



Richmond Education and Enterprise Campus Development



Outline Sustainability Statement

Produced for Richmond upon Thames College

June 2015

Client: Richmond upon Thames College

Title: Richmond Education and Enterprise Campus Development
Outline Sustainability Statement

Project No: CC747

Date of Issue: June 2015

Status: Final

Version No: 1.0

Produced By



.....
Katherine Hayward
Senior Environmental Scientist

Authorised for Release By



.....
Dr T Rudd
Technical Director

CONTACT DETAILS

**Cascade Consulting
(Environment &
Planning) Limited**
Cascade Consulting
c/o Ricardo-AEA
Marble Arch Tower
55 Bryanston Street
London
W1H 7AA
Tel 01235 753 277



CONTENTS

1	Introduction	1
1.1	Background	1
1.2	The Site and Surrounds	1
1.3	The Proposed Development	3
2	Sustainability Policy	8
2.1	Introduction	8
2.2	National Policy on Sustainable Development	8
2.3	Regional	9
2.4	Local	14
2.5	Other Policies	23
3	Sustainable Design and Construction Elements of the Scheme	24
3.1	Introduction	24
3.2	Sustainable Design and Construction	24
3.3	Design Code	28
4	Approach to Sustainability Assessment	30
4.1	Introduction	30
4.2	Assessment Tools	37
5	Results of Assessment	39
5.1	Introduction	39
5.2	Landuse	40
5.3	Housing, Living Spaces and Social Infrastructure	41
5.4	Conservation of Energy, Materials and Water Resources	42
5.5	Maximising the Use of Natural Systems	44
5.6	Reducing the Impacts of Noise, Pollution and Flooding	45
5.7	Promoting Health and Wellbeing	48
5.8	Conservation and Enhancement of the Natural Environment and Biodiversity	50
5.9	Waste Management	51
5.10	Sustainable Construction	53
5.11	Sustainable Transport	53
5.12	Conserving and Enhancing the Local Character and Historic Environment	55
5.13	Economic Development	57
5.14	Summary	57
6	Sustainable Construction Checklist	57

Appendix A BREEAM Pre-Assessment

1 INTRODUCTION

1.1 BACKGROUND

This Outline Sustainability Statement has been produced by Cascade Consulting (Environment and Planning) Ltd on behalf of Richmond upon Thames College (RuTC) to accompany an Outline Planning Application (OPA) for the Richmond Education and Enterprise Campus (REEC; the 'REEC development'), a proposed mixed use redevelopment of the Richmond upon Thames College site in Twickenham, located in the London Borough of Richmond upon Thames (LBRuT), south London.

The REEC development entails a mix of new education facilities, comprising the college, a new secondary school and a Special Educational Needs (SEN) school, business space and replacement indoor and outdoor recreational facilities with community use, together with an 'enabling' residential development.

This Sustainability Statement sets out how the proposed development contributes to sustainable development in the context of national, regional and local policies on sustainability, through various design features of the development, the approach to construction and its long term use.

The design and construction of the proposed development aim to comply as far as possible with relevant sustainability policies and guidance and therefore this statement responds specifically to guidance as set out in:

- The National Planning Policy Framework (2012);
- Planning Practice Guidance (PPG);
- London Plan (consolidated 2015) and Supplementary Planning Guidance (SPG) on Sustainable Design and Construction (2014);
- LBRuT Core Strategy (2009);
- LBRuT Development Management Plan (2011);
- Crane Valley Planning Guidelines (2005);
- LBRuT Sustainable Construction Checklist SPD (2011); and
- LBRuT Planning Brief Richmond Upon Thames College (2008)

The proposals summarised within this statement promote a development which will incorporate an energy efficient, sustainable design with environmental performance and mitigation of the effects of climate change.

1.2 THE SITE AND SURROUNDS

The REEC development site ('the Site') covers an area of approximately 9 hectares

(ha) and falls within the administrative boundary of the LBRuT. A plan showing the location of the site is provided in **Figure 1** and the planning application boundary for the site is provided in **Figure 2**. The site is bounded by:

- A316 Chertsey Road to the north;
- Egerton Road and a residential area to the east;
- River Crane and Twickenham Rough to the south; and
- Langhorn Drive, Challenge Court, Harlequin FC's rugby stadium Twickenham Stoop, and Council playing fields and Depot to the west.

The OPA Site comprises numerous academic and facilities buildings associated with the existing RuTC, with the northern part of the site occupied by a four-court sports hall with associated facilities, a grass sports pitch and car parking in the north east corner (**Figure 3**), and the southern part of the site by the College playing fields south of Craneford Way. The RuTC buildings were constructed in the 1930s with further expansion in the 1970s, and vary from one to three storeys in height (with the exception of the five storey tower), with the mass of buildings focussed to the south east corner of the site. The buildings have an existing floorspace of 34,252 m² gross external area (GEA).

The sports centre and pitches are also operated as a community sports facility outside normal college hours. The main operating times are as follows:

- Term Time: Monday – Friday 16.30-22.00 / Saturdays and Sundays 09.00-17.00
- Holidays: Monday – Friday 16.30-22.00 / Saturdays and Sundays 09.00-17.00
- Bank Holidays: Closed.

The OPA Site is located within an area of predominantly residential development. To the east of the site is the residential neighbourhood known as the Heatham Estate, whilst to the west is the Challenge Court residential complex and further west the Rosecroft Gardens Conservation Area (known locally as the Dene Estate).



LONDON



Richmond upon Thames



RICHMOND UPON THAMES

Richmond upon Thames Campus



 Map to scale Scale: All numbers are approximate Copyright © R. Adams & Co. Ltd. 2015  Drawing Number: H&K Number 09-002	
Project Title: Richmond Education and Enterprise Campus Development	
Figure Title: Site Location	
Figure Number: Figure 1	Date: June 2015



Legend

- Site Boundary
- Existing Buildings



Project Title:
**Richmond Education and
 Enterprise Campus
 Development**

Figure Title:
Planning Application Boundary

Figure Number: Figure 2	Date: June 2015
-----------------------------------	---------------------------



  <small>100m</small> <small>Note: All locations are approximate.</small>  <small>Planning Services, Hill Number 84, 010</small>	
Project Title: Richmond Education and Enterprise Campus Development	
Figure Title: Site Context	
Figure Number: Figure 3	Date: June 2015

1.3 THE PROPOSED DEVELOPMENT

The Applicant is submitting an OPA for the following:

The demolition of the existing college buildings, site clearance and groundworks together with the comprehensive redevelopment to provide:

- (i) *A new campus for education and enterprise – comprising:*
 - *Replacement College (Use Class D1) of up to 16,000m² (square metres) GEA to accommodate up to 3,000 FTE day time students, as well as evening and weekend use;*
 - *A Science, Technology, Engineering and Maths (STEM) Centre (Use Class D1) of up to 6,100 m² GEA*
 - *A new Secondary School (Use Class D1) of up to 7,000m² (GEA) for up to 750 students;*
 - *A new Special Education Needs (SEN) School (Use Class D1) of up to 4,000m² GEA;*
 - *A new ancillary 'Tech Hub' for Haymarket Media (Use Class B1) of up to 1,700 m² GEA; and*
 - *Replacement on-site sports centre (Use Class D2) of up to 3,900 m² GEA to serve the college, schools and the wider community.*
- (ii) *Upgrading of existing Craneford Way Playing Fields for use by the College, schools and the local community;*
- (iii) *Alterations to existing means of access for vehicles, pedestrians and cyclists from Langhorn Drive and from Egerton Road and installation of an at grade signalised junction to allow a right turn from Langhorn Drive onto the A316;*
- (iv) *Provision of on-site parking for the College, Schools and Tech Hub for up to 230 vehicles, open space and landscaping; and*
- (v) *New residential development of up to 180 units together with associated parking for up to 190 vehicles, open space and landscaping.*

The OPA seeks outline planning permission for the proposed development but provides details of all the proposed access arrangements for vehicles (including service vehicles), cyclists and pedestrians to the site (whether these involve new arrangements or alterations to existing access to /exits from the site).

The OPA seeks to establish the principles for the REEC development against which subsequent detailed Reserved Matter Applications will be considered, both in terms

of the general scale of development and the land uses considered appropriate for the OPA Site. The following matters are therefore reserved for future approval:

- **Layout** - detailed layouts showing *"...the way in which buildings, routes and open spaces within the development are provided, situated and orientated in relation to each other and to buildings and spaces out the development"*.
- **Scale** - detailed scale plans showing *"...the height, width and length of each building"*.
- **Appearance** - detailed design and external appearance of buildings to show *"...the aspects of a building or place within the development which determine the visual impression of the building or place makes, including the external built form of the development, its architecture, materials, decoration, lighting, colour and texture"*.
- **Landscaping** - details of the *"...means of treatment of land (other than buildings) for the purpose of enhancing or protecting the amenities of the site and the area in which it is situated"*.
- **Access** - the design of the internal access arrangements, including layout to facilitate movement and circulation between and within each development zone.

To demonstrate that the OPA Site is capable of accommodating the quantum of development proposed in an acceptable manner, a series of plans have been produced to show the maximum and minimum parameters (height, width and length), known as Parameter Plans. These are accompanied by a Development Specification and supported by a Design Code. These together form the Primary Control Documents for the OPA. An Illustrative Masterplan demonstrating how the REEC development might be built out and an Illustrative Landscape Plan to show how it could be landscaped have also been produced and are presented Chapter 5 of the Environmental Statement (ES) that accompanies the OPA.

2 SUSTAINABILITY POLICY

2.1 INTRODUCTION

This section of the report defines sustainable development and sets out national, regional and local planning policy considered relevant to it. These sustainable development policies were used as a benchmark to develop sustainability themes for the assessment against which the sustainability of the REEC development is assessed in Section 4 of this report.

2.2 NATIONAL POLICY ON SUSTAINABLE DEVELOPMENT

2.2.1 National Planning Policy Framework (2012)

The National Planning Policy Framework (NPPF), published in March 2012 by the Department of Communities and Local Government, sets out the Government's planning policies for England and how these are expected to be applied. The NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development. At the heart of the NPPF is a presumption in favour of sustainable development (paragraph 6). This requires the planning system to perform economic, social and environmental roles. The economic role explicitly recognises the need for *"identifying and coordinating development requirements, including the provision of infrastructure"*. The environmental role recognises the need to *"minimise waste and pollution, and mitigate and adapt, to climate change"*, and the social role supports *"strong, vibrant and healthy communities by creating a high quality built environment"*.

The policies within the NPPF, taken as a whole, constitute the Government's view of what sustainable development means in practice for the planning system. The NPPF constitutes guidance for local planning authorities and decision makers both in drawing up plans and as material considerations in determining planning applications. The development-related policies in the NPPF fall under the following broad headings:

- Building a strong, competitive economy;
- Ensuring the vitality of town centres;
- Supporting a prosperous rural economy;
- Promoting sustainable transport;
- Supporting high quality communications infrastructure;
- Delivering a wide choice of high quality homes;
- Requiring good design;
- Promoting healthy communities;
- Protecting Green Belt land;

- Meeting the challenge of climate change, flooding and coastal change;
- Conserving and enhancing the natural environment;
- Conserving and enhancing the historic environment; and
- Facilitating the sustainable use of minerals.

These are of direct relevance to the REEC development with the exception of the policies relating to 'Supporting a prosperous rural economy'; 'Promoting healthy communities'; and 'Protecting Green Belt land' are not of direct relevance to the REEC development.

Paragraph 109 requires the planning system to contribute to and enhance the natural and local environment.

Paragraph 111 encourages the effective use of land by re-using land that has been previously developed provided that it is not of high environmental value.

2.2.2 Planning Practice Guidance

In March 2014, the Government launched its Planning Practice Guidance (PPG), which provides a web-based resource. The PPG provides guidance on a range of topics including the following of relevance to the REEC development:

- Air quality;
- Climate change;
- Conserving and enhancing the historic environment;
- Design;
- Flood risk;
- Health and wellbeing;
- Land affected by contamination;
- Light pollution;
- Natural environment;
- Noise;
- Renewable and low carbon energy;
- Travel plan and transport assessment; and
- Water supply, wastewater and water quality.

2.3 REGIONAL

2.3.1 London Plan – The Spatial Development Strategy for London Consolidated with Alterations since 2011 (March 2015)

The London Plan is the development plan for Greater London, which should be taken into account in taking relevant planning decisions, such as determining planning

applications. The Plan identifies a target of 315 homes per annum for Richmond to deliver (over the period 2015-2025)¹.

Policy 5.3 of the London Plan sets out the Mayor's policy on Sustainable Design and Construction. The policy includes the following sustainable design principles:

- Minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems);
- Avoiding internal overheating and contributing to the urban heat island effect;
- Efficient use of natural resources (including water), including making the most of natural systems both within and around buildings;
- Minimising pollution (including noise, air and urban runoff);
- Minimising the generation of waste and maximising reuse or recycling;
- Avoiding impacts from natural hazards (including flooding);
- Ensuring developments are comfortable and secure for users including avoiding the creation of adverse local climatic conditions;
- Securing sustainable procurement of materials, using local supplies where feasible; and
- Promoting and protecting biodiversity and green infrastructure.

The London Plan is supported by supplementary planning guidance. Policy 5.3 states that major development proposals should meet the minimum standards outlined in the Mayor's Sustainable Design and Construction Supplementary Planning Guidance (SPG). The SPG was updated in April 2014. The new SPG sets out what can be done within the policy framework to contribute to sustainable development.

The SPG applies to all major developments. It includes a series of Mayor's Priorities and Mayor's Best Practice which apply to all such developments where appropriate.

The Priorities and Best Practice in the SPG are grouped into the following themes:

- Resource management, including optimising the use of land;
- Site layout and building design including energy and carbon dioxide emissions, energy demand, energy efficiency, renewable energy and water efficiency;
- Materials and waste;
- Nature conservation and biodiversity;
- Climate change adaptation, including heat and drought resistant planting, urban greening, trees and management of flood risks; and
- Pollution management, including land contamination, air quality, noise, light pollution and water pollution.

¹ FALP 2014, Table 4.4

Other policies of relevance to this Sustainability Statement include those summarised in **Table 1**.

Table 1: Summary of Other Relevant Policies from the London Plan

Policy No.	Title	Key Relevant Aspects
2.18	Green infrastructure	Development proposals should incorporate appropriate elements of green infrastructure and linkages with green infrastructure to the wider public realm to improve accessibility for all and develop new links is encouraged.
3.2	Improving Health and Addressing Health Inequalities	Requires the consideration of impacts of major development proposals on the health and wellbeing of communities. New development should be designed, constructed and managed in ways that improve health and promote healthy lifestyles.
3.3	Increasing Housing Supply	Aims to ensure the housing need identified in the London Plan is met.
3.9	Mixed and Balanced Communities	Promotes mixed and balanced communities through developments that foster social diversity, redress social exclusion and strengthen communities' sense of responsibility for their neighbourhoods.
3.16	Protection and Enhancement of Social Infrastructure	Development proposals should provide high quality social infrastructure. Facilities should be accessible to all sections of the community and be located within easy reach by walking, cycling or public transport.
4.1	Developing London's Economy	Promotes the continued development of a strong, sustainable and increasingly diverse economy. Seeks London's transition to a low carbon economy.
4.12	Opportunities for All	Support for local employment, skills development and training opportunities.
5.1	Climate change mitigation	Seeks to achieve an overall reduction in London's CO ₂ emissions by 60% by 2025.
5.2	Minimising carbon dioxide emissions	Requires development proposals to make the fullest contribution to minimising carbon dioxide emissions in accordance with the energy hierarchy.
5.4	Retrofitting	Refers to reducing the environmental impact of existing urban areas by bringing existing buildings up to the Mayor's

		standards on sustainable design and construction.
5-10	Urban Greening	Promotes the integration of green infrastructure, such as green roofs and walls, tree planting and soft landscaping into development proposals.
5-11	Green Roofs and Development Site Environs	Requires major development proposals to be designed to include roof, wall and site planting.
5-13	Sustainable Drainage	Requires developments to utilise sustainable urban drainage systems (SUDS).
5-15	Water Use and Supplies	Requires developers to minimise the use of mains water by incorporating water saving measures and equipment and designing residential development so that mains water consumption would meet a target of 105 litres or less per head per day.
5-16	Waste net self-sufficiency	This will be achieved by minimising waste, encouraging re-use and reduction in the use of materials, exceeding recycling/composting levels in local authority collected waste, commercial, industrial, construction, excavation and demolition waste, reducing the proportion of waste exported from the capital and working with neighbouring authorities to co-ordinate strategic waste management.
5-18	Construction, Excavation and Demolition Waste	Requires waste to be removed from construction sites, and material brought to site, by water or rail transport wherever practicable.
5-20	Aggregates	Encourages the re-use and recycling of construction, demolition and excavation waste and the sustainable transport of aggregates.
6.3	Assessing the Effects of Development on Transport Capacity	Impacts on transport capacity and the transport network at both corridor and local level are required to be fully assessed.
7-4	Local Character	Developments should have regard to form, function and structure of an area and the scale, mass and orientation of surrounding buildings. Improve an area's visual or physical connection with natural features.
7.8	Heritage Assets and Archaeology	Development should identify, value, conserve, restore, re-use and incorporate heritage assets where appropriate.

		Development affecting heritage assets and their settings should conserve their significance. New development should make provision for protection of archaeological resources, landscapes and significant memorials.
7.44	Improving Air Quality	Requires developments to minimise increased exposure to existing poor air quality and promote sustainable design and construction to reduce emissions.
7.45	Reducing and Managing Noise, Improving and Enhancing the Acoustic Environment and Promoting Appropriate Soundscapes	Addresses reducing and managing noise, improving and enhancing the acoustic environment and promoting appropriate soundscapes.
7.17	Metropolitan Open Land	The playing fields at the south west of the site are designated as Metropolitan Open Land (MOL). Policy 7.17 refers to the protection of MOL.
7.19	Biodiversity and Access to Nature	Requires development proposals to make a positive contribution to the protection, enhancement, creation and management of biodiversity, wherever possible.
7.27	Blue Ribbon Network: Supporting Infrastructure and Recreational Use	Protect and improve access points including paths alongside. Protect and enhance waterway support infrastructure.
7.28	Restoration of the Blue Ribbon Network.	Development proposals should restore and enhance the Blue Ribbon Network.
7.21	Trees and Woodlands	Existing trees of value should be retained and any loss replaced. Planting of additional trees is encouraged for new developments where appropriate, particularly large-canopied species.

2.4 LOCAL

2.4.1 London Borough of Richmond upon Thames Core Strategy (2009)

The LBRuT Core Strategy includes the following policies which relate to sustainable development and are relevant to the environmental performance/sustainability of the development.

CP1 – Sustainable Development: Part 1.A. of the policy states that development will be required to conform with the Sustainable Construction Checklist. This includes the requirements to:

- Meet Code for Sustainable Homes Level 3 (new residential) (note that the Code for Sustainable Homes has since been withdrawn for new developments)
- Ecohomes “excellent” (for conversions)
- BREEAM “excellent” for other types of development.

Point 1.B. states that higher density residential and mixed use developments are to be in town centres, near to public transport in order to reduce the need to travel by car.

Point 1.C. relates to making the best use of land. It supports the dual use of facilities and co-location developments.

Point 1.D. states that the environmental benefits of retaining and, where appropriate, refurbishing existing buildings, should be compared against redevelopment. Development should minimise the use of open land and maintain natural vegetation where possible.

Para 8.1.1.2 states that developers will be required to submit a Sustainability Statement with their application to demonstrate compliance with environmental performance standards.

CP2 – Reducing Carbon Emissions

The policy states that the council will reduce its carbon dioxide emissions by requiring measures that minimise energy consumption in new development.

Point 2.B states that the council will require the evaluation, development and use of decentralised energy in appropriate development.

Point 2.C. states that the Council will increase the use of renewable energy by requiring all new development to achieve a reduction in carbon dioxide emissions of 20% from on-site renewable energy generation unless it can be demonstrated that such provision is not feasible.

CP3 – Climate Change

The policy states that development will need to take account of the impacts of climate change over its lifetime, including:

- Water conservation and drainage
- The need for summer cooling
- Risk of subsidence
- Flood risk

It also states the proposals in high flood risk areas will be restricted – the site is not in a high risk area and so this is not applicable.

CP4 - Biodiversity

Point 4.A states the Borough's biodiversity including the SSSIs and Other Sites of Nature Importance will be safeguarded and enhanced. Biodiversity enhancements will be encouraged particularly in areas of deficiency (parts of Whitton, Hampton, Teddington, Twickenham and South Kew), in areas of new development and along wildlife corridors and green chains such as the River Thames and River Crane corridors.

Point 4.B states that weighted priority in terms of their importance will be afforded to protected species and priority species and habitats in the UK, Regional and Richmond upon Thames Biodiversity Action Plans.

Note that the core strategy also includes policy 'CP12 River Crane Corridor', for which point 12.A states:

The Council will improve the strategic corridor to provide an attractive open space with improvements to the biodiversity. Developments in and adjacent to the River Crane Corridor will be expected to contribute to improving the environment and access, in line with planning guidance.

CP5 - Sustainable Travel

This policy has a number of requirements and objectives based on sustainable travel, those considered of relevance are summarised as:

Part 5.A requires development generating high levels of travel to be located on sites well served by Public Transport.

Part 5.C seeks to prioritise the needs of pedestrians and cyclists in the design of new development.

Part 5.D seeks to improve bus services within the River Crane corridor through the

implementation of development proposals. It also seeks to improve walking cycling and public transport provision in areas currently served poorly public transport.

Part 5.E states that traffic management measures will be implemented to reduce the impact of traffic where necessary.

Part 5.F requires development in areas of good public transport accessibility to have regard to maximum parking standards. It also requires all developments to provide car sharing and car club facilities, and to be designed so as to discourage commuter parking.

Part 5.G Encourages Major employers and schools to develop Green Travel Plans and to require these with planning applications where appropriate.

CP6 - Waste

This policy states that the Council we seek to implement a range sustainable waste management targets.

CP7 – Maintaining and Improving the Local Environment

New development should recognise distinctive local character and contribute to the creation of places of high architectural and urban design quality.

CP12 River Crane Corridor

This policy relates to the protection and enhancement of the corridor.

CP13 – Opportunities for All

Opportunities provided are to be accessed by all residents.

CP14 – Housing

The indicative target of additions for Twickenham, including the ward of St Margaret's and North Twickenham, is 700-1100 dwellings up to 2017. All housing is to be built to Lifetime Homes Standards and 10% of all new housing should be to wheelchair standards.

CP15 – Affordable Housing

A range of housing to meet the needs of all types of households is expected to be included within housing provision.

CP16 – Local Services/Infrastructure

Adequate provision of services and facilities.

CP17 Health and Wellbeing

New development should encourage and promote healthier communities and places.

CP18 Education and Training

The provision of schools and other education and training facilities need to be sufficient in quality and quantity to meet the needs of residents. The potential of existing educational sites to be maximised by redevelopment, re-furbishment and re-use to meet educational needs. Facilities and services should be for all age groups and conveniently accessible to users.

CP19 Local Business

This policy relates to the retention of land in employment uses and development likely to generate significant amounts of travel should be accessible to public transport.

2.4.2 London Borough of Richmond upon Thames Development Management Plan (2011)

In addition to the Core Strategy, the Richmond Council Development Management Policies also forms part of the LDF. The council requires all new residential developments (creating 1 dwelling unit or more) and new non-residential developments of more than 100sqm floorspace to:

- follow sustainable construction policies and reduce carbon emissions
- follow renewable energy and decentralised energy networks
- complete a sustainable construction checklist

The relevant policies relating to Sustainable Development (Section 3.1) are listed below:

Policy DM SD 1 - Sustainable Construction

This policy requires all development, in terms of materials, design, landscaping, standard on construction and operation to include measures of mitigating and adapting to climate change.

It states that development will need to comply with the Boroughs Sustainable Construction Checklist SPD.

New homes will be required to meet Code for Sustainable Homes Level 3 (note that the Code for Sustainable Homes has since been replaced by the Government – see Section 4.2.3). They will also be required to achieve 40 per cent reduction in CO₂ emissions between 2013-2016.

Non residential development over 1000sqm will be required to meet BREEAM “excellent” standards. Policy DM SD 3 relates to conversions.

Supporting paragraph 3.1.1 states that more detailed policies and guidance will be contained in the Mayor’s forthcoming Climate Change Mitigation and Energy Statement.

Policy DM SD 2 Renewable Energy and Decentralised Energy Networks

The policy states that new development will need to conform with the Sustainable Construction Checklist SPD. In addition it will need to:-

- Maximise opportunities for micro-generation of renewable energy.
- (large schemes) reduce CO₂ emissions by firstly delivering efficient design, secondly through low carbon technologies and thirdly by – where feasible and viable – include energy contribution from renewable sources.
- Local opportunities to contribute towards decentralised energy networks will be encouraged.
- All new development will be required to connect to existing or planned decentralised energy networks.

The supporting para 3.1.4, states that the Council will encourage developers to achieve a 20 per cent reduction in total site CO₂ emissions from the use of on-site renewable energy.

DM SD 3 Retrofitting

This policy states that proposals for conversions and extensions will be encouraged to comply with the Sustainable Construction Checklist SPD as far as possible, and opportunities for micro-generation of renewable energy will be supported.

Conversions and extensions required to meet EcoHomes excellent rating.

DM SD 4 Adapting to Higher Temperatures and Need for Cooling

This policy requires development in terms of its layout, design, construction, materials landscaping and operation to adapt to higher temperatures, avoid overheating and meet the need for cooling.

DM SD 5 Living Roofs

This policy states that living roofs should be incorporated into new developments where feasible. The onus will be on the developer for proposals with roof plates of 100sqm or more to provide evidence and justification if a living roof cannot be provided. 70% of the roof should be used.

The use of living roofs for conversions will be supported.

DM SD 6 Flood Risk

The policy states that development will be guided to areas of lower risk using the sequential test. The southern part of the site is within Zone 2.

The guidance states that there are no land use restrictions in these areas, but that basement residential will not be permitted. Development in this zone will require a sequential test unless exceptional circumstances apply. Highly vulnerable development will require an exception test, all proposals will require a Flood Risk Assessment.

DM SD 7 Sustainable Drainage

This policy states that all development proposals are required to follow the drainage hierarchy when disposing of surface water and must utilise Sustainable Drainage Systems wherever practicable. When discharging into a public sewer, applicants need to evidence that sufficient capacity exists.

Proposals are required to follow the London Plan drainage hierarchy:-

- store rainwater for later use
- use infiltration techniques, such as porous surfaces in non-clay areas
- attenuate rainwater in ponds or open water features for gradual release to a watercourse
- attenuate rainwater by storing in tanks or sealed water features for gradual release to a watercourse
- discharge rainwater direct to a watercourse
- discharge rainwater to a surface water drain
- discharge rainwater to the combined sewer.

DM SD 9 Protecting Water Resources and Infrastructure

This policy states that development proposals that would pose an unacceptable threat to surface water and groundwater quantity and quality will be resisted.

New developments must achieve a high standard of water efficiency by:

- Meeting minimum mandatory water consumption target set by CSH or;
- Meeting minimum of 2 credits on water consumption for other types of development, or
- Meeting minimum of 3 credits on water consumption for conversions by EcoHomes, and
- Utilising rainwater harvesting for all external water uses to reduce consumption of potable water.

These standards will be adjusted to accord with other guidance.

New development is also encouraged to consider:

- Utilising rainwater harvesting and grey water harvesting; and
- Designing of landscaping to minimise water demand.

Where rivers have been classified as “poor” – including the River Crane, any development affecting such rivers is encouraged to improve the water quality in these areas.

DM SD 10 Water and Sewerage Provision

New development will need to ensure that there is adequate water supply, surface water, foul drainage and sewerage capacity to serve the development.

Other policies of relevance include:

- *DM OS 2 Metropolitan Open Land* - MOL will be protected and retained in predominantly open use. Appropriate uses include playing fields. Where appropriate, improvement and enhancement of the openness and character of the MOL and measures to reduce visual impacts will be encouraged.
- *DM OS 3 Other Open Land of Townscape Importance* – such areas to be protected and enhanced in open use.
- *DM OS 4 Historic Parks, Gardens and Landscapes*
- *DM OS 5 Biodiversity and New Development* - New development is expected to preserve and where possible enhance existing habitats.
- *DM OS 6 Public Open Space* - Public open space will be protected and enhanced. Improvements to the openness and character including allowing for convenient access for all. Larger developments to include open space provision.

- *DM OS 8 Sport and Recreation Facilities* - Public and private sports grounds will be protected and enhanced.
- *DM OS 9 Floodlighting* - Criteria are specified for the assessment of floodlighting including those relating to residential amenity and biodiversity and wildlife.
- *DM HO 4 Housing Mix and Standards* - Development should generally provide family sized accommodation except within town centres where a higher proportion of smaller units would be appropriate.
- *DM SI 1 Encouraging New Social Infrastructure Provision* - New social infrastructure should provide for an identified need, where practicable be co-located with other social infrastructure which encourages dual use and increased public access and is in a location that is accessible by public transport, walking and cycling.
- *DM DC 5 Neighbourliness, Sunlighting and Daylighting* - Protection of adjoining properties from unreasonable loss of privacy, pollution, visual intrusion, noise and disturbance.
- *DM TP 2 Transport and New Development – the impact of new development on the transport system to be assessed against other plan policies and transport standards.*
- *DM TP 3 Enhancing Transport Links – New developments are expected to create or improve links with the local and wider transport networks including the cycle and pedestrian networks and must be designed to improve accessibility.*

2.4.3 Crane Valley Planning Guidelines (2005)

The document provides planning guidelines for four main sites in the Crane, including the college site. It covers the Local Planning Authority's intentions for the wider area in which the college site sits. It includes the positive policy:

environmental improvement, improved access and sympathetic development will be applied to the River Crane "area of opportunity"

The guidelines are referenced in the LBRuT Core Strategy (2009) to identify the main area of potential change, which includes the Stoop Memorial Ground, the Craneford Way playing fields, the Council Depot, the Richmond upon Thames College and the Post Office Sorting Office.

The policy also includes reference to improvements to banks of the River Crane to improve their ecological interest and provision of a through pedestrian/cycle route

along the River Crane.

The planning vision for the Crane Valley Development Guidelines area is:

To develop the area to the highest environmental standards based around an improved riverside, a riverside walkway and improved open spaces, meeting the housing, recreational and educational needs of the area.

The guidelines state that all development schemes will be tested against the extent that they meet the following objectives:

- To maximise the opportunities for improvements by ensuring that the area is planned in a comprehensive manner;
- To protect and enhance the natural environment of the River Crane, the Duke of Northumberland River and their banks as part of the wider West London Green Chain and Blue Ribbon network as identified in the London Plan;
- To improve the appearance and recreational value of the open space including the provision of a river walk and the associated pedestrian/cycle linkages; taking account of river corridor ecology;
- To ensure that new development is compatible in scale and character with the local area; minimising any adverse impacts including flood risk;
- To minimise traffic and other impact on the surrounding area, particularly on the Heatham estate, to reduce severance and to improve pedestrian and cycle linkages within the area and to the surrounding area;
- To seek to secure improved sports facilities and possible improvements but not a significant expansion of student numbers at the College;
- To contribute towards meeting a range of housing needs;
- To ensure the provision of appropriate local community facilities including for education and health and the community use of buildings and playing fields; and
- To ensure that developers take account of the Council's Planning Contributions Strategy.

2.4.4 LBRuT Planning Brief Richmond upon Thames College (2008)

The purpose of this brief is to establish a development framework for the redevelopment of Richmond upon Thames College and identify the broad principles to guide the development. The key objectives include that any redevelopment

proposal for the site:

- Ensures appropriate pedestrian, cycle and vehicular access points, which reflect links and reduce traffic impacts in neighbouring streets;
- Promotes sustainable forms of transport and reduces car parking, through the implementation of a green travel plan;
- Maximises the sustainability of all new buildings, in accordance with relevant national, regional and local sustainability targets;
- Delivers benefits for the wider area, including improving linkages between the main development sites in the Crane Valley and environmental improvements;
- Continues to play an important role in the community and maximises the opportunity for community use of facilities; and
- Delivers an appropriate level of enabling residential development, including affordable housing, if required to contribute to the funding of the development.

2.4.5 LBRuT Supplementary planning document sustainable construction checklist (2011)

The checklist is a mandatory part of a planning application for new residential development providing one or more new dwellings and all new non-residential development of over 100m² in floor area. Therefore, this applies to the proposed development. The checklist is used to assess compliance with RBRuT's minimum policy requirements for environmental ratings under the Code for Sustainable Homes (note that the Code for Sustainable Homes has since been replaced by the Government – see Section 4.2.3) or BREEAM as well as energy and carbon dioxide emission savings.

2.5 OTHER POLICIES

Compliance with individual policies in a wide range of other policy documents which are not themselves directed specifically at sustainability could nevertheless contribute to the sustainability of the Development. It is not possible to list all such policies here. However, in the assessment of sustainability of the proposed development, where the proposals are in accordance with individual policies which support sustainability, this is noted.

3 SUSTAINABLE DESIGN AND CONSTRUCTION ELEMENTS OF THE SCHEME

3.1 INTRODUCTION

Aspects of the proposed development of particular relevance to this Sustainability Assessment are identified below, followed by a description of the key relevant elements of the Design Code.

LBRuT's Sustainable Construction Checklist has been completed and is provided in Section 6.

3.2 SUSTAINABLE DESIGN AND CONSTRUCTION

3.2.1 Residential Units

Of the 180 residential units proposed, there will be a minimum of 15% affordable housing and 10% of the housing mix will have wheelchair access or be adaptable for wheelchair access.

The overall target dwelling mix for the OPA Site² is provided in **Table 2**.

Table 2. Target Dwelling Mix for Residential Development Zone

Unit Size	Percentage (%)	Market Units	Affordable Units	Total Unit Numbers
One bed (Flat)	25	28	7	35
Two bed (Flat)		33	9	39
Two bed (House)	45%	36	6	42
Three bed (Flat)	20%	7	1	8
Three bed (House)		24	4	28
Four bed (Flat)	10%	1	1	2
Four bed (House)		14	2	16
TOTAL	N/A	153	27	180

² It should be noted that the OPA sets a maximum floorspace and number of units. If a residential developer wishes to increase this, then they will be required to either demonstrate that their alternative proposals falls within the scope of what has been assessed within the OPA or submit a further planning application.

3.2.2 Cycle and Pedestrian Access

Cycle access will be available through the main accesses from Langhorn Drive and Egerton Road and via a shared cycle way/footpath along the upgraded Marsh Farm Lane (off both the A316 and Craneford Way). Cycle parking will be provided in accordance with the London Plan (2015), approximately 142 spaces will be provided for the College and 106 spaces will be provided adjacent to the Secondary School car park.

There will be improved pedestrian access via the upgraded shared footpath and cycleway along Marsh Farm Lane, which runs from Craneford Road in the south to the A316 in the north. This route will connect to Twickenham Station via the existing River Crane footpath and bridge, and a new length of footpath being built on the south bank of the River Crane as part of the Twickenham Rough development (Land to the West of the Former Royal Mail Sorting Office, Twickenham - Ref 13/1147/FUL) and access to Twickenham and the rail station being put in as part of the Sorting Office development (Former Royal Mail Sorting Office, Twickenham - Ref 12/3650/FUL). This will form a new pedestrian route to the College, but because it will not be lit (for safety and conservation reasons) and it is understood will be locked at night, it will only be suitable for use during daylight hours.

The other main pedestrian routes to the station for students and staff will be along Marsh Farm Lane and either via the A316 or Craneford Way/Court Way. A new gateway will be provided for pedestrians to access the eastern end of the College playing fields, making a circular walk around the new pitches. The existing footpath across Craneford Way playing fields and the existing bridge over the River Crane will be retained, but will be upgraded/refurbished as part of the REEC Development.

3.2.3 Landscaping

The landscaping principles set out in the Design Code are to strengthen the vegetated boundaries of the site with native species to provide wildlife corridors and improve amenity. The line of mature trees along the college frontage on the A316, which are partly within and partly outside the red line, will be retained and gaps filled by planting new trees within the red line area. Some mature trees along Marsh Farm Lane will be retained, with new planting along the shared access route to improve the footpath/cycleway and make it more appealing to users than it is at present. Additional trees will also be planted in staggered blocks along the new residential access road, with the blocks acting as a traffic calming measure.

Soft and hard landscaping within the main site will be appropriate to its function for schools and college use. Sections of native hedgerow will be planted between the school and college grounds, providing screening of the school entrance and play

areas. Mature trees along Craneford Way will also be retained where possible and part of the soft landscaping areas, for example on the College playing field, will be enhanced for nature conservation by native planting and retaining areas of longer grass.

The street and path network across the Site will be designed to give priority to pedestrians and cyclists, and where possible these will be separated from vehicle accesses. The streets and paths will be well lit, appropriate to their use, with the exception of the footpath along the River Crane (being built by others) which will be kept unlit as it is an important biodiversity corridor, and also from a safety perspective to discourage use after dark. Streets will be bordered by a tree planting zone where possible, again with use of native species.

3.2.4 Open Space

The provision of open space will increase from the existing 78% to 82% of the total area (based on the Illustrative Masterplan). Private gardens and shared amenity areas within the residential development will be provided in line with policy requirements.

3.2.5 Community Use

The REEC partnership is committed to providing community use for a wide range of facilities and activities. These include use of the following:

- College sports hall – Community use of the sports hall will be provided out of main College hours of use; after 5.30pm to closing time (governed by planning regulations) and on Saturdays and Sundays. In addition, use of the sports hall will be provided during College holiday periods when it is closed.
- College restaurant and catering – The principle of development is to provide the College with industry standard, real work environments. The College restaurant will be open to the community for hire and for dining both during College standard hours and through evening classes.
- College fitness gym - Within the main building (separate to the sports building) the College will provide access to a fitness gym both during College daytime operational hours, evening and weekends.
- Hair and Beauty – the College wish to actively encourage the community to book treatments within the hair and beauty salons during daytime and evening opening.
- Sports Pitches – the College is committed to the provision of bookable use of the sports pitches in the evenings (in the summer, due to the absence of floodlighting)

and at weekends and will commit to a community use agreement.

- School sports hall – Community use of the sports hall will be provided out of main school hours of use; after 5.30pm to closing time (governed by planning regulations) and on Saturdays and Sundays. In addition use of the sports hall will be provided when the school is closed during holiday periods.
- School dining room and catering – the school dining space will be open to the community for hire outside normal school hours (governed by planning regulations).
- School halls and drama spaces – the school halls and drama spaces will be open to the community for hire outside normal school hours (governed by planning regulations).
- School Multi-Use Games Area – Community use of the school Multi-Use Games Area (MUGA) will be provided out of main school hours of use; after 5.30pm to closing time (governed by planning regulations) and on Saturdays and Sundays. In addition use of the MUGA will be provided when the school is closed during holiday periods.

3.2.6 Demolition and Construction

Key aspects of the construction period of particular relevance to this Sustainability Assessment include:

- An Outline Construction Management Plan (CMP), Outline Construction Logistics Plan (CLP) and Outline Construction Environmental Management Plan (CEMP) have been prepared for the proposed development.
- It is currently anticipated that construction would commence in 2015 and would be phased over a four year duration, completing in 2019.
- Up to approximately 45,279m³ (including additional 30% bulk factor²) of demolition material (derived from existing buildings and hardstanding) would require storage or removal from the Site following demolition.
- It is envisaged that of the total demolition material (45,279m³), up to approximately 5,329m³ (including brick and concrete from external walls and internal partitions) would be recycled, crushed, graded and used as a sub-base for new foundations. These demolition materials would be stockpiled on-site prior to re-use during the site enabling works. The remainder would be taken off site for re-use, recycling or disposal.

- Stockpile areas would be located as required by the demolition / construction phase and to enable reuse of demolition material on Site.
- The average number of Heavy Goods Vehicles (HGV) movements associated with demolition and construction activities has been assessed to be approximately 8 HGV movements per day (16 vehicle trips per day) up until completion, over the 4 year demolition and construction programme. It is anticipated that construction vehicles are likely to peak during Phase 1 of the demolition / construction programme, and average at approximately 12 HGV movements per day to / from the Site (24 vehicle trips per day), owing to the large volume of construction materials required to be imported on Site at this time.
- During Phase 1, there would be a peak of approximately 150 operatives travelling to / from the Site by car or LGVs. A large number of these trips would be via public transport and by shared vehicles.
- The Applicant would work with LBRuT to promote the employment of local people for construction and the patronage of local businesses.
- Prescribed working hours would be agreed with LBRuT. It is however anticipated that the normal working hours for the demolition and construction works would be as set out below, in accordance with LBRuT's Considerate Contractor's Advice Note⁹:
 - 08:00 – 18:00 hours Monday to Friday (with a one hour period of mobilisation / demobilisation at the start and end of the day);
 - 08:00 – 13:00 hours Saturday (with a one hour period of mobilisation / demobilisation at the start and end of the day); and
 - No working on Sundays or Bank Holidays.

3-3 DESIGN CODE

The Design Code for the proposed development comprises a set of guidelines for future design teams involved in the preparation of Reserved Matters Applications. The document sets qualitative rules and aspirations for the scheme design, including buildings, open space and landscaping, and provides an indication of how the final development may appear. It sets out a sustainable approach to the design, construction and production of all the proposed facilities should deliver "a cost effective and resource efficient redevelopment that:

- Allows opportunities for recycling during the works period;

⁹ London Borough of Richmond Upon Thames. Considerate Contractor Advice Note. Available online at: <http://www.richmond.gov.uk/construction.pdf>

- Optimises the use of low-energy solutions and be designed and constructed to respond to specific site constraints and opportunities, and to the future impact of climate change;
- Provides effective measuring and monitoring of the performance of the buildings in operation;
- Includes operational plans that record all targets for the key aspects of environmental performance;
- Includes assessment against BREEAM criteria, or an approved alternative environmental assessment standard such as Passivhaus or LEED. If BREEAM rating are used the aim should be to achieve a rating of "very good" or better. If alternative standards are used, these should ensure a standard equivalent to or better than BREEAM "very good".
- For the residential development, achieves or exceeds the energy, water and materials efficiency standards identified in the Mayor of London's Housing Design Guide.

Pedestrian and cycle access to the College site, the Tech Hub and the residential zone should be encouraged and designed to maximise improvements to connections to the town centre. Pedestrian access to the schools should be encouraged and should be possible from a number of directions.

The residential zone should incorporate open space, protecting the existing mature trees and habitat along Egerton Road.

The General Design Principles include:

- The street and path network and layout should be designed to give priority to pedestrians while encouraging cycling and allowing appropriate access for vehicles. Where possible, pedestrian and cycle routes should be separated from vehicles.
- The street and path network should be designed for inclusion and accessibility.
- Building materials should be natural where possible.
- Permeable areas should be used where possible to reduce run off.
- The design of streets and paths should support the proposed development's sustainable drainage strategy.
- The open space guidelines include that the proposed development should take

account of climate change adaptation measures.

- New or extended habitat areas should be provided as identified in the Design Code and in the Environmental Statement.
- The use of Living Roofs, including green and brown roofs, on lower buildings should be encouraged.

The residential development should be designed and built in accordance with the Lifetime Homes Standards included within the London Housing Design Guide and the London Design Guide's requirements for climate change mitigation and adaptation.

4 APPROACH TO SUSTAINABILITY ASSESSMENT

4.1 INTRODUCTION

The specific sustainable development policies identified in Section 2 of this report together constitute a benchmark against which the sustainability of the REEC development can be assessed. The policies and sustainability objectives within them have been reviewed in order to develop a framework for the sustainability assessment of the proposed development.

Those policies and sustainability objectives identified as relevant to the proposed development were grouped into nine main sustainability themes, as set out below. Most of the sustainability themes are based on the objectives in the GLA Sustainable Design and Construction Supplementary Planning Guidance (SPG). These also cover policies of the LBRuT Core Strategy and LBRuT Development Plan considered to be of relevance to the proposed development. Some policies, for example those relating to agriculture are not relevant to the proposed development and therefore no themes have been developed to cover them.

Additional themes were included to cover transport, historic environment and economic development policies. These policies have been added to the assessment framework in order to reflect their inclusion as major policy headings in the NPPF.

The 12 main sustainable development policy themes forming the basis of the assessment are:

- Landuse;
- Housing, living spaces and social infrastructure;
- Conservation of energy, materials and water resources;
- Maximising the use of natural systems;
- Reducing the impacts of noise, pollution and flooding;

- Promoting health and well-being;
- Conservation and enhancement of the natural environment and biodiversity;
- Sustainable waste management;
- Sustainable construction;
- Sustainable transport;
- Conserving of the local character and enhancing the historic environment; and
- Economic development.

The details of the various policy objectives, key messages and targets associated with each theme were reviewed and a set of Guide Questions were developed in order to support the assessment in each theme area. **Table 3** lists the guide questions developed against each theme.

In undertaking the assessment, commentary against each guide question has been provided. The commentary has been informed by available information including the scheme design and construction methodology; the ES topic chapters; and feedback from consultation.

Table 3. Sustainability Themes and Guide Questions for the Development

Theme	Important/ relevant aspects of policies	Theme and Guide Questions
Landuse	<ul style="list-style-type: none"> • LBRuT Core Strategy CP1 • London Plan Policies 5.3 and 5.4 	<ul style="list-style-type: none"> • Will the development make best use of and maximise the efficient use of land, buildings?
	<ul style="list-style-type: none"> • LBRuT Core Strategy CP1 • paragraph 111 of the NPPF • London Plan Policies 2.18 and 5.16 • London Plan Policy 7.17 • DM OS 2 states that MOL's will be protected and retained in predominately open use. • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • How has the development design used previously developed land and re-used or refurbished existing buildings or facilities? • How will the development minimise potential impact on open / green space?
Housing , living spaces and social infrastructure	<ul style="list-style-type: none"> • London Plan Policy 3.3, 3.9 • LBRuT Core Strategy CP14 • LBRuT Core Strategy CP15 • LBRuT DM HO 4 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • Will the development improve housing provision and meet the needs of a range of types of households suitable to the area?
	<ul style="list-style-type: none"> • London Plan Policy 3.16 • LBRuT Core Strategy CP13 • LBRuT Core Strategy CP16 • LBRuT DM SI 1 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • Will the development contribute towards providing a range of opportunities and facilities relevant to the site and accessible to all in the community?
	<ul style="list-style-type: none"> • London Plan Policy 5.1 • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP2 	<ul style="list-style-type: none"> • How has the development been designed to be energy efficient?



Theme	Important/ relevant aspects of policies	Theme and Guide Questions
Conservation of energy, materials and water resources	<ul style="list-style-type: none"> • London Plan policy 5.2 , • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP2 • LBRuT DM SD 1 	• How has the development considered carbon dioxide and other greenhouse gas emissions?
	<ul style="list-style-type: none"> • LBRuT LBRuT Core Strategy CP2 • DM SD 2 • LBRuT DM SD 3 	• How has the development made use of renewable energy?
	<ul style="list-style-type: none"> • London Plan Policy 5.3 • Mayor's Sustainable Design and Construction SPG 	• How will the efficient use of sustainable raw materials be promoted during the construction of the development?
	<ul style="list-style-type: none"> • London Plan Policies 5.3, 5.4 and 5.15. • The Mayor's Sustainable Design and Construction SPG • LBRuT DM SD 9 	• How has the development considered opportunities for efficient water usage?
	<ul style="list-style-type: none"> • London Plan Policies 5.3 and 7.27 • LBRuT DM SD 7 • LBRuT DM SD 9 	• How has the development considered potential impacts on availability of water resources?
	<ul style="list-style-type: none"> • London Plan Policies 5.1, 5.10, 5.11 and 5.13 • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP3 • LBRuT DM SD 5 	• How has the efficient use of natural systems been considered?
Maximising the use of natural systems	<ul style="list-style-type: none"> • London Plan Policy 5.3 • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP3 	• How will the development increase London's resilience and adaptability to the effects of climate change?
	<ul style="list-style-type: none"> • Paragraph 109 of the NPPF • London Plan Policy 7.14 	• How have measures been incorporated in the project design, construction and operation to minimise any air quality impacts?



Theme	Important/ relevant aspects of policies	Theme and Guide Questions
Reducing the impacts of noise, pollution and flooding	<ul style="list-style-type: none"> • The NPPF • the Noise Policy Statement for England • London Plan Policy 7.15 • LBRuT DM DC 5 	How have measures been incorporated in the project design to minimise noise, vibration and nuisance impacts to sensitive receptors?
	<ul style="list-style-type: none"> • London Plan Policy 5.3, and • The Mayor's Sustainable Design and Construction SPG • LBRuT DM OS 9 	How have measures been incorporated in the project design to minimise light pollution that will cause nuisance to sensitive receptors?
	<ul style="list-style-type: none"> • the NPPF • London Plan Policy 7.28 • LBRuT Core Strategy CP4 • LBRuT DM SD 7 	How have measures been incorporated in the project design to minimise impacts on surface and groundwater quality?
	<ul style="list-style-type: none"> • The NPPF, • London Plan Policies 5.18 and 5.3 • The Mayor's Sustainable Design and Construction SPG Policy DM SD 6 	How will the project alleviate flood risk on the site or elsewhere in the future (including the impacts of extreme flood events that relate to a changing climate)?
	<ul style="list-style-type: none"> • Section 8 of the NPPF • London Plan Policy 3.2 • 	How will the development affect the health or wellbeing of the workforce and community during construction or operation?
Promoting health and well-being	<ul style="list-style-type: none"> • Section 8 of the NPPF • London Plan Policy 3.2 • LBRuT Core Strategy CP17 	In what ways will the development improve health and promote healthy lifestyles to help to reduce health inequalities
	<ul style="list-style-type: none"> • Section 8 of the NPPF • London Plan Policy 3.2 • LBRuT Core Strategy CP17 • LBRuT DM OS 6 • LBRuT DM OS 8 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • How will the development affect the health or wellbeing of the workforce during construction or operation? • In what ways will the development improve health and promote healthy lifestyles to help to reduce health inequalities? • How will the development increase the use and accessibility of shared (mix-use) space, community or recreational facilities and open space.

Theme	Important/ relevant aspects of policies	Theme and Guide Questions
	<ul style="list-style-type: none"> • Paragraph 109 of the NPPF, • London Plan Policy 5.3, 7.19 and 7.28 • The Mayor's Sustainable Design and Construction SPG • LBRT Core Strategy CP4 • LBRT Core Strategy CP12 • LBRT DM OS 5 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • Will the development promote the enhancement of habitats and avoid impacts on species?
Conservation and enhancement of the natural environment and biodiversity	<ul style="list-style-type: none"> • London Plan Policy 5.3, 7.19 and 7.28 • The Mayor's Sustainable Design and Construction SPG • LBRT Core Strategy CP4 • LBRT Core Strategy CP12 • LBRT DM OS 5 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • Will the development improve the environment of, and access to green corridors, London Green Chain and Blue Ribbon network?
	<ul style="list-style-type: none"> • The NPPF • London Plan Policy 5.16 and 5.18, • The Mayor's Sustainable Design and Construction SPG • LBRT Core Strategy CP6 	<ul style="list-style-type: none"> • How will the project encourage the management of construction and demolition waste in accordance with the waste hierarchy (prevention, re-use, recycle, other recovery and lastly disposal?)
Sustainable waste management	<ul style="list-style-type: none"> • London Plan Policies 5.16, 5.18 and 5.20, • The Mayor's Sustainable Design and Construction SPG • LBRT Core Strategy CP6 	<ul style="list-style-type: none"> • Will the project achieve a target of 95% of all construction, demolition and excavation waste being re-used (on site where possible) or recycled?
	<ul style="list-style-type: none"> • The Mayor's Sustainable Design and Construction SPG • LBRT DM SD 1 	<ul style="list-style-type: none"> • How will the efficient use of sustainable raw materials be promoted during the construction of the project?
Sustainable Construction	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Have locally sourced materials been used on site where ever possible?

Theme	Important/ relevant aspects of policies	Theme and Guide Questions
	<ul style="list-style-type: none"> • London Plan Policy 5.3 • LBRuT DM SD 1 • The NPPF • London Plan Policy 6.3 • LBRuT Core Strategy CP5 • LBRuT DM TP 2 	<ul style="list-style-type: none"> • Is the Contractor a member of the Considerate Contractor scheme, or similar? • How will the development be managed to minimise impacts on the local transport networks and any associated impacts on local communities?
Sustainable transport	<ul style="list-style-type: none"> • The NPPF • London Plan Policy 6.3 • LBRuT Core Strategy CP5 • LBRuT DM TP 3 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • How will the development create or improve links with local and wider transport networks in particular walking and cycling and public transport?
	<ul style="list-style-type: none"> • The NPPF • London Plan Policy 7.4, 7.8, 7.21 • LBRuT Core Strategy CP7 • LBRuT DM OS 2 • LBRuT DM OS 3 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • How will the project minimise impacts on locally valued landscapes and townscapes?
Conserving and enhancing the local character and historic environment	<ul style="list-style-type: none"> • Chapter 12 NPPF • London Plan Policy 7.4, 7.8, 7.21 • LBRuT Core Strategy CP7 • LBRuT DM OS 2 • LBRuT DM OS 3 • LBRuT DM OS 4 	<ul style="list-style-type: none"> • Has the historic environment on and around the site been protected and conserved in a manner appropriate to its significance?
	<ul style="list-style-type: none"> • Chapter 1 of the NPPF • London Plan Policy 4.1, 4.3 • LBRuT Core Strategy CP18 • LBRuT Core Strategy CP19 	<ul style="list-style-type: none"> • How will the project create local employment and skills development opportunities?
Economic development	<ul style="list-style-type: none"> • Chapter 12 of the NPPF • London Plan Policy 4.12 	<ul style="list-style-type: none"> • How will the project help to ensure long-term investment in London and support sustainable growth in the region?

4.2 ASSESSMENT TOOLS

4.2.1 Energy

London Plan Policy 5.2 'Minimising Carbon Dioxide Emissions' confirms that development proposals should make the fullest contribution to minimising CO₂ emissions in accordance with the energy hierarchy of Be Lean (use less energy), Be Clean (supply energy efficiently) and Be Green (use renewable energy). Policy 5.2 of the London Plan requires each major development proposal to submit a detailed energy assessment. The purpose of an energy assessment is to demonstrate that climate change mitigation measures are integral to the scheme's design and evolution, and that they are appropriate to the context of the development.

Each assessment is required to demonstrate how the targets for regulated CO₂ emission reductions over and above 2013 Building Regulations will be met using the Mayor's energy hierarchy. As outlined in the Sustainable Design and Construction SPG, since 6 April 2014, the Mayor has applied a 35% cent carbon reduction target beyond Part L 2013 of the Building Regulations - this is deemed to be broadly equivalent to the 40% beyond Part L 2010 of the Building Regulations, as set out in London Plan Policy 5.2 for 2013-2016.

An Energy Statement has been prepared as part of the application and indicates that the REEC development will achieve 15.5% CO₂ emissions reduction compared to notional due to design of the buildings and their services for minimum energy use (lean building), and a further 16.5% reduction due to use of on-site renewable energy (lean, clean and green building). An overall 32% reduction in CO₂ emissions compared to notional values appears achievable and further enhancements could be targeted in future design, such as use of photovoltaic cells, in order to achieve the GLA target of 35% CO₂ emission reductions.

4.2.2 BREEAM

BREEAM New Construction 2014 is a performance based environmental assessment method and certification scheme for new buildings. The primary aim of BREEAM New Construction is to mitigate the impacts of new developments on the environment over the entire life-cycle of the building in a comprehensive and cost-effective manner. This is achieved through the integration of the BREEAM scheme at key stages of the design and procurement process.

The aspiration of the REEC development is for the educational element to achieve BREEAM 'Very Good'. A Design Stage Pre-Assessment submitted with the OPA indicates that this is achievable (see **Appendix A**).

4.2.3 Technical Housing Standards

The Code for Sustainable Homes referred to in some of the policies identified in this Sustainability Assessment has, in March 2015, been withdrawn. It has been replaced by the Government's new approach to the setting of technical standards for new housing. The new national technical standards complement the existing mandatory Building Regulations. Local planning authorities can set additional technical requirements exceeding the minimum standards required by Building Regulations with respect to access and water and an optional nationally described space standard.

For access, local planning authorities should take account of evidence that demonstrates a clear need for housing for people with specific housing needs and plan to meet this need.

For water, all new homes already have to meet the mandatory standard of 125 litres/person/day under the Building Regulations. Local planning authorities can, where there is a clear local need, set policies to meet the tighter optional requirement of 110 litres/person/day.

The NPPF states that local planning authorities should identify the size, type, tenure and range of housing required in a particular location and reflecting local demand. Internal space standards should be referenced in the local plan and reflect the Nationally Described Space Standard.

In London, the Mayor's London Housing Design Guide, which incorporates the Lifetime Homes standard and key components of the Code for Sustainable Homes, provides guidance for residential development. The London Housing Design Guide provides a wide range design guide standards, including ones relating to climate change and adaptation. The design standard relating to water states that new dwellings should be designed to ensure that a maximum of 105 litres of water is consumed per person per day.

5 RESULTS OF ASSESSMENT

5.1 INTRODUCTION

This section presents the REEC development's performance against the 12 sustainable development policy themes:

- Landuse
- Housing , living spaces and social infrastructure;
- Conservation of energy, materials and water resources;
- Maximising the use of natural systems;
- Reducing the impacts of noise, pollution and flooding;
- Promoting health and well-being;
- Conservation and enhancement of the natural environment and biodiversity;
- Sustainable waste management;
- Sustainable Construction;
- Sustainable transport;
- Conserving of the local character and enhancing the historic environment; and,
- Economic development.

Responses to each of the developed guide questions under each sustainable development policy theme are provided in Sections 5.2 to 5.13.

5.2 LANDUSE

There are strong policy drivers for redevelopment of previously used land at national, regional and local level. Re-use of brownfield sites reduces development pressure on open space, other undeveloped land and greenspace.

The means by which the proposed development would re-use land and buildings sustainably are set out below.

Guide Question 1: Will the development make best use of and maximise the efficient use of land and buildings?

The proposed development comprises demolition of the existing college buildings, site clearance and groundworks and comprehensive redevelopment of the site. Therefore, it re-uses the existing site, avoiding the need for off-site land take and makes use of the existing footprint.

The co-location of related educational and training facilities would be achieved through the proposed development, making efficient use of land.

The redevelopment will also enable an increase in the number of housing units on site. There is no housing provision on site at present and the proposed development will provide up to 180 new units.

By eliminating the need for additional land take off site, enabling co-location of related facilities and adding residential use, support is demonstrated for a range of policies and sustainability objectives.

Guide Question 2: How has the development design used previously developed land and re-used or refurbished existing buildings or facilities?

The development design has used previously developed land and therefore complies with policies encouraging this.

It has not however re-used or refurbished existing buildings or facilities, instead due to their age, poor condition and high maintenance requirements, it is proposed to demolish them and redevelop the site. It therefore does not address policies associated with encouraging the re-use of existing buildings.

Of the total demolition material provided (45,279m³), up to approximately 5,329m³ (including brick and concrete from external walls and internal partitions) would be recycled, crushed, graded and used as a sub-base for new foundations on site. Therefore, this achieves support for policies encouraging the re-use of materials.

Guide Question 3: How will the development minimise the potential impact on open / green space?

The existing College Playing Fields (classified as Metropolitan Open Land (MOL)) are proposed to be upgraded thus this area of open space will be retained and improved. Chapter 18 of the ES notes that its proposed use for new all weather and grass sports pitches aligns with the appropriate uses for MOL as set out in policy, although the fencing of the pitches in accordance with Sport England policy will affect the openness of the area.

Open space in the form of private gardens and shared amenity space will be provided within the residential development in line with local policy requirements. Overall the development will increase open space; based on the illustrative Masterplan the total open space area increases from 78% to 82%.

5-3 HOUSING, LIVING SPACES AND SOCIAL INFRASTRUCTURE

Guide Question 4: Will the development improve housing provision and meet the needs of a range of types of households suitable to the area?

The proposed development will provide up to 180 residential units. This will contribute to the identified housing need in the area.

The housing units will comply with the Lifetime Homes Standard, therefore complying with policy in the Core Strategy.

The Design Code for the residential element of the proposed development refers to achieving or exceeding the energy, water and materials efficiency standards identified in the Mayor of London's Housing Design Guide.

For the non residential development, the Design Code for the proposed development refers to assessment against BREEAM criteria (or appropriate alternative standard) will be undertaken and the aim will be to achieve 'very good' or better.

Regarding the range of housing, a minimum of 15% affordable housing and 10% of the housing mix will have wheelchair access or be adaptable for wheelchair access. Some 45% would be suitable for four people, 20% for five people and 10% for six people therefore providing potential family sized accommodation. This dwelling mix will support policies that aim to meet a range of housing needs and promote mixed and balanced communities.

Guide Question 5: Will the development contribute towards providing a range of opportunities and facilities relevant to the site and accessible to all in the community?

The vision for the REEC development is to create a new campus for education and enterprise; a college working in partnership with employers on site, which will provide students access to resources and work opportunities through work experience, apprenticeships and ultimately, jobs. The potential to completely redevelop the site provides RuTC with an opportunity to create a flagship regional centre of excellence, as well as maintaining its strong commitment to the local community.

The REEC partnership is committed to providing community use for a wide range of facilities and activities including the specified use of the college sports hall, college restaurant and catering, college fitness gym, hair and beauty salons, sports pitches, school sports hall, school dining room and catering, school halls and drama spaces and the multi-use games area. Therefore, the proposed development will contribute towards the provision of facilities accessible to the community. Furthermore, the Design Code for the proposed development states that the street and path network should be designed for inclusion and accessibility.

5-4 CONSERVATION OF ENERGY, MATERIALS AND WATER RESOURCES

Excessive energy consumption is unsustainable, not only because coal, gas and oil resources are finite but also because their use causes pollution. Furthermore, carbon dioxide emissions from burning of fossil fuels are widely thought to contribute to climate change. About 50% of the UK's carbon emissions derive from heating and cooling of buildings and a further 10% from the production and transport of materials and construction of buildings.

Measures need to be taken to reduce demand for energy and other natural resources, including water and promote more efficient resource use. The means by which the proposed development would address these issues are set out below.

Guide Question 6: How has the development been designed to be energy efficient?

An Outline Energy Assessment has been undertaken and the following potential energy efficiency measures have been identified:

- High performance facade balancing natural day lighting with minimal heat gains and losses;
- Low air permeability rates;
- High efficiency LED lighting with daylight linked dimming, zone and timer control;
- Air source heat pumps with high seasonal efficiency;
- High efficiency condensing boilers; and

- Heat recovery on fresh air ventilation units.

Also, the Design Code for the proposed development identifies the optimisation of passive design measures including Fabric First principles and aims to minimise energy demand. Therefore, sustainable solutions for heating, cooling, ventilation and lighting will be provided as part of the detailed development.

Guide Question 7: How has the development considered carbon dioxide and other greenhouse gas emissions?

Emissions during operation have been considered in the Outline Energy Statement accompanying the OPA. Carbon dioxide emission reduction percentages are identified as targets for detailed design. It is concluded that by implementing a specified range of technologies and appropriate building construction standards and services equipment, an overall 32% reduction in CO₂ emissions compared to notional values is achievable. Further enhancements could be targeted in at detailed design stage in order to achieve the GLA target of 35% CO₂ emission reductions.

Guide Question 8: How has the development made use of renewable energy?

A number of renewable technologies have been evaluated for the proposed development. The most appropriate solution for the proposed development comprises a mix of solar water heating, air source to water heat pumps, possibly supplemented by photovoltaics.

Guide Question 9: How will the efficient use of sustainable raw materials be promoted during the construction of the development?

Part of the approach set out in the Design Code for the proposed development is to minimise the use of resources, allow opportunities for recycling during the works period (targets for recycling demolition materials are identified for the proposed development) and that building materials should be natural where possible.

Guide Question 10: How has the development considered opportunities for efficient water usage?

Part of the approach set out in the Design Code for the proposed development is to minimise water use.

Mitigation measures will be applied to reduce water consumption during the construction phase of the development. These include:

- Selection and specification of equipment to reduce the amount of water required;

- Implementation of staff-based initiatives such as turning off taps, plant and equipment when not in use both on-site and within Site offices; and
- Use of a grey water recycling water systems where possible such as wheel washes.

During operation demand for water will increase as a result of the proposed development. Water efficiency measures will be implemented in the residential development in accordance with the London Housing Design Guide and in the educational development in line with BREEM⁴ requirements to achieve a "very good" rating. Rainwater harvesting from clean roofs for irrigation of landscaping and for toilet flushing will also be considered at the detailed design stage.

Guide Question 11: How has the development considered potential impacts on availability of water resources?

Water efficiency will be employed during the construction phase, for example water for wheel washing and washing down of vehicles will be recycled.

Water efficient fixtures and fittings implemented in the residential development in accordance with the London Housing Design Guide and in the educational development in line with BREEM⁵ requirements to achieve a "very good" rating will reduce the development's potential impact on water resources, in line with policy requirements. Rainwater harvesting will also be considered at detailed design stage to reduce use of mains water for irrigating landscape and toilet flushing.

5-5 MAXIMISING THE USE OF NATURAL SYSTEMS

Guide Question 12: How has the efficient use of natural systems been considered?

The use of natural systems has been incorporated into the proposed development in the following ways:

- Minimising carbon dioxide emissions has been considered for the proposed development (see Guide Question 7 above).
- Living roofs are to be provided as specified in the Design Code for the proposed development. New planting and soft landscaping will also be provided.
- An Outline Sustainable Drainage Strategy has been developed to attenuate and dispose of surface water runoff on site using SuDS measures including green roofs, permeable pavements and soakaways.

Guide Question 13: How will the development increase London's

⁴ BREEM New Construction (2014) Design Stage Criteria (Issue 2.0) Education Buildings Further Education

⁵ BREEM New Construction (2014) Design Stage Criteria (Issue 2.0) Education Buildings Further Education

resilience and adaptability to the effects of climate change?

An Outline Sustainable Drainage (SuDS) Strategy based on green roofs, permeable pavements and soakaways, has been developed to retain surface water runoff on site and to reduce flood risk. The use of green roofs on buildings will also help to reduce heat island effects.

The Design Code for the proposed development refers to permeable areas being used where possible to reduce run-off, residential development being designed in accordance with the London Design Guide's requirements for climate change mitigation and adaptation and taking account of climate change adaptation matters for the proposed open space.

5.6 REDUCING THE IMPACTS OF NOISE, POLLUTION AND FLOODING

Guide Question 14: How have measures been incorporated in the project design, construction and operation to minimise any air quality impacts?

Mitigation measures for air quality that will be implemented during construction through the CEMP include dust management techniques and equipment maintenance.

The design of the development has buildings set back from the A316 to avoid impacts from vehicle emissions, with open space and residential development set further away from the highway network.

Measures to reduce traffic and thus reduce air quality effects from vehicle emissions on receptors both in the development and in the surrounding area from the development include:

- An upgrade to Marsh Farm Lane within the site boundary to enable a new 3m shared footway / cycleway to be provided between London Road and Marsh Farm Lane routed on the southern side of the River Crane. This will open up a new convenient walking and cycling route between the site and Twickenham Station for pupils, staff, visitors and residents.
- Secure cycle parking provision provided to local standards and showers with changing facilities for staff and employees will help to encourage cycling as an alternative to short car, bus and rail trips.

As assessment carried out in accordance with the GLA's Air Quality Neutral Planning Support Guidance⁶ showed that the total development emissions will be considerably lower than the benchmarked emissions. On this basis the REEC development is

⁶ Air Quality Neutral Planning Support Update, GLA 80371, April 2014

considered to be Air Quality Neutral.

Guide Question 15: How have measures been incorporated in the project design to minimise noise, vibration and nuisance impacts to sensitive receptors?

Mitigation measures for reducing construction noise and vibration that will be implemented through the CEMP include:

- Keeping noise and vibration to a minimum in accordance with best practicable means, as defined in Section 72 of Control of Pollution Act.
- No noisy plant will be allowed to commence work before 08.00 hours or continue working after 18.00 hours, Mondays to Fridays and between 08.00 hours and 13.00 hours on Saturdays, except in cases of emergency where safety is an issue, or as agreed under a dispensation to a Section 61 agreement of the Control of Pollution Act.
- All plant brought on-site will comply with the relevant EC / UK noise limits applicable to that equipment or will be no noisier than would be expected based the noise levels quoted in BS 5228:1997.
- Plant will be properly maintained and operated in accordance with manufacturer's recommendations. Electrically powered plant will be preferred, where practicable, to mechanically powered alternatives.
- Where feasible, all stationary plant will be located so that the noise effect at all occupied residential and commercial properties is minimised and, if practicable, every item of static plant when in operation will be sound attenuated using methods based on the guidance and advice given in BS 5228.
- Areas of the Site where particularly noisy works are required, such as demolition and piling works, will be surrounded where practicable by a 2.4m hoarding, and will provide some acoustic shielding at ground level.
- Residents living in locations identified as noise sensitive receptors will be kept informed of the progress of the construction works and will be contacted by letter prior to any activities which are likely to cause noise disturbance.

Prior to the commencement of work on site, a Section 61 agreement under the Control of Pollution Act⁷ may be required. If necessary, this will confirm the noise limits, in line with the target noise levels, set out hours of working, and give further detail on the types of construction activity that may be undertaken.

During operation, the dominant noise source affecting the proposed buildings will be from aircraft. This will affect all buildings. Therefore, facade sound reduction

⁷ Control of Pollution Act 1974

measures will be designed to achieve acceptable noise levels inside all proposed buildings. Fixed mechanical plant will be designed to meet criteria ensuring that noise effects on users of the site and on existing sensitive receptors would be of negligible significance. To mitigate noise from the sports pitches, a noise barrier may be provided, subject to consultation with residents. This would reduce noise levels in the garden areas of the properties by approximately 8dB.

Guide Question 16: How have measures been incorporated in the project design to minimise light pollution that will cause nuisance to sensitive receptors?

Relevant mitigation measures for the construction phase are set out in the Outline CEMP. Site lighting will be kept to a minimum necessary for adequate security and safety. To minimise the potential for nuisance, lighting will not be located or directed towards neighbouring or adjoining properties.

Measures to minimise potential lighting effects on habitats will include:

- Provision of minimum light levels necessary for safe working conditions;
- Avoidance of unnecessary light spillage through appropriate direction of lighting towards the area of works and shielding if necessary; and
- Inclusion of a period of darkness to allow bat species to commute across the Site.

Lighting design for the operational development is set out in Section 5.1.7 of the Design Code which states that glare and light pollution should be controlled to minimise stray light and in particular its impact on residential amenity and on habitat.

The proposed sports pitches on the College playing fields will not be floodlit.

Guide Question 17: How have measures been incorporated in the project design to minimise impacts on surface and groundwater quality?

Relevant mitigation measures for construction are set out in the Outline CEMP. Chapter 13 of the ES describes the mitigation measures for construction, which include the development of a Water Management Plan to accompany the CEMP. This will set out the water pollution management measures and controls that the contractor will implement during the construction process.

Prior to the main construction works, areas of contaminated land that have been identified on the site will be remediated, thus reducing risks to ground and surface waters from contaminant mobilisation.

During both construction and operation, a sustainable drainage system (SuDS) will

be implemented, based on soakaways and temporary retention ponds during construction and green roofs, permeable pavements and soakaways during operation. This will reduce runoff and minimise the risk of water quality effects on the surface and groundwaters.

Guide Question 18: How will the project alleviate flood risk on the site or elsewhere in the future (including the impacts of extreme flood events that relate to a changing climate)?

A Flood Risk Assessment has been undertaken. This showed that the REEC development will not increase flood risk.

A sustainable drainage system (SuDS) will be implemented to reduce surface water runoff and flood risk during phased construction and in operation.

5.7 PROMOTING HEALTH AND WELLBEING

Guide Question 19: How will the development affect the health or wellbeing of the workforce and community during construction or operation?

All buildings would be surveyed following vacant possession to establish the location and quantity of any asbestos containing material and any such material would be removed and sent for disposal in accordance with the Control of Asbestos Regulations 2012. This will reduce risks to the workforce and REEC staff students and visitors.

With dust control measures implemented through the CEMP, the risk of dust impacts to health during construction is considered to be negligible. There will initially be some adverse effects of traffic emissions from the REEC development on properties close to the A316 Chertsey Road which are already subject to poor air quality. However, 15 years post completion, the predicted air pollutant (nitrogen dioxide) concentrations are considerably lower due to the projected reduction in vehicle emissions, and the effect of operational REEC traffic will not be significant.

Construction noise is predicted to result residual moderate adverse effects at four external receptor locations. There would also be residual adverse effects on receptors within the site because the hoardings would be effective in reducing noise at ground and possibly first floor levels but would have little effect at higher floors. Noise can affect health and well being but as the construction noise will be temporary and short term, it is unlikely to have adverse effects on health over the long term.

Soil contamination identified at the site will be remediated as part of the construction works thus reducing risks to the workforce. The permanent removal of soil

contaminants, particularly in areas proposed for residential development with gardens, will provide a long term benefit to health and well-being of the residents and community.

During operation, there will be beneficial effects resulting from the provision of facilities that are available to the public, such as the sports pitches and educational facilities, promoting a healthy lifestyle. Improved footpath and cyclepath access to the REEC development will encourage more healthy modes of transport.

Guide Question 20: In what ways will the development improve health and promote healthy lifestyles to help to reduce health inequalities?

The REEC development provides upgraded sports facilities for the College and school students, including a Sports Centre, two all weather Multi Use Games Areas in the main site, and an all weather pitch and grass pitch on the College playing fields. The schools development also includes play areas and gardens for informal play and socialising; while the residential element includes private gardens and balconies with additional shared outdoor amenity areas and play space. The REEC sports facilities as well as a wide range of educational facilities will be accessible to the wider community, therefore promoting a healthy lifestyle and potentially improving healthier communities.

The development is designed to encourage walking and cycling and provides an upgraded footpath/cycleway route along the existing footpath on Marsh Farm Lane. All those who use the facilities will have the use of this pedestrian and cycle access on site with associated links to wider networks, further promoting a healthy lifestyle.

The college and schools may participate in programmes of outdoor learning and practical conservation, which are linked to health and well-being outcomes.

Harlequin FC is one of the partners of the REEC development and is on the REEC project board. The operators provide a number of commitments that encourage healthy lifestyles including working with the college and schools to create a best in class sporting programme for all age groups and levels across a range of sports to encourage activity and healthy living.

The major positive effect of the REEC development on education provision in the LBRuT supports policies associated with encouraging healthier communities.

Guide Question 23: How will the development increase the use and accessibility of shared (mix-use) space, community or recreational facilities and open space?

The proposed development includes the provision of open space and landscaping for

the proposed college, schools and Tech Hub and also for the proposed residential development. The provision of open space will increase from the existing 78% to 82% of the total area.

A range of sports facilities including the sports centre and pitches, and other college facilities, will be available to the community.

Policies requiring convenient access for all are supported by the proposals making improved provision for pedestrian and cycle access on site and links with existing networks.

5.8 CONSERVATION AND ENHANCEMENT OF THE NATURAL ENVIRONMENT AND BIODIVERSITY

Guide Question 24: Will the development promote the enhancement of habitats and avoid impacts on species?

During construction, potential injury or mortality of protected and notable species through site clearance and construction activity will be avoided through careful seasonal timing of works and pre-clearance habitat checks. Disturbance to species in retained habitat within and adjacent to the site will be reduced through industry good-practice measures for reduction and containment of lighting and noise. A minor reduction in bat foraging habitat in the local area will occur. The development includes measures to enhance the available nesting and roosting habitat for birds, bats and invertebrates through extensive tree planting, artificial roosting structures and dead-wood habitat features.

During operation, potential disturbance of species such as bats and birds by lighting will be avoided or reduced through the use of industry good-practice techniques to limit light-spill into adjacent habitat areas. Increased use by students and residents of footpaths adjacent to sensitive habitats, including the river corridors and designated habitats, may result in increased trampling and litter but this is not likely to have significant adverse effect. The conservation of these sites could be enhanced by the College and schools supporting local programmes of nature education and community involvement in practical conservation.

Specific habitat enhancement measures will include:

- Planting of additional native tree species along the site boundaries to improve connectivity and provide commuting and foraging areas for bats. Linear tree planting within the college, schools and residential development zones to provide commuting routes for bats.

- Planting of native species-rich hedgerows to improve connectivity and provide habitat for breeding birds. Provision of additional scrub habitats and unmown grassland around the periphery of the for breeding birds and hedgehog.
- Provision of unmanaged grassland areas in unlit parts of the site, including College Playing Fields, to enhance the invertebrate population on site and improve the existing foraging resource for bats.
- Siting of sports pitches on the College Playing fields to leave a suitable buffer area along the riverbank for future naturalisation of the river banks (by others).
- Provision of green roofs.
- Provision of bird nesting opportunities in suitable locations on the site through the installation of bird boxes. Provision of bat roosting opportunities in suitable locations on the site through the installation of bat boxes, incorporated into the fabric of the new buildings.
- Retention of felled trees for provision of additional deadwood habitat or a loggery along the southern boundary of the site for stag beetle and other invertebrates, contributing to the objectives of the London and LBRuT Species Action Plans.

Guide Question 25: Will the development improve the environment of, and access to green corridors, London Green chain and Blue Ribbon network?

The River Crane is part of the Blue Ribbon Network. The upgrading of Marsh Farm Lane and its connection to a new footpath being provided through other developments through Twickenham Rough will improve access to the River Crane.

The REEC development is proposing to make a contribution towards the restoration programme for the River Crane being developed by the Environment Agency. This will implement a range of measures identified for the Crane Catchment in the River Basin Management Plan, and assist in the river meeting its target of good ecological status in compliance with the Water Framework Directive.

5-9 WASTE MANAGEMENT

Guide Question 26: How will the project encourage the management of construction and demolition waste in accordance with the waste hierarchy (prevention, re-use, recycle, other recovery and lastly disposal?)

The objectives of the Design Code include minimising waste and allowing

opportunities for recycling during the works period.

Details of the proposed management of demolition and construction waste are presented in Chapter 12 of the ES. About 91,000 tonnes of demolition waste will be generated, of which about 11,000 tonnes would be reused on site as a sub-base for new foundations. The balance, plus excavation waste, together totalling about 120,000 tonnes will be taken off site for reuse, recycling or disposal. In addition, there will be about 24,000 tonnes of construction waste.

The contractor aims to divert a total of 96% of waste from landfill through reuse and recycling of demolition waste, clean excavated 'waste' and construction waste. Waste streams will be segregated on site to maximise opportunities for reuse and recycling.

Details of the waste management and mitigation measures will be provided in the contractor's Site Waste Management Plan (SWMP), which will be based on implementing the waste hierarchy throughout all phases of the proposed development

The following specific measures will be taken to minimise the generation of construction waste:

- 'Just-in-time' procurement to minimise the chance of damage to materials;
- storage in an appropriately dedicated area to prevent spoilage, damage and contamination;
- training of construction teams on waste issues and in particular the importance of correct ordering of materials so as to avoid excess materials;
- use of standard materials where possible that can be used elsewhere if necessary;
- ensuring that deliveries are correct before accepting them on site;
- review of packaging requirements where possible to avoid, reduce and reuse;
- maximising use of offsite manufacturing; and
- development of a materials inventory of construction material, equipment and plant for the purposes of identifying reuse options across the project.

Guide Question 27: Will the project achieve a target of 95% of all construction, demolition and excavation waste being re-used (on site where possible) or recycled?

A total of 96% of demolition waste, clean excavated 'waste' and construction waste

will be reused or recycled.

5.10 SUSTAINABLE CONSTRUCTION

Guide Question 28: How will the efficient use of sustainable raw materials be promoted during the construction of the project?

The Design Code specifies that the use of resources will be minimised and that building materials will be natural where possible.

Guide Question 29: Have locally sourced materials been used on site where ever possible?

The outline CEMP notes that the contractor(s) full CEMP will detail the approach for a range of resource efficiency principles including locally sourcing materials and services, auditing materials to demonstrate environmental performance and options for the re-use of supplies.

Guide Question 30: Is the Contractor a member of the Considerate Contractor scheme, or similar?

A contractor has not yet been appointed for the construction of the development but the Principal Contractor will be required to be a member of the Considerate Constructors Scheme and comply with the scheme's Code of Considerate Practice and LBRuT's Considerate Contractors Advice Note.

5.11 SUSTAINABLE TRANSPORT

Guide Question 31: How will the development be managed to minimise impacts on the local transport networks and any associated impacts on local communities?

The development involves junction improvements on the A316 to allow a right turn out of Langhorn Drive. Residential traffic from the development will be routed via Langhorn Drive to allay the concern of the local community about impacts on the Heatham Estate and Whitton Road junction.

Measures set out in the CEMP that will minimise impacts on pedestrians during construction include:

- Pedestrians will be kept separate from the demolition and construction activities at all times used appropriate hoarding.
- During construction works, existing pedestrian routes and footpaths crossing will be maintained at all times. If temporary closures are required, i.e. for the erection

of scaffolds or incoming services connections, permissions and licences will be obtained for the rerouting of pedestrian rights of way.

- The proposed construction vehicle access routes avoid using the minor roads as far as possible and have specifically avoided residential roads adjoining the site to the east.
- Waiting vehicles will be avoided through strict management of delivery times by the use of a regulated on-line booking system controlled by the Principal Contractor.
- On-site parking for construction workers will be restricted to an absolute minimum as there will be a general policy of not providing any car parking on the site. Parking on local residential roads to the east of the site is prohibited by the existing Controlled Parking Zones (CPZs). The construction workers will be encouraged to use the nearby public transport modes of bus and rail. Provisions will be made within the site for essential on-site parking if required for emergencies and for a minibus set down point.
- Section 106 contributions will be provided to fund a study to establish whether residents would like the operation times of CPZ 'R' to the north of the site to be extended from the existing operation times. If the residents deem the extension of the CPZ operation times to be required, sufficient funds commuted through the Section 106 will be used to implement the extended operation times including infrastructure such as signing.
- To encourage the use of cycles by contractors, secure cycle parking and changing facilities with showers will be provided.
- Strict monitoring and control of vehicles accessing and egressing, and travelling across the site will be implemented.
- Delivery schedules will be produced in order to obtain the profiles of future construction vehicle trips to regulate deliveries and eliminate bottle necks. A holding area has been identified close to Sunbury Cross on the A316 which may be used to control the number of construction deliveries coming into close proximity of the site.
- Details on the management of walkways, closures and routing would be agreed with LBRuT post planning through the CEMP.

Overall, the increases in traffic flows during construction on all of the road links assessed will not have a significant adverse effect on the operational capacity and the

environmental capacity of the road links.

During operation, there will be an increase in demand for bus journeys. Discussions are ongoing with TfL to develop bus service frequency improvements to accommodate the additional demand on the bus network which equates to 3 to 4 additional bus loads in the AM peak hour period.

Secure cycle parking will be provided as part of the proposed development.

With existing and planned extensions to CPZs near the College, and measures set out in the College Travel Plan to discourage students from using their cars to travel to the College, the likely effect on on-street parking within walking distance of the College will be negligible.

A site wide Framework Travel Plan has been prepared for the REEC development. The Framework Travel Plan will be used by each element of the development in order to prepare a site specific Travel Plan at the detailed design stage.

Guide Question 32: How will the development create or improve links with local and wider transport networks in particular walking and cycling and public transport?

The Design Code for the proposed development refers to pedestrian and cycle access being encouraged and designed to maximise improvements to connections. The layout will be designed to give priority to pedestrians whilst encouraging cycling and allowing appropriate access for vehicles. Pedestrian and cycle routes will be separated from vehicles where possible.

The upgrade to Marsh Farm Lane and its connection with a proposed footpath through Twickenham Rough (being provided as part of other developments) will provide an alternative pedestrian and cycle route to Twickenham Town Centre and station for REEC students and residents and for the local community.

The improved junction on the A316 and new right turn out of Langhorn Drive will provide benefits to the development and other users, including Harlequin FC and the Council Depot, by reducing travel time towards Central London.

5.12 CONSERVING AND ENHANCING THE LOCAL CHARACTER AND HISTORIC ENVIRONMENT

Guide Question 33: How will the project minimise impacts on locally valued landscapes and townscapes?

The following measures are identified in Chapter 16 of the ES for mitigating

construction effects on townscape and visual amenity:

- Tree protection measures for trees to be retained within and adjoining the site including no dig zones, protective fencing and construction exclusion zones;
- The phasing of demolition from the inside of the site outwards so peripheral buildings protect existing residents for part of the demolition works;
- Erection of solid hoardings to the site perimeter;
- Location of site offices outside the MOL, i.e. not on Craneford Way East playing fields, where possible;
- Location of site offices and storage to minimise the effects on adjacent residents.

During operation, secondary mitigation will include the following, as set out in the Design Code, which would form part of the detailed design process and the approval of reserved matters for individual buildings:

- Articulation of the built form to reduce the apparent mass of buildings and create a visually interesting façade of appropriate scale for the streetscape;
- Articulation of the roof scape to create visual interest;
- Detailed design to reinforce appropriate local landmark elements;
- Well-detailed buildings with good quality elevational and roofing materials.

Guide Question 34: Has the historic environment on and around the site been protected and conserved in a manner appropriate to its significance?

The development of the northern and southern areas of the College site have the potential to have an uncertain but probably minor effect upon the archaeological resource within these areas. A geophysical survey produced no evidence for archaeological deposits and, although this does not preclude the potential for archaeological deposits to be present, it reduces the likely potential of the site to contain significant deposits. Potential mitigation measures, if required by Historic England, will include excavation and recording of any significant archaeological deposits present or the implementation of an archaeological monitoring action (Watching Brief) during intrusive construction activities.

The operation of the proposed development will have no effect upon 26 of the 27 Listed Buildings within the general environs of the scheme. It may have a low visual impact upon the views from Richmond Hill of the Grade I listed Church tower of All

Hallows which will result in an overall minor (neutral) visual effect. The operation of the scheme will have no significant impact on any of the Buildings/Structures of Townscape Interest located within its environs.

5-13 ECONOMIC DEVELOPMENT

Guide Question 35: How will the project create local employment and skills development opportunities?

The Applicant will work with LBRuT to promote the employment of local people for construction. A number of initiatives are proposed to maximise the economic benefits of the scheme felt locally, including:

- Providing full and fair employment opportunities, training and education opportunity for local residents;
- Encouraging procurement opportunities for local businesses to source products and services locally where possible and practical; and,
- Establishing links with local schools and businesses to offer training and employment opportunities via work experience and apprentice schemes.

The College use local contractors where possible and will require its contractors to take on apprentices from the local population to ensure a commitment to training local young people.

Guide Question 36: How will the project help to ensure long-term investment in London and support sustainable growth in the region?

The Applicant will work with LBRuT to promote the patronage of local businesses. Local contractors will be also used where possible.

5-14 SUMMARY

This assessment indicates that the outline design for the REEC development complies with or is supportive of the policies identified in Table 3 relating to the 12 sustainability themes. Due to fencing of pitches on the College playing fields reducing open space for informal recreation by the community and the openness of the MOL, the development is not fully compliant with London Plan Policy 7.17, DM OS 2 and the Crane Valley Planning Guidelines, however provision of a contribution towards restoration of the River Crane has been proposed to compensate for effects on open space.

6 SUSTAINABLE CONSTRUCTION CHECKLIST

LBRUT's Sustainable Construction Checklist has been completed as far as is possible



for the outline design being submitted in the OPA, and is provided as overleaf.

The provisional score of 75.5 for new construction indicates that REEC will make a major contribution towards achieving sustainable development in Richmond.



LEIRUT SUSTAINABLE CONSTRUCTION CHECKLIST

TO BE FILLED IN FOR ALL RESIDENTIAL DEVELOPMENT PROVIDING ONE OR MORE NEW RESIDENTIAL UNITS, AND ALL OTHER FORMS OF DEVELOPMENT PROVIDING THREE OR MORE OF NON-RESIDENTIAL DEVELOPMENT

ALL OTHER CLASSES OF DEVELOPMENT ARE ENCOURAGED TO COMPLY WITH THIS CHECKLIST

This document forms part of the Sustainable Construction Checklist (SCC) and should be read in conjunction with the associated Guidance Document. Where further information is required, please refer to the relevant section, or refer to the document where this information may be found (e.g. Flood Risk Assessments or similar). Scores will be awarded for different achievements on site, and a final score attributed to the site as a whole.

Priority Name of site(s): Application No. (if known):

Development Type:

Address (Include postcode):

Completed by:

MINIMUM POLICY COMPLIANCE

Please check the Sustainable Construction webpage for the policy requirements.

Ecological Policy of Development			
Proposed (non-land)	<input type="text" value="Full assessment"/>	A job assessment is required to support this. Has this been provided?	<input type="checkbox"/>
Guides for Sustainable Home Land	<input type="text" value="Guides Landsc"/>	A job assessment is required to support this. Has this been provided?	<input type="checkbox"/>
Non-Proposed (non-land) (Highway or main)	<input type="text" value="SPECIAL Document"/>	A job assessment is required to support this. Has this been provided?	<input type="checkbox"/>
Special Land	<input type="text" value="SPECIAL Document"/>	A job assessment is required to support this. Has this been provided?	<input type="checkbox"/>
Relativity and compliance (landfill/leaching)	<input type="text" value="Phase 2/3/4"/>	A job assessment is required to support this. Has this been provided?	<input type="checkbox"/>
Earthquake Land	<input type="text" value="Phase 2/3/4"/>	A job assessment is required to support this. Has this been provided?	<input type="checkbox"/>
Other environmental rating sought (phase 2/3/4)	<input type="text" value="1 (Define Purpose, Location, Intensity, Storage, Design)"/>		

Scores awarded for Environmental Rating (this will only be awarded once a job assessment is submitted to verify the level achieved).
 Green: Level 3 = 4, Level 4 = 3, Level 5 = 2
 Amber: Level 6 = 3, Level 7 = 2, Level 8 = 1, Level 9 = 0
 Red: Level 10 = 0, Level 11 = 0, Level 12 = 0, Level 13 = 0, Level 14 = 0, Level 15 = 0
 Score:

Accredited Assessors (Please see Guidance document for more details on accredited assessors)
 Have you used a licensed Guide for Sustainable Homes, Approved and Effective Accredited Assessor, registered with?

Energy Assessment (Please see Justification & Evidence document for more details on how to complete an Energy Assessment)
 An energy assessment is required that demonstrates the expected energy and carbon dioxide emissions saving from energy efficiency and renewable energy measures. Available for the benefit of all CO2e and appropriate quality benefits. Has this been undertaken?

Carbon Dioxide emissions reduction (Please see Justification & Evidence document for more details on how to calculate these figures as part of the Energy Assessment)

- * Percentage of total site CO₂e emissions saved through renewable energy installation?
- * Percentage of regulated CO₂e emissions saved below building regulations target level through all site carbon measures?



1. ENERGY USE AND PROVISION

1.1 Heat for Cooling	Score
<ul style="list-style-type: none"> a. How does the development incorporate cooling measures? Tick all that apply: <ul style="list-style-type: none"> <input type="checkbox"/> Energy efficient design incorporating specific heat demand to keep floor to ceiling to 10 m height <input type="checkbox"/> Reduce heat entering a building through ground/structure by insulation and using roofs and walls <input type="checkbox"/> Reduce heat entering a building through shading <input type="checkbox"/> Reduced thermal mass and high ceilings <input type="checkbox"/> Passive ventilation <input type="checkbox"/> Mechanical ventilation with heat recovery <input type="checkbox"/> Air-free cooling systems, i.e. Air Conditioning Unit 	0 1 2 3 4 5 6
<ul style="list-style-type: none"> 1.2 Heat Generation b. How have the heating and cooling systems, with preference to the heating system hierarchy, been selected (aligned to London Plan policy 41.5)? Tick the heating and cooling system that will be used in the development: <ul style="list-style-type: none"> <input type="checkbox"/> Connected to existing CO2/CHP systems <input type="checkbox"/> On-site CO2/CHP powered by renewable energy <input type="checkbox"/> Gas-fired CO2/CHP <input type="checkbox"/> Commercial heat/cooling generated by non-renewable energy <input type="checkbox"/> Commercial heat/cooling generated by gas <input type="checkbox"/> Individual heating/cooling powered by renewable energy <input type="checkbox"/> Individual heating/cooling generated by gas or electricity 	0 1 2 3 4 5 6
<ul style="list-style-type: none"> 1.3 Pollution: Air, Noise and Light c. Does the development plan to implement reduction strategies for heat emissions from construction sites? <ul style="list-style-type: none"> <input type="checkbox"/> Yes <input type="checkbox"/> No d. Does the development plan to reduce a biomass boiler? <ul style="list-style-type: none"> <input type="checkbox"/> Yes, please refer to the biomass guidelines for the Borough of Richmond, and see guidance for supplementary information, if the proposed boiler is of a qualifying size, you may need to complete the information requested based on the biomass code. <input type="checkbox"/> No 	0 1 2 3
<ul style="list-style-type: none"> e. Please fill out the carbon label <ul style="list-style-type: none"> <input type="checkbox"/> Has the development been measured to reduce embodied carbon and enhance the existing landscape of the site? <input type="checkbox"/> Has the development been calculated to not include any low noise generation/landscape issues to be identified? f. Has the development been measured to reduce light pollution impacts on character, residential amenity and biodiversity? g. Have you attached a lighting Pollution Report? 	0 1 2 3 4
Please also see additional support comments to the Energy Use and Pollution Section below	Subtotal <input type="text" value="11"/>

1.1.1 SHADING design to include shading on building openings and exposed thermal mass and high ceilings have not yet been determined.
 1.2.1. System space have not been finalized but it is not the intention to use any form of CO2/CHP. It is proposed to incorporate heating/cooling powered by renewable energy.
 1.3. AirPoll noise disturbance, improved location of new buildings and quieter floor plans will reduce noise to internal and external residents.



2. TRANSPORT

2.1 Provision for the safe, efficient and sustainable movement of people and goods

- 2.1.1 Does your development provide opportunities for occupants to use innovative travel technologies, such as electric cars? 0
- 2.1.2 For major developments ONLY: Has a Transport Assessment been produced for your development based on TFL's Best Practice (4 star)?
 + If you have provided a Transport Assessment as part of your planning application, please tick here and move to Section 3 of the Checklist. 8
- 2.1.3 For smaller developments ONLY: Have you provided a Transport Statement?
 + If so, for how many days/week? 0
 + Is it 50% shorter on the site plan? 2
- 2.1.4 Will the development create or improve links with local and major transport networks? If yes, please provide details below. 0

Subtotal

Please give any additional relevant comments in the Transport Section below.

Cycle storage for 100 bicycles is shown on the Landscaping Masterplan. A modern improvement to provide light turn out of Langston Drive, Junction with A310-Downley Road will improve links with water transport network.

3. ACCESSIBILITY

3.1 Minimising the Risk to biodiversity from tree felling, lighting, hard surfacing and people

- 3.1.1 Does your development consider the loss of an ecological feature or habitat, including a tree or grass or other green space compared to the pre-development site? (Tick if yes) -2
 + If so, please state how much is lost?
- 3.1.2 Does your development minimise the removal of any habitat? (Tick if yes) 0
 + If so, has a tree report been provided to support your application? (Tick if yes) 0
- 3.1.3 Does your development plan to use any trees or shrub? (Tick if yes) 0
- 3.1.4 Please indicate which features and/or habitats that your development will incorporate to improve on site biodiversity:
- | | | | | | |
|---|-----|--------------------------|----------------|--------------------------|-------|
| • Fens, heathland or extensive natural planting | 4 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • An extensive grass field | 4 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • An extensive green roof | 4 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • A green roof | 4 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • Garden space | 4 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • Additional native and/or shrubs planted to peripheral areas | 4 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • Additional planting to peripheral areas | 3 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • A living wall | 3 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • Barabanks | 3 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • Bio-retention | 2.5 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |
| • Other | 0.5 | <input type="checkbox"/> | Area protected | <input type="checkbox"/> | Light |

Subtotal

Please give any additional relevant comments, including specific measures why things could not be incorporated in proposals with our table areas of 100m² or more across the site, in the Biodiversity Section below.

Loss of green space primarily due to loss of surface covering (not tree removal, grassland). Street trees proposed in development however at early stage of design it is not possible to provide an open area. Proposed 14-160 10,000-12 of grass lawn, 6 10000 of private garden space, and in addition 22,000m² of soft landscaping. At this stage of the design it is not possible to identify the exact area of sustainability friendly planting, however the Design Code specifies that planting around private walking routes not include areas where possible, with a preference for native trees, hedgerows and wildflower beds.



C. FLOODING AND DRAINAGE

1. Identifying and mitigating the risks of flooding and other impacts of climate change in the borough

a. Is your site located in an area at risk of flooding? (Tick if yes)

If yes, please tick one (ONE) option below:

- New development in a high flood risk area (H)
- New development in a medium flood risk area (M)
- Redevelopment of an existing building or construction

Is your development within 25 metres of a watercourse or a flood defence? (Tick if yes)

Have you submitted a Flood Risk Assessment? (Tick if yes)

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

- Silted channels or open ditches
- Use of infiltration techniques such as porous surfacing materials to allow drainage in situ
- In-situ retention or ponds or open water features
- Storm retention in tanks for gradual release to a watercourse
- Discharge not nearer directly to watercourse
- Discharge not nearer to surface water drain
- Discharge not nearer to agricultural cover

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

Please provide details of the permeable surfacing below:

These represent a loss in permeability. Enter as a negative number.

100

sqm

Submit

10.0

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

Permeable surfacing includes grass and other natural sports pitches, soft landscaping, urban gardens, roads and car parking designed with permeable paving.



3. REDUCED RESOURCE DEMAND

3.1 Reduce waste generated and amount disposed of by landfill through increasing level of reuse and recycling

- a. Will demolition be required on your site prior to construction?
- Will 10% of demolition waste or more be reused in the new development?
 - Will 10% of demolition waste or more be recycled?
- b. Check your site has any contaminated land or has the site previously been used for potentially contaminating uses?
- Have you submitted an assessment of the site contamination?
 - Are you in place to remediate the contamination?
 - Have you submitted a remediation plan?
- c. Are plans in place to include composting on site?

YES
NO
YES
NO
YES
NO
YES
NO

3.2 Reducing levels of water waste

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

- Fitting of water efficient taps, shower heads, dual flush toilets etc
 - Use of water efficient k or g rated appliances
 - Rainwater harvesting for external use
 - Composting systems
 - 70+ water meter
- b. What is the water consumption target of the development (litres per person per day)?
- The recommended target for conversions or other small scale residential properties is 100 litres per person, 100 litres or less? (include 7 day)

YES
NO
YES
NO
YES
NO
YES
NO

c. If applicable, have you submitted evidence that capacity exists in the public sewerage and water supply network?

YES
NO

Please give any additional relevant comments, including reasons why the water consumption target has not been met should this be the case.

3.3 The proposed treatment effluent discharge details

The entire amount of effluent will be designed in accordance with Luban Housing Design Guide when specified (100%)

Submit



3. DESIGN STANDARDS AND ACCESSIBILITY

3.1. Complete building information and long-term cost of construction

4. **If the development is residential, will it meet the requirements set out in the Residential Design Standards SPD for outdoor space and layout?** 1

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

[Green box for details]

AND

5. **If the development is residential, will it meet the criteria included in the Lifetime Home Standards?** 2

If not all Lifetime Homes criteria are to be met, in the space below, please provide details of any accessibility measures included in the development

[Green box for details]

6. **Are 10% or more of the units in the development wheelchair accessible?** 1

OR

7. **If the development is non-residential, does it comply with requirements included in the National Design for Maximum Access (NDMA)?** 2

Please provide details of the accessibility measures specified in the National Design SPD that will be included in the development

[Green box for details]

Subtotal

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

[Green box for additional comments]

LBRT Sustainable Construction Checklist Scoring Matrix

TOTAL

Scores for new construction	Scores for extensions or conversions	Rating	Significance
80 or more	75 or more	A+	Project achieves to achieve highest standard in range of most sustainable development
75-79	67-69	A	Shows a major contribution towards achieving sustainable development in the town
67-74	47-66	B	Shows a significant contribution towards the Borough's goal of sustainable development
35-66	26-42	C	Minimal effort to increase sustainability beyond current standards
35 or less	25 or less	Fails	Does not comply with planning conditions on sustainability and climate change

Authorisation

I hereby declare that I have read and approved this form to the best of my knowledge

Signature

[Signature]

Date 27/01/2016



**APPENDIX A
BREEAM PRE-ASSESSMENT**



Richmond Education and Enterprise Campus Development

Outline Sustainability Statement

Produced for Richmond upon Thames College

June 2015

Client: Richmond upon Thames College

Title: Richmond Education and Enterprise Campus Development
Outline Sustainability Statement

Project No: CC747

Date of Issue: June 2015

Status: Final

Version No: 1.0

Produced By



.....
Katherine Hayward
Senior Environmental Scientist

Authorised for Release By



Dr T Rudd
Technical Director

CONTACT DETAILS

**Cascade Consulting
(Environment &
Planning) Limited**
Cascade Consulting
c/o Ricardo-AEA
Marble Arch Tower
55 Bryanston Street
London
W1H 7AA
Tel 01235 753 277



CONTENTS

1	Introduction	1
1.1	Background	1
1.2	The Site and Surrounds	1
1.3	The Proposed Development.....	3
2	Sustainability Policy.....	8
2.1	Introduction.....	8
2.2	National Policy on Sustainable Development	8
2.3	Regional	9
2.4	Local	14
2.5	Other Policies.....	23
3	Sustainable Design and Construction Elements of the Scheme	24
3.1	Introduction.....	24
3.2	Sustainable Design and Construction.....	24
3.3	Design Code	28
4	Approach to Sustainability Assessment	30
4.1	Introduction.....	30
4.2	Assessment Tools.....	37
5	Results of Assessment.....	39
5.1	Introduction.....	39
5.2	Landuse.....	40
5.3	Housing, Living Spaces and Social Infrastructure	41
5.4	Conservation of Energy, Materials and Water Resources	42
5.5	Maximising the Use of Natural Systems.....	44
5.6	Reducing the Impacts of Noise, Pollution and Flooding.....	45
5.7	Promoting Health and Wellbeing	48
5.8	Conservation and Enhancement of the Natural Environment and Biodiversity	50
5.9	Waste Management	51
5.10	Sustainable Construction.....	53
5.11	Sustainable Transport.....	53
5.12	Conserving and Enhancing the Local Character and Historic Environment	55
5.13	Economic Development.....	57
5.14	Summary.....	57
6	Sustainable Construction Checklist.....	57

Appendix A BREEAM Pre-Assessment

1 INTRODUCTION

1.1 BACKGROUND

This Outline Sustainability Statement has been produced by Cascade Consulting (Environment and Planning) Ltd on behalf of Richmond upon Thames College (RuTC) to accompany an Outline Planning Application (OPA) for the Richmond Education and Enterprise Campus (REEC; the 'REEC development'), a proposed mixed use redevelopment of the Richmond upon Thames College site in Twickenham, located in the London Borough of Richmond upon Thames (LBRuT), south London.

The REEC development entails a mix of new education facilities, comprising the college, a new secondary school and a Special Educational Needs (SEN) school, business space and replacement indoor and outdoor recreational facilities with community use, together with an 'enabling' residential development.

This Sustainability Statement sets out how the proposed development contributes to sustainable development in the context of national, regional and local policies on sustainability, through various design features of the development, the approach to construction and its long term use.

The design and construction of the proposed development aim to comply as far as possible with relevant sustainability policies and guidance and therefore this statement responds specifically to guidance as set out in:

- The National Planning Policy Framework (2012);
- Planning Practice Guidance (PPG);
- London Plan (consolidated 2015) and Supplementary Planning Guidance (SPG) on Sustainable Design and Construction (2014);
- LBRuT Core Strategy (2009);
- LBRuT Development Management Plan (2011);
- Crane Valley Planning Guidelines (2005);
- LBRuT Sustainable Construction Checklist SPD (2011); and
- LBRuT Planning Brief Richmond Upon Thames College (2008)

The proposals summarised within this statement promote a development which will incorporate an energy efficient, sustainable design with environmental performance and mitigation of the effects of climate change.

1.2 THE SITE AND SURROUNDS

The REEC development site ('the Site') covers an area of approximately 9 hectares

(ha) and falls within the administrative boundary of the LBRuT. A plan showing the location of the site is provided in **Figure 1** and the planning application boundary for the site is provided in **Figure 2**. The site is bounded by:

- A316 Chertsey Road to the north;
- Egerton Road and a residential area to the east;
- River Crane and Twickenham Rough to the south; and
- Langhorn Drive, Challenge Court, Harlequin FC's rugby stadium Twickenham Stoop, and Council playing fields and Depot to the west.

The OPA Site comprises numerous academic and facilities buildings associated with the existing RuTC, with the northern part of the site occupied by a four-court sports hall with associated facilities, a grass sports pitch and car parking in the north east corner (**Figure 3**), and the southern part of the site by the College playing fields south of Craneford Way. The RuTC buildings were constructed in the 1930s with further expansion in the 1970s, and vary from one to three storeys in height (with the exception of the five storey tower), with the mass of buildings focussed to the south east corner of the site. The buildings have an existing floorspace of 34,252 m² gross external area (GEA).

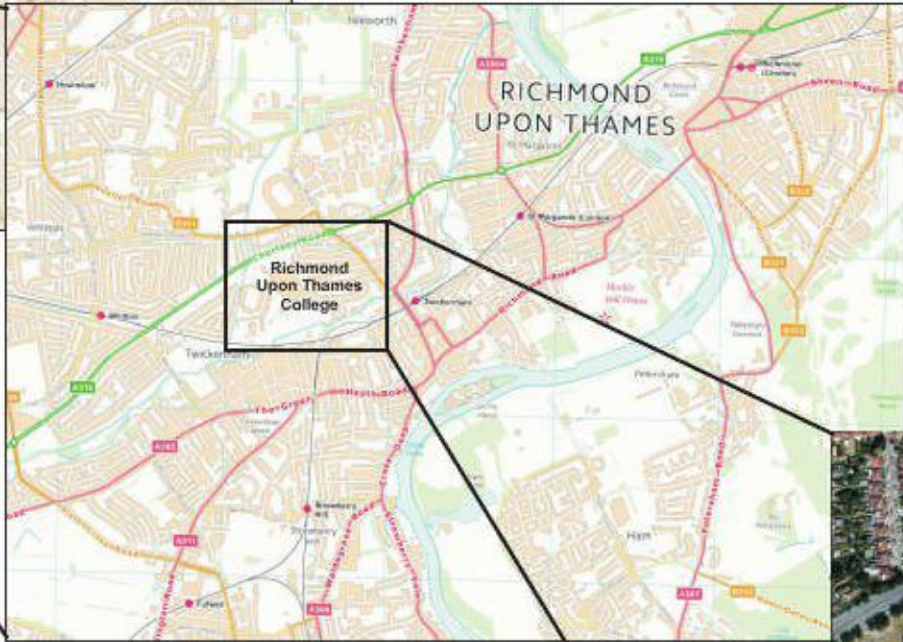
The sports centre and pitches are also operated as a community sports facility outside normal college hours. The main operating times are as follows:




- Term Time: Monday – Friday 16.30-22.00 / Saturdays and Sundays 09.00-17.00
- Holidays: Monday – Friday 16.30-22.00 / Saturdays and Sundays 09.00-17.00
- Bank Holidays: Closed.

The OPA Site is located within an area of predominantly residential development. To the east of the site is the residential neighbourhood known as the Heatham Estate, whilst to the west is the Challenge Court residential complex and further west the Rosecroft Gardens Conservation Area (known locally as the Dene Estate).



Richmond Upon Thames



  <p>Not to scale</p> <p>Note: All locations are approximate Contains OS data © Crown Copyright 2015</p>  <p>Drawing Source: HoK Number SK-042</p>	
<p>Project Title:</p> <p>Richmond Education and Enterprise Campus Development</p>	
<p>Figure Title:</p> <p>Site Location</p> <p><small>For Information Only</small></p>	
<p>Figure Number:</p> <p>Figure 1</p>	<p>Date:</p> <p>June 2015</p>



Legend

-  Site Boundary
-  Existing Buildings



Not to scale

Note: All locations are approximate
Contains OS data © Crown Copyright 2015



Drawing Source: HoK Number PL-01

Project Title:
**Richmond Education and
Enterprise Campus
Development**

Figure Title:
Planning Application Boundary

For Information Only

Figure Number:

Figure 2

Date:

June 2015






 0 100m

Note: All locations are approximate


 Drawing Source: HoK Number SK-042

Project Title:
 Richmond Education and Enterprise Campus Development

Figure Title:
 Site Context

For Information Only

Figure Number:
 Figure 3

Date:
 June 2015

1.3 THE PROPOSED DEVELOPMENT

The Applicant is submitting an OPA for the following:

The demolition of the existing college buildings, site clearance and groundworks together with the comprehensive redevelopment to provide:

- (i) *A new campus for education and enterprise – comprising:*
 - *Replacement College (Use Class D1) of up to 16,000m² (square metres) GEA to accommodate up to 3,000 FTE day time students, as well as evening and weekend use;*
 - *A Science, Technology, Engineering and Maths (STEM) Centre (Use Class D1) of up to 6,100 m² GEA*
 - *A new Secondary School (Use Class D1) of up to 7,000m² (GEA) for up to 750 students;*
 - *A new Special Education Needs (SEN) School (Use Class D1) of up to 4,000m² GEA;*
 - *A new ancillary 'Tech Hub' for Haymarket Media (Use Class B1) of up to 1,700 m² GEA; and*
 - *Replacement on-site sports centre (Use Class D2) of up to 3,900 m² GEA to serve the college, schools and the wider community.*
- (ii) *Upgrading of existing Craneford Way Playing Fields for use by the College, schools and the local community;*
- (iii) *Alterations to existing means of access for vehicles, pedestrians and cyclists from Langhorn Drive and from Egerton Road and installation of an at grade signalised junction to allow a right turn from Langhorn Drive onto the A316;*
- (iv) *Provision of on-site parking for the College, Schools and Tech Hub for up to 230 vehicles, open space and landscaping; and*
- (v) *New residential development of up to 180 units together with associated parking for up to 190 vehicles, open space and landscaping.*

The OPA seeks outline planning permission for the proposed development but provides details of all the proposed access arrangements for vehicles (including service vehicles), cyclists and pedestrians to the site (whether these involve new arrangements or alterations to existing access to /exits from the site).

The OPA seeks to establish the principles for the REEC development against which subsequent detailed Reserved Matter Applications will be considered, both in terms

of the general scale of development and the land uses considered appropriate for the OPA Site. The following matters are therefore reserved for future approval:

- **Layout** - detailed layouts showing "*...the way in which buildings, routes and open spaces within the development are provided, situated and orientated in relation to each other and to buildings and spaces out the development*".
- **Scale** - detailed scale plans showing "*...the height, width and length of each building*".
- **Appearance** - detailed design and external appearance of buildings to show "*...the aspects of a building or place within the development which determine the visual impression of the building or place makes, including the external built form of the development, its architecture, materials, decoration, lighting, colour and texture*".
- **Landscaping** - details of the "*...means of treatment of land (other than buildings) for the purpose of enhancing or protecting the amenities of the site and the area in which it is situated*".
- **Access** - the design of the internal access arrangements, including layout to facilitate movement and circulation between and within each development zone.

To demonstrate that the OPA Site is capable of accommodating the quantum of development proposed in an acceptable manner, a series of plans have been produced to show the maximum and minimum parameters (height, width and length), known as Parameter Plans. These are accompanied by a Development Specification and supported by a Design Code. These together form the Primary Control Documents for the OPA. An Illustrative Masterplan demonstrating how the REEC development might be built out and an Illustrative Landscape Plan to show how it could be landscaped have also been produced and are presented Chapter 5 of the Environmental Statement (ES) that accompanies the OPA.

2 SUSTAINABILITY POLICY

2.1 INTRODUCTION

This section of the report defines sustainable development and sets out national, regional and local planning policy considered relevant to it. These sustainable development policies were used as a benchmark to develop sustainability themes for the assessment against which the sustainability of the REEC development is assessed in Section 4 of this report.

2.2 NATIONAL POLICY ON SUSTAINABLE DEVELOPMENT

2.2.1 National Planning Policy Framework (2012)

The National Planning Policy Framework (NPPF), published in March 2012 by the Department of Communities and Local Government, sets out the Government's planning policies for England and how these are expected to be applied. The NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development. At the heart of the NPPF is a presumption in favour of sustainable development (paragraph 6). This requires the planning system to perform economic, social and environmental roles. The economic role explicitly recognises the need for *"identifying and coordinating development requirements, including the provision of infrastructure"*. The environmental role recognises the need to *"minimise waste and pollution, and mitigate and adapt, to climate change"*, and the social role supports *"strong, vibrant and healthy communities by creating a high quality built environment"*.

The policies within the NPPF, taken as a whole, constitute the Government's view of what sustainable development means in practice for the planning system. The NPPF constitutes guidance for local planning authorities and decision makers both in drawing up plans and as material considerations in determining planning applications. The development-related policies in the NPPF fall under the following broad headings:

- Building a strong, competitive economy;
- Ensuring the vitality of town centres;
- Supporting a prosperous rural economy;
- Promoting sustainable transport;
- Supporting high quality communications infrastructure;
- Delivering a wide choice of high quality homes;
- Requiring good design;
- Promoting healthy communities;
- Protecting Green Belt land;

- Meeting the challenge of climate change, flooding and coastal change;
- Conserving and enhancing the natural environment;
- Conserving and enhancing the historic environment; and
- Facilitating the sustainable use of minerals.

These are of direct relevance to the REEC development with the exception of the policies relating to ‘Supporting a prosperous rural economy’; ‘Promoting healthy communities’; and ‘Protecting Green Belt land’ are not of direct relevance to the REEC development.

Paragraph 109 requires the planning system to contribute to and enhance the natural and local environment.

Paragraph 111 encourages the effective use of land by re-using land that has been previously developed provided that it is not of high environmental value.

2.2.2 Planning Practice Guidance

In March 2014, the Government launched its Planning Practice Guidance (PPG), which provides a web-based resource. The PPG provides guidance on a range of topics including the following of relevance to the REEC development:

- Air quality;
- Climate change;
- Conserving and enhancing the historic environment;
- Design;
- Flood risk;
- Health and wellbeing;
- Land affected by contamination;
- Light pollution;
- Natural environment;
- Noise;
- Renewable and low carbon energy;
- Travel plan and transport assessment; and
- Water supply, wastewater and water quality.

2.3 REGIONAL

2.3.1 London Plan – The Spatial Development Strategy for London Consolidated with Alterations since 2011 (March 2015)

The London Plan is the development plan for Greater London, which should be taken into account in taking relevant planning decisions, such as determining planning

applications. The Plan identifies a target of 315 homes per annum for Richmond to deliver (over the period 2015-2025)¹.

Policy 5.3 of the London Plan sets out the Mayor's policy on Sustainable Design and Construction. The policy includes the following sustainable design principles:

- Minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems);
- Avoiding internal overheating and contributing to the urban heat island effect;
- Efficient use of natural resources (including water), including making the most of natural systems both within and around buildings;
- Minimising pollution (including noise, air and urban runoff);
- Minimising the generation of waste and maximising reuse or recycling;
- Avoiding impacts from natural hazards (including flooding);
- Ensuring developments are comfortable and secure for users including avoiding the creation of adverse local climatic conditions;
- Securing sustainable procurement of materials, using local supplies where feasible; and
- Promoting and protecting biodiversity and green infrastructure.

The London Plan is supported by supplementary planning guidance. Policy 5.3 states that major development proposals should meet the minimum standards outlined in the Mayor's Sustainable Design and Construction Supplementary Planning Guidance (SPG). The SPG was updated in April 2014. The new SPG sets out what can be done within the policy framework to contribute to sustainable development.

The SPG applies to all major developments. It includes a series of Mayor's Priorities and Mayor's Best Practice which apply to all such developments where appropriate.

The Priorities and Best Practice in the SPG are grouped into the following themes:

- Resource management, including optimising the use of land;
- Site layout and building design including energy and carbon dioxide emissions, energy demand, energy efficiency, renewable energy and water efficiency;
- Materials and waste;
- Nature conservation and biodiversity;
- Climate change adaptation, including heat and drought resistant planting, urban greening, trees and management of flood risks; and
- Pollution management, including land contamination, air quality, noise, light pollution and water pollution.

¹ FALP 2014, Table 4.1

Other policies of relevance to this Sustainability Statement include those summarised in **Table 1**.

Table 1: Summary of Other Relevant Policies from the London Plan

Policy No.	Title	Key Relevant Aspects
2.18	Green infrastructure	Development proposals should incorporate appropriate elements of green infrastructure and linkages with green infrastructure to the wider public realm to improve accessibility for all and develop new links is encouraged.
3.2	Improving Health and Addressing Health Inequalities	Requires the consideration of impacts of major development proposals on the health and wellbeing of communities. New development should be designed, constructed and managed in ways that improve health and promote healthy lifestyles.
3.3	Increasing Housing Supply	Aims to ensure the housing need identified in the London Plan is met.
3.9	Mixed and Balanced Communities	Promotes mixed and balanced communities through developments that foster social diversity, redress social exclusion and strengthen communities' sense of responsibility for their neighbourhoods.
3.16	Protection and Enhancement of Social Infrastructure	Development proposals should provide high quality social infrastructure. Facilities should be accessible to all sections of the community and be located within easy reach by walking, cycling or public transport.
4.1	Developing London's Economy	Promotes the continued development of a strong, sustainable and increasingly diverse economy. Seeks London's transition to a low carbon economy.
4.12	Opportunities for All	Support for local employment, skills development and training opportunities.
5.1	Climate change mitigation	Seeks to achieve an overall reduction in London's CO ₂ emissions by 60% by 2025.
5.2	Minimising carbon dioxide emissions	Requires development proposals to make the fullest contribution to minimising carbon dioxide emissions in accordance with the energy hierarchy.
5.4	Retrofitting	Refers to reducing the environmental impact of existing urban areas by bringing existing buildings up to the Mayor's

		standards on sustainable design and construction.
5.10	Urban Greening	Promotes the integration of green infrastructure, such as green roofs and walls, tree planting and soft landscaping into development proposals.
5.11	Green Roofs and Development Site Environs	Requires major development proposals to be designed to include roof, wall and site planting.
5.13	Sustainable Drainage	Requires developments to utilise sustainable urban drainage systems (SUDS).
5.15	Water Use and Supplies	Requires developers to minimise the use of mains water by incorporating water saving measures and equipment and designing residential development so that mains water consumption would meet a target of 105 litres or less per head per day.
5.16	Waste net self-sufficiency	This will be achieved by minimising waste, encouraging re-use and reduction in the use of materials, exceeding recycling/composting levels in local authority collected waste, commercial, industrial, construction, excavation and demolition waste, reducing the proportion of waste exported from the capital and working with neighbouring authorities to co-ordinate strategic waste management.
5.18	Construction, Excavation and Demolition Waste	Requires waste to be removed from construction sites, and material brought to site, by water or rail transport wherever practicable.
5.20	Aggregates	Encourages the re-use and recycling of construction, demolition and excavation waste and the sustainable transport of aggregates.
6.3	Assessing the Effects of Development on Transport Capacity	Impacts on transport capacity and the transport network at both corridor and local level are required to be fully assessed.
7.4	Local Character	Developments should have regard to form, function and structure of an area and the scale, mass and orientation of surrounding buildings. Improve an area's visual or physical connection with natural features.
7.8	Heritage Assets and Archaeology	Development should identify, value, conserve, restore, re-use and incorporate heritage assets where appropriate.

		Development affecting heritage assets and their settings should conserve their significance. New development should make provision for protection of archaeological resources, landscapes and significant memorials.
7.14	Improving Air Quality	Requires developments to minimise increased exposure to existing poor air quality and promote sustainable design and construction to reduce emissions.
7.15	Reducing and Managing Noise, Improving and Enhancing the Acoustic Environment and Promoting Appropriate Soundscapes	Addresses reducing and managing noise, improving and enhancing the acoustic environment and promoting appropriate soundscapes.
7.17	Metropolitan Open Land	The playing fields at the south west of the site are designated as Metropolitan Open Land (MOL). Policy 7.17 refers to the protection of MOL.
7.19	Biodiversity and Access to Nature	Requires development proposals to make a positive contribution to the protection, enhancement, creation and management of biodiversity, wherever possible.
7.27	Blue Ribbon Network: Supporting Infrastructure and Recreational Use	Protect and improve access points including paths alongside. Protect and enhance waterway support infrastructure.
7.28	Restoration of the Blue Ribbon Network	Development proposals should restore and enhance the Blue Ribbon Network.
7.21	Trees and Woodlands	Existing trees of value should be retained and any loss replaced. Planting of additional trees is encouraged for new developments where appropriate, particularly large-canopied species.

2.4 LOCAL

2.4.1 London Borough of Richmond upon Thames Core Strategy (2009)

The LBRuT Core Strategy includes the following policies which relate to sustainable development and are relevant to the environmental performance/sustainability of the development.

CP1 – Sustainable Development: Part 1.A. of the policy states that development will be required to conform with the Sustainable Construction Checklist. This includes the requirements to:

- Meet Code for Sustainable Homes Level 3 (new residential) (note that the Code for Sustainable Homes has since been withdrawn for new developments)
- Ecohomes “excellent” (for conversions)
- BREEAM “excellent” for other types of development.

Point 1.B. states that higher density residential and mixed use developments are to be in town centres, near to public transport in order to reduce the need to travel by car.

Point 1.C. relates to making the best use of land. It supports the dual use of facilities and co-location developments.

Point 1.D. states that the environmental benefits of retaining and, where appropriate, refurbishing existing buildings, should be compared against redevelopment. Development should minimise the use of open land and maintain natural vegetation where possible.

Para 8.1.1.2 states that developers will be required to submit a Sustainability Statement with their application to demonstrate compliance with environmental performance standards.

CP2 – Reducing Carbon Emissions

The policy states that the council will reduce its carbon dioxide emissions by requiring measures that minimise energy consumption in new development.

Point 2.B states that the council will require the evaluation, development and use of decentralised energy in appropriate development.

Point 2.C. states that the Council will increase the use of renewable energy by requiring all new development to achieve a reduction in carbon dioxide emissions of 20% from on-site renewable energy generation unless it can be demonstrated that such provision is not feasible.

CP3 – Climate Change

The policy states that development will need to take account of the impacts of climate change over its lifetime, including;

- Water conservation and drainage
- The need for summer cooling
- Risk of subsidence
- Flood risk

It also states the proposals in high flood risk areas will be restricted – the site is not in a high risk area and so this is not applicable.

CP4 - Biodiversity

Point 4.A states the Borough's biodiversity including the SSSIs and Other Sites of Nature Importance will be safeguarded and enhanced. Biodiversity enhancements will be encouraged particularly in areas of deficiency (parts of Whitton, Hampton, Teddington, Twickenham and South Kew), in areas of new development and along wildlife corridors and green chains such as the River Thames and River Crane corridors.

Point 4.B states that weighted priority in terms of their importance will be afforded to protected species and priority species and habitats in the UK, Regional and Richmond upon Thames Biodiversity Action Plans.

Note that that the core strategy also includes policy 'CP12 River Crane Corridor', for which point 12.A states:

The Council will improve the strategic corridor to provide an attractive open space with improvements to the biodiversity. Developments in and adjacent to the River Crane Corridor will be expected to contribute to improving the environment and access, in line with planning guidance.

CP5 - Sustainable Travel

This policy has a number of requirements and objectives based on sustainable travel, those considered of relevance are summarised as:

Part 5.A requires development generating high levels of travel to be located on sites well served by Public Transport.

Part 5.C seeks to prioritise the needs of pedestrians and cyclists in the design of new development.

Part 5.D seeks to improve bus services within the River Crane corridor through the

implementation of development proposals. It also seeks to improve walking cycling and public transport provision in areas currently served poorly public transport.

Part 5.E states that traffic management measures will be implemented to reduce the impact of traffic where necessary.

Part 5.F requires development in areas of good public transport accessibility to have regard to maximum parking standards. It also requires all developments to provide car sharing and car club facilities, and to be designed so as to discourage commuter parking.

Part 5.G Encourages Major employers and schools to develop Green Travel Plans and to require these with planning applications where appropriate.

CP6 - Waste

This policy states that the Council we seek to implement a range sustainable waste management targets.

CP7 – Maintaining and Improving the Local Environment

New development should recognise distinctive local character and contribute to the creation of places of high architectural and urban design quality.

CP12 River Crane Corridor

This policy relates to the protection and enhancement of the corridor.

CP13 – Opportunities for All

Opportunities provided are to be accessed by all residents.

CP14 – Housing

The indicative target of additions for Twickenham, including the ward of St Margaret's and North Twickenham, is 700-1100 dwellings up to 2017. All housing is to be built to Lifetime Homes Standards and 10% of all new housing should be to wheelchair standards.

CP15 – Affordable Housing

A range of housing to meet the needs of all types of households is expected to be included within housing provision.

CP16 – Local Services/Infrastructure

Adequate provision of services and facilities.

CP17 Health and Wellbeing

New development should encourage and promote healthier communities and places.

CP18 Education and Training

The provision of schools and other education and training facilities need to be sufficient in quality and quantity to meet the needs of residents. The potential of existing educational sites to be maximised by redevelopment, re-furbishment and re-use to meet educational needs. Facilities and services should be for all age groups and conveniently accessible to users.

CP19 Local Business

This policy relates to the retention of land in employment uses and development likely to generate significant amounts of travel should be accessible to public transport.

2.4.2 London Borough of Richmond upon Thames Development Management Plan (2011)

In addition to the Core Strategy, the Richmond Council Development Management Policies also forms part of the LDF. The council requires all new residential developments (creating 1 dwelling unit or more) and new non-residential developments of more than 100sqm floorspace to:

- follow sustainable construction policies and reduce carbon emissions
- follow renewable energy and decentralised energy networks
- complete a sustainable construction checklist

The relevant policies relating to Sustainable Development (Section 3.1) are listed below:

Policy DM SD 1 - Sustainable Construction

This policy requires all development, in terms of materials, design, landscaping, standard on construction and operation to include measures of mitigating and adapting to climate change.

It states that development will need to comply with the Boroughs Sustainable Construction Checklist SPD.

New homes will be required to meet Code for Sustainable Homes Level 3 (note that the Code for Sustainable Homes has since been replaced by the Government – see Section 4.2.3). They will also be required to achieve 40 per cent reduction in CO₂ emissions between 2013-2016.

Non residential development over 1000sqm will be required to meet BREEAM “excellent” standards. Policy DM SD 3 relates to conversions.

Supporting paragraph 3.1.1 states that more detailed policies and guidance will be contained in the Mayor’s forthcoming Climate Change Mitigation and Energy Statement.

Policy DM SD 2 Renewable Energy and Decentralised Energy Networks

The policy states that new development will need to conform with the Sustainable Construction Checklist SPD. In addition it will need to:-

- Maximise opportunities for micro-generation of renewable energy.
- (large schemes) reduce CO₂ emissions by firstly delivering efficient design, secondly through low carbon technologies and thirdly by – where feasible and viable – include energy contribution from renewable sources.
- Local opportunities to contribute towards decentralised energy networks will be encouraged.
- All new development will be required to connect to existing or planned decentralised energy networks.

The supporting para 3.1.4. states that the Council will encourage developers to achieve a 20 per cent reduction in total site CO₂ emissions from the use of on-site renewable energy.

DM SD 3 Retrofitting

This policy states that proposals for conversions and extensions will be encouraged to comply with the Sustainable Construction Checklist SPD as far as possible, and opportunities for micro-generation of renewable energy will be supported.

Conversions and extensions required to meet EcoHomes excellent rating.

DM SD 4 Adapting to Higher Temperatures and Need for Cooling

This policy requires development in terms of its layout, design, construction, materials landscaping and operation to adapt to higher temperatures, avoid overheating and meet the need for cooling.

DM SD 5 Living Roofs

This policy states that living roofs should be incorporated into new developments where feasible. The onus will be on the developer for proposals with roof plates of 100sqm or more to provide evidence and justification if a living roof cannot be provided. 70% of the roof should be used.

The use of living roofs for conversions will be supported.

DM SD 6 Flood Risk

The policy states that development will be guided to areas of lower risk using the sequential test. The southern part of the site is within Zone 2.

The guidance states that there are no land use restrictions in these areas, but that basement residential will not be permitted. Development in this zone will require a sequential test unless exceptional circumstances apply. Highly vulnerable development will require an exception test, all proposals will require a Flood Risk Assessment.

DM SD 7 Sustainable Drainage

This policy states that all development proposals are required to follow the drainage hierarchy when disposing of surface water and must utilise Sustainable Drainage Systems wherever practicable. When discharging into a public sewer, applicants need to evidence that sufficient capacity exists.

Proposals are required to follow the London Plan drainage hierarchy:-

- store rainwater for later use
- use infiltration techniques, such as porous surfaces in non-clay areas
- attenuate rainwater in ponds or open water features for gradual release to a watercourse
- attenuate rainwater by storing in tanks or sealed water features for gradual release to a watercourse
- discharge rainwater direct to a watercourse
- discharge rainwater to a surface water drain
- discharge rainwater to the combined sewer.

DM SD 9 Protecting Water Resources and Infrastructure

This policy states that development proposals that would pose an unacceptable threat to surface water and groundwater quantity and quality will be resisted.

New developments must achieve a high standard of water efficiency by;

- Meeting minimum mandatory water consumption target set by CSH or;
- Meeting minimum of 2 credits on water consumption for other types of development, or
- Meeting minimum of 3 credits on water consumption for conversions by EcoHomes, and
- Utilising rainwater harvesting for all external water uses to reduce consumption of potable water.

These standards will be adjusted to accord with other guidance.

New development is also encouraged to consider:

- Utilising rainwater harvesting and grey water harvesting; and
- Designing of landscaping to minimise water demand.

Where rivers have been classified as “poor” – including the River Crane, any development affecting such rivers is encouraged to improve the water quality in these areas.

DM SD 10 Water and Sewerage Provision

New development will need to ensure that there is adequate water supply, surface water, foul drainage and sewerage capacity to serve the development.

Other policies of relevance include:

- *DM OS 2 Metropolitan Open Land* - MOL will be protected and retained in predominantly open use. Appropriate uses include playing fields. Where appropriate, improvement and enhancement of the openness and character of the MOL and measures to reduce visual impacts will be encouraged.
- *DM OS 3 Other Open Land of Townscape Importance* – such areas to be protected and enhanced in open use.
- *DM OS 4 Historic Parks, Gardens and Landscapes*
- *DM OS 5 Biodiversity and New Development* - New development is expected to preserve and where possible enhance existing habitats.
- *DM OS 6 Public Open Space* - Public open space will be protected and enhanced. Improvements to the openness and character including allowing for convenient access for all. Larger developments to include open space provision.

- *DM OS 8 Sport and Recreation Facilities* - Public and private sports grounds will be protected and enhanced.
- *DM OS 9 Floodlighting* - Criteria are specified for the assessment of floodlighting including those relating to residential amenity and biodiversity and wildlife.
- *DM HO 4 Housing Mix and Standards* - Development should generally provide family sized accommodation except within town centres where a higher proportion of smaller units would be appropriate.
- *DM SI 1 Encouraging New Social Infrastructure Provision* - New social infrastructure should provide for an identified need, where practicable be co-located with other social infrastructure which encourages dual use and increased public access and is in a location that is accessible by public transport, walking and cycling.
- *DM DC 5 Neighbourliness, Sunlighting and Daylighting* - Protection of adjoining properties from unreasonable loss of privacy, pollution, visual intrusion, noise and disturbance.
- *DM TP 2 Transport and New Development – the impact of new development on the transport system to be assessed against other plan policies and transport standards.*
- *DM TP 3 Enhancing Transport Links – New developments are expected to create or improve links with the local and wider transport networks including the cycle and pedestrian networks and must be designed to improve accessibility.*

2.4.3 Crane Valley Planning Guidelines (2005)

The document provides planning guidelines for four main sites in the Crane, including the college site. It covers the Local Planning Authority's intentions for the wider area in which the college site sits. It includes the positive policy:

environmental improvement, improved access and sympathetic development will be applied to the River Crane "area of opportunity"

The guidelines are referenced in the LBRuT Core Strategy (2009) to identify the main area of potential change, which includes the Stoop Memorial Ground, the Craneford Way playing fields, the Council Depot, the Richmond upon Thames College and the Post Office Sorting Office.

The policy also includes reference to improvements to banks of the River Crane to improve their ecological interest and provision of a through pedestrian/cycle route

along the River Crane.

The planning vision for the Crane Valley Development Guidelines area is:

To develop the area to the highest environmental standards based around an improved riverside, a riverside walkway and improved open spaces, meeting the housing, recreational and educational needs of the area.

The guidelines state that all development schemes will be tested against the extent that they meet the following objectives:

- To maximise the opportunities for improvements by ensuring that the area is planned in a comprehensive manner;
- To protect and enhance the natural environment of the River Crane, the Duke of Northumberland River and their banks as part of the wider West London Green Chain and Blue Ribbon network as identified in the London Plan;
- To improve the appearance and recreational value of the open space including the provision of a river walk and the associated pedestrian/cycle linkages; taking account of river corridor ecology;
- To ensure that new development is compatible in scale and character with the local area; minimising any adverse impacts including flood risk;
- To minimise traffic and other impact on the surrounding area, particularly on the Heatham estate, to reduce severance and to improve pedestrian and cycle linkages within the area and to the surrounding area;
- To seek to secure improved sports facilities and possible improvements but not a significant expansion of student numbers at the College;
- To contribute towards meeting a range of housing needs;
- To ensure the provision of appropriate local community facilities including for education and health and the community use of buildings and playing fields; and
- To ensure that developers take account of the Council's Planning Contributions Strategy.

2.4.4 LBRuT Planning Brief Richmond upon Thames College (2008)

The purpose of this brief is to establish a development framework for the redevelopment of Richmond upon Thames College and identify the broad principles to guide the development. The key objectives include that any redevelopment

proposal for the site:

- Ensures appropriate pedestrian, cycle and vehicular access points, which reflect links and reduce traffic impacts in neighbouring streets;
- Promotes sustainable forms of transport and reduces car parking, through the implementation of a green travel plan;
- Maximises the sustainability of all new buildings, in accordance with relevant national, regional and local sustainability targets;
- Delivers benefits for the wider area, including improving linkages between the main development sites in the Crane Valley and environmental improvements;
- Continues to play an important role in the community and maximises the opportunity for community use of facilities; and
- Delivers an appropriate level of enabling residential development, including affordable housing, if required to contribute to the funding of the development.

2.4.5 LBRuT Supplementary planning document sustainable construction checklist (2011)

The checklist is a mandatory part of a planning application for new residential development providing one or more new dwellings and all new non-residential development of over 100m² in floor area. Therefore, this applies to the proposed development. The checklist is used to assess compliance with RBRuT's minimum policy requirements for environmental ratings under the Code for Sustainable Homes (note that the Code for Sustainable Homes has since been replaced by the Government – see Section 4.2.3) or BREEAM as well as energy and carbon dioxide emission savings.

2.5 OTHER POLICIES

Compliance with individual policies in a wide range of other policy documents which are not themselves directed specifically at sustainability could nevertheless contribute to the sustainability of the Development. It is not possible to list all such policies here. However, in the assessment of sustainability of the proposed development, where the proposals are in accordance with individual policies which support sustainability, this is noted.

3 SUSTAINABLE DESIGN AND CONSTRUCTION ELEMENTS OF THE SCHEME

3.1 INTRODUCTION

Aspects of the proposed development of particular relevance to this Sustainability Assessment are identified below, followed by a description of the key relevant elements of the Design Code.

LBRuT's Sustainable Construction Checklist has been completed and is provided in Section 6.

3.2 SUSTAINABLE DESIGN AND CONSTRUCTION

3.2.1 Residential Units

Of the 180 residential units proposed, there will be a minimum of 15% affordable housing and 10% of the housing mix will have wheelchair access or be adaptable for wheelchair access.

The overall target dwelling mix for the OPA Site² is provided in **Table 2**.

Table 2. Target Dwelling Mix for Residential Development Zone

Unit Size	Percentage (%)	Market Units	Affordable Units	Total Unit Numbers
One bed (Flat)	25	38	7	45
Two bed (Flat)	45%	33	6	39
Two bed (House)		36	6	42
Three bed (Flat)	20%	7	1	8
Three bed (House)		24	4	28
Four bed (Flat)	10%	1	1	2
Four bed (House)		14	2	16
TOTAL	N/A	153	27	180

² It should be noted that the OPA sets a maximum floorspace and number of units. If a residential developer wishes to increase this, then they will be required to either demonstrate that their alternative proposals falls within the scope of what has been assessed within the OPA or submit a further planning application.

3.2.2 Cycle and Pedestrian Access

Cycle access will be available through the main accesses from Langhorn Drive and Egerton Road and via a shared cycle way/footpath along the upgraded Marsh Farm Lane (off both the A316 and Craneford Way). Cycle parking will be provided in accordance with the London Plan (2015), approximately 142 spaces will be provided for the College and 106 spaces will be provided adjacent to the Secondary School car park.

There will be improved pedestrian access via the upgraded shared footpath and cycleway along Marsh Farm Lane, which runs from Craneford Road in the south to the A316 in the north. This route will connect to Twickenham Station via the existing River Crane footpath and bridge, and a new length of footpath being built on the south bank of the River Crane as part of the Twickenham Rough development (Land to the West of the Former Royal Mail Sorting Office, Twickenham - Ref 13/1147/FUL) and access to Twickenham and the rail station being put in as part of the Sorting Office development (Former Royal Mail Sorting Office, Twickenham - Ref 12/3650/FUL). This will form a new pedestrian route to the College, but because it will not be lit (for safety and conservation reasons) and it is understood will be locked at night, it will only be suitable for use during daylight hours.

The other main pedestrian routes to the station for students and staff will be along Marsh Farm Lane and either via the A316 or Craneford Way/Court Way. A new gateway will be provided for pedestrians to access the eastern end of the College playing fields, making a circular walk around the new pitches. The existing footpath across Craneford Way playing fields and the existing bridge over the River Crane will be retained, but will be upgraded/refurbished as part of the REEC Development.

3.2.3 Landscaping

The landscaping principles set out in the Design Code are to strengthen the vegetated boundaries of the site with native species to provide wildlife corridors and improve amenity. The line of mature trees along the college frontage on the A316, which are partly within and partly outside the red line, will be retained and gaps filled by planting new trees within the red line area. Some mature trees along Marsh Farm Lane will be retained, with new planting along the shared access route to improve the footpath/cycleway and make it more appealing to users than it is at present. Additional trees will also be planted in staggered blocks along the new residential access road, with the blocks acting as a traffic calming measure.

Soft and hard landscaping within the main site will be appropriate to its function for schools and college use. Sections of native hedgerow will be planted between the school and college grounds, providing screening of the school entrance and play

areas.. Mature trees along Craneford Way will also be retained where possible and part of the soft landscaping areas, for example on the College playing field, will be enhanced for nature conservation by native planting and retaining areas of longer grass.

The street and path network across the Site will be designed to give priority to pedestrians and cyclists, and where possible these will be separated from vehicle accesses. The streets and paths will be well lit, appropriate to their use, with the exception of the footpath along the River Crane (being built by others) which will be kept unlit as it is an important biodiversity corridor, and also from a safety perspective to discourage use after dark. Streets will be bordered by a tree planting zone where possible, again with use of native species.

3.2.4 Open Space

The provision of open space will increase from the existing 78% to 82% of the total area (based on the Illustrative Masterplan). Private gardens and shared amenity areas within the residential development will be provided in line with policy requirements.

3.2.5 Community Use

The REEC partnership is committed to providing community use for a wide range of facilities and activities. These include use of the following;

- College sports hall – Community use of the sports hall will be provided out of main College hours of use; after 5.30pm to closing time (governed by planning regulations) and on Saturdays and Sundays. In addition, use of the sports hall will be provided during College holiday periods when it is closed.
- College restaurant and catering – The principle of development is to provide the College with industry standard, real work environments. The College restaurant will be open to the community for hire and for dining both during College standard hours and through evening classes.
- College fitness gym - Within the main building (separate to the sports building) the College will provide access to a fitness gym both during College daytime operational hours, evening and weekends.
- Hair and Beauty – the College wish to actively encourage the community to book treatments within the hair and beauty salons during daytime and evening opening.
- Sports Pitches – the College is committed to the provision of bookable use of the sports pitches in the evenings (in the summer, due to the absence of floodlighting)

and at weekends and will commit to a community use agreement.

- School sports hall – Community use of the sports hall will be provided out of main school hours of use; after 5.30pm to closing time (governed by planning regulations) and on Saturdays and Sundays. In addition use of the sports hall will be provided when the school is closed during holiday periods.
- School dining room and catering – the school dining space will be open to the community for hire outside normal school hours (governed by planning regulations).
- School halls and drama spaces – the school halls and drama spaces will be open to the community for hire outside normal school hours (governed by planning regulations).
- School Multi-Use Games Area – Community use of the school Multi-Use Games Area (MUGA) will be provided out of main school hours of use; after 5.30pm to closing time (governed by planning regulations) and on Saturdays and Sundays. In addition use of the MUGA will be provided when the school is closed during holiday periods.

3.2.6 Demolition and Construction

Key aspects of the construction period of particular relevance to this Sustainability Assessment include:

- An Outline Construction Management Plan (CMP), Outline Construction Logistics Plan (CLP) and Outline Construction Environmental Management Plan (CEMP) have been prepared for the proposed development.
- It is currently anticipated that construction would commence in 2015 and would be phased over a four year duration, completing in 2019.
- Up to approximately 45,279m³ (including additional 30% bulk factor*) of demolition material (derived from existing buildings and hardstanding) would require storage or removal from the Site following demolition.
- It is envisaged that of the total demolition material (45,279m³), up to approximately 5,329m³ (including brick and concrete from external walls and internal partitions) would be recycled, crushed, graded and used as a sub-base for new foundations. These demolition materials would be stockpiled on-site prior to re-use during the site enabling works. The remainder would be taken off site for re-use, recycling or disposal.

- Stockpile areas would be located as required by the demolition / construction phase and to enable reuse of demolition material on Site.
- The average number of Heavy Goods Vehicles (HGV) movements associated with demolition and construction activities has been assessed to be approximately 8 HGV movements per day (16 vehicle trips per day) up until completion, over the 4 year demolition and construction programme. It is anticipated that construction vehicles are likely to peak during Phase 1 of the demolition / construction programme, and average at approximately 12 HGV movements per day to / from the Site (24 vehicle trips per day), owing to the large volume of construction materials required to be imported on Site at this time.
- During Phase 1, there would be a peak of approximately 150 operatives travelling to / from the Site by car or LGVs. A large number of these trips would be via public transport and by shared vehicles.
- The Applicant would work with LBRuT to promote the employment of local people for construction and the patronage of local businesses.
- Prescribed working hours would be agreed with LBRuT. It is however anticipated that the normal working hours for the demolition and construction works would be as set out below, in accordance with LBRuT's Considerate Contractor's Advice Note³:
 - 08:00 – 18:00 hours Monday to Friday (with a one hour period of mobilisation / demobilisation at the start and end of the day);
 - 08:00 – 13:00 hours Saturday (with a one hour period of mobilisation / demobilisation at the start and end of the day); and
 - No working on Sundays or Bank Holidays.

3.3 DESIGN CODE

The Design Code for the proposed development comprises a set of guidelines for future design teams involved in the preparation of Reserved Matters Applications. The document sets qualitative rules and aspirations for the scheme design, including buildings, open space and landscaping, and provides an indication of how the final development may appear. It sets out a sustainable approach to the design, construction and production of all the proposed facilities should deliver "*a cost effective and resource efficient redevelopment that*:"

- Allows opportunities for recycling during the works period;

³ London Borough of Richmond Upon Thames. *Considerate Contractor Advice Note*. Available online at: <http://www.richmond.gov.uk/construction.pdf>

- Optimises the use of low-energy solutions and be designed and constructed to respond to specific site constraints and opportunities, and to the future impact of climate change;
- Provides effective measuring and monitoring of the performance of the buildings in operation;
- Includes operational plans that record all targets for the key aspects of environmental performance;
- Includes assessment against BREEAM criteria, or an approved alternative environmental assessment standard such as Passivhaus or LEED. If BREEAM rating are used the aim should be to achieve a rating of “very good” or better. If alternative standards are used, these should ensure a standard equivalent to or better than BREEAM “very good”.
- For the residential development, achieves or exceeds the energy, water and materials efficiency standards identified in the Mayor of London’s Housing Design Guide.

Pedestrian and cycle access to the College site, the Tech Hub and the residential zone should be encouraged and designed to maximise improvements to connections to the town centre. Pedestrian access to the schools should be encouraged and should be possible from a number of directions.

The residential zone should incorporate open space, protecting the existing mature trees and habitat along Egerton Road.

The General Design Principles include:

- The street and path network and layout should be designed to give priority to pedestrians while encouraging cycling and allowing appropriate access for vehicles. Where possible, pedestrian and cycle routes should be separated from vehicles.
- The street and path network should be designed for inclusion and accessibility.
- Building materials should be natural where possible.
- Permeable areas should be used where possible to reduce run off.
- The design of streets and paths should support the proposed development’s sustainable drainage strategy.
- The open space guidelines include that the proposed development should take

account of climate change adaptation measures.

- New or extended habitat areas should be provided as identified in the Design Code and in the Environmental Statement.
- The use of Living Roofs, including green and brown roofs, on lower buildings should be encouraged.

The residential development should be designed and built in accordance with the Lifetime Homes Standards included within the London Housing Design Guide and the London Design Guide's requirements for climate change mitigation and adaptation.

4 APPROACH TO SUSTAINABILITY ASSESSMENT

4.1 INTRODUCTION

The specific sustainable development policies identified in Section 2 of this report together constitute a benchmark against which the sustainability of the REEC development can be assessed. The policies and sustainability objectives within them have been reviewed in order to develop a framework for the sustainability assessment of the proposed development.

Those policies and sustainability objectives identified as relevant to the proposed development were grouped into nine main sustainability themes, as set out below. Most of the sustainability themes are based on the objectives in the GLA Sustainable Design and Construction Supplementary Planning Guidance (SPG). These also cover policies of the LBRuT Core Strategy and LBRuT Development Plan considered to be of relevance to the proposed development. Some policies, for example those relating to agriculture are not relevant to the proposed development and therefore no themes have been developed to cover them.

Additional themes were included to cover transport, historic environment and economic development policies. These policies have been added to the assessment framework in order to reflect their inclusion as major policy headings in the NPPF.

The 12 main sustainable development policy themes forming the basis of the assessment are:

- Landuse;
- Housing, living spaces and social infrastructure;
- Conservation of energy, materials and water resources;
- Maximising the use of natural systems;
- Reducing the impacts of noise, pollution and flooding;

- Promoting health and well-being;
- Conservation and enhancement of the natural environment and biodiversity;
- Sustainable waste management;
- Sustainable construction;
- Sustainable transport;
- Conserving of the local character and enhancing the historic environment; and
- Economic development.

The details of the various policy objectives, key messages and targets associated with each theme were reviewed and a set of Guide Questions were developed in order to support the assessment in each theme area. **Table 3** lists the guide questions developed against each theme.

In undertaking the assessment, commentary against each guide question has been provided. The commentary has been informed by available information including the scheme design and construction methodology; the ES topic chapters; and feedback from consultation.

Table 3. Sustainability Themes and Guide Questions for the Development

Theme	Important/ relevant aspects of policies	Theme and Guide Questions
Landuse	<ul style="list-style-type: none"> • LBRuT Core Strategy CP1 • London Plan Policies 5.3 and 5.4 	<ul style="list-style-type: none"> • Will the development make best use of and maximise the efficient use of land, buildings?
	<ul style="list-style-type: none"> • LBRuT Core Strategy CP1 • paragraph 111 of the NPPF • London Plan Policies 2.18 and 5.16 	<ul style="list-style-type: none"> • How has the development design used previously developed land and re-used or refurbished existing buildings or facilities?
	<ul style="list-style-type: none"> • London Plan Policy 7.17 • DM OS 2 states that MOL's will be protected and retained in predominately open use. • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • How will the development minimise potential impact on open / green space?
Housing , living spaces and social infrastructure	<ul style="list-style-type: none"> • London Plan Policy 3.3, 3.9 • LBRuT Core Strategy CP14 • LBRuT Core Strategy CP15 • LBRuT DM HO 4 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • Will the development improve housing provision and meet the needs of a range of types of households suitable to the area?
	<ul style="list-style-type: none"> • London Plan Policy 3.16 • LBRuT Core Strategy CP13 • LBRuT Core Strategy CP16 • LBRuT DM SI 1 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • Will the development contribute towards providing a range of opportunities and facilities relevant to the site and accessible to all in the community?
	<ul style="list-style-type: none"> • London Plan Policy 5.1 • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP2 • 	<ul style="list-style-type: none"> • How has the development been designed to be energy efficient? •

Theme	Important/ relevant aspects of policies	Theme and Guide Questions
Conservation of energy, materials and water resources	<ul style="list-style-type: none"> • London Plan policy 5.2 , • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP2 • LBRuT DM SD 1 	<ul style="list-style-type: none"> • How has the development considered carbon dioxide and other greenhouse gas emissions?
	<ul style="list-style-type: none"> • LBRuT LBRuT Core Strategy CP2 • DM SD 2 • LBRuT DM SD 3 	<ul style="list-style-type: none"> • How has the development made use of renewable energy?
	<ul style="list-style-type: none"> • London Plan Policy 5.3 • Mayor's Sustainable Design and Construction SPG 	<ul style="list-style-type: none"> • How will the efficient use of sustainable raw materials be promoted during the construction of the development?
	<ul style="list-style-type: none"> • London Plan Policies 5.3, 5.4 and 5.15, • The Mayor's Sustainable Design and Construction SPG • LBRuT DM SD 9 	<ul style="list-style-type: none"> • How has the development considered opportunities for efficient water usage?
	<ul style="list-style-type: none"> • London Plan Policies 5.3 and 7.27 • LBRuT DM SD 7 • LBRuT DM SD 9 	<ul style="list-style-type: none"> • How has the development considered potential impacts on availability of water resources?
	<ul style="list-style-type: none"> • London Plan Policies 5.1, 5.10, 5.11 and 5.13 • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP3 • LBRuT DM SD 5 	<p>How has the efficient use of natural systems been considered?</p>
Maximising the use of natural systems	<ul style="list-style-type: none"> • London Plan Policy 5.3 • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP3 	<ul style="list-style-type: none"> • How will the development increase London's resilience and adaptability to the effects of climate change?
	<ul style="list-style-type: none"> • Paragraph 109 of the NPPF • London Plan Policy 7.14 	<ul style="list-style-type: none"> • How have measures been incorporated in the project design, construction and operation to minimise any air quality impacts?

Theme	Important/ relevant aspects of policies	Theme and Guide Questions
Reducing the impacts of noise, pollution and flooding	<ul style="list-style-type: none"> • The NPPF • the Noise Policy Statement for England • London Plan Policy 7.15 • LBRuT DM DC 5 	How have measures been incorporated in the project design to minimise noise, vibration and nuisance impacts to sensitive receptors?
	<ul style="list-style-type: none"> • London Plan Policy 5.3, and • The Mayor's Sustainable Design and Construction SPG • LBRuT DM OS 9 	<ul style="list-style-type: none"> • How have measures been incorporated in the project design to minimise light pollution that will cause nuisance to sensitive receptors?
	<ul style="list-style-type: none"> • the NPPF • London Plan Policy 7.28 • LBRuT Core Strategy CP4 • LBRuT DM SD 7 	<ul style="list-style-type: none"> • How have measures been incorporated in the project design to minimise impacts on surface and groundwater quality?
	<ul style="list-style-type: none"> • The NPPF, • London Plan Policies 5.18 and 5.3 • The Mayor's Sustainable Design and Construction SPG Policy DM SD 6 	<ul style="list-style-type: none"> • How will the project alleviate flood risk on the site or elsewhere in the future (including the impacts of extreme flood events that relate to a changing climate)?
	<ul style="list-style-type: none"> • Section 8 of the NPPF • London Plan Policy 3.2 • 	<ul style="list-style-type: none"> • How will the development affect the health or wellbeing of the workforce and community during construction or operation? •
Promoting health and well-being	<ul style="list-style-type: none"> • Section 8 of the NPPF • London Plan Policy 3,2 • LBRuT Core Strategy CP17 	In what ways will the development improve health and promote healthy lifestyles to help to reduce health inequalities
	<ul style="list-style-type: none"> • Section 8 of the NPPF • London Plan Policy 3.2 • LBRuT Core Strategy CP17 • LBRuT DM OS 6 • LBRuT DM OS 8 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • How will the development affect the health or wellbeing of the workforce during construction or operation? • In what ways will the development improve health and promote healthy lifestyles to help to reduce health inequalities? • How will the development increase the use and accessibility of shared (mix-use) space, community or recreational facilities and open space. •

Theme	Important/ relevant aspects of policies	Theme and Guide Questions
	<ul style="list-style-type: none"> • Paragraph 109 of the NPPF, • London Plan Policy 5.3, 7.19 and 7.28 • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP4 • LBRuT Core Strategy CP12 • LBRuT DM OS 5 • Crane Valley Planning Guidelines 	<p>Will the development promote the enhancement of habitats and avoid impacts on species?</p>
Conservation and enhancement of the natural environment and biodiversity	<ul style="list-style-type: none"> • London Plan Policy 5.3, 7.19 and 7.28 • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP4 • LBRuT Core Strategy CP12 • LBRuT DM OS 5 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • Will the development improve the environment of, and access to green corridors, London Green Chain and Blue Ribbon network? •
	<ul style="list-style-type: none"> • The NPPF • London Plan Policy 5.16 and 5.18, • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP6 	<ul style="list-style-type: none"> • How will the project encourage the management of construction and demolition waste in accordance with the waste hierarchy (prevention, re-use, recycle, other recovery and lastly disposal?)
Sustainable waste management	<ul style="list-style-type: none"> • London Plan Policies 5.16, 5.18 and 5.20, • The Mayor's Sustainable Design and Construction SPG • LBRuT Core Strategy CP6 	<p>Will the project achieve a target of 95% of all construction, demolition and excavation waste being re-used (on site where possible) or recycled?</p>
	<ul style="list-style-type: none"> • The Mayor's Sustainable Design and Construction SPG • LBRuT DM SD 1 	<ul style="list-style-type: none"> • How will the efficient use of sustainable raw materials be promoted during the construction of the project?
Sustainable Construction	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Have locally sourced materials been used on site where ever possible?

Theme	Important/ relevant aspects of policies	Theme and Guide Questions
	<ul style="list-style-type: none"> • London Plan Policy 5.3 • LBRuT DM SD 1 • The NPPF • London Plan Policy 6.3 • LBRuT Core Strategy CP5 • LBRuT DM TP 2 	<ul style="list-style-type: none"> • Is the Contractor a member of the Considerate Contractor scheme, or similar? • How will the development be managed to minimise impacts on the local transport networks and any associated impacts on local communities?
Sustainable transport	<ul style="list-style-type: none"> • The NPPF • London Plan Policy 6.3 • LBRuT Core Strategy CP5 • LBRuT DM TP 3 • Crane Valley Planning Guidelines 	<ul style="list-style-type: none"> • How will the development create or improve links with local and wider transport networks in particular walking and cycling and public transport? •
	<ul style="list-style-type: none"> • The NPPF • London Plan Policy 7.4, 7.8, 7.21 • LBRuT Core Strategy CP7 • LBRuT DM OS 2 • LBRuT DM OS 3 • Crane Valley Planning Guidelines 	<p>How will the project minimise impacts on locally valued landscapes and townscapes?</p>
Conserving and enhancing the local character and historic environment	<ul style="list-style-type: none"> • Chapter 12 NPPF • London Plan Policy 7.4, 7.8, 7.21 • LBRuT Core Strategy CP7 • LBRuT DM OS 2 • LBRuT DM OS 3 • LBRuT DM OS 4 	<ul style="list-style-type: none"> • Has the historic environment on and around the site been protected and conserved in a manner appropriate to its significance?
	<ul style="list-style-type: none"> • Chapter 1 of the NPPF • London Plan Policy 4.1, 4.3 • LBRuT Core Strategy CP18 • LBRuT Core Strategy CP19 • 	<ul style="list-style-type: none"> • How will the project create local employment and skills development opportunities? •
Economic development	<ul style="list-style-type: none"> • Chapter 12 of the NPPF • London Plan Policy 4.12 	<p>How will the project help to ensure long-term investment in London and support sustainable growth in the region?</p>
		<ul style="list-style-type: none"> •

4.2 ASSESSMENT TOOLS

4.2.1 Energy

London Plan Policy 5.2 'Minimising Carbon Dioxide Emissions' confirms that development proposals should make the fullest contribution to minimising CO₂ emissions in accordance with the energy hierarchy of Be Lean (use less energy), Be Clean (supply energy efficiently) and Be Green (use renewable energy). Policy 5.2 of the London Plan requires each major development proposal to submit a detailed energy assessment. The purpose of an energy assessment is to demonstrate that climate change mitigation measures are integral to the scheme's design and evolution, and that they are appropriate to the context of the development.

Each assessment is required to demonstrate how the targets for regulated CO₂ emission reductions over and above 2013 Building Regulations will be met using the Mayor's energy hierarchy. As outlined in the Sustainable Design and Construction SPG, since 6 April 2014, the Mayor has applied a 35% cent carbon reduction target beyond Part L 2013 of the Building Regulations - this is deemed to be broadly equivalent to the 40% beyond Part L 2010 of the Building Regulations, as set out in London Plan Policy 5.2 for 2013-2016.

An Energy Statement has been prepared as part of the application and indicates that the REEC development will achieve 15.5% CO₂ emissions reduction compared to notional due to design of the buildings and their services for minimum energy use (lean building), and a further 16.5% reduction due to use of on-site renewable energy (lean, clean and green building). An overall 32% reduction in CO₂ emissions compared to notional values appears achievable and further enhancements could be targeted in future design, such as use of photovoltaic cells, in order to achieve the GLA target of 35% CO₂ emission reductions.

4.2.2 BREEAM

BREEAM New Construction 2014 is a performance based environmental assessment method and certification scheme for new buildings. The primary aim of BREEAM New Construction is to mitigate the impacts of new developments on the environment over the entire life-cycle of the building in a comprehensive and cost-effective manner. This is achieved through the integration of the BREEAM scheme at key stages of the design and procurement process.

The aspiration of the REEC development is for the educational element to achieve BREEAM 'Very Good'. A Design Stage Pre-Assessment submitted with the OPA indicates that this is achievable (see **Appendix A**).

4.2.3 Technical Housing Standards

The Code for Sustainable Homes referred to in some of the policies identified in this Sustainability Assessment has, in March 2015, been withdrawn. It has been replaced by the Government's new approach to the setting of technical standards for new housing. The new national technical standards complement the existing mandatory Building Regulations. Local planning authorities can set additional technical requirements exceeding the minimum standards required by Building Regulations with respect to access and water and an optional nationally described space standard.

For access, local planning authorities should take account of evidence that demonstrates a clear need for housing for people with specific housing needs and plan to meet this need.

For water, all new homes already have to meet the mandatory standard of 125 litres/person/day under the Building Regulations. Local planning authorities can, where there is a clear local need, set policies to meet the tighter optional requirement of 110 litres/person/day.

The NPPF states that local planning authorities should identify the size, type, tenure and range of housing required in a particular location and reflecting local demand. Internal space standards should be referenced in the local plan and reflect the Nationally Described Space Standard.

In London, the Mayor's London Housing Design Guide, which incorporates the Lifetime Homes standard and key components of the Code for Sustainable Homes, provides guidance for residential development. The London Housing Design Guide provides a wide range design guide standards, including ones relating to climate change and adaption. The design standard relating to water states that new dwellings should be designed to ensure that a maximum of 105 litres of water is consumed per person per day.

5 RESULTS OF ASSESSMENT

5.1 INTRODUCTION

This section presents the REEC development's performance against the 12 sustainable development policy themes:

- Landuse
- Housing , living spaces and social infrastructure;
- Conservation of energy, materials and water resources;
- Maximising the use of natural systems;
- Reducing the impacts of noise, pollution and flooding;
- Promoting health and well-being;
- Conservation and enhancement of the natural environment and biodiversity;
- Sustainable waste management;
- Sustainable Construction;
- Sustainable transport;
- Conserving of the local character and enhancing the historic environment; and,
- Economic development.

Responses to each of the developed guide questions under each sustainable development policy theme are provided in Sections 5.2 to 5.13.

5.2 LANDUSE

There are strong policy drivers for redevelopment of previously used land at national, regional and local level. Re-use of brownfield sites reduces development pressure on open space, other undeveloped land and greenspace.

The means by which the proposed development would re-use land and buildings sustainably are set out below.

Guide Question 1: Will the development make best use of and maximise the efficient use of land and buildings?

The proposed development comprises demolition of the existing college buildings, site clearance and groundworks and comprehensive redevelopment of the site. Therefore, it re-uses the existing site, avoiding the need for off-site land take and makes use of the existing footprint.

The co-location of related educational and training facilities would be achieved through the proposed development, making efficient use of land.

The redevelopment will also enable an increase in the number of housing units on site. There is no housing provision on site at present and the proposed development will provide up to 180 new units.

By eliminating the need for additional land take off site, enabling co-location of related facilities and adding residential use, support is demonstrated for a range of policies and sustainability objectives.

Guide Question 2: How has the development design used previously developed land and re-used or refurbished existing buildings or facilities?

The development design has used previously developed land and therefore complies with policies encouraging this.

It has not however re-used or refurbished existing buildings or facilities, instead due to their age, poor condition and high maintenance requirements, it is proposed to demolish them and redevelop the site. It therefore does not address policies associated with encouraging the re-use of existing buildings.

Of the total demolition material provided (45,279m³), up to approximately 5,329m³ (including brick and concrete from external walls and internal partitions) would be recycled, crushed, graded and used as a sub-base for new foundations on site. Therefore, this achieves support for policies encouraging the re-use of materials.

Guide Question 3: How will the development minimise the potential impact on open / green space?

The existing College Playing Fields (classified as Metropolitan Open Land (MOL)) are proposed to be upgraded thus this area of open space will be retained and improved. Chapter 18 of the ES notes that its proposed use for new all weather and grass sports pitches aligns with the appropriate uses for MOL as set out in policy, although the fencing of the pitches in accordance with Sport England policy will affect the openness of the area.

Open space in the form of private gardens and shared amenity space will be provided within the residential development in line with local policy requirements. Overall the development will increase open space; based on the Illustrative Masterplan the total open space area increases from 78% to 82%.

5-3 HOUSING, LIVING SPACES AND SOCIAL INFRASTRUCTURE**Guide Question 4: Will the development improve housing provision and meet the needs of a range of types of households suitable to the area?**

The proposed development will provide up to 180 residential units. This will contribute to the identified housing need in the area.

The housing units will comply with the Lifetime Homes Standard, therefore complying with policy in the Core Strategy.

The Design Code for the residential element of the proposed development refers to achieving or exceeding the energy, water and materials efficiency standards identified in the Mayor of London's Housing Design Guide.

For the non residential development, the Design Code for the proposed development refers to assessment against BREEAM criteria (or appropriate alternative standard) will be undertaken and the aim will be to achieve 'very good' or better.

Regarding the range of housing, a minimum of 15% affordable housing and 10% of the housing mix will have wheelchair access or be adaptable for wheelchair access. Some 45% would be suitable for four people, 20% for five people and 10% for six people therefore providing potential family sized accommodation. This dwelling mix will support policies that aim to meet a range of housing needs and promote mixed and balanced communities.

Guide Question 5: Will the development contribute towards providing a range of opportunities and facilities relevant to the site and accessible to all in the community?

The vision for the REEC development is to create a new campus for education and enterprise; a college working in partnership with employers on site, which will provide students access to resources and work opportunities through work experience, apprenticeships and ultimately, jobs. The potential to completely redevelop the site provides RuTC with an opportunity to create a flagship regional centre of excellence, as well as maintaining its strong commitment to the local community.

The REEC partnership is committed to providing community use for a wide range of facilities and activities including the specified use of the college sports hall, college restaurant and catering, college fitness gym, hair and beauty salons, sports pitches, school sports hall, school dining room and catering, school halls and drama spaces and the multi-use games area. Therefore, the proposed development will contribute towards the provision of facilities accessible to the community. Furthermore, the Design Code for the proposed development states that the street and path network should be designed for inclusion and accessibility.

5.4 CONSERVATION OF ENERGY, MATERIALS AND WATER RESOURCES

Excessive energy consumption is unsustainable, not only because coal, gas and oil resources are finite but also because their use causes pollution. Furthermore, carbon dioxide emissions from burning of fossil fuels are widely thought to contribute to climate change. About 50% of the UK's carbon emissions derive from heating and cooling of buildings and a further 10% from the production and transport of materials and construction of buildings.

Measures need to be taken to reduce demand for energy and other natural resources, including water and promote more efficient resource use. The means by which the proposed development would address these issues are set out below.

Guide Question 6: How has the development been designed to be energy efficient?

An Outline Energy Assessment has been undertaken and the following potential energy efficiency measures have been identified:

- High performance facade balancing natural day lighting with minimal heat gains and losses;
- Low air permeability rates;
- High efficiency LED lighting with daylight linked dimming, zone and timer control;
- Air source heat pumps with high seasonal efficiency;
- High efficiency condensing boilers; and

- Heat recovery on fresh air ventilation units.

Also, the Design Code for the proposed development identifies the optimisation of passive design measures including Fabric First principles and aims to minimise energy demand. Therefore, sustainable solutions for heating, cooling, ventilation and lighting will be provided as part of the detailed development.

Guide Question 7: How has the development considered carbon dioxide and other greenhouse gas emissions?

Emissions during operation have been considered in the Outline Energy Statement accompanying the OPA. Carbon dioxide emission reduction percentages are identified as targets for detailed design. It is concluded that by implementing a specified range of technologies and appropriate building construction standards and services equipment, an overall 32% reduction in CO₂ emissions compared to notional values is achievable. Further enhancements could be targeted in at detailed design stage in order to achieve the GLA target of 35% CO₂ emission reductions.

Guide Question 8: How has the development made use of renewable energy?

A number of renewable technologies have been evaluated for the proposed development. The most appropriate solution for the proposed development comprises a mix of solar water heating, air source to water heat pumps, possibly supplemented by photovoltaics.

Guide Question 9: How will the efficient use of sustainable raw materials be promoted during the construction of the development?

Part of the approach set out in the Design Code for the proposed development is to minimise the use of resources, allow opportunities for recycling during the works period (targets for recycling demolition materials are identified for the proposed development) and that building materials should be natural where possible.

Guide Question 10: How has the development considered opportunities for efficient water usage?

Part of the approach set out in the Design Code for the proposed development is to minimise water use.

Mitigation measures will be applied to reduce water consumption during the construction phase of the development. These include:

- Selection and specification of equipment to reduce the amount of water required;

- Implementation of staff-based initiatives such as turning off taps, plant and equipment when not in use both on-site and within Site offices; and
- Use of a grey water recycling water systems where possible such as wheel washes.

During operation demand for water will increase as a result of the proposed development. Water efficiency measures will be implemented in the residential development in accordance with the London Housing Design Guide and in the educational development in line with BREEAM⁴ requirements to achieve a “very good” rating. Rainwater harvesting from clean roofs for irrigation of landscaping and for toilet flushing will also be considered at the detailed design stage.

Guide Question 11: How has the development considered potential impacts on availability of water resources?

Water efficiency will be employed during the construction phase, for example water for wheel washing and washing down of vehicles will be recycled.

Water efficient fixtures and fittings implemented in the residential development in accordance with the London Housing Design Guide and in the educational development in line with BREEAM⁵ requirements to achieve a “very good” rating will reduce the development’s potential impact on water resources, in line with policy requirements. Rainwater harvesting will also be considered at detailed design stage to reduce use of mains water for irrigating landscape and toilet flushing.

5-5 MAXIMISING THE USE OF NATURAL SYSTEMS

Guide Question 12: How has the efficient use of natural systems been considered?

The use of natural systems has been incorporated into the proposed development in the following ways:

- Minimising carbon dioxide emissions has been considered for the proposed development (see Guide Question 7 above).
- Living roofs are to be provided as specified in the Design Code for the proposed development. New planting and soft landscaping will also be provided.
- An Outline Sustainable Drainage Strategy has been developed to attenuate and dispose of surface water runoff on site using SuDS measures including green roofs, permeable pavements and soakaways.

Guide Question 13: How will the development increase London’s

⁴ BREEAM New Construction (2014) Design Stage Criteria (Issue 2.0) Education Buildings Further Education

⁵ BREEAM New Construction (2014) Design Stage Criteria (Issue 2.0) Education Buildings Further Education

resilience and adaptability to the effects of climate change?

An Outline Sustainable Drainage (SuDS) Strategy based on green roofs, permeable pavements and soakaways, has been developed to retain surface water runoff on site and to reduce flood risk. The use of green roofs on buildings will also help to reduce heat island effects.

The Design Code for the proposed development refers to permeable areas being used where possible to reduce run-off, residential development being designed in accordance with the London Design Guide's requirements for climate change mitigation and adaptation and taking account of climate change adaptation matters for the proposed open space.

5.6 REDUCING THE IMPACTS OF NOISE, POLLUTION AND FLOODING

Guide Question 14: How have measures been incorporated in the project design, construction and operation to minimise any air quality impacts?

Mitigation measures for air quality that will be implemented during construction through the CEMP include dust management techniques and equipment maintenance.

The design of the development has buildings set back from the A316 to avoid impacts from vehicle emissions, with open space and residential development set further away from the highway network.

Measures to reduce traffic and thus reduce air quality effects from vehicle emissions on receptors both in the development and in the surrounding area from the development include:

- An upgrade to Marsh Farm Lane within the site boundary to enable a new 3m shared footway / cycleway to be provided between London Road and Marsh Farm Lane routed on the southern side of the River Crane. This will open up a new convenient walking and cycling route between the site and Twickenham Station for pupils, staff, visitors and residents.
- Secure cycle parking provision provided to local standards and showers with changing facilities for staff and employees will help to encourage cycling as an alternative to short car, bus and rail trips.

As assessment carried out in accordance with the GLA's Air Quality Neutral Planning Support Guidance⁶ showed that the total development emissions will be considerably lower than the benchmarked emissions. On this basis the REEC development is

⁶ Air Quality Neutral Planning Support Update, GLA 80371, April 2014

considered to be Air Quality Neutral.

Guide Question 15: How have measures been incorporated in the project design to minimise noise, vibration and nuisance impacts to sensitive receptors?

Mitigation measures for reducing construction noise and vibration that will be implemented through the CEMP include:

- Keeping noise and vibration to a minimum in accordance with best practicable means, as defined in Section 72 of Control of Pollution Act.
- No noisy plant will be allowed to commence work before 08.00 hours or continue working after 18.00 hours, Mondays to Fridays and between 08.00 hours and 13.00 hours on Saturdays, except in cases of emergency where safety is an issue, or as agreed under a dispensation to a Section 61 agreement of the Control of Pollution Act.
- All plant brought on-site will comply with the relevant EC / UK noise limits applicable to that equipment or will be no noisier than would be expected based the noise levels quoted in BS 5228:1997.
- Plant will be properly maintained and operated in accordance with manufacturer's recommendations. Electrically powered plant will be preferred, where practicable, to mechanically powered alternatives.
- Where feasible, all stationary plant will be located so that the noise effect at all occupied residential and commercial properties is minimised and, if practicable, every item of static plant when in operation will be sound attenuated using methods based on the guidance and advice given in BS 5228.
- Areas of the Site where particularly noisy works are required, such as demolition and piling works, will be surrounded where practicable by a 2.4m hoarding, and will provide some acoustic shielding at ground level.
- Residents living in locations identified as noise sensitive receptors will be kept informed of the progress of the construction works and will be contacted by letter prior to any activities which are likely to cause noise disturbance.

Prior to the commencement of work on site, a Section 61 agreement under the Control of Pollution Act⁷ may be required. If necessary, this will confirm the noise limits, in line with the target noise levels, set out hours of working, and give further detail on the types of construction activity that may be undertaken.

During operation, the dominant noise source affecting the proposed buildings will be from aircraft. This will affect all buildings. Therefore, facade sound reduction

⁷ Control of Pollution Act 1974

measures will be designed to achieve acceptable noise levels inside all proposed buildings. Fixed mechanical plant will be designed to meet criteria ensuring that noise effects on users of the site and on existing sensitive receptors would be of negligible significance. To mitigate noise from the sports pitches, a noise barrier may be provided, subject to consultation with residents. This would reduce noise levels in the garden areas of the properties by approximately 8dB.

Guide Question 16: How have measures been incorporated in the project design to minimise light pollution that will cause nuisance to sensitive receptors?

Relevant mitigation measures for the construction phase are set out in the Outline CEMP. Site lighting will be kept to a minimum necessary for adequate security and safety. To minimise the potential for nuisance, lighting will not be located or directed towards neighbouring or adjoining properties.

Measures to minimise potential lighting effects on habitats will include:

- Provision of minimum light levels necessary for safe working conditions;
- Avoidance of unnecessary light spillage through appropriate direction of lighting towards the area of works and shielding if necessary; and
- Inclusion of a period of darkness to allow bat species to commute across the Site.

Lighting design for the operational development is set out in Section 5.1.7 of the Design Code which states that glare and light pollution should be controlled to minimise stray light and in particular its impact on residential amenity and on habitat.

The proposed sports pitches on the College playing fields will not be floodlit.

Guide Question 17: How have measures been incorporated in the project design to minimise impacts on surface and groundwater quality?

Relevant mitigation measures for construction are set out in the Outline CEMP. Chapter 13 of the ES describes the mitigation measures for construction, which include the development of a Water Management Plan to accompany the CEMP. This will set out the water pollution management measures and controls that the contractor will implement during the construction process.

Prior to the main construction works, areas of contaminated land that have been identified on the site will be remediated, thus reducing risks to ground and surface waters from contaminant mobilisation.

During both construction and operation, a sustainable drainage system (SuDS) will

be implemented, based on soakaways and temporary retention ponds during construction and green roofs, permeable pavements and soakaways during operation. This will reduce runoff and minimise the risk of water quality effects on the surface and groundwaters.

Guide Question 18: How will the project alleviate flood risk on the site or elsewhere in the future (including the impacts of extreme flood events that relate to a changing climate)?

A Flood Risk Assessment has been undertaken. This showed that the REEC development will not increase flood risk.

A sustainable drainage system (SuDS) will be implemented to reduce surface water runoff and flood risk during phased construction and in operation.

5.7 PROMOTING HEALTH AND WELLBEING

Guide Question 19: How will the development affect the health or wellbeing of the workforce and community during construction or operation?

All buildings would be surveyed following vacant possession to establish the location and quantity of any asbestos containing material and any such material would be removed and sent for disposal in accordance with the Control of Asbestos Regulations 2012. This will reduce risks to the workforce and REEC staff students and visitors.

With dust control measures implemented through the CEMP, the risk of dust impacts to health during construction is considered to be negligible. There will initially be some adverse effects of traffic emissions from the REEC development on properties close to the A316 Chertsey Road which are already subject to poor air quality. However, 15 years post completion, the predicted air pollutant (nitrogen dioxide) concentrations are considerably lower due to the projected reduction in vehicle emissions, and the effect of operational REEC traffic will not be significant.

Construction noise is predicted to result residual moderate adverse effects at four external receptor locations. There would also be residual adverse effects on receptors within the site because the hoardings would be effective in reducing noise at ground and possibly first floor levels but would have little effect at higher floors. Noise can affect health and well being but as the construction noise will be temporary and short term, it is unlikely to have adverse effects on health over the long term.

Soil contamination identified at the site will be remediated as part of the construction works thus reducing risks to the workforce. The permanent removal of soil

contaminants, particularly in areas proposed for residential development with gardens, will provide a long term benefit to health and well-being of the residents and community.

During operation, there will be beneficial effects resulting from the provision of facilities that are available to the public, such as the sports pitches and educational facilities, promoting a healthy lifestyle. Improved footpath and cyclepath access to the REEC development will encourage more healthy modes of transport.

Guide Question 20: In what ways will the development improve health and promote healthy lifestyles to help to reduce health inequalities?

The REEC development provides upgraded sports facilities for the College and school students, including a Sports Centre, two all weather Multi Use Games Areas in the main site, and an all weather pitch and grass pitch on the College playing fields. The schools development also includes play areas and gardens for informal play and socialising; while the residential element includes private gardens and balconies with additional shared outdoor amenity areas and play space. The REEC sports facilities as well as a wide range of educational facilities will be accessible to the wider community, therefore promoting a healthy lifestyle and potentially improving healthier communities.

The development is designed to encourage walking and cycling and provides an upgraded footpath/cycleway route along the existing footpath on Marsh Farm Lane. All those who use the facilities will have the use of this pedestrian and cycle access on site with associated links to wider networks, further promoting a healthy lifestyle.

The college and schools may participate in programmes of outdoor learning and practical conservation, which are linked to health and well-being outcomes.

Harlequin FC is one of the partners of the REEC development and is on the REEC project board. The operators provide a number of commitments that encourage healthy lifestyles including working with the college and schools to create a best in class sporting programme for all age groups and levels across a range of sports to encourage activity and healthy living.

The major positive effect of the REEC development on education provision in the LBRuT supports policies associated with encouraging healthier communities.

Guide Question 23: How will the development increase the use and accessibility of shared (mix-use) space, community or recreational facilities and open space?

The proposed development includes the provision of open space and landscaping for

the proposed college, schools and Tech Hub and also for the proposed residential development. The provision of open space will increase from the existing 78% to 82% of the total area.

A range of sports facilities including the sports centre and pitches, and other college facilities, will be available to the community.

Policies requiring convenient access for all are supported by the proposals making improved provision for pedestrian and cycle access on site and links with existing networks.

5.8 CONSERVATION AND ENHANCEMENT OF THE NATURAL ENVIRONMENT AND BIODIVERSITY

Guide Question 24: Will the development promote the enhancement of habitats and avoid impacts on species?

During construction, potential injury or mortality of protected and notable species through site clearance and construction activity will be avoided through careful seasonal timing of works and pre-clearance habitat checks. Disturbance to species in retained habitat within and adjacent to the site will be reduced through industry good-practice measures for reduction and containment of lighting and noise. A minor reduction in bat foraging habitat in the local area will occur. The development includes measures to enhance the available nesting and roosting habitat for birds, bats and invertebrates through extensive tree planting, artificial roosting structures and dead-wood habitat features.

During operation, potential disturbance of species such as bats and birds by lighting will be avoided or reduced through the use of industry good-practice techniques to limit light-spill into adjacent habitat areas. Increased use by students and residents of footpaths adjacent to sensitive habitats, including the river corridors and designated habitats, may result in increased trampling and litter but this is not likely to have significant adverse effect. The conservation of these sites could be enhanced by the College and schools supporting local programmes of nature education and community involvement in practical conservation.

Specific habitat enhancement measures will include:

- Planting of additional native tree species along the site boundaries to improve connectivity and provide commuting and foraging areas for bats. Linear tree planting within the college, schools and residential development zones to provide commuting routes for bats.

- Planting of native species-rich hedgerows to improve connectivity and provide habitat for breeding birds. Provision of additional scrub habitats and unmown grassland around the periphery of the for breeding birds and hedgehog.
- Provision of unmanaged grassland areas in unlit parts of the site, including College Playing Fields, to enhance the invertebrate population on site and improve the existing foraging resource for bats.
- Siting of sports pitches on the College Playing fields to leave a suitable buffer area along the riverbank for future naturalisation of the river banks (by others).
- Provision of green roofs.
- Provision of bird nesting opportunities in suitable locations on the site through the installation of bird boxes. Provision of bat roosting opportunities in suitable locations on the site through the installation of bat boxes, incorporated into the fabric of the new buildings.
- Retention of felled trees for provision of additional deadwood habitat or a loggery along the southern boundary of the site for stag beetle and other invertebrates, contributing to the objectives of the London and LBRuT Species Action Plans.

Guide Question 25: Will the development improve the environment of, and access to green corridors, London Green chain and Blue Ribbon network?

The River Crane is part of the Blue Ribbon Network. The upgrading of Marsh Farm Lane and its connection to a new footpath being provided through other developments through Twickenham Rough will improve access to the River Crane.

The REEC development is proposing to make a contribution towards the restoration programme for the River Crane being developed by the Environment Agency. This will implement a range of measures identified for the Crane Catchment in the River Basin Management Plan, and assist in the river meeting its target of good ecological status in compliance with the Water Framework Directive.

5.9 WASTE MANAGEMENT

Guide Question 26: How will the project encourage the management of construction and demolition waste in accordance with the waste hierarchy (prevention, re-use, recycle, other recovery and lastly disposal?)

The objectives of the Design Code include minimising waste and allowing

opportunities for recycling during the works period.

Details of the proposed management of demolition and construction waste are presented in Chapter 12 of the ES. About 91,000 tonnes of demolition waste will be generated, of which about 11,000 tonnes would be reused on site as a sub-base for new foundations. The balance, plus excavation waste, together totalling about 120,000 tonnes will be taken off site for reuse, recycling or disposal. In addition, there will be about 24,000 tonnes of construction waste.

The contractor aims to divert a total of 96% of waste from landfill through reuse and recycling of demolition waste, clean excavated 'waste' and construction waste. Waste streams will be segregated on site to maximise opportunities for reuse and recycling.

Details of the waste management and mitigation measures will be provided in the contractor's Site Waste Management Plan (SWMP), which will be based on implementing the waste hierarchy throughout all phases of the proposed development

The following specific measures will be taken to minimise the generation of construction waste:

- 'Just-in-time' procurement to minimise the chance of damage to materials;
- storage in an appropriately dedicated area to prevent spoilage, damage and contamination;
- training of construction teams on waste issues and in particular the importance of correct ordering of materials so as to avoid excess materials;
- use of standard materials where possible that can be used elsewhere if necessary;
- ensuring that deliveries are correct before accepting them on site;
- review of packaging requirements where possible to avoid, reduce and reuse;
- maximising use of offsite manufacturing; and
- development of a materials inventory of construction material, equipment and plant for the purposes of identifying reuse options across the project.

Guide Question 27: Will the project achieve a target of 95% of all construction, demolition and excavation waste being re-used (on site where possible) or recycled?

A total of 96% of demolition waste, clean excavated 'waste' and construction waste

will be reused or recycled.

5.10 SUSTAINABLE CONSTRUCTION

Guide Question 28: How will the efficient use of sustainable raw materials be promoted during the construction of the project?

The Design Code specifies that the use of resources will be minimised and that building materials will be natural where possible.

Guide Question 29: Have locally sourced materials been used on site where ever possible?

The outline CEMP notes that the contractor(s) full CEMP will detail the approach for a range of resource efficiency principles including locally sourcing materials and services, auditing materials to demonstrate environmental performance and options for the re-use of supplies.

Guide Question 30: Is the Contractor a member of the Considerate Contractor scheme, or similar?

A contractor has not yet been appointed for the construction of the development but the Principal Contractor will be required to be a member of the Considerate Constructors Scheme and comply with the scheme's Code of Considerate Practice and LBRuT's Considerate Contractors Advice Note.

5.11 SUSTAINABLE TRANSPORT

Guide Question 31: How will the development be managed to minimise impacts on the local transport networks and any associated impacts on local communities?

The development involves junction improvements on the A316 to allow a right turn out of Langhorn Drive. Residential traffic from the development will be routed via Langhorn Drive to allay the concern of the local community about impacts on the Heatham Estate and Whitton Road junction.

Measures set out in the CEMP that will minimise impacts on pedestrians during construction include:

- Pedestrians will be kept separate from the demolition and construction activities at all times used appropriate hoarding.
- During construction works, existing pedestrian routes and footpaths crossing will be maintained at all times. If temporary closures are required, i.e. for the erection

of scaffolds or incoming services connections, permissions and licences will be obtained for the rerouting of pedestrian rights of way.

- The proposed construction vehicle access routes avoid using the minor roads as far as possible and have specifically avoided residential roads adjoining the site to the east.
- Waiting vehicles will be avoided through strict management of delivery times by the use of a regulated on-line booking system controlled by the Principal Contractor.
- On-site parking for construction workers will be restricted to an absolute minimum as there will be a general policy of not providing any car parking on the site. Parking on local residential roads to the east of the site is prohibited by the existing Controlled Parking Zones (CPZs). The construction workers will be encouraged to use the nearby public transport modes of bus and rail. Provisions will be made within the site for essential on-site parking if required for emergencies and for a minibus set down point.
- Section 106 contributions will be provided to fund a study to establish whether residents would like the operation times of CPZ 'R' to the north of the site to be extended from the existing operation times. If the residents deem the extension of the CPZ operation times to be required, sufficient funds commuted through the Section 106 will be used to implement the extended operation times including infrastructure such as signing.
- To encourage the use of cycles by contractors, secure cycle parking and changing facilities with showers will be provided.
- Strict monitoring and control of vehicles accessing and egressing, and travelling across the site will be implemented.
- Delivery schedules will be produced in order to obtain the profiles of future construction vehicle trips to regulate deliveries and eliminate bottle necks. A holding area has been identified close to Sunbury Cross on the A316 which may be used to control the number of construction deliveries coming into close proximity of the site.
- Details on the management of walkways, closures and routing would be agreed with LBRuT post planning through the CEMP.

Overall, the increases in traffic flows during construction on all of the road links assessed will not have a significant adverse effect on the operational capacity and the

environmental capacity of the road links.

During operation, there will be an increase in demand for bus journeys. Discussions are ongoing with TfL to develop bus service frequency improvements to accommodate the additional demand on the bus network which equates to 3 to 4 additional bus loads in the AM peak hour period.

Secure cycle parking will be provided as part of the proposed development.

With existing and planned extensions to CPZs near the College, and measures set out in the College Travel Plan to discourage students from using their cars to travel to the College, the likely effect on on-street parking within walking distance of the College will be negligible.

A site wide Framework Travel Plan has been prepared for the REEC development. The Framework Travel Plan will be used by each element of the development in order to prepare a site specific Travel Plan at the detailed design stage.

Guide Question 32: How will the development create or improve links with local and wider transport networks in particular walking and cycling and public transport?

The Design Code for the proposed development refers to pedestrian and cycle access being encouraged and designed to maximise improvements to connections. The layout will be designed to give priority to pedestrians whilst encouraging cycling and allowing appropriate access for vehicles. Pedestrian and cycle routes will be separated from vehicles where possible.

The upgrade to Marsh Farm Lane and its connection with a proposed footpath through Twickenham Rough (being provided as part of other developments) will provide an alternative pedestrian and cycle route to Twickenham Town Centre and station for REEC students and residents and for the local community.

The improved junction on the A316 and new right turn out of Langhorn Drive will provide benefits to the development and other users, including Harlequin FC and the Council Depot, by reducing travel time towards Central London.

5.12 CONSERVING AND ENHANCING THE LOCAL CHARACTER AND HISTORIC ENVIRONMENT

Guide Question 33: How will the project minimise impacts on locally valued landscapes and townscapes?

The following measures are identified in Chapter 16 of the ES for mitigating

construction effects on townscape and visual amenity:

- Tree protection measures for trees to be retained within and adjoining the site including no dig zones, protective fencing and construction exclusion zones;
- The phasing of demolition from the inside of the site outwards so peripheral buildings protect existing residents for part of the demolition works;
- Erection of solid hoardings to the site perimeter;
- Location of site offices outside the MOL, i.e. not on Craneford Way East playing fields, where possible;
- Location of site offices and storage to minimise the effects on adjacent residents.

During operation, secondary mitigation will include the following, as set out in the Design Code, which would form part of the detailed design process and the approval of reserved matters for individual buildings:

- Articulation of the built form to reduce the apparent mass of buildings and create a visually interesting façade of appropriate scale for the streetscape;
- Articulation of the roof scape to create visual interest;
- Detailed design to reinforce appropriate local landmark elements;
- Well-detailed buildings with good quality elevational and roofing materials.

Guide Question 34: Has the historic environment on and around the site been protected and conserved in a manner appropriate to its significance?

The development of the northern and southern areas of the College site have the potential to have an uncertain but probably minor effect upon the archaeological resource within these areas. A geophysical survey produced no evidence for archaeological deposits and, although this does not preclude the potential for archaeological deposits to be present, it reduces the likely potential of the site to contain significant deposits. Potential mitigation measures, if required by Historic England, will include excavation and recording of any significant archaeological deposits present or the implementation of an archaeological monitoring action (Watching Brief) during intrusive construction activities.

The operation of the proposed development will have no effect upon 26 of the 27 Listed Buildings within the general environs of the scheme. It may have a low visual impact upon the views from Richmond Hill of the Grade I listed Church tower of All

Hallows which will result in an overall minor (neutral) visual effect. The operation of the scheme will have no significant impact on any of the Buildings/Structures of Townscape Interest located within its environs.

5.13 ECONOMIC DEVELOPMENT

Guide Question 35: How will the project create local employment and skills development opportunities?

The Applicant will work with LBRuT to promote the employment of local people for construction. A number of initiatives are proposed to maximise the economic benefits of the scheme felt locally, including:

- Providing full and fair employment opportunities, training and education opportunity for local residents;
- Encouraging procurement opportunities for local businesses to source products and services locally where possible and practical; and,
- Establishing links with local schools and businesses to offer training and employment opportunities via work experience and apprentice schemes.

The College use local contractors where possible and will require its contractors to take on apprentices from the local population to ensure a commitment to training local young people.

Guide Question 36: How will the project help to ensure long-term investment in London and support sustainable growth in the region?

The Applicant will work with LBRuT to promote the patronage of local businesses. Local contractors will be also used where possible.

5.14 SUMMARY

This assessment indicates that the outline design for the REEC development complies with or is supportive of the policies identified in Table 3 relating to the 12 sustainability themes. Due to fencing of pitches on the College playing fields reducing open space for informal recreation by the community and the openness of the MOL, the development is not fully compliant with London Plan Policy 7.17, DM OS 2 and the Crane Valley Planning Guidelines, however provision of a contribution towards restoration of the River Crane has been proposed to compensate for effects on open space.

6 SUSTAINABLE CONSTRUCTION CHECKLIST

LBRUT's Sustainable Construction Checklist has been completed as far as is possible



for the outline design being submitted in the OPA, and is provided as overleaf.

The provisional score of 75.5 for new construction indicates that REEC will make a major contribution towards achieving sustainable development in Richmond.



LBRUT SUSTAINABLE CONSTRUCTION CHECKLIST

TO BE FILLED IN FOR ALL RESIDENTIAL DEVELOPMENT PROVIDING ONE OR MORE NEW RESIDENTIAL UNITS, AND ALL OTHER FORMS OF DEVELOPMENT PROVIDING 100sqm OR MORE OF NON-RESIDENTIAL DEVELOPMENT

ALL OTHER CLASSES OF DEVELOPMENT ARE ENCOURAGED TO COMPLY WITH THIS CHECKLIST

This document forms part of the Sustainable Construction Checklist SPD, and should be read in conjunction with the associated Guidance Document. 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. Scores will be awarded for different achievements on site, and a final score attributed to the site as a whole.

Property Name (if relevant):	<input type="text" value="Richmond upon Thames College"/>	Application No. (if known):	<input type="text"/>
Development Type:	<input type="text" value="Mixed Use"/>		
Address (include postcodes):	<input type="text" value="Egerton Road Twickenham TW2 7SJ"/>		
Completed by:	<input type="text"/>		

MINIMUM POLICY COMPLIANCE

Environmental Rating of development:

Development Type	Rating achieved	A pre-assessment is required to support this. Has this been provided?
Residential new-build Code for Sustainable Homes Level	<input type="text" value="Code Level 4"/>	<input type="checkbox"/>
Non-Residential new-build (100sqm or more) BREEAM Level	<input type="text" value="BREEAM Excellent"/>	<input checked="" type="checkbox"/>
Extensions and conversions (residential dwellings) EcoHomes Level	<input type="text" value="Please Select"/>	<input type="checkbox"/>
If other environmental rating sought please state:	<input type="text" value="Lifetime Homes, London Housing Design Guide"/>	

Score awarded for Environmental Rating (this will only be awarded once a pre-assessment is submitted to verify the level achieved):

CSH: Level 3 = 4, Level 4 = 8, Level 5 = 13, Level 6 = 20
BREEAM: Good = 0, Very Good = 0, Excellent = 3, Outstanding = 10
EcoHomes: Good = 0, Very Good = 0, Excellent = 3

Score

Accredited Assessors (Please see Guidance document for more details on accredited assessors)

Have you used a licensed Code for Sustainable Homes, EcoHomes and BREEAM Accredited Assessor respectively?

Energy Assessment (Please see Justification & Guidance document for more details on how to prepare an Energy Assessment)

An energy assessment is required that demonstrates the expected energy and carbon dioxide emissions saving from energy efficiency and renewable energy measures, including the feasibility of CHROCHP and community heating systems. Has this been submitted? If yes, please tick.

Carbon Dioxide emissions reduction (Please see Justification & Guidance document for more details on how to calculate these figures as part of the Energy Assessment)

- Percentage of total site CO₂ emissions saved through renewable energy installation?
- Percentage of regulated CO₂ emissions saved below Building Regulations target level through all low carbon measures?

1. ENERGY USE AND POLLUTION		Score
1.1 Need for Cooling		
a. How does the development incorporate cooling measures? Tick all that apply:	<ul style="list-style-type: none"> • Energy efficient design incorporating specific heat demand to less than or equal to 15 kWh/sqm <ul style="list-style-type: none"> • Reduce heat entering a building through providing/improving insulation and living roofs and walls • Reduce heat entering a building through shading • Exposed thermal mass and high ceilings • Passive ventilation • Mechanical ventilation with heat recovery • Active cooling systems, i.e. Air Conditioning Unit 	<input type="checkbox"/> 6 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 1 <input type="checkbox"/> 0
1.2 Heat Generation		
b. How have the heating and cooling systems, with preference to the heating system hierarchy, been selected (defined in London Plan policy 4A.6)? Tick the heating and cooling system that will be used in the development:	<ul style="list-style-type: none"> • Connect to existing CCHP/CHP networks • Site-wide CCHP/CHP powered by renewable energy • Gas-fired CCHP/CHP • Communal heating/cooling powered by renewable energy • Communal heating/cooling powered by gas • Individual heating/cooling powered by renewable energy • Individual heating/cooling powered by gas or electricity 	<input type="checkbox"/> 6 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0
1.3 Pollution: Air, Noise and Light		
a. Does the development plan to implement reduction strategies for dust emissions from construction sites?		<input checked="" type="checkbox"/> 2 <input type="checkbox"/> -
b. Does the development plan to include a biomass boiler?	<ul style="list-style-type: none"> • If yes, please refer to the biomass guidelines for the Borough of Richmond, and see guidance for supplementary information. If the proposed boiler is of a qualifying size, you may need to complete the information request form found on the Richmond website 	<input type="checkbox"/> - <input type="checkbox"/> -
c. Please tick only one option below	<ul style="list-style-type: none"> • Has the development taken measures to reduce existing noise and enhance the existing soundscape of the site? • Has the development taken care to not create any new noise generation/transmission issues in its intended 	<input checked="" type="checkbox"/> 3 <input type="checkbox"/> 1
d. Has the development taken measures to reduce light pollution impacts on character, residential amenity and biodiversity?		<input checked="" type="checkbox"/> 3 <input type="checkbox"/> -
e. Have you attached a Lighting Pollution Report?		<input type="checkbox"/> -
Subtotal		16.0
Please give any additional relevant comments to the Energy Use and Pollution Section below		
1.1 a Building design is in early stages so building shading and exposed thermal mass and high ceilings have not yet been addressed. 1.2 b. System types have not been finalised but it is not the intention to use any form of CCHP/CHP. It is proposed to incorporate heating/cooling powered by renewable energy. 1.3c Aircraft noise dominates. Improved insulation of new buildings and quieter fixed plant will reduce noise to internal and external receptors.		

2. TRANSPORT

2.1 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, such as electric cars? 2
- b. 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
- c. For smaller developments ONLY: Have you provided a Transport Statement? 5
- d. Does your development provide cycle storage?
 • If so, for how many bicycles? 2
 • Is this shown on the site plans? -
- e. Will the development create or improve links with local and wider transport networks? If yes, please provide details below. 2
- Subtotal**

Please give any additional relevant comments to the Transport Section below

Cycle storage for 106 bicycles is shown on the Landscaping Masterplan. Junction improvements to provide right turn out of Langhorn Drive Junction with A316 Chertsey Road will improve links with wider transport network.

3. BIODIVERSITY

3.1 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 compared to the pre-development site? (Tick if yes) -2
 • If so, please state how much in sqm? sqm
- b. Does your development involve the removal of any trees? (Tick if yes)
 • If so, has a tree report been provided in support of your application? (Tick if yes)
- c. Does your development plan to add any trees on site? (Tick 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 | 0 | <input type="checkbox"/> | Area provided: | <input type="text"/> | sqm |
| • An extensive green roof | 5 | <input checked="" type="checkbox"/> | Area provided: | <input type="text" value="10,000"/> | sqm |
| • An intensive green roof | 4 | <input type="checkbox"/> | Area provided: | <input type="text"/> | sqm |
| • A brown roof | 1 | <input type="checkbox"/> | Area provided: | <input type="text"/> | sqm |
| • Garden space | 4 | <input checked="" type="checkbox"/> | Area provided: | <input type="text" value="5157"/> | sqm |
| • Additional native and/or wildlife friendly planting to peripheral areas | 3 | <input checked="" type="checkbox"/> | Area provided: | <input type="text"/> | sqm |
| • Additional planting to peripheral areas | 2 | <input checked="" type="checkbox"/> | Area provided: | <input type="text" value="22449"/> | sqm |
| • A living wall | 2 | <input type="checkbox"/> | Area provided: | <input type="text"/> | sqm |
| • Bat boxes | 0.5 | <input checked="" type="checkbox"/> | | | |
| • Bird boxes | 0.5 | <input checked="" type="checkbox"/> | | | |
| • Other | 0.5 | <input checked="" type="checkbox"/> | | | |
- Subtotal**

Please give any additional relevant comments, including specific reasons why living roofs cannot be incorporated in proposals with roof plate areas of 100sqm or more should this be the case, to the Biodiversity Section below

Not loss of green space primarily due to loss of northern playing field (low amenity grassland). Green roofs proposed in development however at early stage of design it is only possible to provide an approx area. Proposals include 10,000m2 of green roofs, 5,157m2 of private garden space, and in addition 22,449m2 of soft landscaping. At this stage of the design it is not possible to identify the exact area of native/wildlife friendly planting, however the Design Code specifies that planting should include native-species rich habitat areas where possible, with a preference for native trees, hedgerows and wildflower beds.

4 FLOODING AND DRAINAGE

4.1 Reducing and mitigating the risks of flooding and other impacts of climate change in the borough

a. Is your site located in an area at risk of flooding? (Tick if yes) -

If yes, please tick only ONE option below:

- New development in a high flood risk zone (3a) -2
- New development in a medium flood risk zone (2) -1
- Redevelopment of an existing building or conversion 0

Is your development within 20 metres of a watercourse or a flood defence? (Tick if yes) -

Have you submitted a Flood Risk Assessment? (Tick 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: sqm
 Please provide details of the permeable surfacing below: please represent a loss in permeable area as a negative number

Subtotal

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

Permeable surfacing includes grass and all weather sports pitches; soft landscaping; private gardens; roads and car parking designed with permeable paving

5 IMPROVING RESOURCE EFFICIENCY

5.1 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?
- Will 10% of demolition waste or more be reused in the new development? 0
 - Will 10% of demolition waste or more be recycled? 1
- b. Does your site have any contaminated land or has the site previously been used for potentially contaminating uses?
- Have you submitted an assessment of the site contamination? 1
 - Are plans in place to remediate the contamination? 2
 - Have you submitted a remediation plan? 2
 - Have you submitted a remediation plan? 1
- c. Are plans in place to include composting on site? 1

5.2 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, dual flush toilets 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
- b. What is the water consumption target of the development (in litres per person per day)?
- The recommended target for conversions or other small scale residential properties is 105 litres/person/day. Will this be met? (Indicate if yes) 1
- c. If applicable, have you submitted evidence that capacity exists in the public sewerage and water supply network?

Subtotal 15.0

Please give any additional relevant comments, including reasons why the water consumption target has not been met should this be the case, to the Improving Resource Efficiency Section below

Residential element of development will be designed in accordance with London Housing Design Guide which specifies 105l/hd/d

6 DESIGN STANDARDS AND ACCESSIBILITY

6.1 Ensure flexible adaptable and long-term use of structures

a. If the development is residential, will it meet the requirements set out in the Residential Design Standards SPD 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 the criteria included in the Lifetime Home Standards? 2

If not all Lifetime Homes criteria are to be met, in the space below, please provide details of any accessibility measures included in the development.

c. Are 10% or more of the units in the development wheelchair accessible? 1

OR

d. 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

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

LBRUT Sustainable Construction Checklist- Scoring Matrix

TOTAL

Score for new construction	Score for extensions or conversions	Rating	Significance
80 or more	70 or more	A+	Project strives to achieve highest standard in energy efficient sustainable development
71-79	61-69	A	Makes a major contribution towards achieving sustainable development in Richmond
61-70	41-60	B	Helps to significantly improve the Borough's stock of sustainable developments
36-50	26-40	C	Minimal effort to increase sustainability beyond general compliance
35 or less	25 or less	FAIL	Does not comply with planning policies on sustainability and climate change

Authorisation:

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

Signature ASD Date 27/07/2016



APPENDIX A
BREEAM PRE-ASSESSMENT