of which 90% will meet category 2 standards for accessible and adaptable dwellings; with the remaining 10% designed to comply with category 3 standards for full wheelchair adaptable dwellings.

4.36 Dwelling Space standards meet or exceed the standards as set out in the nationally described space standards, and fully comply with the detailed and high quality dwelling layout requirements for housing for private sale.

4.37 In total five disabled car parking spaces are being provided for the development. Applicarion1 site will have four spaces and Application 2 will have one space.

Transport and Movement

Sustainable Travel Planning

Applications 1 and 2 - Ham Common and Martingales Close

4.38 Planning neighbourhoods with facilities such as shops, social infrastructure and bus stops close to homes reduces the reliance on the car and allows a wide range of disabled and older people to live more independently within a community.

4.39 The strategy of the overall development is to balance access to amenities and reliance on cars (mitigating their effect on the environment). Therefore it is essential that people can walk or cycle some distance to and or between the various facilities and public transport with ease, and that there are accessible options available for people with disabilities.

4.40 A Transport Statement has been prepared for the site, by Glanville. A strategy will be put in place with information contained in the welcome packs for new households to ensure that residents are fully informed of the most convenient, safe and sustainable options available to them.

4.41 The Transport Assessment has identified that good opportunities exist for travelling sustainably to and from the development, particularly on foot, by bicycle and via public transport.

Public Transport

Application 1 and 2 - Ham Common and Martingales Close

4.42 The Public Transport Accessibility Level (PTAL) for the site has been estimated as 1b.

4.43 The nearest bus stop is within approximately 200m of the site and is serviced by Bus 65. The closest bus stop is located on Ham Gate Avenue. The nearest station is in Richmond, with access to services to central London, Windsor & Eaton, Reading, Willesden Junction (and others) via:

- Tube (District Line)
- Overground services
- National Rail

4.44 The table below provides a summary selection of key local public transport services.

Table 3 - Local Public Transport Services

Local Service	Station/stop	Distance from site
Tube	Richmond	3.6km
Overground	Richmond	3.6km
Rail	Richmond	3.6km
Bus stop	Ham Gate Avenue	220m
Bus Stop	Sandy Lane	600m

Walking, Cycling & Car Dependency

4.45 The design of the public realm prioritises pedestrians and cyclists within the development. The streetscape will not only be clear and legible but it will also meet the Local Authority's Inclusive Design Standards.

4.46 The nearby amenity areas offer extensive and established cycle routes, with a selection of both traffic-free and on-road cycle routes available:

- the scenic off road pedestrian/cyclist route that connects Richmond to Hampton Court Palace, via Ham, along the southern bank of the River Thames
- Richmond Park off road and main road cycle routes
- Riverside Drive and Ham Gate Avenue off road and quiet cycle route
- Several main road routes to Kingston and Norbiton

Application 1 - Ham Common

4.47 Chosen modes of transport are driven by convenience, availability and the user's lifestyle and the following design measures are included to encourage uptake of sustainable transport:

- In total 35 car parking spaces will be created, including 4 disabled spaces.
- Sufficient and secure cycle parking and storage is provided. Cycle Sheffield stands are available for use immediately off the main car park area. Next to the Coach House, there is provision for another 8 cycle stands, which can either be used by residents, staff or visitors. The cycle spaces will be adequately lit and covered.

4.48 In terms of pedestrian access and circulation within the site, pedestrian convenience and freedom of movement on key access routes has been optimised. Proposed paths and footways will connect with proposed car park and entrance gates, which will connect with routes of the urban fabric and road network via Ham Common. The majority of the site is pedestrianized (car free), car parking is solely located in the main entrance areas.

Application 2 - Martingales Close

4.49 Chosen modes of transport are driven by convenience, availability and the user's lifestyle and the following design measures are included to encourage uptake of sustainable transport:

- 2 car-parking spaces for every dwelling is being provided, with an extra space for visitors; In total 5 spaces are proposed, and one of the spaces is a disabled bay.
- Sufficient and secure cycle parking and storage, have been designed in, 2 cycle Sheffield stands are located on the side of each dwelling.

4.50 In terms of pedestrian access and circulation within the site, proposed paths and footways will directly connect the houses to Martingales Close, which will connect with routes of the urban fabric and road network. The car parking spaces are located immediately in front of each house to safeguard nearby habitats.

Home Working

4.51 Additional power and telephone sockets will be provided in all homes and dedicated communal spaces, and the development will have ready access to high speed broadband to allow easy home working and access to online e-government and commercial services. A significant proportion of

dwellings have been designed with an office space. A computer room will be created on the ground floor of the listed building.

The Location and Amenities

4.52 The St Michael's Convent site is well connected and is in close proximity to several other amenity areas. A list of nearby amenities can be found below:

Table 4 - Proximity to Amenities

Amenity	Name	Distance from site	Walking time
Shops	Ham Street	350m	3 minutes
	Back Lane	550m	6 mins
Sports	Ham Polo Club	1100m	11 mins
	Richmond Golf Club	1200m	12 mins
Leisure	Richmond Park	1400m	14 mins
	Ham Common	10m	1 min
	Ham House	1400m	14 mins
	Thames River	1200m	12mins
Worship	St Thomas Aquinas RC	250m	3 mins
	St Andrew's Church	550m	7 mins
Health	Ham Clinic	600m	8 mins
	Medica Optima	300m	4mins
	Pharmacy	300m	4mins
Post Office	Ferrymoor	1200m	12 mins
ATM	Ham Street (food and wine shop)	350m	3 mins

5. Environmental Credentials

Resource Management

Applications 1 and 2 - Ham Common and Martingales Close

Land

5.1 The development site is located in Ham, London. The location is in an urban environment, where the immediate surroundings are mostly residential buildings (houses and blocks of flats) and some non-residential land uses (schools, shops, churches, etc).

- Application 1 - Ham Common

5.2 The buildings within Application 1 are existing buildings that will be restored, with the exception of 15 new build houses (extension to existing building and mews houses) located mostly on the footprint of existing 1950's buildings (which will be demolished). Therefore, the proposed development is mostly using previously occupied land, greatly reducing its impact.

- Application 2 - Martingales Close

5.3 The buildings within Application 2 are new build houses, well screened by the surrounding trees.

Site Layout and Building Design

- Application 1 - Ham Common

5.4 The proposed buildings are subdivided into several cores:

- main existing building
- the Coach House
- the mews
- the proposed extension to the existing building, along Martingale Close
- the new dwellings enclosing the walled garden

5.5 The main existing building and the Coach House heights (3 storeys and 2 storeys respectively) will be maintained and all dwellings will be created within the existing building fabric. The Coach House is facing West (single aspect), with no windows to the East and only a small window in the utility room to the South. The flats being proposed within the existing building will all have dual aspect, with the majority of windows either facing North or South.

5.6 The houses that will enclose the walled garden have been designed to give continuity to the existing surrounding wall and are therefore only 1 storey high. Both houses have been designed with the windows facing the garden, meaning they are single aspect dwellings.

5.7 The mews houses have been designed, in part, so as to occupy the existing 1950's chapel (to be demolished), with the dwellings opposite to sit on the existing amenity grassland, which has been deemed of low ecological value by the Ecologist. Each house in the mews is dual aspect and has windows facing either North or South.

5.8 The building which will be mostly located on top of the 1950's existing extension to the main existing building have been designed to minimise the area of undisturbed land that is developed. The houses are also dual aspect and are 2 storeys high. The windows face both East and West.

- Application 2 - Martingales Close

5.9 The proposed new buildings are 1½ storey high. Overall they are rectangular in shape with a pitched roof. The houses are dual aspect, with windows facing both East and West, facilitating daylight and cross ventilation. The proximity of the orchard will increase the temperature/pressure differential between East and West facades therefore contributing to air movement within the dwellings if windows are open.

Energy, Carbon Dioxide Emissions and Renewable Energy

Applications 1 and 2 - Ham Common and Martingales Close

Energy Strategy

5.10 The development has been designed to mitigate carbon emissions from the use of fossil fuel energy to heat and power the buildings on site. Please refer to the Energy Statement prepared by PRP for detailed information. The mitigation of carbon emissions is demonstrated by exceeding the minimum energy efficiency requirements for the latest building regulations (Part L 2013) as well as complying with the London Plan and London Borough of Richmond upon Thames policies for carbon reduction on site.

5.11 The strategy for achieving this reduction in emissions is to reduce the demand for heat and power through improvements to the energy efficiency of the building fabric and installation of efficient, cost effective solar photovoltaic panels on the roofs to supply inflation proof electricity.

5.12 This will ensure that demands for energy to heat the internal space, provide hot water and meet the lighting requirements are reduced. This will in turn reduce emissions by a similar amount. To deliver the required carbon emission reductions, the developer has committed to provide the following:

Energy Efficient Design and Enhancements

5.13 For the purposes of compliance with London Plan and London Borough of Richmond upon Thames policies, the development (including Application 1 and 2) consists of 18 new dwellings (and 8 dwellings in retained buildings). The buildings make efficient use of the building footprint and mitigate heat losses through efficient layouts, form and density profile.

5.14 All construction will have U-values much better than those required under Building Regulations for all opaque elements (walls, floors, roofs) as well as improved performance to windows and external doors. Thermal bridging has been reduced throughout as Accredited Construction Details will be used.

5.15 In order to reduce infiltration heat losses, buildings will be constructed and tested to meet improved air-tightness levels (an Air Tightness level of 4 $m^3/m^2/hr$ is being targeted). Measures will typically include: ensuring sufficient laps on vapour barriers, sealing around services and other penetrations, sealing at the junctions between components and careful detailing to avoid unwanted air paths.

Efficient Heating

5.16 On sites, where the dwellings density is very dispersed and low (unviable to install heat networks), with ecological features to be preserved, for the retirement target, it was considered that familiar, non-intrusive (to the landscape) and reliable (simple to use) heating technologies would prove the best solution. For detailed justification for the proposed energy strategy please refer to the Energy

Statement. As such, heating & hot water will be provided by individual high efficiency, low NOx emissions, combigas boilers.

5.17 Heating controls will include 7-day programmers to both the living and sleeping zones, allowing each dwelling to set different temperatures in different rooms at different times. This will avoid the unnecessary heating of rooms that are not in use at particular times of the day.

5.18 Energy bills will account for individual heat usage using 'Smart' meters with accurate recordings of gas (& electricity) provided in each dwelling.

Energy Efficient White Goods

5.19 Information and advice on the purchasing of white goods will be provided within the Home User Guide provided to all dwellings. This will contain information about the EU Energy Labelling Scheme and other energy efficiency indicators.

Low Energy Lighting

5.20 Lighting to all dwellings will be provided by Low Energy Lamps (LELs). LELs, use at least one fifth of the energy of conventional tungsten filament bulbs and last approximately eight times longer. Over its 10,000-hour life, a 20W LEL will save the householder more than £50 and this takes into account the higher purchase costs of the bulbs. Over its life each 20W LEL will save 0.37 tonnes of CO2 compared to the conventional 100W bulb that it replaces.

Renewable Energy

5.21 Renewable energy is proposed in the form of thin Solar Photovoltaic panels, which will be supplied on site to ensure the London Plan and London Borough of Richmond upon Thames policy requirements are met. The site is located in a conservation area and there are Grade II listed buildings to be retained. However given the inappropriateness of alternatives, and after analysing low visual impact opportunities to install PVs on site, the use of integrated PVs was considered satisfactory in comparison to other low or zero carbon technologies. Please refer to Energy Statement for additional details.

5.22 The commitment to use PVs stems from the possibility of installing slate like, low visual impact PVs (see figure below in 5.23), as well as installing PVs in areas of the proposed double pitched roofs (as designed) which will have no visual impact from the ground floor and limited visual impact from the Grade II listed building.

5.23 The use of PVs will equate to approximately 30kWp (~230m^2) located on unshaded roof space. This will reduce emissions by approximately 12,400 kgCO_2/yr (1900 kgCO_2/yr for Application 2 and 10,500 kgCO_2/yr for Application 1), which represents 29% of the total CO_2 reduction for Application 1 and 31% for Application 2 (for a 35% target). Please refer to the Energy Statement (prepared by PRP) for further details.

Water Efficiency

Applications 1 and 2 - Ham Common and Martingales Close

Water Strategy

5.24 Given the status of listed building in a conservation area, it has been decided that the main options for reducing the volume of mains water supplied/consumed be the development future occupants is :

- Providing low water use appliances and fittings
- Plant drought resistant and/or native species planting throughout the soft landscaped spaces
- Encourage occupants to use less water

Reducing Internal Potable Water Use

5.25 The greatest and most cost effective reductions in water use can be achieved through simple water reduction measures. In order to predict likely savings, calculations have been carried out using the water calculation prediction method used in Part G. This has shown that water use will be reduced from a minimum of 125litres/person/day to 105 litres/person/day (compliant with AD Part G), providing a saving of approximately 15% against the mandatory minimum. The following water specification is being proposed for the water fittings to be installed:

- 6/4 litre dual flush WC
- Flow restricted taps (Wall taps reduced to 5 litres/minute)
- Showers with a flow rate of less than 9 litres/minute
- Standard bath (150 litres capacity to overflow)
- Typical Washing machine (7.5 litres/kg dry load) and dishwasher (4.5 litres/place setting)

Raising Awareness

5.26 Residents will be provided with information on how to lower water usage in their gardens and within the dwellings, promoting conscious use of valuable resources.

Materials and Waste

Applications 1 and 2 - Ham Common and Martingales Close

Materials and Resource Use

5.27 The Application 1 aims at maintaining the existing building and the Coach House on site. Therefore, a significant proportion of materials that would be required by a new build will not be necessary as the existing buildings will be renovated and adapted for retirement housing. All the external walls, structure, windows and roofs for both the existing building and the Coach House will be retained.

5.28 For the proposed new dwellings (in both Application 1 and 2) and where new materials are required (for the existing buildings in Application 1), locally sourced materials and materials with a Green Guide to Specification (BRE, 2009 edition) A+ to D rating will be specified by the design team, in order to reduce the lifecycle environmental impacts of materials used in the development.

5.29 As much as possible and feasible, construction materials by value will be from recycled or sustainable sources, possible examples are found below:

- Recycled paving slabs
- Recycled material for sub-base of roads and pathways
- Reconstituted and reused stone
- Plasterboard with a recycled material content
- Blockwork to internal leaf of houses with a recycled content

Environmental Impact of Materials

5.30 Determining the overall environmental impact of construction materials requires an assessment of the life-cycle of each relevant product. This is a complex process that takes into account issues such as: durability; energy and other resources used in manufacture; pollution and emissions resulting from manufacture; and the likelihood of re-use or potential for recycling at the end of their life.

5.31 In selecting materials and construction methods for the site, the new domestic Green Guide to Specification (BRE, 2009 edition) ratings will be used. For each element of a building, the guide provides a rating of 'A+' to 'E' for each of the construction types commonly used to build that element. Materials and construction methods with a rating of 'A+' have the lowest impact in their overall life-cycle compared with alternative construction methods available.

5.32 The developer will commit to selecting for the new build dwellings at least three out of the five main building elements (Roof, Floors, Internal Walls, External Walls, and Windows) to be 'A+' to 'D' rated. Additionally, where practical and in keeping with planning objectives (relating to the appearance of buildings), construction methods will be selected that meet the higher ratings. At this site, material choices that reduce the environmental impact include:

- Flat roofs with timber deck and joists with insulation and roof membrane will be selected to achieve an 'A+' rating in houses
- Roof above with integrated solar panels to achieve 'A+' rating
- External walls with brick faced cavities, insulation and blockwork inner leaf, achieving an 'A+' rating
- Double glazed windows have been specified to minimise maintenance requirements and will be selected to achieve an 'A' rating.

Aggregates

5.33 It is expected that, where possible, aggregates (by weight) used in permanent works forming part of the development shall be from a recycled source.

5.34 The developer will liaise directly with its supply chain and, where feasible, insert clauses within its procurement contracts to support achievement of this target.

5.35 As there is demolition occurring as part of the Application 1 development proposal, the possibility of reusing some of those materials on site will be analysed via the implementation of a pre-demolition audit. Based on the audit results, the contractor will determine the quantity that is available and, where possible, materials can be crushed and used for bedding and as sub-base for the hard landscape and roads on the sites of both planning applications.

Responsible Sourcing of Timber

5.36 All timber will be sourced from sustainable sources, where possible using timber certified under the FSC (Forestry Stewardship Council) certification scheme. Where FSC timber is not available, timber will be sourced from one of the following alternative schemes: PEFC (Pan European Forestry Council), CSA (Canadian Stewardship Council), or SFI (Sustainable Forestry Initiative). All of the mentioned schemes provide independent certification of their timber.

5.37 To ensure that this requirement will be met, the certification requirements will be clearly included within the specification documents for this development.

Ozone Depletion and Global Warming Potential of Insulants

5.38 All new insulation materials will be selected to be CFC and HCFC free, with a Global Warming Potential (GWP) of less than 5. This includes insulation for walls, roofs, hot water cylinders and pipework.

Construction waste

5.39 The developer will commit to meeting a target for construction waste by diverting at least 90% of waste generated during construction. The waste diverted will either be, where feasible, reused on site, reused on other sites or recycled.

5.40 A Site Waste Management Plan will be prepared and implemented. This will be developed in accordance with the relevant guidance produced by DEFRA, WRAP, Envirowise, BRE and others.

5.41 Components that may be used and can be prefabricated off site to reduce waste, for example, in the construction of formwork or the generation of off cuts. Prefabrication of these elements will also help reduce disruption from noise on site. These components will include:

- Provision of sufficient storage facilities for recyclable construction waste
- Use of modular offsite fabrication techniques (e.g. formwork, concrete staircases, etc)
- Reduced use of packaging and take back arrangements (i.e. suppliers take back unused materials)
- Use of soil and spoil on-site within the green/brown roofs

Household Recycling

5.42 The impact that a development has on waste is mainly incurred during occupation. This site has been designed with the intention of reducing the quantity of waste that is sent to landfill by providing residents with the facilities to recycle a number of materials, removing them from the waste stream. Information is also provided to educate occupants about the waste stream and benefits of recycling.

5.43 The site (Application 1) will have secure, covered, externally accessed, communal refuse stores, located at ground floor external to the existing buildings. Each house in the Application 2 has been designed with its own individual refuse store (located on the side of each house).

5.44 The refuse stores across the sites in Application 1 and 2 have been sized in accordance with predicted resident's needs. Each store will have containers for both general waste and recycling.

5.45 In addition to a refuse store, all homes will be provided with a 30-litre internal bin to allow the storage of recyclable materials. This will be installed inside a kitchen cupboard. Residents will be able to conveniently store recyclable materials as they are generated, before transferring them to the external refuse and recycling collection facilities.

Nature Conservation and Biodiversity

Application 1 and 2 - Ham Common and Martingales Close

5.46 The application site comprises of a mix of uses, including a listed building, several 1950's extensions, a coach house and some outbuildings. These are surrounded by extensive greenfield infrastructure such as the orchard, a walled garden with an allotment and large grassland areas.

Statutory and Non Statutory

5.47 The site is located in an area where several sites of ecological designation. The nearest within 3km of the site are as follows:

- Richmond Park (SSSI, NNR and SMI)
- Bushy Park (SSSI)
- Ham Common (LNR and SLI)
- Ham Lands (LNR)
- River Thames (SMI)
- The Copse, Holly Hedge Field and Ham Avenues (SBI2)
- Marble Hill Park (LNR)
- Moormead Recreation Park (LNR)
- Old Deer Park (LNR)

Survey

5.48 In September 2015, May and July 2016, Ecology Solutions was commissioned to carry out a habitat survey and mapping exercise of St Michael's Convent project. In addition, specific surveys were undertaken for bats, great crested newts and badgers (meles meles).

Existing Ecology

5.49 The application site supports the following habitats:

- Buildings and hardstanding
- Mown
- Amenity grassland
- Amenity planting
- Trees, including orchard trees
- Allotments
- Hedgerows
- Two small amenity ponds

5.50 The survey had the scope to analyse if any of the following species could be found on site or be using it for, for example, foraging: great crested newts, birds, bats, reptiles or other protected species. Evidence has been found that the site is used by badgers and there is one record of a common frog. The ponds have been deemed of poor condition for possible use by great crested newts and of limited ecological value within the site's context. The trees on site, some shrubs have the potential to provide nesting grounds for birds.

5.51 Surveys were done in May and July 2016 to verify the use of the site by bats. No evidence has been found that bats are emerging from the existing buildings. Bats were seen foraging the flying on site.

5.52 The amenity grassland, even though of no ecological value itself, does offer foraging opportunities for badgers and birds. The amenity shrubs are non-native species that offer nesting, foraging, navigation and sheltering opportunities for several other animal species. The orchard on site is classed as one of moderate condition. The allotments only offer foraging conditions to badgers. Mitigation measures have been proposed and can be found in the section below.

5.53 An Arboricultural Impact Assessment has been prepared by ACD Arboriculture, in accordance to their analysis a total of 110 individual trees with stem diameters of 75mm and above at 1.5m was surveyed and recorded. Of these 68 trees are 'C' and 'U' classed with the rest being 'A' and 'B' classed, meaning that although some trees are constraints to development, where possible these should be kept.

5.54 The proposed redevelopment of the site will have an impact on some of the existing trees, as some will need to be felled to give way for some of the proposed buildings. However mitigation measures have been proposed and can be found in the section below: 'Maintaining and Improving Biodiversity'.

Figure 8 – Habitats found (source: Ecological Assessment, by Ecology Solutions Ltd)

- Application 2 - Martingales Close

5.55 The proposed development of the site will have an impact on some of the existing trees, as some will need to be felled to give way for some of the proposed buildings. However mitigation measures have been proposed and can be found in the section below.

Maintaining & Improving Biodiversity

5.56 Following the ecological and arboricultural survey findings, some mitigation measures to protect the ecological interest of the site are being proposed.

5.57 Even though no bats have been found to be using the site, it is proposed that bat boxes or tiles are installed as part of the proposed development and landscape scheme. The trees that have shown suitable for roosting opportunities for bats are to be retained and further surveys to confirm the use of the site by bats is recommended. External lighting will be carefully planned to minimise possible nuisance to animals and neighbouring properties. For additional information on the external lighting strategy please refer to the pollution management section below.

5.58 Mitigation measures to protect nesting birds will be required. It is advised that demolition and removal works can only be done outside of the nesting bird season (which is generally taken to be

March to August, inclusive) or after they have been checked for bird nests by a suitably competent person.

5.59 The majority of the trees will be retained on site. The orchard will be safeguarded and enhanced by planting new fruit trees and an appropriate mowing regime will be introduced to enhance the floristic diversity of the grassland beneath the trees.

5.60 The allotment within the walled garden will be retained. Future occupants will be able to use the spaces for growing vegetables and fruits. The maintenance of this space will also increase the foraging opportunities for animals that occupy the site.

5.61 Measures to mitigate impacts have been set out along with recommendations for enhancement of the site's ecological value. The landscape scheme for the site is proposing maintaining, where possible, the existing central amenity grassland area. Some wildlife planting species will be proposed where the main existing build proposed terrace meets the lawn. In the car park at the site main entrance, additional tall hedges are being proposed. The majority of the defensible areas around the buildings will be created by the introduction of shrubs and hedges.

5.62 Implementing the recommendations will ensure that there are no significant impacts upon protected species and that the proposals will be in conformity with relevant legislation and policy.

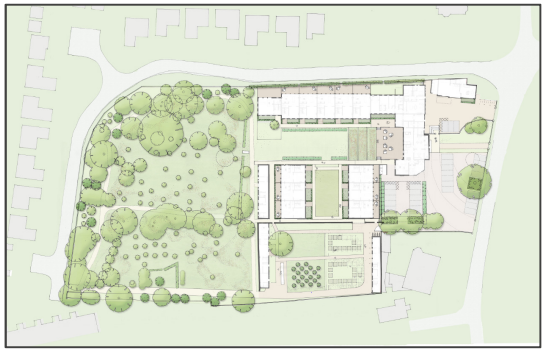

Figure 9 – Proposed Landscape Plan (Application 1)

Figure 10 - Proposed Landscape Plan (Application 2)

Adapting to Climate Change, overheating and green cover

Applications 1 and 2 - Ham Common and Martingales Close

5.63 Due to predicted changes in the climate, it is expected that the urban heat island effect will intensify over time. At the moment urban centres are typically a lot warmer than the surrounding countryside.

5.64 One of the most efficient ways of reducing the effect of urban heat island effect is to maximise the introduction of soft landscaped areas (especially directly adjacent to buildings), as these actively contribute to evaporative transpiration, reducing heat absorption from surfaces, while offering biodiversity benefits.

5.65 The development will feature an array of green and biodiverse landscaped areas along the routes and within close proximity to building facades. The vast majority of the trees will be kept on site, as wells as the allotment area and the grassland areas. Additional soft landscaped areas will be

created in the main entrance, where the formal parking area will be delimited by hedges. Please refer to Design & Access statement for details of the landscape strategy.

5.66 Throughout the site the landscape planting of both new trees and other plants are selected to be robust and resilient in order to withstand climate change and mediate against its excesses, providing shade cover, high levels of carbon sequestration and enhancing the Sustainable Urban Drainage Systems and air quality. Green roofs will be installed on some of the flat roofs.

5.67 The colour scheme proposed for the development will be using medium/light colours for the bricks, which will help increase the albedo effect. The use of bricks and stone, as well as soft landscaping and trees will also contribute to the increase of the amount of sunlight that is reflected back to space, therefore reducing the surfaces temperature.

5.68 All dwellings will have the ability to either be naturally ventilated or with mechanical ventilation heat recovery (MVHR); careful consideration has been given when designing the new build houses and proposed flats. The majority of dwellings will be dual aspect and some will allow for cross ventilation, favouring the reduction of overheating. The building fabric on new build dwellings will be efficient, helping to keep the heat out.

Flooding

Applications 1 and 2 - Ham Common and Martingales Close

Flood Risk Assessment and Sustainable Urban Drainage

5.69 The development site is within Flood Zone 1, which has a low risk from all sources of flooding examined. The site is also not a risk of flooding from reservoirs and only a small portion is at low risk of flooding from surface water. Although the risk of surface water flooding is very low, there is always the potential for localised pooling of surface water run-off in an intense rainfall event.

5.70 The majority of the proposed new houses are designed to occupy land that was previously built on, on either building's that will be renovated or demolished. Some new houses are being proposed on greenfield spaces.

5.71 The two new dwellings (Application 2) are being proposed on greenfield land, and the impact resulting from these on the existing surface water run-off rates is expected to be very low.

5.72 The overall increase in impermeable for both planning applications is 0.55 hectares.

5.73 The drainage strategy for the site involves a restricted discharge to the public surface water sewer. The design will enable infiltration into the Kempton Park Gravel Formation, but has been designed based on a negligible infiltration rate in order to achieve a conservative design. Attenuation storage will be provided to accommodate surface water flows from the development for the 1-in-100 + 40% climate change storm event without flooding.

5.74 Nonetheless and considering the site sensitive nature, some measures are being proposed and these will include:

- Green Roofs on the two new flat roofs
- Permeable paving
- Proposed Infiltration / Conveyance Trench
- Proposed geocellular attenuation crate

Foul & Surface Water Management

5.75 It is proposed to connect the foul sewerage system for the new development into the existing combined public sewer which flows through the site, subject to agreement with Thames Water.

5.76 It is assumed that all drainage features described in this report will be adequately maintained by a designated management company.

Pollution Management

Applications 1 and 2 - Ham Common and Martingales Close

Land Contamination and Remediation

5.77 The British Geological Survey map of the area (No. 270 – South London) indicates that the site geology consists of sands and gravels of superficial deposits of Kempton Park Gravel over London Clay.

5.78 A site investigation has been commissioned to assess the existence, severity and extent of soil contamination and no significant potential off site sources of contamination have been identified. On the basis of the available historical mapping, the site appears to have only been used as an house, school and a convent, with extensive grounds. There is a risk that some made ground soils may be present due to occasional development/redevelopment within the site. There are no remedial measures proposed for the site.

Air Pollution

5.79 The site is located in an urban area characterised by extensive public soft landscaped spaces, residential, commercial and educational uses. The nearby roads are mostly for residential access and are not subject to passing traffic therefore should not be a source of air pollution. The proposed new build dwellings for the site will actually be located 'behind' the main existing building and will be facing either pedestrian routes or 'no through' routes. It is expected that the future occupants will not be at risk of air pollution.

5.80 The proposed development is residential, there is going to be an increase on the housing density, with some additional cars expected to use the site. The increase in traffic to and from the site, is still relatively low. The energy strategy proposed for the site will not feature a Combined Heat and Power system, it will in fact consist of gas boilers and photovoltaic panels on the roof. Therefore the proposed development is not expected to contribute to the deterioration of air quality.

5.81 The existing trees and orchard on site, are being retained, these will significantly contribute to maintaining a good air quality on the site.

5.82 During the construction stage, the developer is aware that during dry conditions there is the potential to produce dust. This will be minimised by implementing best practice air pollution control measures in accordance with Pollution Prevention Guidelines, Working at Construction and demolition Sites (PPG6). These may include some of the following measures:

- Dampening of exposed soil and material stockpiles using sprinklers and hoses when necessary to prevent dust and particulate matter becoming mobile
- Stockpiles of soils and materials would be located as far as possible from sensitive receptors, taking account of prevailing wind directions and seasonal variations in the prevailing wind and the potential for run-off into watercourses

- Surfaced and un-surfaced site access roads will be watered as necessary using a water bowser and surfaces kept in good order
- Regular inspection of local highways and site boundaries to check for dust deposits (and road sweeping will be conducted if necessary) would be carried out, the road sweeper collections will be disposed of in accordance with waste management legislation
- Visual inspection of the site perimeter to check for dust deposition (evident as soiling and marking) on vegetation, cars and other objects, and the implementation of remedial measures if necessary, would be carried out
- Speed limit around site of 10 mph.

Transport

5.83 The developer will implement a construction management plan, which includes the management and control strategy for pedestrians and vehicular movements access on site to ensure safety at all times throughout the construction work period in accordance with all relevant Acts and Regulations.

5.84 For the duration of the construction activities provisions will be adopted to minimise potential impacts on public highways, public rights of way and third party land from the use of construction traffic and all activities associated with the implementation of the project.

5.85 As far as is reasonably practical, vehicle routes will be located away from the main pedestrian routes. Where risks are high because of the number and nature of vehicle movements, appropriate control measures will be adopted, e.g. setting up of different routes for different vehicle types and activities.

5.86 All traffic management measures will be temporary including traffic signs, road markings, barriers, lamps, traffic control and such other measures necessary in accordance with best practice and will be undertaken in accordance with the Department for Transport's Traffic Signs Manual, Chapter 8: Traffic Safety Measures and Signs for road works and temporary situations 2009, parts 1 Design and 2 Operations.

Noise

5.87 The roads that are adjacent to the site are residential access roads. Martingale Close is a 'no-through' residential road, that provides access to the occupants of the residential houses along it. Along the West boundary there is a pedestrian scenic route, up to Ham House. To the South, the perimeter road that runs along Ham Common is slightly busier, despite it still being a residential access road. The development has been designed with the aim to reduce the exposure of the dwellings to noise from the nearby roads. The majority of existing trees are to be kept on site, therefore shielding the dwellings. The main entrance wall and trees are also to be kept. Some tall hedges will be planted on the main entrance court, to the West of the existing building, which will help reduce potential noise to the new build dwellings at the back. The new build dwellings will be double glazed, with a building fabric expected to achieve a noise performance improvement of 3dB (airborne and impact) above Building Regulations.

5.88 The plant room proposed for the site will be adequately insulated as to reduce any potential nuisance to the dwelling occupants and nearby sensitive receptors. There is no intention to install air conditioning or HVAC systems anywhere on site.

5.89 For the construction stage, the maintenance and location of plant will be planned to minimise noise levels and screening will be used where necessary. Adherence to noise limits and permitted working hours will be included in contractual agreements with contractors.

Light Pollution

5.90 External lighting strategy for the development will have careful consideration for the occurrence of potential light spillage and overall pollution.

5.91 The developer will ensure that all external lighting and illumination installed for the external areas of the development will be in accordance with the guidance issued by the following:

- Institution of Lighting Professionals - ILP “Guidance Noted for the Reduction of Light Pollution”
- CIE (International Commission on Illumination) Report - “Guide on the Limitation of the Effects of Obtrusive light from Outdoor Lighting Installations”

5.92 The landscape being proposed for the site will include low lumens lighting to illuminate the footpaths. Security lighting will be maintained where necessary. Any post top luminaires will be at less than 70degrees angle from the post itself. Any wall mounted luminaires will be directed to the floor or specific surface it is intending to illuminate. The design specification for the light fixtures will apply the standards referred to above.

5.93 Careful consideration will be given to ensure light fixtures will not point directly towards: windows (on site or neighbouring ones); possible bat boxes or roosting areas; the ponds; the orchard; badgers sets and latrine areas or any other potentially sensitive receptors.

5.94 During construction, additional measures will be taken to prevent construction lighting affecting the amenity of residents or create a statutory nuisance, the developer will design and position external lighting to:

- Provide the minimum levels necessary for safe working
- Avoid disturbance to adjoining residents and occupiers
- Avoid creating dazzle or distraction for drivers using adjacent highways
- Seek to minimise light spillage or pollution
- Ensure that excess light does not fall on sensitive ecological habitats

Ground and Water Pollution

5.95 The proposed development will have very limited number of parking spaces, therefore it is not expected that the parking areas will be sources of pollution to the nearby soil and water. No oil separators or other types of pollution control measures will be required. The energy strategy for the development is gas boilers and photovoltaic panels on the roofs, there are no proposed HVAC plants, or similar, therefore the risk of contamination from this type of sources is non-existent and mitigation measures are not expected.

5.96 During construction, any chemicals and surface water runoff from the construction activities will be carefully stored to prevent spillages. The contractor will be required to adopt best practice policies in respect of water (ground and surface) pollution on site. The Pollution Prevention Guidelines (PPG6) will be adhered to and implemented on site. Examples of mitigation measures are likely to include:

- Inspection of existing protection measures; repair, empty and clean out before work starts on site.
- Plant, wheel and boot washing: will be carried out in a designated area of hard standing at least 10 metres from any surface waters, where relevant for the site.
- Site water run-off will be collected in a sump, with settled solids removed regularly and water recycled and reused where possible.
- Regular and up to date, adequate to site, staff training to ensure policies are followed

5.97 Standard engineering practice in respect of pollution control, as part of the development proposals, will avoid any potential effects on any retained or new ponds within the site.

5.98 The drainage systems for the Proposed Development shall meet the minimum requirements of Part H of the Building Regulations, and will meet Thames Water's design requirements for adoption.

5.99 As part of the developer's environmental management system, all fuel will be stored in a double skinned tank or a tank in a suitable bonded area in compliance with the Control of Pollution (Oil Storage) England Regulations 2001. Re-fuelling activities will only be undertaken by suitably qualified persons and spill kits will be available within the site compound.

5.100 Any hazardous liquids e.g. oils, lubricants, chemicals and tins of paint will be stored in a segregated area in a suitable locked Control of Substances Hazardous to Health (CoSHH) container. COSHH assessments will be available nearby for information in the event of a spillage.

5.101 In order to protect site workers, members of the public and the environment where movements of contaminated material off site are required this will be carried out under the relevant waste management legislation and in consultation with the Environment Agency where necessary. The Environment Agency will also be consulted where piling and ground improvement activities have the potential to cause risk to the underlying groundwater sources.

6. Sustainable Construction Checklist

Applications 1 and 2 - Ham Common and Martingales Close

6.1 This Sustainable Construction Checklist SPD forms part of the assessment for planning applications for new build, conversion and retrofit properties within the London Borough of Richmond upon Thames.

6.2 According to the results of the checklist presented below, Application 1 and 2 are making a major contribution to achieving sustainable development in Richmond.

LBRUT Sustainable Construction Checklist - January 2016

This document forms part of the Sustainable Construction Checklist SPD. This document **must** be filled out as part of the planning application for the following developments: all residential development providing **one or more new residential units (including conversions leading to one or more new units)**, and all other forms of development providing **100sqm or more of non-residential floor space**. Developments including new non-residential development of less than 100sqm floor space, extensions less than 100sqm, and other conversions are strongly encouraged to comply with this checklist. Where further information is requested, please either fill in the relevant section, or refer to the document where this information may be found in detail, e.g. Flood Risk Assessment or similar. **Further guidance** on completing the Checklist may be found in the Justification and Guidance section of this SPD.

Property Name (if relevant): St Michael's Convent (Application 1 and Application 2)

Application No. (if known):

Address (include. postcode): Ham Common, Richmond, Surrey TW10 7JH

Completed by: Filipa Fonte (Senior Sustainability Consultant)

For Non-Residential
Size of development (m2)

For Residential
Number of dwellings: 28

1 MINIMUM COMPLIANCE (RESIDENTIAL AND NON-RESIDENTIAL)

Energy Assessment

Has an energy assessment been submitted that demonstrates the expected energy and carbon dioxide emissions saving from energy efficiency and renewable energy measures, including the feasibility of CHP/CCHP and community heating systems? If yes, please tick. Y

Carbon Dioxide emissions reduction

What is the carbon dioxide emissions reduction against a Building Regulations Part L (2013) baseline: 35%

Policy DM SD 1 and London Plan Policy 5.2 (2015) require a 35% reduction in CO_2 emissions beyond Building Regulations 2013.

Percentage of **total** site CO2 emissions saved through renewable energy installation? 29%/31%

1A MINIMUM POLICY COMPLIANCE (NON-RESIDENTIAL AND DOMESTIC REFURBISHMENT)

Please check the Guidance Section of this SPD for the policy requirements

Environmental Rating of development:

Non-Residential new-build (100sqm or more)
BREEAM Level: Please Select — Have you attached a pre-assessment to support this? ☐

Extensions and conversions for residential dwellings
BREEAM Domestic Refurbishment: Please Select — Have you attached a pre-assessment to support this? ☐

Extensions and conversions for non-residential buildings
BREEAM Level: Please Select — Have you attached a pre-assessment to support this? ☐

Score awarded for Environmental Rating:
BREEAM: Good = *0*, Very Good = 4, Excellent = *8*, Outstanding = *16*

Subtotal 0

1B MINIMUM POLICY COMPLIANCE (RESIDENTIAL)

Water Usage

Internal water usage limited to 105 litres person per day. (Excluding an allowance 5 litres per person per day for external water consumption). Calculations using the water efficiency calculator for new dwellings have been submitted. ☑ *1*

Subtotal 1

2. ENERGY USE AND POLLUTION

2.1 Need for Cooling — *Score*

a. How does the development incorporate cooling measures? Tick all that apply:

		Score
Energy efficient design incorporating specific heat demand to less than or equal to 15 kWh/sqm	☐	6
Reduce heat entering a building through providng/improving insulation and living roofs and walls	☑	2
Reduce heat entering a building through shading	☑	3
Exposed thermal mass and high ceilings	☐	4
Passive ventilation	☑	3
Mechanical ventilation with heat recovery	☑	1
Active cooling systems, i.e. Air Conditioning Unit	☐	0

2.2 Heat Generation

b. How have the heating and cooling systems, with preference to the heating system hierarchy, been selected (defined in London Plan policy **5.6**)? Tick all heating and cooling systems that will be used in the development:

Connection to existing heating or cooling networks powered by renewable energy	☐	6
Connection to existing heating or cooling networks powered by gas or electricity	☐	5
Site wide CHP network powered by renewable energy	☐	4
Site wide CHP network powered by gas	☐	3
Communal heating and cooling powered by renewable energy	☐	2
Communal heating and cooling powered by gas or electricity	☐	1
Individual heating and cooling	☑	0

2.3 Pollution: Air, Noise and Light

a. Does the development plan to implement reduction strategies for dust emissions from construction sites? ☑ 2

b. Does the development plan include a biomass boiler? ☐ -

If yes, please refer to the biomass guidelines for the Borough of Richmond, please see guidance for supplementary information. If the proposed boiler is of a qualifying size, you may need to completed the information request form found on the Richmond website. ☐ -

c. Please tick only one option below

Has the development taken measures to reduce existing noise and enhance the existing soundscape of the site?	☑	3
Has the development taken care to not create any new noise generation/transmission issues in its intended operation?	☐	1

d. Has the development taken measures to reduce light pollution impacts on character, residential amenity and biodiversity? ☑ 3

e. Have you attached a Lighting Pollution Report? ☑ -

Subtotal 17

Please give any additional relevant comments to the Energy Use and Pollution Section below

The Lighting Pollution measures can be found within the Sustainability Statement, last heading of section 7. According to the Energy Statement the most appropriate solutions for the site have been deemed the use of gas boilers and PVs. Please refer to Energy Statement for additional information.
In addition to the information provided above, the majority of the dwellings are dual aspect, green roofs have been included as part of the proposal and permeable paving will be used extensively throughout the development, which will assist in reducing urban heat effect and overheating risk within the dwellings themselves.

3. TRANSPORT

3.1 Provision for the safe efficient and sustainable movement of people and goods

a. Does your development provide opportunities for occupants to use innovative travel technologies?

Please explain:

The developments will provide cycle storage spaces and also access to internet, which will allow any of the residents to plan their travel options.
Access to the internet also means there is no need for dedicated travel points and information as these would duplicate information available from the internet.
Due to the small size of the proposed developments (Application 1 and 2), no car pooling facilities or spaces are being provided.

b. Does your development include charging point(s) for electric cars? ☐ 2

c. **For major developments ONLY**: Has a Transport Assessment been produced for your development based on TfL's Best Practice Guidance?
If you have provided a Transport Assessment as part of your planning application, please tick here and move to Section 3 of this Checklist. ☐ 5

d. **For smaller developments ONLY**: Have you provided a Transport Statement? ☑ 5

e. Does your development provide cycle storage? (Standard space requirements are set out in the the Council's Parking Standards - DM DPD Appendix 4) ☑ 2
If so, for how many bicycles? 16 sheffield racks
Is this shown on the site plans? ☑ -

f. Will the development create or improve links with local and wider transport networks? If yes, please provide details. ☐ 2

Subtotal 7

Please give any additional relevant comments to the Transport Section below

The proposed developments consist of 2 dwellings (Application 2) and 26 dwellings (Application 1) it is therefore not feasible for the developer to create additional links to the existing network as the proposed additional local density does not justify it.

4 BIODIVERSITY

4.1 Minimising the threat to biodiversity from new buildings, lighting, hard surfacing and people

a. Does your development involve the loss of an ecological feature or habitat, including a loss of garden or other green space? (Indicate if yes) ☑ -2

If so, please state how much in sqm? -5000 sqm

b. Does your development involve the removal of any tree(s)? (Indicate if yes) ☑

If so, has a tree report been provided in support of your application? (Indicate if yes) ☑

c. Does your development plan to add (and not remove) any tree(s) on site? (Indicate if yes) ☐

d. Please indicate which features and/or habitats that your development will incorporate to improve on site biodiversity:

Pond, reedbed or extensive native planting	6	☐	Area provided:	sqm
An extensive green roof	5	☑	Area provided: 240	sqm
An intensive green roof	4	☐	Area provided:	sqm
Garden space	4	☑	Area provided: 8000	sqm
Additional native and/or wildlife friendly planting to peripheral areas	3	☑	Area provided: 210	sqm
Additional planting to peripheral areas	2	☑	Area provided: 300	sqm
A living wall	2	☐	Area provided:	sqm
Bat boxes	0.5	☑		
Bird boxes	0.5	☑		
Other	0.5	☑		

Subtotal 13.5

Please give any additional relevant comments to the Biodiversity Section below

The proposed 2 dwellings development (Application 2) is set on the part of the orchard with less trees. Some trees will need to be felled to give way to the development, however additonal fruit trees will be planted and the orchard itself will be mowed and improved. There are some hedges and shrubs added to the areas where development will take place.
A wildflower meadow will be created on the south area of the site. Green roofs will be installed but on roofs that are part of the wider site.
Each house will have defensible spaces which will be created from hedges/shrubs. The walled garden is to be enhanced and brought back to full use.

5 FLOODING AND DRAINAGE

5.1 Mitigating the risks of flooding and other impacts of climate change in the borough

a. Is your site located in a high flood risk zone (Zone 3)? (Indicate if yes) ☐ -2

Have you submitted a Flood Risk Assessment? (Indicate if yes) ☑ -

b. Which of the following measures of the drainage hierarchy are incorporated onto your site? (tick all that apply)

Store rainwater for later use	☑ 5
Use of infiltration techniques such as porous surfacing materials to allow drainage on-site	☑ 3
Attenuate rainwater in ponds or open water features	☐ 4
Store rainwater in tanks for gradual release to a watercourse	☑ 3
Discharge rainwater directly to watercourse	☐ 2
Discharge rainwater to surface water drain	☐ 1
Discharge rainwater to combined sewer	☑ 0

c. Please give the change in area of permeable surfacing which will result from your development proposal: -5500 sqm

Please provide details of the permeable surfacing below *please represent a loss in permeable area as a negative number*

Subtotal 11

Please give any additional relevant comments to the Flooding and Drainage Section below

For detailed information in regards the FRA, Surface Water Drainage and impermeable area please refer to the FRA, Surface Water Drainage Strategy, prepared by Glanville.

6 IMPROVING RESOURCE EFFICIENCY

6.1 Reduce waste generated and amount disposed of by landfill though increasing level of re-use and recycling

a. Will demolition be required on your site prior to construction? *[Points will only be awarded if 10% or greater of demolition waste is reused/recycled]* ☐ 1

If so, what percentage of demolition waste will be reused in the new development? 5 %

What percentage of demolition waste will be recycled? 90 %

b. Does your site have any contaminated land? ☐ 1

Have you submitted an assessment of the site contamination? ☐ 2

Are plans in place to remediate the contamination? ☐ 2

Have you submitted a remediation plan? ☐ 1

Are plans in place to include composting on site? ☐ 1

6.2 Reducing levels of water waste

a. Will the following measures of water conservation be incorporated into the development? (Please tick all that apply):

Fitting of water efficient taps, shower heads etc	☑ 1
Use of water efficient A or B rated appliances	☑ 1
Rainwater harvesting for internal use	☐ 4
Greywater systems	☐ 4
Fit a water meter	☑ 1

Subtotal 3

Please give any additional relevant comments to the Improving Resource Efficiency Section below

Guidance on how to reduce water usage within the dwelling and in the gardens will be provided to the future residents. The water fittings for the proposed development will be specified so that a water consumption of 105 l/person/day (below part G requirements) is achieved.
It is expected that part of the waste produced during demolition can be reused on site, for example the for sub-base on the hardlandscaping and pipping across the site.
Without a pre demolition audit it is not possible to point out precisely how much will be reused. A very conservative target of 5% has been assumed.

7 ACCESSIBILITY

7.1 Ensure flexible adaptable and long-term use of structures

a. **If the development is residential,** will it meet the requirements of the nationally described space standard for internal space and layout? ☑ *1*

If the standards are not met, in the space below, please provide details of the functionality of the internal space and layout

AND

b. **If the development is residential**, will it meet Building Regulation Requirement M4 (2) 'accessible and adaptable dwellings'? ☑ *2*

If this is not met, in the space below, please provide details of any accessibility measures included in the development.

For major residential developments, are 10% or more of the units in the development to Building Regulation Requirement M4 (3) 'wheelchair user dwellings'? ☐ *1*

OR

c. **If the development is non-residential,** does it comply with requirements included in Richmond's Design for Maximum Access SPG ☐ *2*

Please provide details of the accessibility measures specified in the Maximum Access SPG that will be included in the development

Subtotal 3

Please give any additional relevant comments to the Design Standards and Accessibility Section below

The proposed new building dwellings, for both Application 1 and 2 will meet the requirements highlighted in a) and b) above.

LBRUT Sustainable Construction Checklist- Scoring Matrix for *New Construction* **(Non-Residential and domestic refurb)** ***TOTAL*** ***55.5***

Score	Rating	Significance
80 or more	*A+*	Project strives to achieve highest standard in energy efficient sustainable development
71-79	*A*	Makes a major contribution towards achieving sustainable development in Richmond
51-70	*B*	Helps to significantly improve the Borough's stock of sustainable developments
36-50	*C*	Minimal effort to increase sustainability beyond general compliance
35 or less	*FAIL*	Does not comply with SPD Policy

LBRUT Sustainable Construction Checklist- Scoring Matrix for New Construction **Residential new-build**

Score	Rating	Significance
81 or more	**A++**	Project strives to achieve highest standard in energy efficient sustainable development
64-80	*A+*	Project strives to achieve highest standard in energy efficient sustainable development
55-63	*A*	Makes a major contribution towards achieving sustainable development in Richmond
35-54	*B*	Helps to significantly improve the Borough's stock of sustainable developments
20-34	*C*	Minimal effort to increase sustainability beyond general compliance
19 or less	*FAIL*	Does not comply with SPD Policy

Authorisation:

I herewith declare that I have filled in this form to the best of my knowledge

Signature F. Filipe Faria. Date

7. References

- Design and Access Statement by PRP
- Energy Statement by PRP
- Daylight, Sunlight and Overshading report by PRP
- Ecological Assessment by Ecology Solutions
- Transport Statement by Glanville
- Flood Risk Assessment and Surface Water Drainage Strategy by Glanville
- Desk Study & Preliminary Site Assessment Report by Southern Testing
- Tree Report by ACD Arboriculture