HODKINSON

**Sustainability Statement**

Quantum Group

# Former ICL Private Ground

Final

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# ABOUT HODKINSON CONSULTANCY

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry and tailor teams to suit each individual project.

We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost effective solutions that respond to increasing demands for quality and construction efficiency.

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# Executive Summary

The purpose of this Sustainability Statement is to demonstrate that the proposed development at Former ICL Private Ground in the London Borough of Richmond Upon Thames is considered sustainable, as measured against relevant local, regional and national planning policies.

Through the incorporation of sustainable design and construction methods, energy and water saving measures, waste reduction techniques as well as measures to enhance the ecological value of the site, a good quality and sustainable development is proposed.

The key sustainability features outlined in this Sustainability Statement are listed below:

- The development will target a 35% $CO_2$ reduction over the Building Regulations Approved Document L 2013 baseline through the use of energy efficiency measures and photovoltaic panels;
- BREEAM Excellent will be targeted for the various proposed buildings around the site;
- The development scores 86.5 against the Richmond Sustainability Checklist, defined as '*the highest standard in energy efficient sustainable development*';
- Water efficiency measures and devices will be installed in the dwellings to achieve an equivalent maximum daily water usage of 105 litres/person/day;
- Where practical, materials will be selected based on their environmental impact, with preference given to 'A+' or 'A' rated materials from the BRE Green Guide to Specification;
- Extensive use of Sustainable Urban Drainage Systems such as living roofs, permeable paving and swales will help to attenuate surface water;
- 90% of the new dwellings will be designed to meet Building Regulations Approved Document M4(2) and 10% will meet Part M4(3);
- The use of sustainable transport modes will be encouraged with the provision of cycle storage in accordance with Richmond requirements;
- Social and community recreational facilities will be significantly enhanced with the proposals and the creation of the Community Interest Company;
- Extensive ecological enhancements will be implemented through the provision of areas of green roof, private amenity space, tree planting and surrounding landscaped areas; and
- The site will be registered with the Considerate Constructors Scheme and measures to reduce construction site impacts will be implemented.

# CONTENTS

# 1. INTRODUCTION

**1.1** This Sustainability Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Quantum Group.

**1.2** This Statement sets out the sustainable design and construction measures included in the planning application for the proposed development at the Former ICL Private Ground in the London Borough of Richmond upon Thames.

## Sustainability Statement Structure & Methodology

**1.3** The formulation of the Sustainability Strategy for the proposed development has taken into account several important objectives, including:

> To address all national, regional and local planning policies and requirements;

> To provide a high quality development that is adaptable to future changes in climate;

> To minimise the negative impact of the proposed development on both the local and wider climate and environment;

> To achieve the highest viable levels of sustainable design and construction;

> To minimise emissions of pollutants such as oxides of nitrogen and particulate matter; and

> To create a pleasant, safe and friendly working and living environment that will be flexible to its occupants' needs.

**1.4** **Chapter 1** provides an introduction to the site and the proposed development.

**1.5** **Chapter 2** sets out the relevant national, regional and local policy documents which have been used to guide and inform the sustainability strategy for the proposed development.

**1.6** **Chapters 3 to 14** outline the sustainability strategy of the proposed development in relation to the policy documents listed in Chapter 2.

**1.7** **Chapter 15** provides a summary of the key sustainability features associated with the proposed development.

## Site Location

**1.8** The proposed development is located in Teddington, between Udney Park Road to the west and Kingston Lane to the east. It is a short walk from Teddington High Street (A313).

1.9 The site is currently private open ground and is not accessible to the wider community. The existing sports pavilion is located to the west of the site, and is proposed for refurbishment.

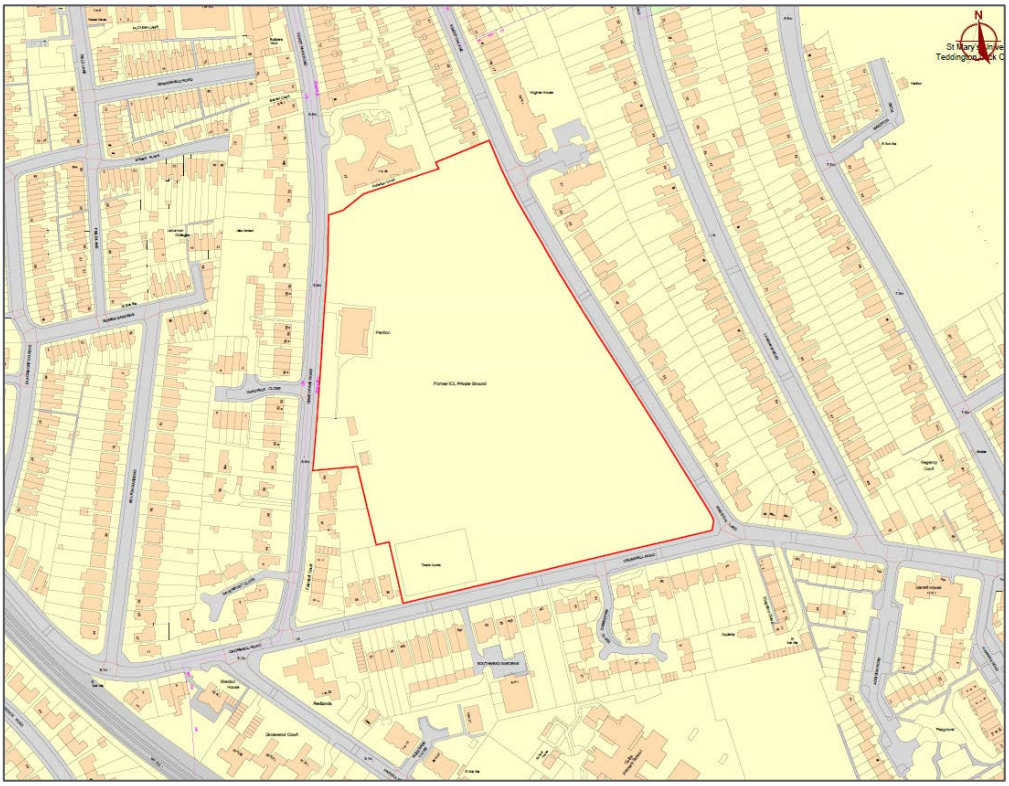

**Figure 1: The Development Site (Quantum Group Location Plan – Ref. 900-SK01)**

## Proposed Development

1.10 The proposed scheme will see the former Imperial College London Private Ground on Udney Park Road, Teddington, London, TW11 9BB, regenerated for a mixed-use development that will deliver high-quality sports and community facilities, alongside new public open space and affordable, care led accommodation for Older People and a new GP surgery. This triple approach secures a sustainable, inclusive future for the site, the benefits of which underpin national and local planning policy.

1.11 With the creation of the Teddington Community Sports Ground Community Interest Company, three areas will be established :

> Assisted living, extra care community with new GP surgery;

> Open parkland with community Orchard and outdoor gym;

> Community sports facilities.

**1.12** The proposed community sports facilities will comprise of the following: -

> A full-size Third Generation artificial grass pitch (3G AGP)

> Natural grass playing pitch provision

> Tennis Courts / MUGA

> Community pavilion containing changing rooms, kitchen, bar and server, flexible-use community rooms and crècheThe development proposals include the following:

**1.13** The development proposals include:

> New GP surgery;

> Plot A – 92 Extra Care living apartments with communal facilities, health and beauty salon, offices and treatment rooms, restaurant, bar & multi-functional rooms;

> Plot B – Full high-specification refurbishment of the existing clubhouse to provide 7 Extra Care living apartments & 1 visitor suite;

> Plot C – 9 Extra Care living apartments;

> New Clubhouse, cafe and sports facilities.

**1.14** The proposed development site plan is set out in Figure 2 overleaf. The main Extra Care assisted living units are located to the north-west of the site, and the main sports area is located to the south.

**1.15** The site layout is presented in Appendix A.

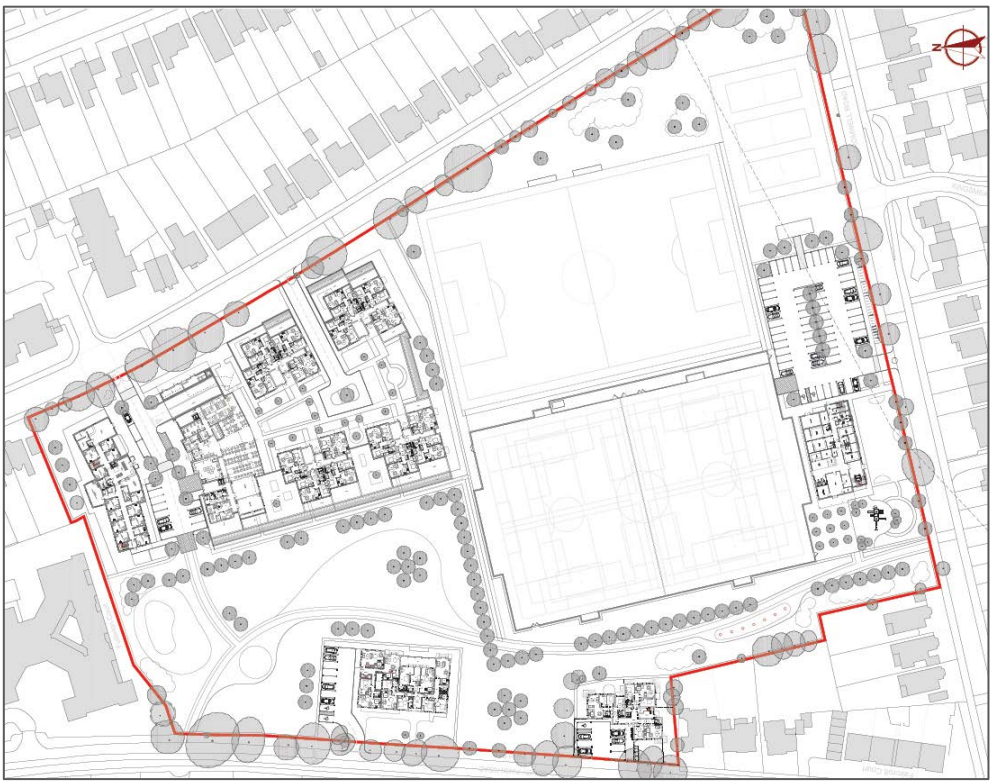

**Figure 2: The Proposed Development Site Plan (Quantum Group Proposed Site Plan– Ref. 900-SK02)**

# 2. RELEVANT PLANNING POLICY

## Relevant Policy Framework

**2.1** The following planning policies and requirements as set out in Figure 3 have informed the sustainable design of the proposed development.

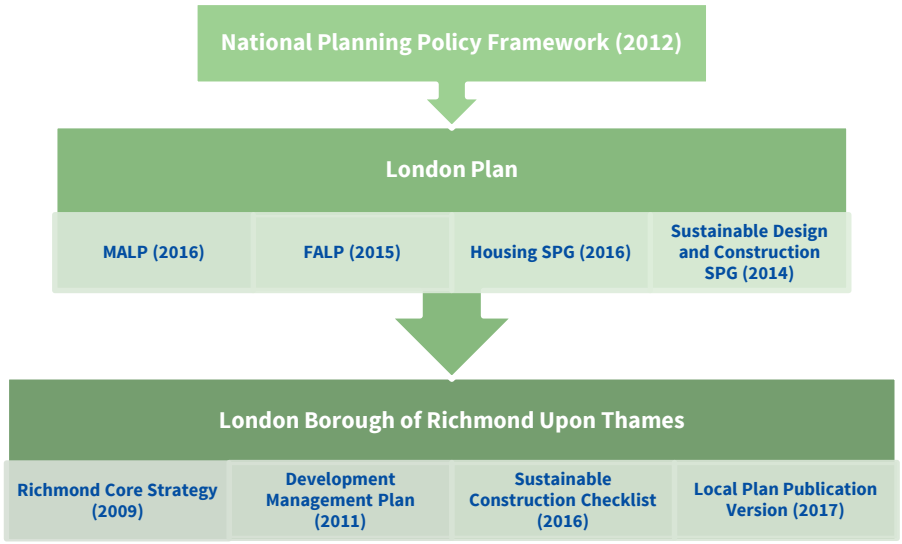


**Figure 3: Proposed Policy Framework**

## National Policy: NPPF


**2.2** The **National Planning Policy Framework (NPPF)** was published in March 2012 and sets out the Government's planning policies for England.

*"At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking."*

**2.3** The NPPF uses the United Nations General Assembly definition to describe sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs". The framework also states that there are three dimensions to sustainable development; economic, social and environmental which give rise to the need for the planning system to perform a number of roles:

> **An economic role** – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;

> **A social role** – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and

> **An environmental role** – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy

**2.4** The document also makes it clear that the delivery of a wide choice of well-designed high quality homes is central to delivering sustainable development.

## Regional Policy: The London Plan (2016)

**2.5** The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20 - 25 years.


**2.6** On 14 March 2016 the Mayor adopted the Minor Amendments to the London Plan (MALP). Prior to this, on 10 March 2015 the Mayor adopted the Further Alterations to the London Plan (FALP). From these dates respectively, the FALP and MALP are operative as formal alterations to the London Plan and form part of the development plan for Greater London. Where the London Plan is referenced within this document, this comprises the FALP and MALP as published.

**2.7** The following outlines key policies set out in the London Plan which are relevant to the proposed development and this Sustainability Statement.

**2.8** **Policy 2.18 – Green Infrastructure**: The Network of Open and Green Spaces states that development proposals should:

> Incorporate appropriate elements of green infrastructure that are integrated into the wider network; and

> Encourage the linkage of green infrastructure, including the Blue Ribbon Network, to the wider public realm to improve accessibility for all and develop new links, utilising green chains, street trees, and other components of urban greening.

2.9 **Policy 3.2 – Improving Health and Addressing Health Inequalities** encourages new developments to be designed, construction and managed in ways that improve health and promote healthy lifestyles to help reduce health inequalities.

2.10 **Policy 3.5 – Quality and Design of Housing Developments** requires housing developments to be of the highest quality internally, externally and in relation to their context and to the wider environment, taking account of strategic policies to protect and enhance London's residential environment and attractiveness as a place to live.

2.11 **Policy 3.6 – Children and Young People's Play and Informal Recreation Facilities** states that housing development proposals should make provision for play and informal recreation, based on the expected child population generated by the scheme and as assessment of future needs.

2.12 **Policy 3.8 – Housing Choice** requires new developments to offer a range of housing choices, sizes and types whereby 90% of new housing meets Building Regulation requirement M4 (2) 'accessible and adaptable dwellings" and at least 10% meets Building Regulation requirement M4 (3) 'wheelchair user dwellings'.

2.13 **Policy 3.9 – Mixed and Balanced Communities** promotes social diversity through mixed and balanced communities by tenure and household income.

2.14 **Policy 3.16 – Protection and Enhancement of Social Infrastructure** states that development proposals which provide high quality social infrastructure will be supported in light of local and strategic needs assessments. These facilities should be accessible to all sections of the community and be located within easy reach by walking, cycling and public transport.

2.15 **Policy 3.17 – Health and Social Care Facilities** states that development proposals which provide high quality health and social care facilities will be supported in areas of identified need, particularly in places easily accessible by public transport, cycling and walking.

2.16 **Policy 3.18 – Education Facilities** supports development proposal which enhance education and skills provision, including new build, expansion of existing facilities or change of use to educational purposes.

2.17 **Policy 3.19 – Sports Facilities** supports development proposals that increase or enhance the provision of sports and recreation facilities.

2.18 **Policy 4.5 – London's Visitor Infrastructure** states that developments should:

> Contribute towards the hotel provision target and ensure that at least 10 per cent of bedrooms are wheelchair accessible;

> Be consistent with the strategic location principles; and

> Not result in the net loss of strategically important hotel capacity.

2.19 **Policy 4.6 – Support for and Enhancement of Arts, Culture, Sport and Entertainment Provision** supports the continued success of London's diverse range of arts, cultural, professional sporting and entertainment enterprises and the cultural social and economic benefits that they offer to its residents, workers and visitors.

2.20 **Policy 5.2 – Minimising Carbon Dioxide Emissions** requires that all residential and non-residential major development between 2016- 2031 achieve Zero Carbon.

2.21 The concept of Zero Carbon is defined by the Greater London Authority (GLA) in their guidance on energy planning (March 2016), which also confirmed the policy would be implemented from 1 October 2016.

2.22 **Policy 5.3 – Sustainable Design and Construction** states that the highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments. Major development should meet the minimum standards outlined in the London Plan Supplementary Planning Guidance and this should be clearly demonstrated. The standards include the following sustainable design principles (summarised):

> Minimising $CO_2$ emissions;

> Avoiding internal overheating and contributing to the urban heat island effect;

> Efficient use of natural resources (including water);

> Minimising pollution (including noise, air and urban run-off);

> Minimising the generation of waste and maximising reuse and recycling;

> Avoiding impacts from natural hazards (including flooding);

> Ensuring developments are comfortable and secure for users;

> Securing sustainable procurement of materials, using local suppliers where feasible; and

> Promoting and protecting biodiversity and green infrastructure.

2.23 **Policy 5.5 – Decentralised Energy Networks** states that the Mayor expects 25 per cent of the heat and power used in London to be generated through the use of localised decentralised energy systems by 2025. The Mayor will prioritise the development of decentralised heating and cooling networks at the development and area wide levels, including larger scale heat transmission networks.

2.24 **Policy 5.6 – Decentralised Energy** requires that all developments should evaluate the feasibility of Combined Heat and Power (CHP) systems, and examine the opportunities to extend the system beyond the site boundary to adjacent sites.

2.25 **Policy 5.7 – Renewable Energy** states that within the framework of the energy hierarchy, major development proposals should provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation, where feasible.

2.26 **Policy 5.8 – Innovative Energy Technologies** encourages the more widespread use of innovative energy technologies to reduce use of fossil fuels and carbon dioxide emissions.

2.27 **Policy 5.9 – Overheating and Cooling** seeks to reduce the impact of the urban heat island effect, reduce potential overheating and reduce reliance on air conditioning systems in line with the cooling hierarchy.

2.28 **Policy 5.10 – Urban Greening** encourages new planting such as trees, green roofs and walls, in the public realm (including streets, squares and plazas), to contribute to the adaptation to, and mitigation of, the effects of climate change.

2.29 **Policy 5.11 – Green Roofs and Development Site Environs** requires major development proposals to include roof, wall and site planting, especially green roofs and walls where feasible.

2.30 **Policy 5.12 – Flood Risk Management** states that new development must comply with the flood risk assessment and management requirements, and will be required to pass the Exceptions Test addressing flood resilient design and emergency planning.

2.31 **Policy 5.13 – Sustainable Drainage** requires that development should use sustainable urban drainage systems (SUDS) unless there are practical reasons for not doing so, and should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible in line with the drainage hierarchy.

2.32 **Policy 5.15 – Water Use and Supplies** requires that development should minimise the use of mains water by incorporating water saving measures and equipment and that residential development is designed so that mains water consumption meets a target of 105 litres/person/day or less.

2.33 **Policy 6.9 – Cycling** expects development proposals to provide secure, integrated and accessible cycle parking facilities in line with minimum standards, as well as on-site changing facilities and showers for cyclists.

2.34 **Policy 6.10 – Walking** states that development proposals should ensure high quality pedestrian environments and emphasise the quality of the pedestrian street space.

2.35 **Policy 6.13 – Parking** sets out the maximum standards which should be applied to all planning applications. In addition, developments must ensure than 1 in 5 spaces provide an electrical

charging point to encourage the uptake of electric vehicles; provide sufficient parking for disabled people; and provide the needs of businesses for delivery and servicing.

2.36 **Policy 7.3 – Designing Out Crime** requires that development should reduce the opportunities for criminal behaviour and contribute to a sense of security without being overbearing or intimidating.

2.37 **Policy 7.14 – Improving Air Quality** states that development proposals should:

> Minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality;

> Promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance;

> Be at least 'air quality neutral' and not lead to further deterioration of existing poor quality; and

> Ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site.

2.38 **Policy 7.15 – Reducing Noise and Enhancing Soundscapes** requires development proposals to manage noise by avoiding significant adverse noise impacts on health and quality of life as a result of new development as well as mitigating and minimising the existing and potential adverse impacts of noise.

2.39 **Policy 7.19 – Biodiversity and Access to Nature** states that development proposals should wherever possible, make a positive contribution to the protection, enhancement, creation and management of biodiversity.

2.40 **Policy 7.21 – Trees and Woodlands** aims to protect, maintain and enhance trees and woodland and wherever appropriate, the planting of additional trees should be included in new developments.

## London Plan Housing Supplementary Planning Guidance (2016)

2.41 The London Plan Housing SPG was recently published in March 2016 to replace the 2012 Housing SPG and provide guidance on the implementation of housing policies in the 2015 London Plan and the 2016 MALP. The document includes a chapter on 'housing quality' which updates the London housing standards to reflect the implementation of the Government's new national technical standards through the MALP. Some amendments have also been made to the standards not affected by the new national standards to improve clarity, implementation and alignment with other Mayoral guidance.

## Sustainable Design and Construction Supplementary Planning Guidance (2014)

**2.42** The London Plan Sustainable Design and Construction SPG was adopted in April 2014 and provides detail and best practice guidance on how to implement the sustainable design and construction and wider environmental sustainability London Plan policies.

**2.43** The SPG provides guidance on topics such as energy efficient design; meeting carbon dioxide reduction targets; decentralised energy; how to off-set carbon dioxide where the targets set out in the London Plan are not met; retro-fitting measures; monitoring energy use during occupation; air quality; resilience to flooding; urban greening; pollution control; basements and local food growing.

## Local Policy: London Borough of Richmond Upon Thames

## Richmond Core Strategy (2009)

**2.44** Policies pertinent to this application include:

**2.45** **Policy CP1 – Sustainable Development** - development will be required to conform to the Sustainable Construction checklist, including the requirement to meet EcoHomes 'Excellent' for conversions or BREEAM 'Excellent' for other types of non-residential development.

**2.46** **Policy CP2 – Reducing Carbon Emissions** – development will be expected to minimise energy consumption in new development and promote these measures in existing development.

**2.47** The Council will require the evaluation, development and use of decentralised energy in appropriate development.

**2.48** The Council will increase the use of renewable energy by requiring all new development to achieve a reduction in $CO_2$ emissions of 20% from on-site renewable energy generation unless it is demonstrated this is not feasible.

**2.49** **Policy CP3 – Climate Change – Adapting to its Effects** – development will need to take account of the impacts of climate change over its lifetime, including:

> Water conservation and drainage;

> Need for summer cooling;

> Risk of subsidence;

> Flood risk from the River Thames.

## Richmond Development Management Plan

**2.50** **Policy DM SD 1 – Sustainable Construction** – all development in terms of materials, design, landscaping, standards of construction and operation should include measures capable of mitigating and adapting to climate change to meet future needs.

**2.51** All new buildings should conform to the Borough's Sustainable Construction Checklist SPD.

**2.52** New homes must achieve a 40% improvement in carbon dioxide emissions over Building Regulations Part L (2010) from 2013 to 2016, and Zero Carbon standards from 2016.

**2.53** New non-residential buildings over 100sqm will be required to meet the relevant BREEAM 'Excellent' standards.

**2.54** **Policy DM SD 2 – Renewable Energy and Decentralised Energy Networks** – new development will be required to conform with the Sustainable Construction Checklist SPD and:

**2.55** Maximise opportunities for the micro-generation of renewable energy. Some form of low carbon renewable and/or decentralised energy will be expected in all new development;

**2.56** Developments of 1 dwelling or more, or 100sqm of non-residential floor space or more will be required to reduce their total carbon dioxide emission by following a hierarchy that first requires an efficient design to minimise the amount of energy used, secondly, by using low carbon technologies and finally, including a contribution from renewable sources;

**2.57** Low opportunities to contribute towards decentralised energy supply from renewable and low-carbon technologies will be encouraged where there is no overriding adverse local impact;

**2.58** All new development will be required to connect to existing or planned decentralised energy networks where one exists. In all major developments and large proposal sites provision should be made for future connection to a local energy network should one become available.

**2.59** Supplementary informative text to this policy confirms that the Council encourages developers to achieve a 20% reduction in total site $CO_2$ emissions from the use of on-site renewable energy, to improve savings beyond those generated by energy efficiency measures, as set out in Core Strategy Policy CP2.

**2.60** **Policy DM SD 3 – Retrofitting** – high standards of energy and water efficiency in existing development will be supported wherever possible through retrofitting. Proposals for conversions and extensions will be encouraged to comply with the Sustainable Construction Checklist SPD.

**2.61** **Policy DM SD 4** – **Adapting to Higher Temperatures and Need for Cooling** – all new development, in their layout, design, construction, materials, landscaping and operation, are required to take into

account and adapt to higher temperatures, avoid and mitigate overheating and excessive heat generation to counteract the urban heat island effect and meet the need for cooling.

**2.62** All new development proposals should reduce reliance on air conditioning systems and demonstrate this in accordance with the cooling hierarchy.

**2.63** **Policy DM SD 5 – Living Roofs** – living roofs should be incorporated into new developments where technically feasible and subject to considerations of visual impacts. The onus is on the applicant/ developer for proposals with roof plate areas of 100sqm or more to provide evidence and justification if a living roof cannot be incorporated. The aim should be to use at least 70% of any potential roof plate as a living roof.

**2.64** The Council defines a living roof as having a minimum of 70% soil/vegetation coverage, with a minimum substrate depth of 85mm and a maximum of 30% hardstanding.

**2.65** The aim should be to use at least 70% of any potential roof plate area as a living roof; that is, the total roof plate area including space for renewable energy solutions such as photovoltaic panels and solar thermal but excluding non-living roof solutions such as air condition units.

**2.66** **Policy DM SD 7 – Sustainable Drainage** – all development proposals are required to follow the drainage hierarchy when disposing of surface water and must utilise Sustainable Drainage Systems (SUDS) wherever practical. Any discharge must be reduced to greenfield run-off rates wherever feasible.

**2.67** **Policy DM SD 9 – Protecting Water Resources and Infrastructure** – new developments must achieve a high standard of water efficiency by:

> Meeting the minimum mandatory target for water consumption as set out in the Code for Sustainable Homes;

> Meeting a minimum of 2 credits on water consumption for other types of development (BREEAM Excellent);

> Meeting a minimum of 3 credits on water consumption for conversions (EcoHomes Excellent);

> Utilising rainwater harvesting for all external water uses to reduce the consumption of potable water wherever possible.

**2.68** New developments should also consider the following:

> Utilising rainwater harvesting and greywater recycling for all non-potable uses to reduce the consumption of potable water wherever possible, and

> Designing of landscape to minimise water demand.

2.69 **Policy DM OS 5 – Biodiversity and New Development** – all new development will be expected to preserve and where possible enhance existing habitats including river corridor and biodiversity features, including trees.

2.70 All development will be expected to enhance existing and incorporate new biodiversity features and habitats into the design of buildings themselves as well as attracting wildlife and promoting biodiversity.

2.71 When designing new habitats and biodiversity features, consideration should be given to the use of native species as well as the adaptability to the likely effects of climate change.

2.72 **Policy DM OS 9 – Floodlighting** – floodlighting of sports pitches courts and historic and other architectural features will be permitted unless there is demonstrable harm to character, biodiversity or residential amenity. The following will be taken into account:

> Benefits and impacts of the provision of floodlighting on the wider community;

> Benefits and effects on the use and viability of the facility;

> Impacts on biodiversity and wildlife;

> Impacts on residential and wider public;

> Impacts on local character.

2.73 **Policy DM DC 4 – Trees and Landscape** – the Borough's trees and landscape will be protected by planting and encouraging other to plant trees, clumps and thickets particularly in areas of deficiency and of a type and species as set out in the Borough's Tree Strategy.

2.74 **Policy DM DC 5 – Neighbourliness, Sunlighting and Daylighting** – the Council will seek to protect adjoining properties from unreasonable loss of privacy, pollution, visual intrusion, noise and disturbance. The Council will generally seek to ensure that the design and layout of buildings enables sufficient sunlight and daylight to penetrate into and between buildings, and that adjoining land or properties are protected from overshadowing in accordance with established standards.

## Supplementary Planning Document – Sustainable Construction Checklist Guidance Document – (2016)

2.75 The SPD on sustainable construction will be used to assess compliance with Richmond's minimum policy requirements on energy and carbon dioxide emissions savings, and also with regard BREEAM compliance.

2.76 The completed Sustainability Checklist for the development is presented as **Appendix B**.

**2.77** This shows that the application achieves a score of 86.5, which is defined as '*the highest standard in energy efficient sustainable development*'.

## Local Plan Publication Version for Consultation – (2017)

**2.78** **Draft Policy LP1** – **Local Character and Design Quality** - the Council will require all development to be of high architectural and urban design quality. Sustainable design and construction, including adaptability, will be considered when assessing proposals.

**2.79** **Draft Policy LP8 - Amenity and Living Conditions** - the Council will ensure the design and layout of buildings enables good standards of daylight and sunlight to be achieved in new development and in existing properties affected by new development; where existing daylight and sunlight conditions are already substandard, they should be improved where possible;

**2.80** **Draft Policy LP9 – Floodlighting** - floodlighting, including alterations and extensions, of sports pitches, courts and historic and other architectural features will be permitted unless there is demonstrable harm to character, biodiversity or amenity and living conditions.

**2.81** **Draft Policy LP10 - Local Environmental Impacts, Pollution and Land Contamination** - **Light Pollution** - The Council will seek to ensure that artificial lighting in new developments does not lead to unacceptable impacts by requiring the following, where necessary:

> An assessment of any new lighting and its impact upon any receptors;

> Mitigation measures, including the type and positioning of light sources;

> Promotion of good lighting design and use of new technologies.

**2.82** **Draft Policy LP15 – Biodiversity** - the Council will protect and enhance the borough's biodiversity, in particular, but not exclusively, the sites designated for their biodiversity and nature conservation value, including the connectivity between habitats.

**2.83** **Draft Policy LP 17 - Green Roofs and Walls** - green roofs and/or brown roofs should be incorporated into new major developments with roof plate areas of 100sqm or more where technically feasible and subject to considerations of visual impact. The aim should be to use at least 70% of any potential roof plate area as a green / brown roof.

**2.84** The onus is on an applicant to provide evidence and justification if a green roof cannot be incorporated. The Council will expect a green wall to be incorporated, where appropriate, if it has been demonstrated that a green / brown roof is not feasible.

**2.85** The use of green / brown roofs and green walls is encouraged and supported in smaller developments, renovations, conversions and extensions.

**2.86** **Draft Policy LP 20 - Climate Change Adaptation**

- A. The Council will promote and encourage development to be fully resilient to the future impacts of climate change in order to minimise vulnerability of people and property.

- B. New development, in their layout, design, construction, materials, landscaping and operation, should minimise the effects of overheating as well as minimise energy consumption in accordance with the following cooling hierarchy:

    - Minimise internal heat generation through energy efficient design

    - Reduce the amount of heat entering a building in summer through shading, reducing solar reflectance, fenestration, insulation and green roofs and walls

    - Manage the heat within the building through exposed internal thermal mass and high ceilings

    - Passive ventilation

    - Mechanical ventilation

    - Active cooling systems (ensuring they are the lowest carbon options)

- C. Opportunities to adapt existing buildings, places and spaces to the likely effects of climate change should be maximised and will be supported.

2.87 **Draft Policy LP21 - Flood Risk and Sustainable Drainage -** the Council will require the use of Sustainable Drainage Systems (SuDS) in all development proposals. Applicants will have to demonstrate that their proposal complies with the following:

- A reduction in surface water discharge to greenfield run-off rates wherever feasible

- Where greenfield run-off rates are not feasible, this will need to be demonstrated by the applicant, and in such instances, the minimum requirement is to achieve at least a 50% attenuation of the site's surface water runoff at peak times based on the levels existing prior to the development.

2.88 **Draft Policy LP22 – Sustainable Design and Construction** – developments will be required to achieve the highest standards of sustainable design and construction in order to mitigate against climate change.

- Applicants will be expected to comply with the Sustainable Construction Checklist SPD. A completed checklist to be submitted as part of the application.

- Developments resulting in residential development will be expected to incorporate water conservation measures to achieve maximum water consumption of 110 litres per person per day for homes (including 5 litres for external use);

> New non-residential development over 100sqm will be required to meet BREEAM Excellent standard;

> Proposals for change of use to residential will be required to meet BREEAM Domestic Refurbishment Excellent standard

**2.89** Developers are required to incorporate measures to improve energy conservation and efficiency as well as contributions to renewable and low carbon energy generation. All new major residential developments should achieve zero carbon in line with London Plan policy, and all major non-residential development should achieve a 35% reduction.

**2.90** The Council requires developments to contribute towards the Mayor of London's target of 25% of heat and power to be generated through localised decentralised energy (DE) systems by 2025. All new developments are required to connect to existing DE networks where feasible. Development proposals of 50 units or more will need to provide an assessment of the provision of on-site decentralised energy (DE) networks and combined heat and power.

**2.91** Where feasible, new developments of 50 or more units, or new non-residential development of 1,000sqm or more, will be required to provide on-site DE and CHP. Where on-site provision is not feasible, provision should be made for future connection to a local DE network should one become available.

**2.92** High standards of energy and water efficiency in existing developments will be supported wherever possible through retrofitting.

# 3. BREEAM SUMMARY

**3.1** In accordance with the London Borough of Richmond Upon Thames Core Strategy CP1 and Development Management Plan policy DM SD 1 the non-residential uses across the site will target a BREEAM rating of 'Excellent'.

**3.2** Pre-assessments for the various BREEAM assessments can be found in the appendices. Whilst these have been determined as appropriate routes to certification at this stage of the development proposals, the actual routes to certification may vary as the designs and assessments progress.

**3.3** In order to reflect the different building types across the development, the following BREEAM assessments will be undertaken.

> Appendix C - Plots A & C – BREEAM Multi-residential New Construction 'Excellent';

> Appendix D – Plot B – BREEAM Domestic Refurbishment 'Excellent';

> Appendix E - GP Surgery – BREEAM New Construction Shell only 'Excellent';

> Appendix F - New Clubhouse – BREEAM Other Buildings New Construction 'Excellent'.

**3.4** The attainment of BREEAM Excellent represents a high level of sustainable design and construction.

**3.5** The principles and requirements of many of the individual credit requirements feature throughout this Sustainability Statement where appropriate. However, the mandatory credits for BREEAM 'Excellent' are listed below:

> **Man 03: Responsible Construction Practices** – A minimum of one credit is achieved requiring a minimum Considerate Constructors Scheme score of between 25 and 34.

> **Ene 01: Reduction in $CO_2$ emissions** – An Energy Performance Ratio (EPR) is calculated which is compared against benchmark figures to recognise and encourage buildings to be designed to minimise operational energy demand consumption and Carbon emissions. A minimum of five credits are required.

> **Wat 02: Water Monitoring** – A water meter will need to be provided on the mains water supply which should have a pulsed output to enable connection to a Building Management System (BMS).

> **Mat 03: Responsible Sourcing** – All timber used on the project must be sourced in accordance with the UK Government's Timber Procurement Policy.

> **Wst 03: Operational Waste** – A dedicated space(s) to cater for the segregation and storage of operational recyclable waste volume needs to be installed which should be clearly labelled, easily accessible (to building users and for waste collection) and of an adequate size.

> **Le03: Mitigation Ecological Impact** – A suitably qualified ecologist will carry out species calculations and at least one credit needs to be achieved.

# 4. ENERGY AND $CO_2$ CONSERVATION

## Energy Strategy

**4.1** An Energy Statement has been prepared by Hodkinson Consultancy and will be submitted as part of this planning application. A summary of this statement has been outlined as follows however this document should be referred to for greater detail.

**4.2** The Energy Strategy for the Former ICL Ground development has been formulated following the London Plan Energy Hierarchy: ***Be Lean***, ***Be Clean*** and ***Be Green***. The overriding objective in the formulation of the strategy is to maximise the reductions in $CO_2$ emissions through the application of this Hierarchy with a cost-effective and technically appropriate approach and to minimise the emission of other pollutants.

**4.3** The strategy targets, as a minimum, a 35% reduction in Regulated carbon dioxide above the baseline emissions rate.

**4.4** For the purpose of this Energy Statement and calculating $CO_2$ emissions assisted living units have been assessed under Part L (2013) of the Building Regulations. In line with the London Plan, this strategy uses the Part L1A (2013) Target Emission Rate (TER) as the baseline for the new assisted living units and a baseline based on the previous building specification for the refurbished units. Both of these Calculations will use SAP 2012 to calculated $CO_2$ emission reductions. 'Zero Carbon' will apply to these residential units; therefore all remaining Regulated $CO_2$ emission will be offset though a cash-in-lieu Carbon Offsetting Payment.

**4.5** Plot A's associated facilities, the GP surgery, and the new sports Pavilion will be assessed under Part L2A using SBEM calculations. These non-residential areas are required to meet the London Plans 35% reduction in Regulated $CO_2$ emissions and BREEAM '*Excellent*' minimum energy criteria.

## Domestic Strategy

**4.6** The proposed new build dwellings (plots A and C) to meet the Part L1A 2013 Target Emission Rate (TER) through Be Lean measures alone and ensure the refurbished units (Plot B) meet the requirements of Part L1B. Plot B will promote energy efficiency whilst still preserving the character and appearance of the building. A 41% reduction in Regulated $CO_2$ emissions is predicted over the Part L (2013) baseline for alll domestic units.

**4.7** In line with the London Plan, the feasibility of decentralised energy production as a Be Clean measure has been carefully examined. There are no existing or planned heat networks in the vicinity of the proposed development. However a highly efficient on-site communal heating system is the Applicant's preferred method for providing heat and hot water to the units in Plots A and C. For other areas individual high efficiency heating systems will be utilised due to the low density or heating demand.

**4.8** Photovoltaic (PV) panels have been selected as the most appropriate Be Green technology to meet a 35% reduction in Regulated $CO_2$ emissions. It has been estimated that 113kWp (904m2 of panel area) will be required between the roofs of Plot A and C. It is expected that Regulated $CO_2$ emissions will be reduced by 59% over the Part L (2013) baseline; this represents a high level of sustainable design and construction.

**4.9** The residential units will be required to pay into the Councils ring-fenced Carbon Offset fund to comply with the London Plan 'Zero Carbon' Policy. It is estimated that 102.7 tonnes of Regulated

$CO_2$ emissions will need to be offset though a cash in lieu payment of £184,860 to be paid to the London Borough of Richmond upon Thames.

**Table 1: Domestic Regulated $CO_2$ emissions reductions**

| | Regulated $CO_2$ Emissions | % Reduction over Baseline |
|---|---|---|
| | kg CO2/year | - |
| Domestic Building Regulations (Part L) Baseline | 251,220 | |
| Domestic After Be Lean Measures | 147,317 | 41.4% |
| Domestic After Be Clean Measures | 147,317 | 41.4% |
| Domestic After Be Green Measures | 102,717 | 59.1% |
| Domestic After Zero Carbon Offset Payment | 0 | 100.0% |

## Non-residential areas

**4.10** A range of ***Be Lean*** energy efficiency measures are proposed. They enable each of the proposed non-residential areas to meet the Part L2 (2013) Target Emission Rate (TER) through energy efficiency measures alone. An average **14%** reduction in Regulated $CO_2$ emissions is predicted over the Part L (2013) baseline for the new build elements. This represents a high level of sustainable design and construction.

**4.11** Air Source Heat Pumps have been utilised as the first ***Be Green*** measure to provide heating and cooling efficiently. This improved the non-residential areas Regulated $CO_2$ reductions to **16%**. Following the ASHP, PV has been selected as the most appropriate ***Be Green*** measure to achieve further $CO_2$ reductions. It is expected that **58kWp** (464$m^2$ panel area) of PV panels will be distributed between the Non-residential areas.

**4.12** The allocated PV above allows the Non-residential areas to achieve a **30.5%** reduction in Regulated $CO_2$ emissions. However this is expected to be the maximum capacity of PV the roof space will allow. Further reductions in $CO_2$ are considered unfeasible. Therefore Carbon Offsetting cash-in-lieu payment of **£13,140** is proposed to ensure the Non-Residential areas together achieve a 35% reduction.

**Table 2:Non-Domestic Regulated $CO_2$ emissions reductions**

| | Regulated $CO_2$ Emissions | % Reduction over Baseline |
|---|---|---|
| | kg CO2/year | - |
| Non-Domestic Building Regulations (Part L) Baseline | 164,134 | |
| Non-Domestic After Be Lean Measures | 141,393 | 13.9% |
| Non-Domestic After Be Clean Measures | 141,393 | 13.9% |
| Non-Domestic After Be Green Measures | 114,003 | 30.5% |
| Non-Domestic after Shortfall Carbon Offset Payment | 106,687 | 35.0% |

## Development Wide Energy Strategy

**4.13** The measured detailed above ensure the site-wide energy strategy achieves in excess of the 35% target.

**4.14** The Summary Table (iii) below summarises the site-wide reductions in $CO_2$ emissions for each level of the London Plan Energy Hierarchy of the Proposed Development. ***Be Lean*** measures are expected to reduce the Site-wide Regulated CO2 emissions by 31%. Maximising ***Be Green*** measures will result in a site wide reduction of **49%** in Regulated $CO_2$ compared to the Baseline emissions.

**4.15** Cash-in-lieu payments into Carbon Offsetting funds will result in the effective Regulated $CO_2$ emissions of the Proposed Development to be reduced by 74% over the Building Regulations Part L (2013) Baseline.

**Table 3: Site wide Regulated $CO_2$ emissions reduction**

| | Regulated $CO_2$ Emissions | % Reduction over Baseline |
|---|---|---|
| | kg CO2/year | - |
| Building Regulations (Part L) Baseline | 415,354 | |
| After Be Lean Measures | 288,710 | 30.5% |
| After Be Clean Measures | 288,710 | 30.5% |
| After Be Green Measures | 216,720 | 47.8% |
| After Carbon Offset and Zero Carbon Payments | 106,687 | 74.3% |

## Lighting

**4.16** All external lighting, and any security lighting, will be energy efficient and adequately controlled using PIR sensors, daylight cut-off sensors or time switches where possible. This will ensure the conservation of energy when the lighting is not in use.

## Appliances

**4.17** On average home appliances can account for around 45% of a household's annual electricity bill. The choice of energy efficient appliances and the effective use of them will not only reduce unregulated $CO_2$ emissions but will save the occupants money.

**4.18** Where provided, white goods will aim to be energy efficient in line with the ratings outlined in Table 4 overleaf.

**Table 4: Energy Efficient White Goods**

| Appliance | Energy Efficiency Rating |
|---|---|
| Fridges, freezers and fridge-freezers | A+ |
| Dishwashers | A |
| Washing machines | A |
| Washer Dryers | B |
| Tumble dryers | B |

**4.19** Advice on the purchasing of energy efficient white goods in the EU labelling scheme leaflet will also be provided within the Home Information Manual.

# 5. WATER REDUCTION

## Internal Water Efficiency

**5.1** Water conservation is at the core of sustainable development. Every person in the UK uses approximately 150 litres of water per day which has continued to rise by 1% since 1930. Water is a finite resource and during times of drought supplies can run low. Many natural ecosystems in the United Kingdom can suffer as a result of water abstraction.

**5.2** Reducing water consumption will not only help to preserve our water sources but will save energy because as much as 25% of a household's energy consumption is used for heating water.

**5.3** As such, internal water consumption will be significantly reduced through the use of practical and hygienic water saving measures in accordance with the London Plan Policy 5.15.

## Residential

**5.4** All new residential units will target a minimum water efficiency standard of **105 litres/person/day** in accordance with the above planning policy and the optional tighter Building Regulations Approved Document G requirement (110 litres/person/day). An evaluation of the proposed fixtures and fittings

will be undertaken during the detailed design however an illustrative strategy to achieve this water target is set out in Table 5 below and the Water Efficiency Calculator in **Appendix G.**

**Table 5: Residential Sanitaryware**

| Installation Type | Water Capacity/Flow Rate |
|---|---|
| **WC** | 6/4 litres dual flush |
| **Bath** | 160 litres capacity to overflow |
| **Shower** | 8 litres/minute flow rate |
| **Kitchen tap** | 5 litres/minute flow rate |
| **Basin tap** | 4 litres/minute flow rate |
| **Washing machine** | 8.17 litres/kg |
| **Dishwasher** | 1.25 litres/place setting |

## Commercial

**5.5** The internal water consumption of the commercial space will also be significantly reduced through the use of water efficient fixtures and fittings in line with the Wat 01 requirements of the BREEAM assessment. Table 6 overleaf provides an indication of the types of sanitaryware and appliances that could be installed to meet the required performance level.

**Table 6: Commercial Sanitaryware**

| Installation Type | Water Capacity/Flow Rate |
|---|---|
| **WC** | 4 litres effective flush volume |
| **Basin tap** | 4.5 litres/minute flow rate |
| **Shower** | 6 litres/minute flow rate |
| **Urinals (2 or more)** | 1.5 litres/bowl/hour |
| **Urinal (1 only)** | 2 litres/bowl/hour |
| **Kitchen tap** | 5 litres/minute flow rate |
| **Dishwasher (domestic size)** | 12 litres/cycle |
| **Washing machine (domestic size)** | 40 litres/use |
| **Dishwasher (commercial size)** | 5 litres/rack |
| **Washing machine (commercial size)** | 7.5 litres/kg |

## Leak Detection

**5.6** Another method of reducing water consumption is to ensure that water leaks do not go undetected. As such a leak detection system may be installed which will be capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter.

## Water Metering

**5.7** A water meter with a pulsed output will also be installed on the mains supply. This will allow the water consumption of the development to be monitored and managed and therefore encourage reductions.

# 6. WASTE MANAGEMENT

**6.1** Waste reduction and recycling is another key challenge of sustainable development and something which is strongly encouraged in the London Plan (Policy 3.2). The waste hierarchy, illustrated in Figure 4 below, prioritises those waste management options which are best for the environment.

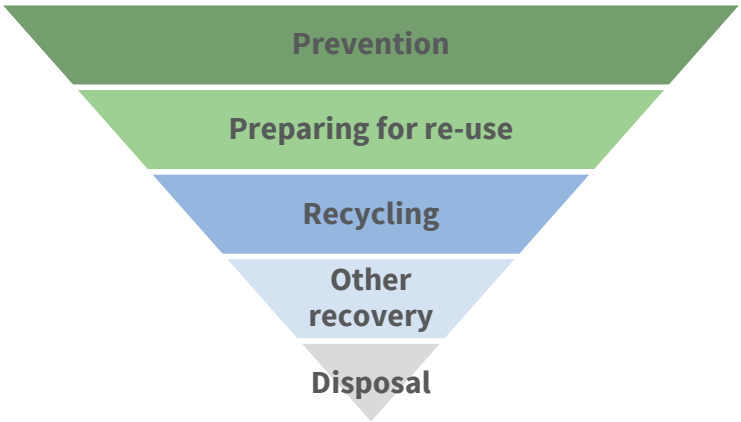


**Figure 4: Waste Hierarchy**

**6.2** The waste hierarchy prioritises the prevention of waste in the first instance through using less materials in the designing and manufacturing processes. Once waste is created, the hierarchy then prioritises the re-use of materials through cleaning, repairing and refurbishing whole items. It then gives priority to recycling which is the turning of waste into a new product or substance, including composting. 'Other recovery' including incineration with energy recovery and anaerobic digestion and then final disposal (to landfill or incineration without energy recovery) are seen as the least favourable options.

## Household Waste

**6.3** Quantum Group is committed to following the above waste hierarchy and reducing waste sent to landfill. The following measures will be implemented to encourage and help ensure the residents and occupants will be able to maximise recycling of waste:

> Refuse storage is to be provided in communal stores located across the ground floor, where both recyclable and non-recyclable waste can be stored;

> Space will be provided for segregated recycling waste bins within the kitchen areas. This will involve the installation of recycling bins, in addition to general waste bins, where waste can be segregated into paper, cans, plastics and glass; and

> External storage for waste and recycling will be provided in accordance with the London Borough of Richmond upon Thames waste collection service.

## Commercial Waste

**6.4** Adequate space for the segregation and storage of commercial waste and recycling will be provided in designated stores. This space will meet the following BREEAM requirements:

> Clearly labelled to assist with waste segregation, storage and collection;

> Accessible to building occupants and facilities operators; and

> Of a capacity that is appropriate to the building's type, size and predicted volumes of waste.

## Construction Waste

**6.5** The reduction of construction waste not only minimises environmental impacts through ensuring the responsible use of resources and waste disposal, but can also significantly reduce construction costs for the developer.

**6.6** The following waste minimisation actions will be considered:

> Consider opportunities for zero cut and fill to avoid waste from excavation or groundworks;

> Design for standardisation of components and the use of fewer materials;

> Design for off-site or modular build;

> Return packaging for reuse;

> Consider community reuse of surplus materials or offcuts; and

> Engage with supply chains and include waste minimisation initiatives and targets in tenders and contracts.

**6.7** As part of their commitment to divert construction waste from landfill, Quantum Group will regularly monitor and record the site's waste reduction performance. This will be compared against target benchmarks and at least 85% by volume of waste will be targeted.

# 7. MATERIALS

## Environmental Impact

**7.1** The Building Research Establishment (BRE) Green Guide to Specification will be used to assess the main building materials. As part of this, materials are rated from 'A+' to 'E', with the rating reflecting the Life Cycle of the materials in question.

**7.2** New materials required in the development will be sourced where possible to ensure that environmentally friendly and low embodied energy materials are used.

**7.3** When selecting materials for the development, preference will be given to the use of locally sourced materials and local suppliers where viable. This will benefit the local economy as well as having environmental benefits through reducing transportation requirements. This will be addressed and considered in more detail during the detailed design stage.

## Recycled Materials

**7.4** Where feasible, the Applicant will commit to using materials that are from renewable sources and are recycled. The use of recycled materials (e.g. crushed concrete from waste used for hard-standing) has less embodied energy impact, other than that expended in their processing or transport. Their use would therefore be carefully considered from a sustainability perspective and, where possible, they will be incorporated into the proposed development.

## Responsible Sourcing

**7.5** Major materials will be responsibly and legally sourced from manufacturers with environmental management systems and chain of custody certificates where appropriate.

**7.6** Timber used on the site, including timber used in the construction phase, such as hoarding, fencing and scaffolding, will be sourced from sustainable sources (e.g. PEFC and FSC) where possible.

# 8. POLLUTION

## Noise Pollution

**8.1** An Environmental Noise Impact Assessment has been prepared in support of the application by Hayes McKenzie. Please refer to this for full information; however a summary is provided here.

**8.2** This has assessed potential noise associated with both plant and sporting activities on the site.

**8.3** The BS4142 assessment found that a minor impact that could be easily mitigated through the use of a noise barrier in the form of a close-boarded fence to remove 'line of sight' between the compressor/condenser and the residential properties.

**8.4** The assessment of football training noise could be mitigated with improvements to sound insulation on some of the proposed residential units, and through the use of a suitable noise barrier that is appropriate for installing around the proposed AGP.

**8.5** The assessment of the MUGA found proposed noise levels to be acceptable to all proposed and existing properties.

**8.6** Quantum Group is committed to reducing noise disturbance to internal and external areas of dwellings to improve the health and wellbeing of the occupants.

## Light Pollution

**8.7** A Light Pollution Report has been prepared by Hodkinson Consultancy to support the application. Please refer to this for full information; however a summary is provided here. This outlines the floodlighting proposals and demonstrates how the impact of the lighting has been kept to a minimum with advanced energy efficient luminaires and strategically designed deflectors.

**8.8** Portable diesel generated flood lights are currently used around the site in the winter/ autumn months, and the development proposals seek to provide energy efficient static lighting that is FA compliant and which will have significantly less air and noise pollution than the current site.

## Indoor Air Quality

**8.9** In accordance with the requirements of the BREEAM assessments it is anticipated that an indoor air quality plan will be produced which will consider the following:

> Removal of contaminant sources;

> Dilution and control of contaminant sources;

> Procedures for pre-occupancy flush out;

> Third party testing and analysis; and

> Maintaining indoor air quality in-use.

**8.10** All decorative paints and varnishes will meet the relevant standards in order to reduce the emission levels of volatile organic compounds (VOCs).

**8.11** Building materials, coatings and furnishings can be significant sources of indoor air pollution. The risk of these pollutants emitted needs to be reduced to minimise detrimental impacts on health.

**8.12** As such the building materials within the proposed development will all aim to:

> Use traditional and/or long-established materials that do not emit pollutants;

> Use materials that are stable, durable and appropriate;

> Do not use materials that contain heavy metals, biocides or known toxins such as lead or asbestos;

> Use low or nil-formaldehyde-emitting materials;

> Minimise the use of paints, using organic, water-based or mineral paints wherever practicable;

> Avoid timber preservatives;

> Avoid harmful cleaning agents, solvents and smoke from open fires; and

> All insulation materials to have Ozone Depleting Potential of zero and a Global Warming Potential of less than 5.

# 9. FLOOD RISK & SURFACE WATER RUN-OFF

## Flood Risk

**9.1** The development of housing in low flood risk areas is promoted to not only protect homes and local communities and reduce the cost implications if flooding occurs, but to protect the environment from the transfer of pollutants during flooding events.

**9.2** According to the Flood Risk Assessment by Calcinotto and the Environment Agency's Flood Risk Map (Figure 5), the site is located in Flood Zone 1 which represents a 0.1% annual probability of flooding from the Thames.

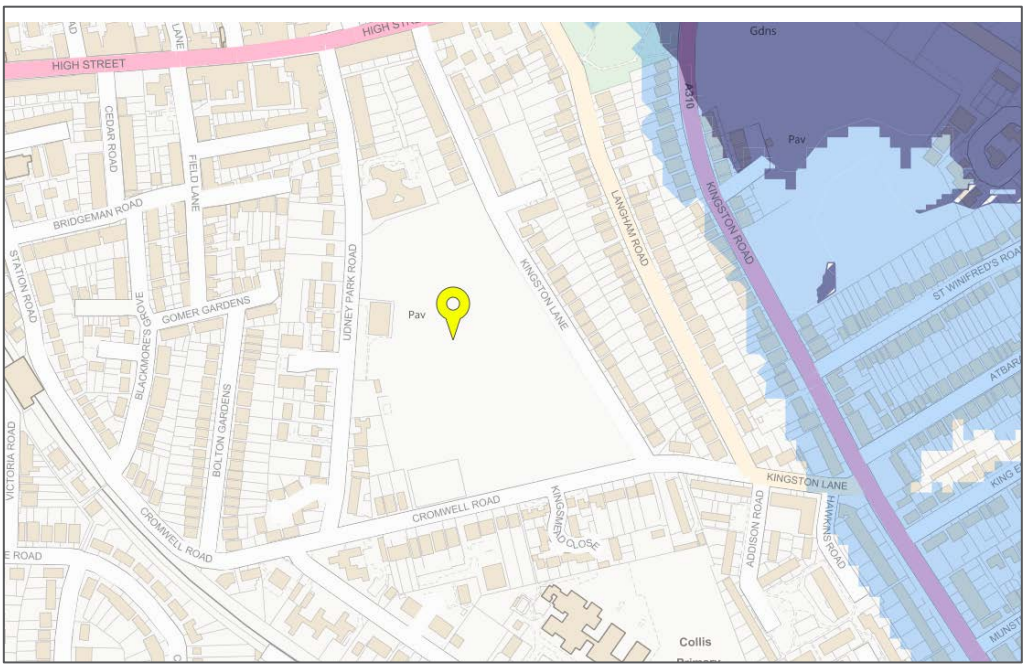


**Figure 5: Environment Agency Flood Map – (www.flood-map-for-planning–service.gov.uk)**

## Sustainable Urban Drainage Systems

**9.3** Sustainable Urban Drainage Systems are designed to maximise opportunities and benefits that can be secured from surface water management. The four pillars of SuDS are:

> Water Quantity – control the quantity of runoff to support the management of flood risk and maintain and protect the natural cycle of water.

> Water Quality – manage the quality of runoff to prevent pollution.

> Amenity – create and sustain better places for people.

> Biodiversity – create and sustain better places for nature.

**9.4** The SuDS Hierarchy (Figure 6 below) sets out the preferred method of selecting which Sustainable Drainage System should be used. Living roofs, basins and ponds, and filter strips and swales are the most sustainable as they contribute to flood reduction, pollution reduction and have benefit to the surrounding landscape and wildlife.

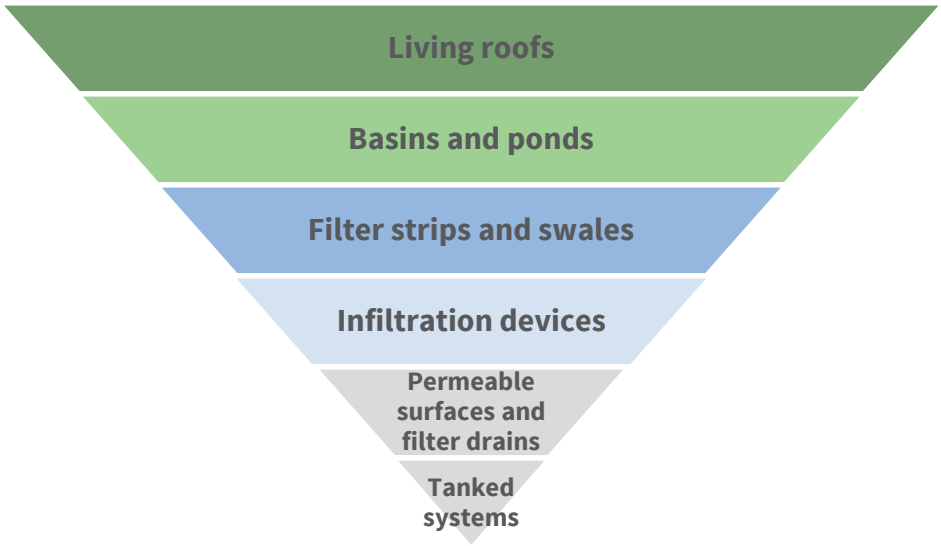


Figure 6: SuDS Hierarchy

## SuDS in the Urban Environment

**9.5** As set out in the surface water drainage design by Calcinotto, the following SuDS are proposed for the site: Green roofs, a detention basin, swales, porous paving and source control measures.

**9.6** Swales are linear vegetated drainage features in which surface water can be store or conveyed; they are built to promote low flow velocities to allow much of the suspended particulate load to settle out, providing effective pollutant removal.

**9.7** Detention basins are depressions in the landscape which are dry the majority of the time, they are wet when there is particularly heavy rainfall. Detention basins treat the water by trapping the silt, which contain a high proportion of the pollutants. In order to be visually appealing to nearby residents, a forebay (where the initial water enters the basin) is designed to trap most of the silt and sediment in a location where it is not visually intrusive. There must be an outlet and an exceedance flow route, when there is excessive rainfall.

**9.8** Ponds and wetlands have similar design requirements to detention basins, the difference being they are a permanent pool of water. The pool volume and shape determines the pollution removal effectiveness, the larger the proportion of surface covered by aquatic planting then the more water treatment there will be.

**9.9** Living roofs (or green roofs) are designed to manage 1 in 100 year events plus climate change. They intercept and retain precipitation, reducing the volume of runoff and attenuating peak flows. Green roofs have good removal capability of atmospherically deposited urban pollutants and mimic predevelopment states of hydraulics and hydrology.

**9.10** Pervious surfaces can be either permeable or porous; porous surfacing infiltrates water across the entire surface, whereas permeable surfacing is formed of material that is impervious to water but infiltration is allowed through voids in the surface. Pervious surfaces provide a suitable surface for pedestrians or vehicles, whilst allowing rainwater to infiltrate downwards. Rainwater can be temporarily stored before infiltration to the ground, reused or discharged to another drainage system or watercourse. They reduce the effects of pollution in runoff on the environment and can be used in high density developments.

# 10.BUILDING QUALITY

## Security

**10.1** It is important for new developments to be safe and secure for its occupants; to reduce the risk and costs associated with crime; and to improve the occupier's quality of life by reducing the fear of crime.

**10.2** Consultation with a security specialist is likely to take place throughout the design process to ensure the development provides a safer and more secure development. Safe access for pedestrians and cyclists will be included in the designs as recommended by the Consultant. This will aim to meet the requirements of the Building Regulations Approved Document Q and the London Plan Policy 7.3 on Designing Out Crime and BREEAM.

## Sound Insulation

**10.3** In order to reduce the likelihood of noise complaints between residential units and to ensure a high quality development is created, the development will be aiming to achieve airborne sound insulation values that will improve upon the performance standards outlined within the Building Regulations for England and Wales, Approved Document E.

**10.4** The commercial element of the development will meet the appropriate acoustic performance standards and testing requirements for sound insulation, indoor ambient noise level and reverberation times in order to achieve the Hea 05 credit in the BREEAM assessment. A full Noise Impact Assessment may be required during the design stage to assess the impact of noise on

sensitive areas and buildings within an 800m radius of the proposed development. This will suggest noise attenuation measures which will need to be implemented to achieve the Pol 05 credit.

## Inclusive Design

**10.5** The Quantum Group is commitment to inclusivity will ensure that the proposed development is scaled appropriately so as to respond to the needs of all its users. Quantum Group will endeavour to incorporate the requirements of the Equality Act (2010) into their design, making reasonable adjustments to enable disabled access, regularly reviewing whether the buildings are accessible and effective, and providing necessary design adjustments where it is practical to do so.

**10.6** London Plan policy requires 90% of the new dwellings to be built to Building Regulations Approved Document M4(2) standards, with 10% to Part M4(3). The Part M4(2) standards are a series of design criteria intended to make homes more easily adaptable for use over their lifetime. They are intended to ensure accessible and adaptable accommodation for everyone; young families, older people, individuals with a temporary or permanent physical impairment, and allow residents to stay in their home despite developing disabilities. The new Building Regulations Part M4 (2) 'accessible and adaptable dwellings' is broadly equivalent to Lifetime Homes standards; Part M4 (3) 'wheelchair user dwellings' is broadly equivalent to London Wheelchair Housing Standards.

**10.7** These principles enable flexibility, visitability (facilitating ease of visiting access to the homes by everyone, regardless of mobility or disability) and future-proofing i.e. the accommodation will be adaptable and able to respond to changing technological and environmental conditions. This will ensure that good standards of accessibility are achieved.

**10.8** Therefore, in accordance with the London Plan, the new residential units have been designed to comply with the principles of Part M4(2) and Part M4(3) standards as required.

## Daylight and Sunlight

**10.9** The promotion of good daylighting levels contributes to sustainability through improving the occupant's quality of life and reducing the building's energy consumption by minimising the need for artificial light.

**10.10** A Daylight & Sunlight Report has been prepared by Hodkinson Consultancy and will be submitted as part of this planning application.

**10.11** The report concludes that the results of the daylight and sunlight assessment are in line with the intentions of the BRE guidance and that appropriate levels of internal daylight are proposed to the majority of residential units.

**10.12** The results of the overshadowing assessment within the proposed scheme show good levels of internal daylight and the results of the available shading/sunlight assessment demonstrate the communal amenity space will be well lit throughout the year.

## Residential Overheating

**10.13** Minimising the risk of summer overheating and high uncontrollable temperatures is important so as to ensure that homes are comfortable for their occupants and remain comfortable in the future.

**10.14** In line with the Cooling Hierarchy within London Plan Policy 5.9, it is proposed to reduce the need for active cooling as far as possible. All homes will therefore be subject to measures to minimise the risk of summer overheating to an acceptable level. In the first instance, this will be done through the specification of non-mechanical measures such as good thermal insulation and air tightness. Additionally and where appropriate, solar control glazing (low g-value) will be installed to reduce solar heat gains.

**10.15** Open-able windows will be provided and will enable cross-ventilation where possible, convective-ventilation and night purging. These concepts will reduce the build-up of heat within homes and are illustrated below.

# 11. TRANSPORT AND LOCAL AMENITIES

## Local Amenities

**11.1** The proposed development has access to the following key amenities in the local area which will help to reduce dependency on private transport:

> Administrative services

> Health services

> Small/large scale retail services

> Recreation or leisure facilities

> Education and community facilities

## Sustainable Transport

**11.2** The provision of alternative sustainable transport options and associated facilities reduces dependency on traditionally fuelled cars and has the following benefits:

> Encourages active travel and helps improve people's health and wellbeing;

> Reduces congestion and encourages clean travel which helps to improve the air quality of the local area; and

> Provides cost savings compared with maintaining and running traditionally fuelled cars.

## Public Transport

**11.3** The site is well located within close proximity to Teddington Rail Station which is operated by South West Trains and provides regular services to London Waterloo.

**11.4** The Transport for London Public Transport Accessibility Level (PTAL) map for the site is presented in Figure 7 below. The site's PTAL rating of 2 represents a moderate level of transport accessibility.

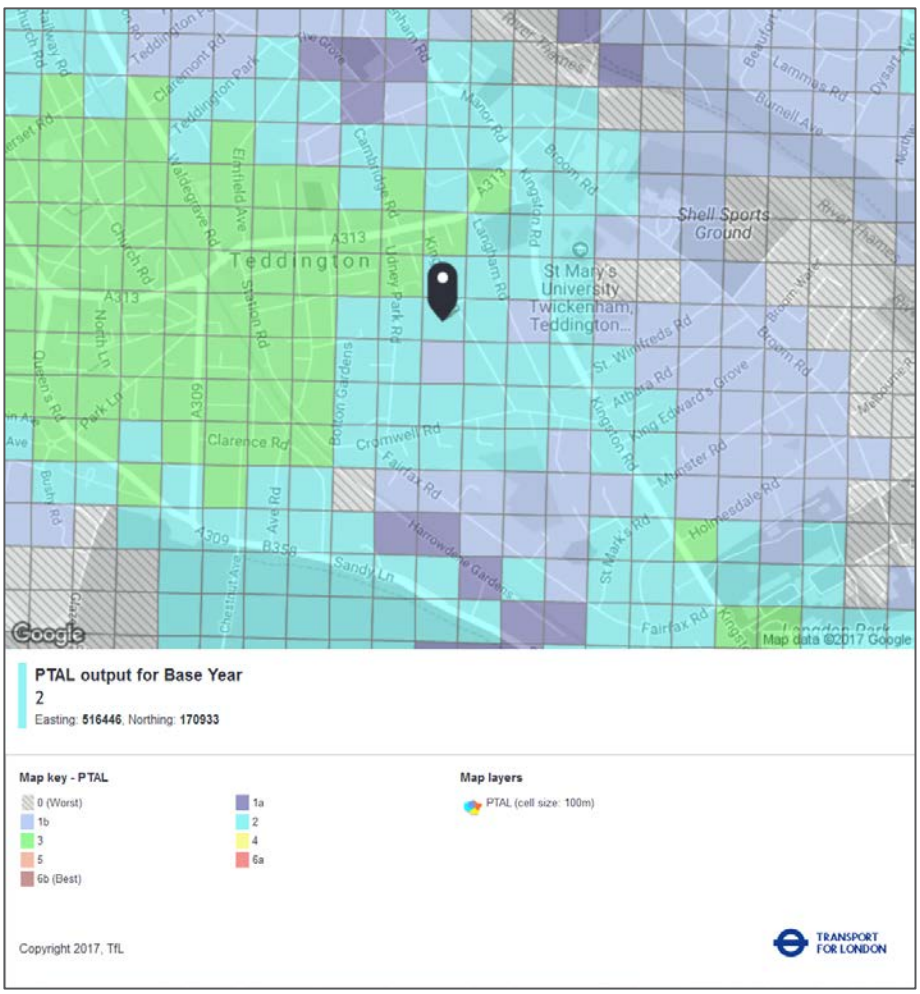


**Figure 7: PTAL Map - www.tfl.gov.uk**

**11.5** A Transport Assessment has been prepared by Bellamy Roberts in support of the application.

## Cycle Parking

**11.6** Encouraging cycling not only makes a positive contribution to health and well-being, but also reduces pressure on existing transport systems in accordance with the London Plan.

**11.7** Policy compliant cycle parking is provided across the development.

## Electric Car Charging

**11.8** Electric vehicles have the benefit of eliminating emissions as the vehicles are used, including of carbon dioxide, oxides of nitrogen, carbon monoxide and particulates that are normal exhaust emissions of cars, thus having air quality benefits in the city. With road transport accounting for 66% of particulate emissions and 42% of $NO_x$ emissions in London, measures that reduce this are considered very important.

**11.9** The lack of charging points is one of the major impediments to greater use of eclectic cars. As such, London Plan Policies 5.8 and 6.13 promote the use of electric vehicles.

**11.10** Furthermore, electric vehicles have an overall carbon benefit over traditional petrol alternatives, reducing $CO_2$ emissions (which are at the power station, rather than the car by 30-40%). This will increase as the carbon intensity of electricity declines.

**11.11** Electric vehicle charging points will be provided in accordance with the London Plan requirements. Therefore at least 20% of parking spaces will be equipped with electric charging points, with provision for a further 20% for passive charging.

## Travel Plan

**11.12** During the BREEAM design stage assessment, a Travel Plan will be developed for the GP surgery to consider a range of travel options for building users.

**11.13** Transport for London defines a Travel Plan as a 'long term management strategy for an organisation or site that seeks to deliver sustainable transport objectives through action and is articulated in a document that is regularly reviewed'.

**11.14** It sets out a series of proposed measures to promote sustainable modes of transport, such as walking and cycling. These measures are used to meet the specific targets of the Travel Plan, often relating to a specific increase in cycling rates or to minimise the need to travel to and from the site, especially by private car, taken from a baseline situation. It also includes a monitoring regime, whereby surveys will be done to assess progress towards these targets.

## Working from Home

**11.15** The concept of working from home will be promoted by the provision of internal services and infrastructure, enabling the potential for home offices to be established in each dwelling. This will contribute to the vibrancy of this scheme, whilst offering additional environmental benefits in terms of potential reduced demand for transportation.

# 12. BIODIVERSITY AND ECOLOGY

## Existing Site

**12.1** Redeveloping and revitalising vacant and under-used sites is supported by the NPPF.

**12.2** It is thought that development on this particular site will enhance the local character of the area and improve the ecological value.

## Current Ecological Value

**12.3** According to the Ecological Appraisal carried out by Lindsay Carrington Ecological Servies in March 2016, the existing site is located on previously developed as a large sports ground with areas of hardstanding, tall ruderal vegetation and surrounding hedgerows.

**12.4** A range of Phase 2 ecological studies were undertaken by Peach Ecology in August and in October 2016 to determine the presence of bats and reptiles. Bats were observed around the site and appropriate mitigation measures are set out in the Phase 2 survey report as noted below.

## Protection of Ecological Value

**12.5** To protect existing biodiversity a series of measures can be implemented to reduce any impact the re-development of the site may have on local wildlife. These include the following:

> At least ten features for roosting bats and ten bat boxes to be hung on retained mature trees as temporary mitigation prior to works;

> Any vegetation removal will take place outside the bird nesting season which runs from 1 March to 1 August inclusive, unless an ecologist is present to ensure there are no birds present;

> Cleared vegetation should be used to create log and habitat spaces within the retained areas for hedgerow species like stag beetles;

> A range of features for nesting birds will be incorporated into the new buildings on site for swifts, house sparrows and tits;

> All site operatives to be made aware of current legislation protecting bats;

> Suitable fencing should be used where required to reduce the possibility of any damage to established vegetation to be retained;

> Native species or where not possible species of known wildlife value will be used for the proposed new planting.

## Enhancement of Ecological Value

**12.6** Enhancing a site's ecological value not only helps to reduce a development's environmental impact but improves the health and wellbeing of the occupants through their interaction with the natural environment.

**12.7** The development proposals are expected to increase the ecological value of the site. The landscaping designs include landscaped areas, tree planting, orchard planting, new pond areas, ornamental planting, hedge planting, wildflower planting, private gardens and areas of green and brown roof.

**12.8** Flowering species will be preferred as these benefit invertebrate species and may provide nesting opportunities for birds. Bat and bird boxes may also be provided.

**12.9** The proposed redevelopment of the site includes extensive areas of wildlife planting. These areas will assist in benefiting the ecological value of the site and biodiversity of the area. The strategy for the open green spaces and new planting will include the following:

> Promote local ecology through the use of native seed and fruit bearing species;

> Attract pollinators such as bees and butterflies through the use of flowering, nectar rich species;

> Combine natural and ornamental species to enrich the planting mix and promote local biodiversity;

> Create new habitats to attract local fauna;

> Interconnect existing and proposed habitats of the site and its surroundings where possible.

**12.10** Additionally, as part of the BREEAM assessment, an ecology report will be prepared during the detailed design stage and will outline recommendations for enhancing the site's ecological value.

**12.11** The combination of additional planting and soft landscaping will also help to facilitate localised cooling through evapotranspiration, i.e. energy which would otherwise heat the local atmosphere is instead used evaporating water. Both these measures can help to reduce the urban heat island effect.

**12.12** In addition to the cooling effect, planting/trees provide a number of benefits, including:

> Carbon sequestration;

> Absorption of airborne pollutants, improving air quality;

> Deciduous trees allow winter solar gains, while providing summer shading and cooling.

## Green/Brown Roofs

**12.13** The new development also includes large areas of green roof in order to meet Policy 5.11 of the London Plan and Richmond policy DM SD 5.

**12.14** Green roofs have demonstrable sustainability benefits, including:

> Reduction in urban heat island effect (localised cooling through increased evaporation);

> Provision of ecological habitats for fauna and flora, particularly where these roofs can replicate pre-existing ecological conditions; and

> Reduction in surface water run-off.

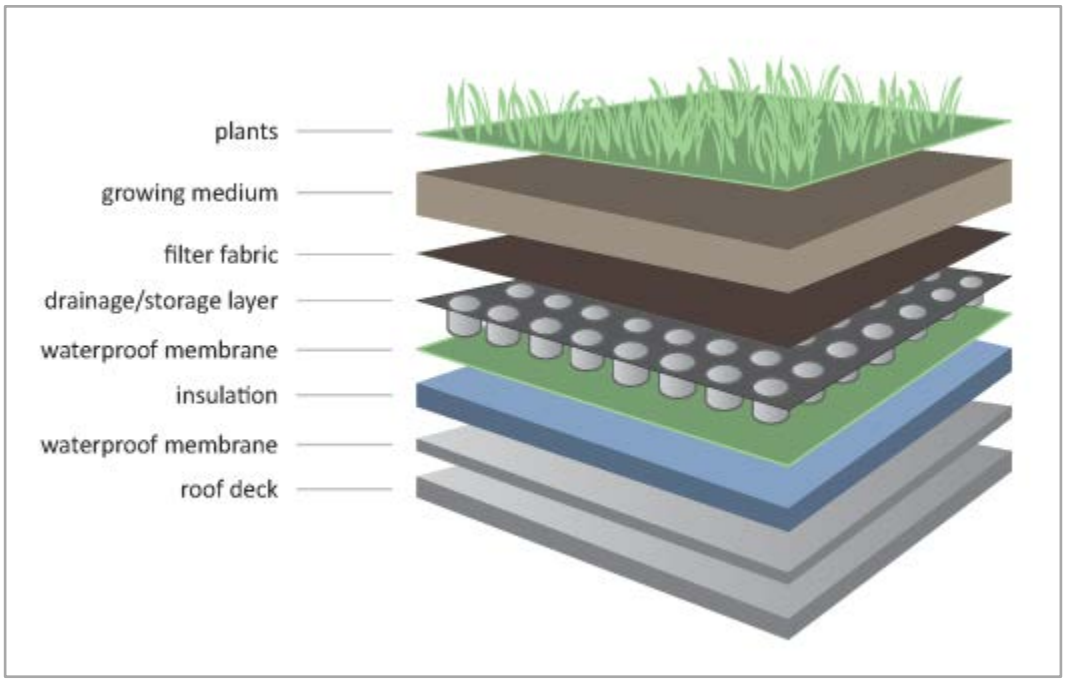


**Figure 8: Indicative Build-up of Green/Brown Roof**

**12.15** The combination of green roofs and additional planting will help to facilitate localised cooling through evapotranspiration, i.e. energy which would otherwise heat the local atmosphere is used instead to evaporate water. Both these measures can help to reduce the urban heat island effect.

# 13. SUSTAINABLE CONSTRUCTION

**13.1** Sustainable construction is described as involving the prudent use of existing and new resources and the efficient management of the construction process. This includes the following measures:

> Reducing waste during construction and demolition and sorting waste on site where practical

> Reducing the risk of statutory nuisance to neighbouring properties as much as possible through effective site management

> Controlling dust and emissions from demolition and construction

> Complying with protected species legislation

## Considerate Constructors Scheme

**13.2** The development site will be registered with the Considerate Constructors Scheme to which Quantum Group is committed to targeting a 'Beyond Best Practice' score. This is designed to encourage environmentally and socially considerate ways of working, to reduce any adverse impacts arising from the construction process in accordance with Policy 5.3 of the London Plan.

**13.3** The Considerate Constructors Scheme aims are as follows:

> Enhancing the appearance;

> Respecting the community;

> Protecting the environment;

> Securing everyone's safety;

> Caring for the workforce.

## Monitoring Construction Site Impacts

**13.4** During the construction processes, control procedures will be put in place to minimise noise and dust pollution and roads will be kept clean. The management systems will generally comprise procedures and working methods that are approved by the development team together with commercial arrangements to ensure compliance.

**13.5** Further to the above, additional measures will be adopted to minimise the impact on the local area during construction. This will include the limiting of air and water pollution in accordance with best practice principles, as well as the recording, monitoring and displaying of energy and water use from site activities during construction.

**13.6** In terms of construction traffic, this will be minimised by restricting deliveries and arrival times in order to manage potential impacts on existing and future occupants. Work will be limited to appropriate hours to be agreed with the Council, and suppressors will be used to reduce noise from machinery.

# 14. HOME/BUILDING INFORMATION AND AFTERCARE

**14.1** All dwellings will be provided with a Home Information Pack with information on the site's sustainable features and details of how to efficiently operate the services within the home.

**14.2** Home User Guides can be provided to the occupants of the dwellings providing advice and information on how to best operate the services within their dwelling. This method can be one of the most effective means to reduce energy use both in the short and long term.

**14.3** Building User Guides can also be provided to the users, staff and management of the non-residential spaces within the proposed development. The guide can provide advice and information on how to operate the building efficiently and in a manner that is in keeping with the original design intent. A Building User Guide will likely include the following information:

> An overview of the energy, water and waste efficiency strategy;

> The building's services and access to controls;

> Pre-arrival information for visitors (e.g. access and security procedures);

> Details on the shared facilities and how to access them;

> Safety and emergency instructions;

> Building related operational procedures and maintenance arrangements;

> Incident reporting and feedback arrangements;

> Building related training information;

> Access to transport facilities; and

> Provision and access to local amenities.

**14.4** Water and energy use meters may also be included across the development as a means to monitor use and determine any excess use or wastage. Their inclusion can be a very effective means to reduce energy and water usage.

### Smart Energy Monitors

**14.5** Energy display devices which monitor consumption data for electricity and primary heating fuel may be provided, empowering the occupants to be more aware of and therefore reduce their energy usage.

# 15.CONCLUSION

**15.1** The purpose of this Sustainability Statement is to demonstrate that the proposed development at Former ICL Private Ground in the London Borough of Richmond Upon Thames is considered sustainable, as measured against relevant local, regional and national planning policies.

**15.2** Through the incorporation of sustainable design and construction methods, energy and water saving measures, waste reduction techniques as well as measures to enhance the ecological value of the site, a good quality and sustainable development is proposed.

**15.3** The key sustainability features outlined in this Sustainability Statement are listed below:

> The development will target a 35% $CO_2$ reduction over the Building Regulations Approved Document L 2013 baseline through the use of energy efficiency measures and photovoltaic panels;

> BREEAM Excellent will be targeted for the various proposed buildings around the site;

> The development scores 86.5 against the Richmond Sustainability Checklist, defined as '*the highest standard in energy efficient sustainable development*';

> Water efficiency measures and devices will be installed in the dwellings to achieve an equivalent maximum daily water usage of 105 litres/person/day;

> Where practical, materials will be selected based on their environmental impact, with preference given to 'A+' or 'A' rated materials from the BRE Green Guide to Specification;

> Extensive use of Sustainable Urban Drainage Systems such as living roofs, permeable paving and swales will help to attenuate surface water;

> 90% of the new dwellings will be designed to meet Building Regulations Approved Document M4(2) and 10% will meet Part M4(3);

> The use of sustainable transport modes will be encouraged with the provision of cycle storage in accordance with Richmond requirements;

> Social and community recreational facilities will be significantly enhanced with the proposals and the creation of the Community Interest Company;

> Extensive ecological enhancements will be implemented through the provision of areas of green roof, private amenity space, tree planting and surrounding landscaped areas; and

> The site will be registered with the Considerate Constructors Scheme and measures to reduce construction site impacts will be implemented.

# APPENDICES

**Appendix A**
Proposed Development Site Layout

**Appendix B**
LBRuT Sustainability Checklist

**Appendix C**
Plot A & C - BREEAM New Construction 2014 Multi-Residential Pre-Assessment ‘Excellent’

**Appendix D**
Plot B – BREEAM Domestic Refurbishment ‘Excellent’

**Appendix E**
GP Surgery – BREEAM New Construction Shell only ‘Excellent’

**Appendix F**
New Clubhouse – BREEAM Other Buildings New Construction ‘Excellent’

# Appendix G
## Residential Water Efficiency Calculator

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# Appendix A

Proposed Site Layout

When Scaled correctly this bar measures 100mm.


# PLANNING

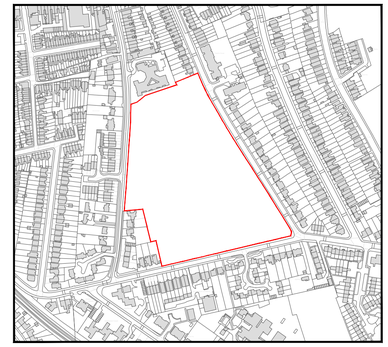


Do Not Scale, Use figure dimensions.

Check all dimensions on site before work proceeds, report discrepancies to Architect.

If In Doubt Ask!!

NOTES:



Location Plan - 1:5000

| Rev | Date | Description | Initials |
|---|---|---|---|
| A | 07/07/17 | GP Surgery layout amendments. | JC |

Quantum Group

Quantum House, 170 Charminster Road, Charminster, Bournemouth, BH8 9RL
Email: info@quantumhomes.co.uk | Web: www.quantumhomes.co.uk
Tel: 01202 531635 | Fax: 01202 531650

Project:

Former Imperial College Private Ground , Udney Park Road, Teddington

Drawing Title:

Proposed Site Plan

Discipline:

ARCHITECTURAL

Drawn by: JC

Checked by: SH

Scale: 1:500@A1

Date: July 2017

Drawing Number: 900-SK02

Revision: A

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# Appendix B

LBRuT Sustainability Checklist

## LBRUT Sustainable Construction Checklist - January 2016

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

Property Name (if relevant): Udney Park

Application No. (if known):

Address (include. postcode): Udney Park Road, Teddington, TW11 9BB

Completed by: Christopher Scobie

*For Non-Residential*
Size of development (m2)

*For Residential*
Number of dwellings: 108

### 1 MINIMUM COMPLIANCE (RESIDENTIAL AND NON-RESIDENTIAL)

**Energy Assessment**

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

**Carbon Dioxide emissions reduction**

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

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

Percentage of **total** site CO2 emissions saved through renewable energy installation? 17.70%

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

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

**Environmental Rating of development:**

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

*Extensions and conversions for residential dwellings*
BREEAM Domestic Refurbishment: Excellent — Have you attached a pre-assessment to support this? ☑

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

Score awarded for Environmental Rating:

BREEAM: Good = *0*, Very Good = 4, Excellent = *8*, Outstanding = *16*

**Subtotal** 16

### 1B MINIMUM POLICY COMPLIANCE (RESIDENTIAL)

**Water Usage**

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

**Subtotal** 1

## 2. ENERGY USE AND POLLUTION

**2.1 Need for Cooling** — *Score*

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

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

**2.2 Heat Generation**

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

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

**2.3 Pollution: Air, Noise and Light**

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

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

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

c. Please tick only one option below

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

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

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

**Subtotal** 19

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

## 3. TRANSPORT

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

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

Please explain:

Yes, electric cars with charging points, cycle storage and mobility scooters.

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

c. **For major developments ONLY**: Has a Transport Assessment been produced for your development based on TfL's Best Practice Guidance?

If you have provided a Transport Assessment as part of your planning application, please tick here and move to Section 3 of this Checklist. ☑ 5

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

e. Does your development provide cycle storage? (Standard space requirements are set out in the the Council's Parking Standards - DM DPD Appendix 4) ☑ 2

If so, for how many bicycles? 12 + 1 + 10

Is this shown on the site plans? ☐ -

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

**Subtotal** 9

Please give any additional relevant comments to the Transport Section below

New proposed footpaths through the site will improve local permeability and connectivity.

## 4 BIODIVERSITY

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

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

If so, please state how much in sqm? 20204 sqm

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

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

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

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

| | | | | |
|---|---|---|---|---|
| Pond, reedbed or extensive native planting | 6 | ☑ | Area provided: | 577 sqm |
| An extensive green roof | 5 | ☑ | Area provided: | 845 sqm |
| An intensive green roof | 4 | ☑ | Area provided: | 830 sqm |
| Garden space | 4 | ☑ | Area provided: | 4260 sqm |
| Additional native and/or wildlife friendly planting to peripheral areas | 3 | ☑ | Area provided: | 10400 sqm |
| Additional planting to peripheral areas | 2 | ☑ | Area provided: | 7100 sqm |
| A living wall | 2 | ☐ | Area provided: | sqm |
| Bat boxes | 0.5 | ☑ | | |
| Bird boxes | 0.5 | ☐ | | |
| Other | 0.5 | ☐ | | |

**Subtotal** 22.5

Please give any additional relevant comments to the Biodiversity Section below

The area noted as 'lost' above under 4.1a is predominantly amenity grassland used for recreational sport activities.
Habitat is being replaced and enhanced with new hedge planting to form wildlife corridors, orchard planting, wildflower meadow sowing and management, herb gardens and bat boxes.
Arboricultural report has been prepared in support of the application.

## 5 FLOODING AND DRAINAGE

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

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

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

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

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

c. Please give the change in area of permeable surfacing which will result from your development proposal: -7362 sqm

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

**Subtotal** 8

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

## 6 IMPROVING RESOURCE EFFICIENCY

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

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

If so, what percentage of demolition waste will be reused in the new development? 0 %

What percentage of demolition waste will be recycled? 0 %

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

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

Are plans in place to remediate the contamination? ☐ 2

Have you submitted a remediation plan? ☐ 1

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

**6.2 Reducing levels of water waste**

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

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

**Subtotal** 5

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

A Phase 1 Geotechnical and contamination report has been submitted in support of the application. This has identifed a number of features that could present localised areas of contamination. A small shed is to be removed from site.

## 7 ACCESSIBILITY

**7.1 Ensure flexible adaptable and long-term use of structures**

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

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

**AND**

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

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

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

**OR**

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

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

**Subtotal** **6**

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

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

***TOTAL*** ***86.5***

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

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

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

**Authorisation:**

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

Signature _____ Date _____

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# Appendix C

Plot A & C - BREEAM New Construction 2014 Multi-Residential Pre-Assessment ‘Excellent’

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# Former ICL Ground Udney Park Road - Senior Living Unit - New Construction 2014 Residential Institutions Assessment
# BREEAM Excellent - Fully Fitted Out Residential Institutions

## Pre-Assessment Stage Summary

| | | | |
|---|---|---|---|
| Project Name - Number | Former ICL Ground Udney Park Road - Senior Living Unit - | | |
| Client | Sam Hobson - Quantum Group | BREEAM Assessor | Zeta Watkins |
| Project Town - Postcode | Teddington - TW11 | Project Manager | Christopher Scobie |
| Development Description | Development that will provide an Older People's Care Community (which this pre assessment relates to) and a GP surgery. 8 acres of the site will also be gifted to the Teddington Community Sports Ground CIC for publicly accessible sport, leisure and community facilities. | | |

| | Credits Available | Credits Targeted | Contribution | Mandatory |
|---|---|---|---|---|
| Man01 | 4 | 4 | 2.29% | |
| Man02 | 4 | 1 | 0.57% | |
| Man03 | 6 | 4 | 2.29% | Yes |
| Man04 | 4 | 3 | 1.71% | Yes |
| Man05 | 3 | 3 | 1.71% | Yes |
| **Management Total** | **21** | **15** | **8.57%** | |
| | | | | |
| Hea01 | 5 | 2 | 1.58% | |
| Hea02 | 5 | 2 | 1.58% | |
| | | | | |
| Hea04 | 3 | 3 | 2.37% | |
| Hea05 | 4 | 4 | 3.16% | |
| Hea06 | 2 | 2 | 1.58% | |
| **Health & Wellbeing Total** | **19** | **13** | **10.26%** | |
| | | | | |
| Ene01 | 12 | 5 | 3.95% | Yes |
| Ene02 | 1 | 1 | 0.79% | Yes |
| Ene03 | 1 | 1 | 0.79% | |
| Ene04 | 3 | 1 | 0.79% | |
| | | | | |
| | | | | |
| | | | | |
| Ene08 | 2 | 2 | 1.58% | |
| | | | | |
| **Energy Total** | **19** | **10** | **7.89%** | |
| | | | | |
| Tra01 | 3 | 3 | 3.00% | |
| Tra02 | 2 | 2 | 2.00% | |
| Tra03 | 1 | 1 | 1.00% | |
| Tra04 | 2 | 2 | 2.00% | |
| Tra05 | 1 | 1 | 1.00% | |
| **Transport Total** | **9** | **9** | **9.00%** | |
| | | | | |
| **Innovation Total** | **10** | **1** | **1.00%** | |

| | Credits Available | Credits Targeted | Contribution | Mandatory |
|---|---|---|---|---|
| Wat01 | 5 | 3 | 2.33% | Yes |
| Wat02 | 1 | 1 | 0.78% | Yes |
| Wat03 | 2 | 2 | 1.56% | |
| Wat04 | 1 | 1 | 0.78% | |
| **Water Total** | **9** | **7** | **5.44%** | |
| | | | | |
| Mat01 | 6 | 4 | 3.86% | |
| Mat02 | 1 | 1 | 0.96% | |
| Mat03 | 4 | 2 | 1.93% | Yes |
| Mat04 | 1 | 1 | 0.96% | |
| Mat05 | 1 | 1 | 0.96% | |
| Mat06 | 1 | 0 | 0.00% | |
| **Materials Total** | **14** | **9** | **8.67%** | |
| | | | | |
| Wst01 | 4 | 3 | 3.19% | |
| Wst02 | 1 | 0 | 0.00% | |
| Wst03 | 1 | 1 | 1.06% | Yes |
| | | | | |
| Wst05 | 1 | 0 | 0.00% | |
| Wst06 | 1 | 1 | 1.06% | |
| **Waste Total** | **8** | **5** | **5.31%** | |
| | | | | |
| LE01 | 2 | 1 | 1.00% | |
| LE02 | 2 | 2 | 2.00% | |
| LE03 | 2 | 2 | 2.00% | Yes |
| LE04 | 2 | 1 | 1.00% | |
| LE05 | 2 | 2 | 2.00% | |
| **Land Use/Ecology Total** | **10** | **8** | **8.00%** | |
| | | | | |
| Pol01 | 3 | 3 | 2.31% | |
| Pol02 | 3 | 3 | 2.31% | |
| Pol03 | 5 | 4 | 3.08% | |
| Pol04 | 1 | 1 | 0.77% | |
| Pol05 | 1 | 1 | 0.77% | |
| **Pollution Total** | **13** | **12** | **9.23%** | |

| Indicative Target Building Score | Indicative Target Building Rating |
|---|---|
| **73.37%** | **Excellent** |

| Current Building Score | Current Building Rating |
|---|---|
| | |

| Revision | Date | Revision Details | Author | Checked By |
|---|---|---|---|---|
| *v1* | 15/06/2017 | Issued for comment | ZW | CS |
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BREEAM®

# Former ICL Ground Udney Park Road - Senior Living Unit - New Construction 2014 Residential Institutions Assessment BREEAM Excellent - Fully Fitted Out

## Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Management | Man01 Project brief and design | Stakeholder Consultation (project delivery) | Roles and responsibilities of the delivery stakeholders to be defined in accordance with BREEAM | 1 | 1 | |
| | | Stakeholder Consultation (third party) | During RIBA stage 4 conduct BREEAM compliant consultation with the relevant parties | 1 | 1 | |
| | | Sustainability Champion (design) | Sustainability Champion to be appointed during the feasibility stage (stage 1) and targets are agreed for BREEAM assessment no later than RIBA stage 2. | 1 | 1 | |
| | | Sustainability Champion (monitoring progress) | Sustainability Champion to monitor and report throughout RIBA stages to 2-4. | 1 | 1 | |
| | Man02 Life Cycle Costs and Service Life Planning | Elemental life cycle cost (LCC) | Conduct Elemental life cycle costing (LCC) at RIBA stage2 to be conducted in accordance with PD15686-5:2008 | 2 | 0 | |
| | | Component level LCC plan | Conduct life cycle costing (LCC) at RIBA stage C/D and a further LCC at RIBA stage D/E to be conducted in accordance with BS ISO 15686-5:2008 | 1 | 0 | |
| | | Capital cost reporting | Report the capital cost for the building in £ per m2. | 1 | 1 | |
| | Man03 Responsible Construction Practices | Pre-Requisite | All timber and timber based products used on the project will need to be legally harvested | - | - | One Credit (CCS) |
| | | Environmental Management | The principal contractor will need to operate an Environmental Management System (EMS) | 1 | 1 | One Credit (CCS) |
| | | Sustainability Champion (Construction) | A sustainability champion (AP) is to be appointed to monitor the project during the construction, handover and close out. | 1 | 0 | |
| | | Considerate Construction | Developer to register site to CCS. | 2 | 2 | |
| | | Monitoring of Construction Site Impacts - Utility | Monitor and record data on principal contractors/subcontractors' potable water consumption (m3) and energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation. | 1 | 1 | |
| | | Monitoring of Construction Site Impacts - Transport | Monitor and record data on transport movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site | 1 | 0 | |
| | Man04 Commissioning and Handover | Commissioning and Testing Schedule and Responsibilities | Commissioning schedule and testing that identifies includes a timescale for commissioning and re-commissioning of all complex/non-complex building services and control systems. | 1 | 1 | One Credit (BUG) |
| | | Commissioning Building Services | A specialist commissioning manager will need to be appointed during the design stage to provide commissioing advice during installation and handover/post handover. | 1 | 1 | |
| | | Testing and Inspecting Building Fabric | Thermographic survey to be carried out | 1 | 0 | |
| | | Handover | Training schedules and a building user guide to be developed prior to handover for the building occupiers and premises managers. | 1 | 1 | |
| | Man05 Aftercare | Aftercare Support | Resources to be put in place to offer aftercare support to the building occupiers | 1 | 1 | One Credit (seasonal commissioning) |
| | | Seasonal Commissioning | Seasonal commissioning activities to be completed over a minimum 12-month period once the building becomes substantially occupied | 1 | 1 | |
| | | Post Occupancy Evaluation | Post-occupancy evaluation (POE) exercise to be carried out one year after initial building occupation | 1 | 1 | |
| | | | **Total for Management** | **21** | **15** | |

# Former ICL Ground Udney Park Road - Senior Living Unit - New Construction 2014 Residential Institutions Assessment
# BREEAM Excellent - Fully Fitted Out

## Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Health and Wellbeing | Hea01 Visual Comfort | Glare Control | Demonstrate that all relevant building areas are using a glare control strategy | 1 | 1 | |
| | | Daylighting | Demonstrate that at least 80% of floor area in each occupied space is adequately day lit with a daylight factor of 2%. | 1 | 0 | |
| | | View Out | Demonstrate that 95% of the floor area in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out | 2 | 0 | |
| | | Internal and External Lighting Levels, Zoning and Control | Internal lighting in all relevant areas of the building to be designed to provide an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard.<br><br>External lighting located within the construction zone to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.<br><br>Internal lighting to be zoned to allow for occupant control in accordance with the criteria below for relevant areas present within the building. | 1 | 1 | |
| | Hea02 Indoor Air Quality | Indoor Air Quality Plan | An air quality plan for the building will need to be developed and carried out. | 1 | 1 | |
| | | Ventilation | The building should been designed to minimise the concentration and recirculation of pollutants in the building | 1 | 0 | |
| | | Volatile organic compound (VOC) emission levels (products) | Decorative paints and varnishes will need to meet the necessary criteria | 1 | 1 | |
| | | Volatile organic compound (VOC) emission levels (post construction) | Demonstrate that the emissions of VOCs and other substances from key internal finishes and fittings comply with best practice levels as demonstrated by the applicable BS. | 1 | 0 | |
| | | Adaptability - Potential for natural ventilation | The building ventilation strategy will need to be designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. | 1 | 0 | |
| | Hea04 Thermal Comfort | Thermal Modelling | Demonstrate that thermal comfort levels in occupied spaces of the building are assessed at the design stage to evaluate appropriate servicing options; ensuring appropriate thermal comfort levels are achieved. | 1 | 1 | |
| | | Adaptability for a Projected Climate Change Scenario | The thermal modelling demonstrates that the relevant requirements set out in criteria 3 (thermal modelling) are achieved for a projected climate change environment | 1 | 1 | |
| | | Thermal Zoning and Controls | Demonstrate that the modelling will inform the thermal zoning and controls strategy | 1 | 1 | |
| | Hea05 Acoustic Performance | Acoustic Performance Standards | Credits awarded based on airborne sound insulation and impact sound insulation performance against Building Regulations. | 4 | 4 | |
| | Hea06 Safety and Security | Safe Access | Identify and encourage effective measures that promote safe and secure use and access to and from the building | 1 | 1 | |
| | | Security of the Building | Security specialist to provide recommendations that ensure the design of the building is done to address issues raised in the security needs assessment (SNA) | 1 | 1 | |
| | | | **Total for Health and Wellbeing** | **19** | **13** | |
| Energy | Ene01 Reduction of Energy Use and Carbon | Energy Performance | Up to 12 credits to recognise and encourage buildings designed to minimise operational energy demand consumption and Carbon emissions. | 12 | 5 | Five credits |
| | Ene02 Energy Monitoring | Sub-Metering of Major Energy Consuming Systems | Demonstrate the provision of a BMS or accessible sub-metering strategy of major energy uses within the building. | 1 | 1 | First Credit |
| | Ene03 External Lighting | External Lighting | Energy-efficient external lighting to be specified with all light fittings controlled by the presence of daylight. | 1 | 1 | |
| | Ene04 Low Carbon Design | Passive design analysis | Analysis of the proposed building design/development to influence decisions made for the implementation of passive design solutions that reduce demands for energy consuming building services. | 1 | 0 | |
| | | Free cooling | Passive design analysis includes opportunities for the implementation of free cooling solutions and these strategies are used. | 1 | 0 | |
| | | Low zero carbon feasibility study | A feasibility study considering local (on-site and/or near site) low or zero carbon (LZC) technologies is to be carried out with the results implemented. | 1 | 1 | |
| | Ene08 Energy Efficient Equipment | Energy Efficient Equipment | To recognise and encourage procurement and commissioning of energy-efficient equipment to ensure optimum performance and energy savings. | 2 | 2 | |
| | | | **Total for Energy** | **19** | **10** | |

# Former ICL Ground Udney Park Road - Senior Living Unit - New Construction 2014 Residential Institutions Assessment BREEAM Excellent - Fully Fitted Out

## Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Transport | Tra01 Public Transport Accessibility | Public Transport Accessibility | 5 credits are available on a sliding scale based on the assessed buildings' accessibility to the public transport network. | 3 | 3 | |
| | Tra02 Proximity to Amenities | Proximity to Amenities | 1 credit is available where evidence provided demonstrates that the building is located within 500m of accessible local amenities appropriate to the building type and its users. | 1 | 1 | |
| | | Proximity to Amenities | 1 credit is available where evidence provided demonstrates that the building is located within 1000m of accessible local amenities appropriate to the building type and its users. | 1 | 1 | |
| | Tra03 Cyclist Facilities | Cycle Storage | 1 credit available where evidence provided demonstrates that covered, secure and well-lit cycle storage facilities are provided for all building users. | 1 | 1 | |
| | Tra04 Maximum Car Parking Capacity | Car parking capacity | Minimise car parking spaces to encourage the use of alternative means of transport to the building. | 2 | 2 | |
| | Tra05 Travel Plan | Travel Plan | 1 credit available where evidence provided demonstrates that a travel plan has been developed and tailored to the specific needs of the building users. | 1 | 1 | |
| | | | **Total for Transport** | **9** | **9** | |
| Water | Wat01 Water Consumption | Water Consumption | 5 credits available where evidence provided demonstrates that the specification includes taps, urinals, WCs and showers that consume less potable water in use than standard specifications for the same type of fittings. | 5 | 3 | One Credit |
| | Wat02 Water Monitoring | Water Monitoring | 1 credit available where evidence provided demonstrates that a water meter with a pulsed output will be installed on the mains supply to each building/unit. (Minimum requirement for a pulsed water meter on mains for Good) | 1 | 1 | Criterion 1 only |
| | Wat03 Water Leak Detection and Prevention | Leak detection systems | Demonstrate that a leak detection system will be installed on the buildings main water supply. | 1 | 1 | |
| | | Flow control devices | Flow control devices that regulate the supply of water to each WC area to be installed. | 1 | 1 | |
| | Wat04 Water Efficient Equipment | Water Efficient Equipment | Reduction of unregulated water consumption by encouraging the specification of water efficient equipment | 1 | 1 | |
| | | | **Total for Water** | **9** | **7** | |
| Materials | Mat01 Life Cycle Impacts | Life Cycle Impacts | The credits are determined using the Green Guide to Specification ratings for the major building elements. | 6 | 4 | |
| | Mat02 Hard Landscaping and Boundary Protection | Hard Landscaping and Boundary Protection | 1 credit available where evidence provided demonstrates that at least 80% of the combined area of external hard landscaping and boundary protection specifications achieve an A or A+ rating, as defined by the Green Guide to Specification. | 1 | 1 | |
| | Mat03 Responsible Sourcing of Materials | Responsible Sourcing of Materials | All timber is legally harvested and traded | - | - | Criterion 1 Only |
| | | Responsible Sourcing of Materials | Materials to be sourced in accordance with a procurement plan | 1 | 1 | |
| | | Responsible Sourcing of Materials | 3 credits available where evidence provided demonstrates that 80% of the assessed materials in the building elements are responsibly sourced. Additionally 100% of any timber must be sourced in accordance with the UK Governments Timber Procurement policy. (This is mandatory for pass) | 3 | 1 | |
| | Mat04 Insulation | Embodied Impact | Thermal insulation products used in the building are to have a low embodied impact relative (insulation index the same as or greater than 2.5) to their thermal properties. | 1 | 1 | |
| | Mat05 Designing for durability and resilience | Designing for durability and resilience | Encourage the adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation. | 1 | 1 | |
| | Mat06 Material Efficiency | Material Efficiency | Opportunities will need to be identified in order to optimise the use of materials in all stages of the design. | 1 | 0 | |
| | | | **Total for Materials** | **14** | **9** | |
| Waste | Wst01 Construction Waste Management | Construction Resource Efficiency | 3 credits available where evidence provided demonstrates that the amount of non-hazardous construction waste (m3/100m2 or tonnes100m2) generated on site by the development is the same as or better than good or best practice levels. | 3 | 2 | |
| | | Diversion from Landfill | 1 credit available where evidence provided demonstrates that a significant majority of non-hazardous construction and demolition waste generated by the development will be diverted from landfill and reused or recycled. | 1 | 1 | |
| | Wst02 Recycled Aggregates | Recycled Aggregates | 1 credit available where evidence provided demonstrates the significant use of recycled or secondary aggregates in 'high-grade' building aggregate uses. | 1 | 0 | |
| | Wst03 Operational Waste | Operational Waste | 1 credit available where a central, dedicated space is provided for the storage of the building's recyclable waste streams. | 1 | 1 | One Credit |
| | | Operational Waste | Multi residential buildings with self contained dwellings/bedsits: Each dwelling has a provision of three internal storage containers. | - | – | |
| | Wst05 Adaptation to climate change | Adaptation to climate change – structural and fabric resilience | Conduct a climate change adaptation strategy appraisal for structural and fabric resilience. An Exemplary credit can be awarded where a holistic approach on adaptation to climate change has been covered. | 1 | 0 | |
| | Wst06 Functional Adaptability | Functional Adaptability | Encourage measures taken to accommodate future changes of use of the building over its lifespan. | 1 | 1 | |
| | | | **Total for Waste** | **8** | **5** | |

# Former ICL Ground Udney Park Road - Senior Living Unit - New Construction 2014 Residential Institutions Assessment BREEAM Excellent - Fully Fitted Out

## Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Land Use and Ecology | Le01 Site Selection | Previously Developed Land | 1 credit available where evidence is provided to demonstrate that the majority of the footprint of the proposed development falls within the boundary of previously developed land. | 1 | 1 | |
| | | Contaminated Land | 1 credit available where evidence is provided to demonstrate that the land used for the new development has, prior to development, been defined as contaminated and adequate remedial steps have been taken to decontaminate the site prior to construction. | 1 | 0 | |
| | Le02 Ecological Value of Site and Protection of Ecological Features | Ecological Value of Site | Demonstrate that the site's construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works. | 1 | 1 | |
| | | Protection of Ecological Features | Where evidence provided demonstrates that the site's construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works. | 1 | 1 | |
| | Le03 Minimising impact on existing site ecology | Change in ecological value. | The change in ecological value of the site is to be equal to or greater than zero plant species. | 2 | 2 | One Credit |
| | Le04 Enhancing Site Ecology | Ecologist's report and recommendations | Ecologist's report to be undertaken to include appropriate recommendations to enhance the sites ecology. | 1 | 1 | |
| | | Increase in ecological value | Encourage actions taken to enhance the ecological value of the site as a result of development. | 1 | 0 | |
| | Le05 Long Term Impact on Biodiversity | Long Term Impact on Biodiversity | 1 credit available where the client has committed to achieving the mandatory requirements and at least two of the additional requirements.<br>2 credits available where the client has committed to achieving the mandatory requirements and at least four of the additional requirements. | 2 | 2 | |
| | | | **Total for Land Use and Ecology** | **10** | **8** | |
| Pollution | Pol01 Impact of Refrigerants | No Refrigerants | If there are no refrigerants 3 credits by default. | 3 | 3 | |
| | Pol02 NOx Emissions | NOx Emissions | The plant installed is to have NOx emission levels (measured on a dry basis at 0% excess O2) of either <100, <70 or <40 mg/kWh | 3 | 3 | |
| | Pol03 Surface Water Run Off | Flood Resilience - Low Risk | 2 credits available where evidence provided demonstrates that the assessed development is located in a zone defined as having a low annual probability of flooding. | 2 | 2 | |
| | | Surface Water Run Off | 1 credit available where drainage measures are specified to ensure peak rate of run-off from the site to the watercourses is no greater for the developed site than it was for the pre-development site. | 1 | 1 | |
| | | Surface Water Run Off | 1 credit where flooding of property will not occur in the event of a local drainage system failure. | 1 | 1 | |
| | | Minimising Watercourse Pollution | Confirmation that there will be no discharge from the development site for rainfall events up to 5mm. | 1 | 0 | |
| | Pol04 Reduction of Night Time Light Pollution | Reduction of Night Time Light Pollution | 1 credit available where evidence provided demonstrates that the external lighting design is in compliance with the guidance in the Institution of Lighting Engineers (ILE) Guidance notes for the reduction of obtrusive light, 2005. | 1 | 1 | |
| | Pol05 Noise Attenuation | Noise Attenuation | 1 credit available where evidence provided demonstrates that new sources of noise from the development do not give rise to the likelihood of complaints from existing noise-sensitive premises and amenity or wildlife areas that are within the locality of the site. | 1 | 1 | |
| | | | **Total for Pollution** | **13** | **12** | |

# Former ICL Ground Udney Park Road - Senior Living Unit - New Construction 2014 Residential Institutions Assessment BREEAM Excellent - Fully Fitted Out

## Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Innovation | Man03 Responsible Construction Practices | Criteria 7 | Exemplary level performance: a CCS score of 40 or more and a score of 7 in each of the 5 sections | 1 | 1 | |
| | Man05 Aftercare | Criteria 6 | Implement the resources to carry out the collection of data over a 3 year period. | 1 | 0 | |
| | Hea01 Visual Comfort | Criteria 14 | Exemplary daylight factors have been met. | 1 | 0 | |
| | Hea02 Indoor Air Quality | Criteria 15-18 | Minimising sources of air pollution - volatile organic compound (VOC) emission levels (products | 1 | 0 | |
| | Ene01 Reduction of Carbon Emissions | Criteria 2-4 | Up to 5 credits can be awarded when a building improves upon he EPR of 0.9 and is a net Carbon zero building. | 5 | 0 | |
| | Wat01 Water Consumption | Criteria 2 | 1 credit where evidence provided demonstrates that the specification includes taps, urinals, WCs and showers that consume less potable water in use than standard specifications for the same type of fittings (65% improvement) | 1 | 0 | |
| | Mat01 Life Cycle Impacts | Criteria 4-5 | Route 1: Where assessing four or more applicable building elements, the building achieves at least two points in addition to the total points in addition to the total points required to achieve maximum credits under the standard BREEAM criteria | 1 | 0 | |
| | Mat01 Life Cycle Impacts | Criteria 6-8 | Route 2: Where the design team has used an IMPACT compliant software to measure the environmental impact of the building. Where the design team can demonstrate how the use of an IMPACT compliant software has benefited the building terms of measuring and reducing its environmental impact. Where the design team submit BIIM from the IMPACT compliant software tool for the assessed building to BRE global. | 2 | 0 | |
| | Mat03 Responsible Sourcing of Materials | Criteria 4 | Where 70% of the points available have been achieved. | 1 | 0 | |
| | Wst01 Construction Site Waste Management | Criteria 6-8 | If the development achieves less than 1.6m3 per 100m2 or 1.9tonnes per 100m2 a exemplary credit is awarded. | 1 | 0 | |
| | Wst02 Recycled Aggregates | Criteria 4-6 | Where the total amount of recycled and/or secondary aggregate specified is greater than 35% of the total high grade aggregate specified for the project. To contribute to the total amount the percentage of high grade aggregate specified per application that is recycled and/or secondary aggregate must meet the exemplary minimum levels. | 1 | 0 | |
| | Wst05 Adaptation to Climate change | Criteria 2 | A holistic approach to the design and construction of the current building's life cycle, to mitigate against the impacts of climate change, is represented by the achievement of criteria within Hea04, Ene01, Ene04, Wat01, Mat05, Pol03. | 1 | 0 | |
| | | | **Total for Innovation** | **10** | **1** | |

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# Appendix D

Plot B – BREEAM Domestic Refurbishment ‘Excellent’

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# BREEAM Domestic Refurbishment Planning Pre-Assessment - FORMER ICL GROUND

BREEAM

| 71.37 | Total Predicted Score | Development Description | Completed by |
|---|---|---|---|
| Pass<br>Good<br>Very Good<br>**Excellent**<br>Outstanding | 30 Points<br>45 Points<br>55 Points<br>70 Points<br>85 Points | Former ICL Ground. Converted clubhouse to 9 assisted living units. | Zoë Lowther<br>ZL03<br>25.05.17 |

| | Issue | Credits Available | Credits Predicted | Design Assumptions Made |
|---|---|---|---|---|
| Management | **MAN 1**<br>Home User Guide (HUG) | 3 | 3 | Three credits - provision of a home users guide – containing the information listed in the User Guide Contents List<br><br>User Guide Contents List<br>The list below indicates the type of information that should be included<br>About BREEAM Domestic Refurbishment<br>Recommendations Report<br>Energy Efficiency<br>Water Use<br>Transport Facilities<br>Materials and Waste<br>Emergency Information<br>Local Amenities<br>Provision of Information in Alternative Formats<br>Links and references |
| | **MAN 2**<br>Responsible Construction Practices<br>(+ 1 Innovation Credit) | 2 | 2 | Different responsible construction practices criteria for small and large scale projects.<br>Large scale – assessed using the Considerate Constructors Scheme score or Alternative scheme checklist<br>Small scale – option to assess against Small scale checklist |
| | **MAN 3**<br>Construction Site Impacts | 1 | 1 | Construction site impacts are assessed against BREEAM Domestic Refurbishment Checklists. The checklists consider issues such as CO2 production, water consumption and the sourcing of construction materials. |
| | **MAN 4**<br>Security | 2 | 2 | First Credit - achieving best practice security requirements for external doors and windows and minimum security requirements for retained doors and windows.<br>Second Credit - implementing the principles and guidance for Secured by Design - Section 2 |
| | **MAN 5**<br>Protection and Enhancement of Ecological Features<br>(+ 1 Innovation Credit) | 1 | 1 | First Credit - protection of ecological features that have been identified during the site survey<br><br>An Innovation credit is available for exemplary performance |
| | **MAN 6**<br>Project Management<br>(+ 2 Innovation Credit) | 2 | 2 | First Credit - assigning Project Roles and Responsibility<br>Second Credit - arranging a handover meeting and implementing a minimum of 2 methods of aftercare<br><br>Two Innovation credits are available for exemplary performance |
| **Total Management Category Predicted Score** | | **11** | **11** | **Credit Weighting - 1.09** |
| Health & Wellbeing | **HEA 1**<br>Daylighting | 2 | 1 | First Credit - maintaining good daylighting levels<br>Second Credit - achieving the minimum daylighting standards |
| | **HEA 2**<br>Sound Insulation | 4 | 4 | Credits are awarded for bringing the home up to and beyond national regulations. |
| | **HEA 3**<br>Volatile Organic Compounds | 1 | 1 | One Credit—for avoiding the use of VOCs—assessed by ensuring applicable products have met European standards and testing requirements, or equivalent national standards |
| | **HEA 4**<br>Inclusive Design | 2 | 2 | All credits assessed against the accessibility template checklist<br>First Credit—achieving minimum accessibility<br>Second Credit—achieving advanced accessibility<br>An Innovation credit is available for exemplary performance |
| | **HEA 5**<br>Ventilation<br>**Minimum Standard** | 2 | 1 | First Credit—achieving minimum ventilation requirements for background, extract and purge ventilation.<br>Second Credit—achieving advanced ventilation requirements in line with Building regulations Part F<br>NB separate requirements for historic buildings |
| | **HEA 6**<br>Safety<br>**Minimum Standard** | 1 | 1 | One Credit—implementation of appropriate fire and carbon monoxide detection and alarm systems. |
| **Total Health & Wellbeing Category Predicted Score** | | **12** | **10** | **Credit Weighting - 1.41** |

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| | Issue | Credits Available | Credits Predicted | Design Assumptions Made |
|---|---|---|---|---|
| Energy & Carbon Dioxide Emissions | **ENE 1**<br>Improvement in Energy Efficiency Rating | 6 | 2.5 | Up to 6 credits for the improvement to the dwellings Energy Efficiency Rating. This issue is assessed using the Energy calculator and SAP or RdSAP - credit allocation is based on exceeding EER improvement benchmarks, from the baseline EER. |
| | **ENE 2**<br>Energy Efficiency Rating Post Refurbishment<br>**Minimum Standard** | 4 | 2.5 | Up to 4 credits available for the Energy Efficiency Rating post refurbishment.<br>Two exemplary credits are available.<br><br>Minimum Standards<br>≥50 BREEAM Pass level requires a minimum EER of 50<br>≥55 BREEAM Good level requires a minimum EER of 58<br>≥65 BREEAM Very Good level requires a minimum EER of 65<br>≥70 BREEAM Excellent level requires a minimum EER of 70<br>≥80 BREEAM Outstanding level requires a minimum EER of 81 |
| | **ENE 3**<br>Primary Energy Demand | 7 | 2 | Up to 7 credits available for the primary energy demand. Credit allocation is based on exceeding refurbishment benchmarks. |
| | **ENE 4**<br>Renewable Technologies | 2 | 0 | Up to 2 credits awarded depending on the % of the dwellings primary energy demand being met by low or zero carbon technologies.<br>Maximum Primary Energy Demand targets apply to ensure system and fabric efficiency is considered first. |
| | **ENE 5**<br>Energy Labelled White Goods | 2 | 1 | First credit - provision of fridges, freezers and fridge freezers with the appropriate label/information<br>Second credit – provision of washing machines, dishwashers and washer dryers with the appropriate label/information |
| | **ENE 6**<br>Drying Space | 1 | 1 | One credit – provision of adequate drying space – based on the number of bedrooms within the dwelling |
| | **ENE 7**<br>Lighting | 2 | 2 | First credit – energy efficient external space and security lighting.<br>Second credit – internal lighting that does not exceed the maximum average wattage across the total floor area - 9 watts/m2 |
| | **ENE 8**<br>Energy Display Devices | 2 | 1 | One credit – energy display device displays either electricity consumption data or heating fuel consumption data<br>Two credits – energy display device displays both electricity and primary heating fuel consumption data<br>An exemplary credit is available |
| | **ENE 9**<br>Cycle Storage | 2 | 2 | Two credits available for providing compliant cycle spaces, with the number of spaces required depending on the number of bedrooms in the dwelling. |
| | **ENE 10**<br>Home Office | 1 | 1 | One credit - provision of a compliant home office space. |
| **Total Energy & CO2 Category Predicted Score** | | **29** | **15** | **Credit Weighting - 1.48** |
| | **WAT 1**<br>Indoor Water Use<br>(+ 1 Innovation Credit)<br>**Minimum Standard** | 3 | 3 | Credit allocation based on the water consumption of terminal fittings<br>Water consumption targets required for the following BREEAM ratings:<br>BREEAM Very Good level requires consumption to be 129-139 litres per person per day<br>BREEAM Excellent level requires a consumption to 107-117 litres per person per day<br>BREEAM Outstanding level requires a consumption of <95 litres per person per day |
| | **WAT 2**<br>External Water Use | 1 | 1 | One credit – provision of a rainwater collection system that is compliant and meets the size requirements OR where there is no external space |
| | **WAT 3**<br>Water Meter | 1 | 0 | One credit- For the existence or installation of an appropriate water meter |
| **Total Water Category Predicted Score** | | **5** | **4** | **Credit Weighting - 2.75** |

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| | Issue | Credits Available | Credits Predicted | Design Assumptions Made |
|---|---|---|---|---|
| Materials | **MAT 1**<br>Environmental Impact of Materials | 25 | 15 | Up to 25 credits available for the embodied impact and the thermal performance of; roofs, external walls, internal walls, windows and upper and ground floors.<br>Depending on the Green Guide rating of new materials and the impact of those materials on improving the thermal performance of the materials that make up these elements. |
| | **MAT 2**<br>Responsible Sourcing of Materials - Basic Building Elements<br>**Minimum Standard** | 12 | 8 | Up to 12 credits are available depending on the responsible sourcing tier levels of the applicable new materials.<br>Minimum standards - that all new timber is legally sourced. |
| | **MAT3**<br>Insulation | 8 | 8 | Any new insulation in external walls, ground floors, roofs and building services is assessed as a minimum requirement.<br>First four credits – embodied impact of new insulation –assessed using the Mat3 calculator based on the insulation index.<br>Second four credits – responsible sourcing of a minimum of 80% of insulation OR where no new insulation is specified and the dwelling achieves a minimum of 2.5 credits in issue Ene 02. |
| **Total Materials Category Predicted Score** | | **45** | **31** | **Credit Weighting - 0.17** |
| Waste | **WAS 1**<br>Household Waste | 2 | 2 | First credit – provision of recycling storage facilities<br>Second credit – provision of composting facilities<br>Within this issue there are different criteria depending on the collection scheme the dwelling is served by and if the dwelling has external space. |
| | **WAS 2**<br>Refurbishment Site Waste Management (+ 1 Innovation Credit) | 3 | 3 | Credits are awarded for the implementation of a SWMP.<br>The requirements of the SWMP differ depending on the value of the project.<br>Innovation credits are available |
| **Total Waste Category Predicted Score** | | **5** | **5** | **Credit Weighting - 0.6** |
| Pollution | **POL 1**<br>NOx Emissions | 3 | 3 | Credit allocation is tiered and awarded based on the amount of NOx emissions arising from the operation of space heating and hot water systems. |
| | **POL 2**<br>Surface Water Run off | 3 | 3 | First credit – where the refurbishment has had a neutral impact on surface water from the site<br>Second credit – basic level of reducing run-off from site<br>Third credit – advanced level of reducing run-off from site including an allowance for climate change<br>An exemplary credit is available |
| | **POL 3**<br>Flooding<br>**Minimum Standard** | 2 | 2 | Criteria are based on the results of a flood risk assessment. Where the site is defined as medium or high flood risk there are additional requirements for flood resilience and resistance strategies.<br>Minimum standards – requirement of two or more credits under this issue to achieve an excellent or outstanding rating |
| **Total Pollution Category Predicted Score** | | **8** | **8** | **Credit Weighting - 0.75** |
| Innovation | **INN 1**<br>Innovation | 10 | 0 | Up to 10 credits available for a collection of innovative products or techniques used in the refurbishment process.<br>Each issue is assigned an number of credits that can be awarded for showing innovation.<br>One innovation credit can be awarded for each individual BREEAM issue exemplary performance level complied with and one innovation credit can be awarded for each innovation application approved by BRE Global |
| **Total Innovation Category Predicted Score** | | **10** | **0** | |

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# Appendix E

GP Surgery – BREEAM New Construction Shell only ‘Excellent’

HODKINSON

# Former ICL Ground Udney Park Road - GP Surgery - New Construction 2014 Healthcare Assessment
# BREEAM Excellent - Shell Only Healthcare

## Pre-Assessment Stage Summary

| | | | |
|---|---|---|---|
| Project Name - Number | Former ICL Ground Udney Park Road - GP Surgery - | | |
| Client | Sam Hobson - Quantum Group | BREEAM Assessor | Zeta Watkins |
| Project Town - Postcode | Teddington - TW11 | Project Manager | Christopher Scobie |
| Development Description | Development that will provide an Older People's Care Community and a GP surgery (which this pre-assessment relates too). 8 acres of the site will also be gifted to the Teddington Community Sports Ground CIC for publicly accessible sport, leisure and community facilities. | | |

| | Credits Available | Credits Targeted | Contribution | Mandatory |
|---|---|---|---|---|
| Man01 | 4 | 4 | 3.33% | |
| Man02 | 4 | 1 | 0.83% | |
| Man03 | 6 | 5 | 4.17% | Yes |
| Man04 | 1 | 0 | 0.00% | Yes |
| | | | | |
| **Management Total** | **15** | **10** | **8.33%** | |
| | | | | |
| Hea01 | 5 | 1 | 1.11% | |
| Hea02 | 1 | 0 | 0.00% | |
| | | | | |
| | | | | |
| Hea05 | 1 | 1 | 1.11% | |
| Hea06 | 2 | 2 | 2.22% | |
| **Health & Wellbeing Total** | **9** | **4** | **4.44%** | |
| | | | | |
| Ene01 | 12 | 12 | 10.88% | Yes |
| | | | | |
| Ene03 | 1 | 1 | 0.91% | |
| Ene04 | 3 | 1 | 0.91% | |
| | | | | |
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| | | | | |
| | | | | |
| | | | | |
| **Energy Total** | **16** | **14** | **12.68%** | |
| | | | | |
| Tra01 | 5 | 4 | 4.18% | |
| Tra02 | 1 | 1 | 1.05% | |
| Tra03 | 2 | 0 | 0.00% | |
| Tra04 | 2 | 2 | 2.09% | |
| Tra05 | 1 | 1 | 1.05% | |
| **Transport Total** | **11** | **8** | **8.36%** | |
| | | | | |
| **Innovation Total** | **10** | **1** | **1.00%** | |

| | Credits Available | Credits Targeted | Contribution | Mandatory |
|---|---|---|---|---|
| | | | | |
| Wat02 | 1 | 1 | 1.33% | Yes |
| Wat03 | 1 | 1 | 1.33% | |
| Wat04 | 1 | 1 | 1.33% | |
| **Water Total** | **3** | **3** | **4.00%** | |
| | | | | |
| Mat01 | 6 | 4 | 5.00% | |
| Mat02 | 1 | 1 | 1.25% | |
| Mat03 | 4 | 2 | 2.50% | Yes |
| Mat04 | 1 | 1 | 1.25% | |
| Mat05 | 1 | 1 | 1.25% | |
| Mat06 | 1 | 0 | 0.00% | |
| **Materials Total** | **14** | **9** | **11.25%** | |
| | | | | |
| Wst01 | 4 | 3 | 4.13% | |
| Wst02 | 1 | 0 | 0.00% | |
| Wst03 | 1 | 1 | 1.38% | Yes |
| | | | | |
| Wst05 | 1 | 0 | 0.00% | |
| Wst06 | 1 | 1 | 1.38% | |
| **Waste Total** | **8** | **5** | **6.87%** | |
| | | | | |
| LE01 | 2 | 1 | 1.30% | |
| LE02 | 2 | 2 | 2.60% | |
| LE03 | 2 | 2 | 2.60% | Yes |
| LE04 | 2 | 1 | 1.30% | |
| LE05 | 2 | 2 | 2.60% | |
| **Land Use/Ecology Total** | **10** | **8** | **10.40%** | |
| | | | | |
| | | | | |
| | | | | |
| Pol03 | 5 | 4 | 4.00% | |
| Pol04 | 1 | 1 | 1.00% | |
| | | | | |
| **Pollution Total** | **6** | **5** | **5.00%** | |

| Indicative Target Building Score | Indicative Target Building Rating |
|---|---|
| **72.33%** | **Excellent** |

| Current Building Score | Current Building Rating |
|---|---|
| | |

| Revision | Date | Revision Details | Author | Checked By |
|---|---|---|---|---|
| *v1* | 15/06/2017 | Issued for comment | ZW | CS |
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# Former ICL Ground Udney Park Road - GP Surgery - New Construction 2014 Healthcare Assessment
# BREEAM Excellent - Shell Only

## Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Management | Man01 Project brief and design | Stakeholder Consultation (project delivery) | Roles and responsibilities of the delivery stakeholders to be defined in accordance with BREEAM | 1 | 1 | |
| | | Stakeholder Consultation (third party) | During RIBA stage 4 conduct BREEAM compliant consultation with the relevant parties | 1 | 1 | |
| | | Sustainability Champion (design) | Sustainability Champion to be appointed during the feasibility stage (stage 1) and targets are agreed for BREEAM assessment no later than RIBA stage 2. | 1 | 1 | |
| | | Sustainability Champion (monitoring progress) | Sustainability Champion to monitor and report throughout RIBA stages to 2-4. | 1 | 1 | |
| | Man02 Life Cycle Costs and Service Life Planning | Elemental life cycle cost (LCC) | Conduct Elemental life cycle costing (LCC) at RIBA stage2 to be conducted in accordance with PD15686-5:2008 | 2 | 0 | |
| | | Component level LCC plan | Conduct life cycle costing (LCC) at RIBA stage C/D and a further LCC at RIBA stage D/E to be conducted in accordance with BS ISO 15686-5:2008 | 1 | 0 | |
| | | Capital cost reporting | Report the capital cost for the building in £ per m2. | 1 | 1 | |
| | Man03 Responsible Construction Practices | Pre-Requisite | All timber and timber based products used on the project will need to be legally harvested | - | - | One Credit (CCS) |
| | | Environmental Management | The principal contractor will need to operate an Environmental Management System (EMS) | 1 | 1 | One Credit (CCS) |
| | | Sustainability Champion (Construction) | A sustainability champion (AP) is to be appointed to monitor the project during the construction, handover and close out. | 1 | 0 | |
| | | Considerate Construction | Developer to register site to CCS. | 2 | 2 | |
| | | Monitoring of Construction Site Impacts - Utility | Monitor and record data on principal contractors/subcontractors' potable water consumption (m3) and energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation. | 1 | 1 | |
| | | Monitoring of Construction Site Impacts - Transport | Monitor and record data on transport movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site | 1 | 1 | |
| | Man04 Commissioning and Handover | Testing and Inspecting Building Fabric | Thermographic survey to be carried out | 1 | 0 | One Credit (BUG) |
| | | | **Total for Management** | **15** | **10** | |
| Health and Wellbeing | Hea01 Visual Comfort | Daylighting | Demonstrate that at least 80% of floor area in each occupied space is adequately day lit with a daylight factor of 2%. | 2 | 0 | |
| | | View Out | Demonstrate that 95% of the floor area in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out | 2 | 0 | |
| | | Internal and External Lighting Levels, Zoning and Control | Internal lighting in all relevant areas of the building to be designed to provide an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard.<br><br>External lighting located within the construction zone to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.<br><br>Internal lighting to be zoned to allow for occupant control in accordance with the criteria below for relevant areas present within the building. | 1 | 1 | |
| | Hea02 Indoor Air Quality | Adaptability - Potential for natural ventilation | The building ventilation strategy will need to be designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. | 1 | 0 | |
| | Hea05 Acoustic Performance | Indoor Ambient Noise Level | Achieve the required indoor ambient noise level standards. | 1 | 1 | |
| | Hea06 Safety and Security | Safe Access | Identify and encourage effective measures that promote safe and secure use and access to and from the building | 1 | 1 | |
| | | Security of the Building | Security specialist to provide recommendations that ensure the design of the building is done to address issues raised in the security needs assessment (SNA) | 1 | 1 | |
| | | | **Total for Health and Wellbeing** | **9** | **4** | |
| Energy | Ene01 Reduction of Energy Use and Carbon | Energy Performance | Up to 12 credits to recognise and encourage buildings designed to minimise operational energy demand consumption and Carbon emissions. | 12 | 12 | Five credits |
| | Ene03 External Lighting | External Lighting | Energy-efficient external lighting to be specified with all light fittings controlled by the presence of daylight. | 1 | 1 | |
| | Ene04 Low Carbon Design | Passive design analysis | Analysis of the proposed building design/development to influence decisions made for the implementation of passive design solutions that reduce demands for energy consuming building services. | 1 | 0 | |
| | | Free cooling | Passive design analysis includes opportunities for the implementation of free cooling solutions and these strategies are used. | 1 | 0 | |
| | | Low zero carbon feasibility study | A feasibility study considering local (on-site and/or near site) low or zero carbon (LZC) technologies is to be carried out with the results implemented. | 1 | 1 | |
| | | | **Total for Energy** | **16** | **14** | |

# Former ICL Ground Udney Park Road - GP Surgery - New Construction 2014 Healthcare Assessment
# BREEAM Excellent - Shell Only

## Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Transport | Tra01 Public Transport Accessibility | Public Transport Accessibility | 5 credits are available on a sliding scale based on the assessed buildings' accessibility to the public transport network. | 5 | 4 | |
| | Tra02 Proximity to Amenities | Proximity to Amenities | 1 credit is available where evidence provided demonstrates that the building is located within 500m of accessible local amenities appropriate to the building type and its users. | 1 | 1 | |
| | Tra03 Cyclist Facilities | Cycle Storage | 1 credit available where evidence provided demonstrates that covered, secure and well-lit cycle storage facilities are provided for all building users. | 1 | 0 | |
| | | Cyclist Facilities | 2 credits available where, in addition to the above, adequate changing facilities are provided for staff use. | 1 | 0 | |
| | Tra04 Maximum Car Parking Capacity | Car parking capacity | Minimise car parking spaces to encourage the use of alternative means of transport to the building. | 2 | 2 | |
| | Tra05 Travel Plan | Travel Plan | 1 credit available where evidence provided demonstrates that a travel plan has been developed and tailored to the specific needs of the building users. | 1 | 1 | |
| | | | **Total for Transport** | **11** | **8** | |
| Water | Wat02 Water Monitoring | Water Monitoring | 1 credit available where evidence provided demonstrates that a water meter with a pulsed output will be installed on the mains supply to each building/unit. (Minimum requirement for a pulsed water meter on mains for Good) | 1 | 1 | Criterion 1 only |
| | Wat03 Water Leak Detection and Prevention | Leak detection systems | Demonstrate that a leak detection system will be installed on the buildings main water supply. | 1 | 1 | |
| | Wat04 Water Efficient Equipment | Water Efficient Equipment | Reduction of unregulated water consumption by encouraging the specification of water efficient equipment | 1 | 1 | |
| | | | **Total for Water** | **3** | **3** | |
| Materials | Mat01 Life Cycle Impacts | Life Cycle Impacts | The credits are determined using the Green Guide to Specification ratings for the major building elements. | 6 | 4 | |
| | Mat02 Hard Landscaping and Boundary Protection | Hard Landscaping and Boundary Protection | 1 credit available where evidence provided demonstrates that at least 80% of the combined area of external hard landscaping and boundary protection specifications achieve an A or A+ rating, as defined by the Green Guide to Specification. | 1 | 1 | |
| | Mat03 Responsible Sourcing of Materials | Responsible Sourcing of Materials | All timber is legally harvested and traded | - | - | Criterion 1 Only |
| | | Responsible Sourcing of Materials | Materials to be sourced in accordance with a procurement plan | 1 | 1 | |
| | | Responsible Sourcing of Materials | 3 credits available where evidence provided demonstrates that 80% of the assessed materials in the building elements are responsibly sourced. Additionally 100% of any timber must be sourced in accordance with the UK Governments Timber Procurement policy. (This is mandatory for pass) | 3 | 1 | |
| | Mat04 Insulation | Embodied Impact | Thermal insulation products used in the building are to have a low embodied impact relative (insulation index the same as or greater than 2.5) to their thermal properties. | 1 | 1 | |
| | Mat05 Designing for durability and resilience | Designing for durability and resilience | Encourage the adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation. | 1 | 1 | |
| | Mat06 Material Efficiency | Material Efficiency | Opportunities will need to be identified in order to optimise the use of materials in all stages of the design. | 1 | 0 | |
| | | | **Total for Materials** | **14** | **9** | |
| Waste | Wst01 Construction Waste Management | Construction Resource Efficiency | 3 credits available where evidence provided demonstrates that the amount of non-hazardous construction waste (m3/100m2 or tonnes100m2) generated on site by the development is the same as or better than good or best practice levels. | 3 | 2 | |
| | | Diversion from Landfill | 1 credit available where evidence provided demonstrates that a significant majority of non-hazardous construction and demolition waste generated by the development will be diverted from landfill and reused or recycled. | 1 | 1 | |
| | Wst02 Recycled Aggregates | Recycled Aggregates | 1 credit available where evidence provided demonstrates the significant use of recycled or secondary aggregates in 'high-grade' building aggregate uses. | 1 | 0 | |
| | Wst03 Operational Waste | Operational Waste | 1 credit available where a central, dedicated space is provided for the storage of the building's recyclable waste streams. | 1 | 1 | One Credit |
| | Wst05 Adaptation to climate change | Adaptation to climate change – structural and fabric resilience | Conduct a climate change adaptation strategy appraisal for structural and fabric resilience. An Exemplary credit can be awarded where a holistic approach on adaptation to climate change has been covered. | 1 | 0 | |
| | Wst06 Functional Adaptability | Functional Adaptability | Encourage measures taken to accommodate future changes of use of the building over its lifespan. | 1 | 1 | |
| | | | **Total for Waste** | **8** | **5** | |

# Former ICL Ground Udney Park Road - GP Surgery - New Construction 2014 Healthcare Assessment
# BREEAM Excellent - Shell Only

## Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Land Use and Ecology | Le01 Site Selection | Previously Developed Land | 1 credit available where evidence is provided to demonstrate that the majority of the footprint of the proposed development falls within the boundary of previously developed land. | 1 | 1 | |
| | | Contaminated Land | 1 credit available where evidence is provided to demonstrate that the land used for the new development has, prior to development, been defined as contaminated and adequate remedial steps have been taken to decontaminate the site prior to construction. | 1 | 0 | |
| | Le02 Ecological Value of Site and Protection of Ecological Features | Ecological Value of Site | Demonstrate that the site's construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works. | 1 | 1 | |
| | | Protection of Ecological Features | Where evidence provided demonstrates that the site's construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works. | 1 | 1 | |
| | Le03 Minimising impact on existing site ecology | Change in ecological value. | The change in ecological value of the site is to be equal to or greater than zero plant species. | 2 | 2 | One Credit |
| | Le04 Enhancing Site Ecology | Ecologist's report and recommendations | Ecologist's report to be undertaken to include appropriate recommendations to enhance the sites ecology. | 1 | 1 | |
| | | Increase in ecological value | Encourage actions taken to enhance the ecological value of the site as a result of development. | 1 | 0 | |
| | Le05 Long Term Impact on Biodiversity | Long Term Impact on Biodiversity | 1 credit available where the client has committed to achieving the mandatory requirements and at least two of the additional requirements.<br>2 credits available where the client has committed to achieving the mandatory requirements and at least four of the additional requirements. | 2 | 2 | |
| | | | **Total for Land Use and Ecology** | **10** | **8** | |
| Pollution | Pol03 Surface Water Run Off | Flood Resilience - Low Risk | 2 credits available where evidence provided demonstrates that the assessed development is located in a zone defined as having a low annual probability of flooding. | 2 | 2 | |
| | | Surface Water Run Off | 1 credit available where drainage measures are specified to ensure peak rate of run-off from the site to the watercourses is no greater for the developed site than it was for the pre-development site. | 1 | 1 | |
| | | Surface Water Run Off | 1 credit where flooding of property will not occur in the event of a local drainage system failure. | 1 | 1 | |
| | | Minimising Watercourse Pollution | Confirmation that there will be no discharge from the development site for rainfall events up to 5mm. | 1 | 0 | |
| | Pol04 Reduction of Night Time Light Pollution | Reduction of Night Time Light Pollution | 1 credit available where evidence provided demonstrates that the external lighting design is in compliance with the guidance in the Institution of Lighting Engineers (ILE) Guidance notes for the reduction of obtrusive light, 2005. | 1 | 1 | |
| | | | **Total for Pollution** | **6** | **5** | |
| Innovation | Man03 Responsible Construction Practices | Criteria 7 | Exemplary level performance: a CCS score of 40 or more and a score of 7 in each of the 5 sections | 1 | 1 | |
| | Hea01 Visual Comfort | Criteria 14 | Exemplary daylight factors have been met. | 1 | 0 | |
| | Ene01 Reduction of Carbon Emissions | Criteria 2-4 | Up to 5 credits can be awarded when a building improves upon he EPR of 0.9 and is a net Carbon zero building. | 5 | 0 | |
| | Mat01 Life Cycle Impacts | Criteria 4-5 | Route 1: Where assessing four or more applicable building elements, the building achieves at least two points in addition to the total points in addition to the total points required to achieve maximum credits under the standard BREEAM criteria | 1 | 0 | |
| | Mat01 Life Cycle Impacts | Criteria 6-8 | Route 2: Where the design team has used an IMPACT compliant software to measure the environmental impact of the building. Where the design team can demonstrate how the use of an IMPACT compliant software has benefited the building terms of measuring and reducing its environmental impact. Where the design team submit BIIM from the IMPACT compliant software tool for the assessed building to BRE global. | 2 | 0 | |
| | Mat03 Responsible Sourcing of Materials | Criteria 4 | Where 70% of the points available have been achieved. | 1 | 0 | |
| | Wst01 Construction Site Waste Management | Criteria 6-8 | If the development achieves less than 1.6m3 per 100m2 or 1.9tonnes per 100m2 a exemplary credit is awarded. | 1 | 0 | |
| | Wst02 Recycled Aggregates | Criteria 4-6 | Where the total amount of recycled and/or secondary aggregate specified is greater than 35% of the total high grade aggregate specified for the project. To contribute to the total amount the percentage of high grade aggregate specified per application that is recycled and/or secondary aggregate must meet the exemplary minimum levels. | 1 | 0 | |
| | Wst05 Adaptation to Climate change | Criteria 2 | A holistic approach to the design and construction of the current building's life cycle, to mitigate against the impacts of climate change, is represented by the achievement of criteria within Hea04, Ene01, Ene04, Wat01, Mat05, Pol03. | 1 | 0 | |
| | | | **Total for Innovation** | **10** | **1** | |

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# Appendix F

New Clubhouse – BREEAM Other Buildings New Construction ‘Excellent’

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# Former ICL Ground Udney Park Road - Community Space - New Construction 2014 Non-Residential Institutions Assessment
# BREEAM Excellent - Fully Fitted Out Non-Residential Institutions

## Pre-Assessment Stage Summary

| | | | |
|---|---|---|---|
| Project Name - Number | Former ICL Ground Udney Park Road - Community Space - | | |
| Client | Sam Hobson - Quantum Group | BREEAM Assessor | Zeta Watkins |
| Project Town - Postcode | Teddington - TW11 | Project Manager | Christopher Scobie |
| Development Description | Development that will provide an Older People's Care Community and a GP surgery. 8 acres of the site will also be gifted to the Teddington Community Sports Ground CIC for publicly accessible sport, leisure and community facilities (which this pre-assessment relates to) | | |

| | Credits Available | Credits Targeted | Contribution | Mandatory |
|---|---|---|---|---|
| Man01 | 4 | 4 | 2.29% | |
| Man02 | 4 | 1 | 0.57% | |
| Man03 | 6 | 5 | 2.86% | Yes |
| Man04 | 4 | 3 | 1.71% | Yes |
| Man05 | 3 | 3 | 1.71% | Yes |
| **Management Total** | **21** | **16** | **9.14%** | |
| | | | | |
| Hea01 | 4 | 2 | 1.76% | |
| Hea02 | 5 | 2 | 1.76% | |
| | | | | |
| Hea04 | 3 | 3 | 2.65% | |
| Hea05 | 3 | 3 | 2.65% | |
| Hea06 | 2 | 2 | 1.76% | |
| **Health & Wellbeing Total** | **17** | **12** | **10.58%** | |
| | | | | |
| Ene01 | 12 | 8 | 6.00% | Yes |
| Ene02 | 2 | 2 | 1.50% | Yes |
| Ene03 | 1 | 1 | 0.75% | |
| Ene04 | 3 | 1 | 0.75% | |
| | | | | |
| | | | | |
| | | | | |
| Ene08 | 2 | 2 | 1.50% | |
| | | | | |
| **Energy Total** | **20** | **14** | **10.50%** | |
| | | | | |
| Tra01 | 5 | 3 | 2.45% | |
| Tra02 | 1 | 1 | 0.82% | |
| Tra03 | 2 | 2 | 1.64% | |
| Tra04 | 2 | 1 | 0.82% | |
| Tra05 | 1 | 1 | 0.82% | |
| **Transport Total** | **11** | **8** | **6.54%** | |
| | | | | |
| **Innovation Total** | **10** | **1** | **1.00%** | |

| | Credits Available | Credits Targeted | Contribution | Mandatory |
|---|---|---|---|---|
| Wat01 | 5 | 3 | 2.33% | Yes |
| Wat02 | 1 | 1 | 0.78% | Yes |
| Wat03 | 2 | 2 | 1.56% | |
| Wat04 | 1 | 1 | 0.78% | |
| **Water Total** | **9** | **7** | **5.44%** | |
| | | | | |
| Mat01 | 6 | 4 | 3.86% | |
| Mat02 | 1 | 1 | 0.96% | |
| Mat03 | 4 | 2 | 1.93% | Yes |
| Mat04 | 1 | 1 | 0.96% | |
| Mat05 | 1 | 1 | 0.96% | |
| Mat06 | 1 | 0 | 0.00% | |
| **Materials Total** | **14** | **9** | **8.67%** | |
| | | | | |
| Wst01 | 4 | 3 | 3.19% | |
| Wst02 | 1 | 0 | 0.00% | |
| Wst03 | 1 | 1 | 1.06% | Yes |
| | | | | |
| Wst05 | 1 | 0 | 0.00% | |
| Wst06 | 1 | 1 | 1.06% | |
| **Waste Total** | **8** | **5** | **5.31%** | |
| | | | | |
| LE01 | 2 | 1 | 1.00% | |
| LE02 | 2 | 2 | 2.00% | |
| LE03 | 2 | 2 | 2.00% | Yes |
| LE04 | 2 | 1 | 1.00% | |
| LE05 | 2 | 2 | 2.00% | |
| **Land Use/Ecology Total** | **10** | **8** | **8.00%** | |
| | | | | |
| Pol01 | 3 | 3 | 2.31% | |
| Pol02 | 3 | 3 | 2.31% | |
| Pol03 | 5 | 4 | 3.08% | |
| Pol04 | 1 | 1 | 0.77% | |
| Pol05 | 1 | 1 | 0.77% | |
| **Pollution Total** | **13** | **12** | **9.23%** | |

| Indicative Target Building Score | Indicative Target Building Rating |
|---|---|
| **74.41%** | **Excellent** |

| Current Building Score | Current Building Rating |
|---|---|
| | |

| Revision | Date | Revision Details | Author | Checked By |
|---|---|---|---|---|
| *v1* | 15/06/2017 | Issued for comment | ZW | CS |
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# Former ICL Ground Udney Park Road - Community Space - New Construction 2014 Non-Residential Institutions Assessment
## BREEAM Excellent - Fully Fitted Out
### Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Management | Man01 Project brief and design | Stakeholder Consultation (project delivery) | Roles and responsibilities of the delivery stakeholders to be defined in accordance with BREEAM | 1 | 1 | |
| | | Stakeholder Consultation (third party) | During RIBA stage 4 conduct BREEAM compliant consultation with the relevant parties | 1 | 1 | |
| | | Sustainability Champion (design) | Sustainability Champion to be appointed during the feasibility stage (stage 1) and targets are agreed for BREEAM assessment no later than RIBA stage 2. | 1 | 1 | |
| | | Sustainability Champion (monitoring progress) | Sustainability Champion to monitor and report throughout RIBA stages to 2-4. | 1 | 1 | |
| | Man02 Life Cycle Costs and Service Life Planning | Elemental life cycle cost (LCC) | Conduct Elemental life cycle costing (LCC) at RIBA stage2 to be conducted in accordance with PD15686-5:2008 | 2 | 0 | |
| | | Component level LCC plan | Conduct life cycle costing (LCC) at RIBA stage C/D and a further LCC at RIBA stage D/E to be conducted in accordance with BS ISO 15686-5:2008 | 1 | 0 | |
| | | Capital cost reporting | Report the capital cost for the building in £ per m2. | 1 | 1 | |
| | Man03 Responsible Construction Practices | Pre-Requisite | All timber and timber based products used on the project will need to be legally harvested | - | - | One Credit (CCS) |
| | | Environmental Management | The principal contractor will need to operate an Environmental Management System (EMS) | 1 | 1 | One Credit (CCS) |
| | | Sustainability Champion (Construction) | A sustainability champion (AP) is to be appointed to monitor the project during the construction, handover and close out. | 1 | 0 | |
| | | Considerate Construction | Developer to register site to CCS. | 2 | 2 | |
| | | Monitoring of Construction Site Impacts - Utility | Monitor and record data on principal contractors/subcontractors' potable water consumption (m3) and energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation. | 1 | 1 | |
| | | Monitoring of Construction Site Impacts - Transport | Monitor and record data on transport movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site | 1 | 1 | |
| | Man04 Commissioning and Handover | Commissioning and Testing Schedule and Responsibilities | Commissioning schedule and testing that identifies includes a timescale for commissioning and re-commissioning of all complex/non-complex building services and control systems. | 1 | 1 | One Credit (BUG) |
| | | Commissioning Building Services | A specialist commissioning manager will need to be appointed during the design stage to provide commissioing advice during installation and handover/post handover. | 1 | 1 | |
| | | Testing and Inspecting Building Fabric | Thermographic survey to be carried out | 1 | 0 | |
| | | Handover | Training schedules and a building user guide to be developed prior to handover for the building occupiers and premises managers. | 1 | 1 | |
| | Man05 Aftercare | Aftercare Support | Resources to be put in place to offer aftercare support to the building occupiers | 1 | 1 | One Credit (seasonal commissioning) |
| | | Seasonal Commissioning | Seasonal commissioning activities to be completed over a minimum 12-month period once the building becomes substantially occupied | 1 | 1 | |
| | | Post Occupancy Evaluation | Post-occupancy evaluation (POE) exercise to be carried out one year after initial building occupation | 1 | 1 | |
| | | | **Total for Management** | **21** | **16** | |

# Former ICL Ground Udney Park Road - Community Space - New Construction 2014 Non-Residential Institutions Assessment
## BREEAM Excellent - Fully Fitted Out
### Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Health and Wellbeing | Hea01 Visual Comfort | Glare Control | Demonstrate that all relevant building areas are using a glare control strategy | 1 | 1 | |
| | | Daylighting | Demonstrate that at least 80% of floor area in each occupied space is adequately day lit with a daylight factor of 2%. | 1 | 0 | |
| | | View Out | Demonstrate that 95% of the floor area in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out | 1 | 0 | |
| | | Internal and External Lighting Levels, Zoning and Control | Internal lighting in all relevant areas of the building to be designed to provide an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard.<br><br>External lighting located within the construction zone to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.<br><br>Internal lighting to be zoned to allow for occupant control in accordance with the criteria below for relevant areas present within the building. | 1 | 1 | |
| | Hea02 Indoor Air Quality | Indoor Air Quality Plan | An air quality plan for the building will need to be developed and carried out. | 1 | 1 | |
| | | Ventilation | The building should been designed to minimise the concentration and recirculation of pollutants in the building | 1 | 0 | |
| | | Volatile organic compound (VOC) emission levels (products) | Decorative paints and varnishes will need to meet the necessary criteria | 1 | 1 | |
| | | Volatile organic compound (VOC) emission levels (post construction) | Demonstrate that the emissions of VOCs and other substances from key internal finishes and fittings comply with best practice levels as demonstrated by the applicable BS. | 1 | 0 | |
| | | Adaptability - Potential for natural ventilation | The building ventilation strategy will need to be designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. | 1 | 0 | |
| | Hea04 Thermal Comfort | Thermal Modelling | Demonstrate that thermal comfort levels in occupied spaces of the building are assessed at the design stage to evaluate appropriate servicing options; ensuring appropriate thermal comfort levels are achieved. | 1 | 1 | |
| | | Adaptability for a Projected Climate Change Scenario | The thermal modelling demonstrates that the relevant requirements set out in criteria 3 (thermal modelling) are achieved for a projected climate change environment | 1 | 1 | |
| | | Thermal Zoning and Controls | Demonstrate that the modelling will inform the thermal zoning and controls strategy | 1 | 1 | |
| | Hea05 Acoustic Performance | Sound Insulation & Indoor Ambient Noise Level | Achieve sound insulation levels and ambient noise levels required in relevant standards. | 1 | 1 | |
| | | Reverberation | Sound absorption and reverberation times are compliant with relevant standards. | 1 | 1 | |
| | | Appointed Acoustician | Acoustician to be appointed to define a set of performance requirements for all function areas.. | 1 | 1 | |
| | Hea06 Safety and Security | Safe Access | Identify and encourage effective measures that promote safe and secure use and access to and from the building | 1 | 1 | |
| | | Security of the Building | Security specialist to provide recommendations that ensure the design of the building is done to address issues raised in the security needs assessment (SNA) | 1 | 1 | |
| | | | **Total for Health and Wellbeing** | **17** | **12** | |
| Energy | Ene01 Reduction of Energy Use and Carbon | Energy Performance | Up to 12 credits to recognise and encourage buildings designed to minimise operational energy demand consumption and Carbon emissions. | 12 | 8 | Five credits |
| | Ene02 Energy Monitoring | Sub-Metering of Major Energy Consuming Systems | Demonstrate the provision of a BMS or accessible sub-metering strategy of major energy uses within the building. | 1 | 1 | First Credit |
| | | Sub-Metering of High Energy Load and Tenancy Areas | Demonstrate the provision of a BMS or accessible sub-metering strategy of major energy uses within the building. | 1 | 1 | |
| | Ene03 External Lighting | External Lighting | Energy-efficient external lighting to be specified with all light fittings controlled by the presence of daylight. | 1 | 1 | |
| | Ene04 Low Carbon Design | Passive design analysis | Analysis of the proposed building design/development to influence decisions made for the implementation of passive design solutions that reduce demands for energy consuming building services. | 1 | 0 | |
| | | Free cooling | Passive design analysis includes opportunities for the implementation of free cooling solutions and these strategies are used. | 1 | 0 | |
| | | Low zero carbon feasibility study | A feasibility study considering local (on-site and/or near site) low or zero carbon (LZC) technologies is to be carried out with the results implemented. | 1 | 1 | |
| | Ene08 Energy Efficient Equipment | Energy Efficient Equipment | To recognise and encourage procurement and commissioning of energy-efficient equipment to ensure optimum performance and energy savings. | 2 | 2 | |
| | | | **Total for Energy** | **20** | **14** | |

# Former ICL Ground Udney Park Road - Community Space - New Construction 2014 Non-Residential Institutions Assessment
## BREEAM Excellent - Fully Fitted Out
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| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Transport | Tra01 Public Transport Accessibility | Public Transport Accessibility | 5 credits are available on a sliding scale based on the assessed buildings' accessibility to the public transport network. | 5 | 3 | |
| | Tra02 Proximity to Amenities | Proximity to Amenities | 1 credit is available where evidence provided demonstrates that the building is located within 500m of accessible local amenities appropriate to the building type and its users. | 1 | 1 | |
| | Tra03 Cyclist Facilities | Cycle Storage | 1 credit available where evidence provided demonstrates that covered, secure and well-lit cycle storage facilities are provided for all building users. | 1 | 1 | |
| | | Cyclist Facilities | 2 credits available where, in addition to the above, adequate changing facilities are provided for staff use. | 1 | 1 | |
| | Tra04 Maximum Car Parking Capacity | Car parking capacity | Minimise car parking spaces to encourage the use of alternative means of transport to the building. | 2 | 1 | |
| | Tra05 Travel Plan | Travel Plan | 1 credit available where evidence provided demonstrates that a travel plan has been developed and tailored to the specific needs of the building users. | 1 | 1 | |
| | | | **Total for Transport** | **11** | **8** | |
| Water | Wat01 Water Consumption | Water Consumption | 5 credits available where evidence provided demonstrates that the specification includes taps, urinals, WCs and showers that consume less potable water in use than standard specifications for the same type of fittings. | 5 | 3 | One Credit |
| | Wat02 Water Monitoring | Water Monitoring | 1 credit available where evidence provided demonstrates that a water meter with a pulsed output will be installed on the mains supply to each building/unit. (Minimum requirement for a pulsed water meter on mains for Good) | 1 | 1 | Criterion 1 only |
| | Wat03 Water Leak Detection and Prevention | Leak detection systems | Demonstrate that a leak detection system will be installed on the buildings main water supply. | 1 | 1 | |
| | | Flow control devices | Flow control devices that regulate the supply of water to each WC area to be installed. | 1 | 1 | |
| | Wat04 Water Efficient Equipment | Water Efficient Equipment | Reduction of unregulated water consumption by encouraging the specification of water efficient equipment | 1 | 1 | |
| | | | **Total for Water** | **9** | **7** | |
| Materials | Mat01 Life Cycle Impacts | Life Cycle Impacts | The credits are determined using the Green Guide to Specification ratings for the major building elements. | 6 | 4 | |
| | Mat02 Hard Landscaping and Boundary Protection | Hard Landscaping and Boundary Protection | 1 credit available where evidence provided demonstrates that at least 80% of the combined area of external hard landscaping and boundary protection specifications achieve an A or A+ rating, as defined by the Green Guide to Specification. | 1 | 1 | |
| | Mat03 Responsible Sourcing of Materials | Responsible Sourcing of Materials | All timber is legally harvested and traded | - | - | Criterion 1 Only |
| | | Responsible Sourcing of Materials | Materials to be sourced in accordance with a procurement plan | 1 | 1 | |
| | | Responsible Sourcing of Materials | 3 credits available where evidence provided demonstrates that 80% of the assessed materials in the building elements are responsibly sourced. Additionally 100% of any timber must be sourced in accordance with the UK Governments Timber Procurement policy. (This is mandatory for pass) | 3 | 1 | |
| | Mat04 Insulation | Embodied Impact | Thermal insulation products used in the building are to have a low embodied impact relative (insulation index the same as or greater than 2.5) to their thermal properties. | 1 | 1 | |
| | Mat05 Designing for durability and resilience | Designing for durability and resilience | Encourage the adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation. | 1 | 1 | |
| | Mat06 Material Efficiency | Material Efficiency | Opportunities will need to be identified in order to optimise the use of materials in all stages of the design. | 1 | 0 | |
| | | | **Total for Materials** | **14** | **9** | |
| Waste | Wst01 Construction Waste Management | Construction Resource Efficiency | 3 credits available where evidence provided demonstrates that the amount of non-hazardous construction waste (m3/100m2 or tonnes100m2) generated on site by the development is the same as or better than good or best practice levels. | 3 | 2 | |
| | | Diversion from Landfill | 1 credit available where evidence provided demonstrates that a significant majority of non-hazardous construction and demolition waste generated by the development will be diverted from landfill and reused or recycled. | 1 | 1 | |
| | Wst02 Recycled Aggregates | Recycled Aggregates | 1 credit available where evidence provided demonstrates the significant use of recycled or secondary aggregates in 'high-grade' building aggregate uses. | 1 | 0 | |
| | Wst03 Operational Waste | Operational Waste | 1 credit available where a central, dedicated space is provided for the storage of the building's recyclable waste streams. | 1 | 1 | One Credit |
| | Wst05 Adaptation to climate change | Adaptation to climate change – structural and fabric resilience | Conduct a climate change adaptation strategy appraisal for structural and fabric resilience. An Exemplary credit can be awarded where a holistic approach on adaptation to climate change has been covered. | 1 | 0 | |
| | Wst06 Functional Adaptability | Functional Adaptability | Encourage measures taken to accommodate future changes of use of the building over its lifespan. | 1 | 1 | |
| | | | **Total for Waste** | **8** | **5** | |

# Former ICL Ground Udney Park Road - Community Space - New Construction 2014 Non-Residential Institutions Assessment
## BREEAM Excellent - Fully Fitted Out
### Pre-Assessment Tracker

| Section | Issue | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|
| Land Use and Ecology | Le01 Site Selection | Previously Developed Land | 1 credit available where evidence is provided to demonstrate that the majority of the footprint of the proposed development falls within the boundary of previously developed land. | 1 | 1 | |
| | | Contaminated Land | 1 credit available where evidence is provided to demonstrate that the land used for the new development has, prior to development, been defined as contaminated and adequate remedial steps have been taken to decontaminate the site prior to construction. | 1 | 0 | |
| | Le02 Ecological Value of Site and Protection of Ecological Features | Ecological Value of Site | Demonstrate that the site's construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works. | 1 | 1 | |
| | | Protection of Ecological Features | Where evidence provided demonstrates that the site's construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works. | 1 | 1 | |
| | Le03 Minimising impact on existing site ecology | Change in ecological value. | The change in ecological value of the site is to be equal to or greater than zero plant species. | 2 | 2 | One Credit |
| | Le04 Enhancing Site Ecology | Ecologist's report and recommendations | Ecologist's report to be undertaken to include appropriate recommendations to enhance the sites ecology. | 1 | 1 | |
| | | Increase in ecological value | Encourage actions taken to enhance the ecological value of the site as a result of development. | 1 | 0 | |
| | Le05 Long Term Impact on Biodiversity | Long Term Impact on Biodiversity | 1 credit available where the client has committed to achieving the mandatory requirements and at least two of the additional requirements.<br>2 credits available where the client has committed to achieving the mandatory requirements and at least four of the additional requirements. | 2 | 2 | |
| | | | **Total for Land Use and Ecology** | **10** | **8** | |
| Pollution | Pol01 Impact of Refrigerants | No Refrigerants | If there are no refrigerants 3 credits by default. | 3 | 3 | |
| | Pol02 NOx Emissions | NOx Emissions | The plant installed is to have NOx emission levels (measured on a dry basis at 0% excess O2) of either <100, <70 or <40 mg/kWh | 3 | 3 | |
| | Pol03 Surface Water Run Off | Flood Resilience - Low Risk | 2 credits available where evidence provided demonstrates that the assessed development is located in a zone defined as having a low annual probability of flooding. | 2 | 2 | |
| | | Surface Water Run Off | 1 credit available where drainage measures are specified to ensure peak rate of run-off from the site to the watercourses is no greater for the developed site than it was for the pre-development site. | 1 | 1 | |
| | | Surface Water Run Off | 1 credit where flooding of property will not occur in the event of a local drainage system failure. | 1 | 1 | |
| | | Minimising Watercourse Pollution | Confirmation that there will be no discharge from the development site for rainfall events up to 5mm. | 1 | 0 | |
| | Pol04 Reduction of Night Time Light Pollution | Reduction of Night Time Light Pollution | 1 credit available where evidence provided demonstrates that the external lighting design is in compliance with the guidance in the Institution of Lighting Engineers (ILE) Guidance notes for the reduction of obtrusive light, 2005. | 1 | 1 | |
| | Pol05 Noise Attenuation | Noise Attenuation | 1 credit available where evidence provided demonstrates that new sources of noise from the development do not give rise to the likelihood of complaints from existing noise-sensitive premises and amenity or wildlife areas that are within the locality of the site. | 1 | 1 | |
| | | | **Total for Pollution** | **13** | **12** | |

# Former ICL Ground Udney Park Road - Community Space - New Construction 2014 Non-Residential Institutions Assessment
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| Section | Issue | | Issue Sub-Title | Summary Requirements | Credits Available for sub-title | Credits Targeted | Minimum for Excellent Rating |
|---|---|---|---|---|---|---|---|
| Innovation | Man03 | Responsible Construction Practices | Criteria 7 | Exemplary level performance: a CCS score of 40 or more and a score of 7 in each of the 5 sections | 1 | 1 | |
| | Man05 | Aftercare | Criteria 6 | Implement the resources to carry out the collection of data over a 3 year period. | 1 | 0 | |
| | Hea01 | Visual Comfort | Criteria 14 | Exemplary daylight factors have been met. | 1 | 0 | |
| | Hea02 | Indoor Air Quality | Criteria 15-18 | Minimising sources of air pollution - volatile organic compound (VOC) emission levels (products | 1 | 0 | |
| | Ene01 | Reduction of Carbon Emissions | Criteria 2-4 | Up to 5 credits can be awarded when a building improves upon he EPR of 0.9 and is a net Carbon zero building. | 5 | 0 | |
| | Wat01 | Water Consumption | Criteria 2 | 1 credit where evidence provided demonstrates that the specification includes taps, urinals, WCs and showers that consume less potable water in use than standard specifications for the same type of fittings (65% improvement) | 1 | 0 | |
| | Mat01 | Life Cycle Impacts | Criteria 4-5 | Route 1: Where assessing four or more applicable building elements, the building achieves at least two points in addition to the total points in addition to the total points required to achieve maximum credits under the standard BREEAM criteria | 1 | 0 | |
| | Mat01 | Life Cycle Impacts | Criteria 6-8 | Route 2: Where the design team has used an IMPACT compliant software to measure the environmental impact of the building. Where the design team can demonstrate how the use of an IMPACT compliant software has benefited the building terms of measuring and reducing its environmental impact. Where the design team submit BIIM from the IMPACT compliant software tool for the assessed building to BRE global. | 2 | 0 | |
| | Mat03 | Responsible Sourcing of Materials | Criteria 4 | Where 70% of the points available have been achieved. | 1 | 0 | |
| | Wst01 | Construction Site Waste Management | Criteria 6-8 | If the development achieves less than 1.6m3 per 100m2 or 1.9tonnes per 100m2 a exemplary credit is awarded. | 1 | 0 | |
| | Wst02 | Recycled Aggregates | Criteria 4-6 | Where the total amount of recycled and/or secondary aggregate specified is greater than 35% of the total high grade aggregate specified for the project. To contribute to the total amount the percentage of high grade aggregate specified per application that is recycled and/or secondary aggregate must meet the exemplary minimum levels. | 1 | 0 | |
| | Wst05 | Adaptation to Climate change | Criteria 2 | A holistic approach to the design and construction of the current building's life cycle, to mitigate against the impacts of climate change, is represented by the achievement of criteria within Hea04, Ene01, Ene04, Wat01, Mat05, Pol03. | 1 | 0 | |
| | | | | **Total for Innovation** | **10** | **1** | |

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# Appendix G

Water Efficiency Calculator

# Water Efficiency Calculator (Internal: 105 litres/person/day)
# Former ICL Private Ground

| | Internal Water Consumption | | | |
|---|---|---|---|---|
| **Installation Type** | **Unit of Measure** | **Capacity / Flow Rate** | **Litres/person/day** | **Notes** |
| **WC** | Full Flush Volume (Litres) | **6** | 8.76 | Low flush WCs will be installed to reduce the volume of water consumed during flushing. All WCs will have dual flush cisterns which will provide both part (4L) and full (6L) flushes. |
| | Part Flush Volume (Litres) | **4** | 11.84 | |
| **Bath** | Capacity (Litres to overflow) | **160** | 17.60 | All baths will have reduced capacities of 160 litres (excluding displacement). The bath taps are not included in this calculation as they are already incorporated into the use factor for the baths. |
| **Shower** | Flow Rate (Litres/minute) | **8** | 34.96 | Shower flow rates will be reduced to 8 litres/minute using flow restrictors fixed to the shower heads. These contain precision-made holes or filters to restrict water flow and reduce the outlet flow and pressure. |
| **Kitchen Tap** | Flow Rate (Litres/minute) | **5** | 12.56 | Kitchen taps will be reduced to 5 litres/minute using flow restrictors which will be fitted within the console of the tap or in the pipework. |
| **Basin Tap** | Flow Rate (Litres/minute) | **4** | 7.90 | All taps (excluding kitchen taps) will be reduced to 4 litres/minute using flow restrictors. Where multiple taps are to be provided the average flow rate will be used. |
| **Washing Machine** | Water Consumption (Litres/kg) | **8.17** | 17.16 | Water efficient washing machines or washer-dryers will be specified. The make and model numbers of the appliances are unknown at this stage therefore a default figure of 8.17 litres/kg has been assumed. |
| **Dishwasher** | Water Consumption (Litres/place setting) | **1.25** | 4.50 | All dishwashers will be water efficient. The make and models numbers are unknown therefore a default figure of 1.25 litres/place setting has been assumed at this stage. |
| **Net Internal Water Consumption (Litres/person/day)** | | | **115.3** | |
| **Normalisation Factor** | | | **0.91** | |
| **Total Water Consumption (Litres/person/day)** | | | **104.90** | The internal water consumption target of ≤105 litres/person/day will be achieved. |