Sustainability and Energy Statement

Yield Hall Place 1 and 2, Reading

December 2022

Turley Sustainability

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Client

The Oracle Limited Partnership

Turley Reference

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1. Introduction

This Sustainability and Energy Statement has been prepared to demonstrate the sustainability credentials of the development proposals for The Oracle, Reading.

1.1 Introduction

This Sustainability and Energy Statement has been prepared by Turley Sustainability, on behalf of The Oracle Limited Partnership (the applicant), who are preparing the application for the site owner Hammerson who will lead on the delivery of the development

The development proposals include two detailed planning applications to Reading Borough Council, for the repurposing of the former Debenhams Store and Vue Cinema. Once delivered, they will provide a mixed-use development comprising residential and town centres uses.

Planning permission is sought for the repurposing and redevelopment of sites at the eastern end of the Oracle to provide a mixed-use development comprising residential and town centres uses. The proposals focus around two main sites:

- Former Debenhams department store at the eastern end of the Oracle shopping centre building and northern side of the River Kennet, to be known as Yield Hall Place 1; and
- Vue cinema building on the southern side of the River Kennet and to the east of the Oracle Riverside multi storey car park, to be known as Yield Hall Place 2.

Two detailed planning applications are submitted; one application for Yield Hall Place 1 and one application for Yield Hall Place 2. These applications will be submitted concurrently to Reading Borough Council and expected to be considered and determined in this way by the local planning authority. This report is submitted in respect of both applications and considers / assesses the proposals as a single scheme for the purpose of the technical assessment undertaken.

An illustrative plan is submitted with both planning application which identifies the full extent of the proposed developments, and the schemes assessed for the purposes of this report.

Where matters only pertain to one of the planning application sites, these are specifically identified within the report.

Alongside the development proposals on the two sites identified above, a suite of public realm enhancements are proposed within the vicinity of The Oracle, including:

- Junction with London Street and Inner Distributor Road
- Yield Hall Place from junction of London Street to Minister Street
- Oracle Riverside

Public realm enhancements will include:

- Enhancement of local site connections;
- Provision of new public outdoor green spaces.

This Statement provides a summary of the sustainable design measures incorporated into the proposals to ensure suitable levels of sustainability performance in accordance with local and national planning policy.

1.2 Site Context

The development is located in the centre of Reading within The Oracle, a covered 2-level shopping and leisure facility consisting of two department stores, 81 retail units, 22 restaurants and a cinema.

1.3 Proposed Development

The proposed development comprises the repurposing of the former Debenhams Store and Vue Cinema for a residential (BTR) led development with commercial space at The Oracle.

The development will deliver a mixed used scheme with over 3,700m^2 of new commercial space, including a cinema, restaurants, and co-working spaces as well as 449 new homes and, reconfigured retail space within retained parts of the existing Debenham's store.

The site will also feature a ground source heat pump, utilising the nearby River Kennet, to provide the development with highly efficient low carbon heating and cooling.

Two detailed planning applications are to be submitted, one application for Yield Hall Place 1 and the other for Yield Hall Place 2.

Yield Hall Place 1 (Former Debenhams)

Description of Development:

Mixed use development comprising part demolition of former department store and erection of new building comprising build to rent residential use (Class C3) and commercial uses within Uses Class E. Reconfiguration and change of use of remaining department store floorspace (Class E) to uses with within Use Class E and / or bar (Sui Generis Use) and / or experiential leisure use (Sui Generis Use). Associated public realm, infrastructure works and external alterations to shopping centre, including creation of new shopping centre entrance.

Scheme Details:

- No of Residential units: 202
- Proposed leisure unit (within retained Debenhams space): 935 sqm (GIA/Gross Lettable Area)
- Retained retail floorspace: 3,541 sqm (including riverside floor back of house)
- Ground floor co-working space and maker units: 793 sqm
- Ground floor restaurant unit: 378sqm
- Maximum building height: 106,000 AOD

Yield Hall Place 2 (Vue Cinema)

Description of Development:

Mixed use development comprising demolition of existing buildings and erection of new building comprising build-to-rent residential use (Class C3), cinema (Sui Generis) and ground floor commercial uses within Use Class E. Associated public realm and infrastructure works.

Scheme Details:

- No of Residential units: 247
- Replacement cinema 2,653 sqm / 6 screens
- Ground floor commercial space (excluding cinema) 464 sqm
- Maximum *building height 98,000 AOD*

Figure 1 overleaf shows the site plan of the proposed development.

1.4 Document Structure

Chapter 2 of this report provides an overview of relevant national and local legislation, planning policy and guidance.

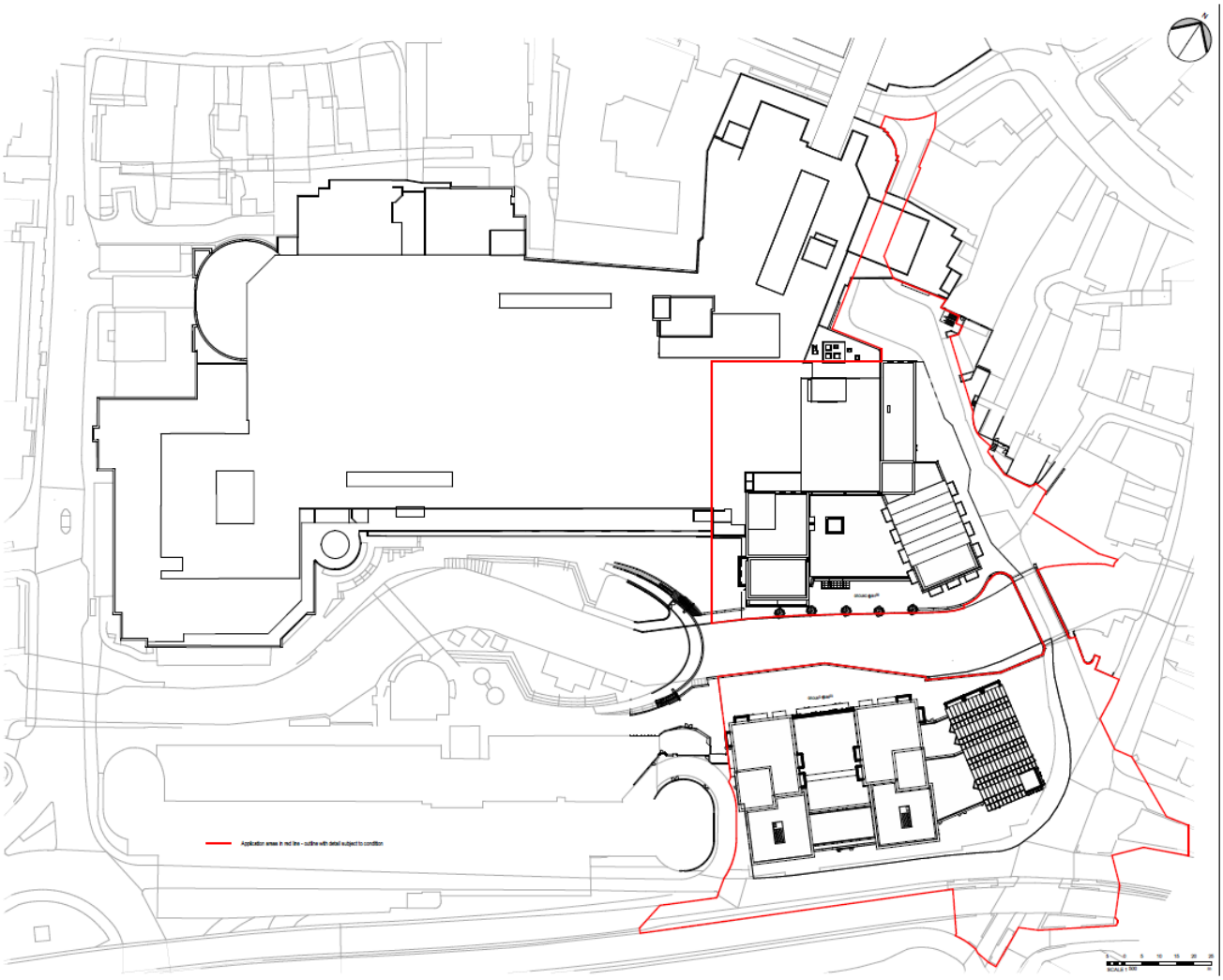
Chapter 3 reports the approach Hammerson takes to sustainable development and to which the development proposals also respond.

Chapter 4 provides detail of the sustainability and energy strategy of the proposed development, in line with local Planning Policy.

Chapter 5 provides detail of the BREEAM strategy proposed for the development.

Please note, the terms “carbon”, carbon dioxide (CO_2)” and “greenhouse gas (GHG)” are used interchangeably in this statement depending on the terminology of referenced documents.

Figure 1: Site Plan (Source: CRTKL)



2. Policy Context

This chapter provides an overview of the relevant sustainability planning policy and guidance from a national and local perspective.

2.1 Introduction

This chapter sets out the planning policy context relating to sustainable design and construction at the national and local authority level.

2.2 National Policy

This section sets out a summary of current national guidance and policy in relation to sustainable development.

2.2.1 National Planning Policy Framework

The National Planning Policy Framework[1] (NPPF) provides a framework for the development of locally-prepared plans and the government's planning policies for England and how these are expected to be applied.

Paragraph 7 of the NPPF states that: 'the purpose of the planning system is to contribute to the achievement of sustainable development'.

It states clearly that in order to deliver sustainable development, the planning system must perform three distinct objectives, aligned to the three pillars of sustainability, which must not be taken in isolation and should be pursued jointly:

An **economic** objective to help build 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, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.

A **social** objective supporting strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

An **environmental** objective contributing to protecting and enhancing our natural, built and historic environment; including, making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

These objectives are key to the development of plans and the NPPF sets out a number of key themes for consideration which guide the preparation of local plans and policies, ensuring the delivery of sustainable development.

The NPPF recognises the role planning has to play in support of the UK's pursuit of the United Nations Sustainable Development Goals (UNSDGs) which address social progress, economic wellbeing and environmental protection[2]. Example UNSDGs are presented in **Figure 2**.

[1] UK Government | NPPF

[2] UN Sustainable Development Goals

Figure 2: Example UN Sustainable Development Goals

2.2.2 Planning Practice Guidance

Planning Practice Guidance (PPG) provides further advice on various planning issues associated with development, including those linked to sustainability and renewable energy and underpins the policies within the NPPF.

PPG is a material consideration in planning decisions and should generally be followed unless there are clear reasons not to. It sets out how local authorities should include polices that protect the local environment and strategies to mitigate and adapt to climate change and supports developments that are functional and adaptable for the future.

The PPG confirms that Local Authorities have the option to set technical requirements exceeding the minimum requirements of the Building Regulations in respect of access, water and space where sufficient evidence is produced to justify the target.

2.2.3 National Design Guide

The National Design Guide published in October 2019 and is based on the national planning policy practice guidance and objective for good design as set out in the NPPF. The Guide introduces ten characteristics of well-designed places which work together to create developments Character and Community, while positively addressing environmental issues affecting climate.

2.2.4 Building Regulations

Part L - Whilst not planning policy, the Building Regulations (and specifically Approved Document Part L: Conservation of Fuel and Power) set out the requirements for energy and carbon performance in new buildings.

Periodic updates to these national regulations will drive energy efficiency and carbon reduction improvements. Government has stated that developers will continue to have flexibility in how they meet carbon reduction targets; but that the emphasis is on using a “fabric first” approach.

On 15th June 2022, the Building Regulations were updated as an interim step towards part of the roadmap to the ‘full’ Future Homes and Buildings Standard, which comes into effect in 2025. The regulations aim to deliver buildings that are of a higher quality, with lower energy bills and reduce GHG emissions by around 30% for new homes and 27% for non-domestic buildings.

In addition, the UK government has announced two new Building Regulations also due to take effect in June 2022, Part S and Part O. As of 15th June 2022, these standards are now in place.

Part S - New approved document Part S sets out guidance for electric vehicle (EV) charging infrastructure and specifies that EV charge points must be provided for each dwelling (or where the total number of parking spaces is less than each dwelling, all spaces should be provided with an active EV charging point). Any remaining spaces must have cable routes for charge points to be installed. For non-residential car parks with more than 10 spaces, at least one active EV charge point must be provided, with cabling to the remaining 20% of spaces.

Part O - Part O sets out new requirements for mitigating overheating, specifying that residential developments must limit unwanted solar gains in the summer and provide means to remove heat. Compliance with Part O can be demonstrated using two methods to demonstrate the risk of

overheating from rising summer temperatures has been mitigated following a simplified prescribed glazing and free area ratio; or, use of a Dynamic Simulation Modelling.

2.3 Local Planning Policy

2.3.1 Reading Climate Emergency Strategy 2020-25

Reading Borough Council declared a climate emergency in July 2019 and has set out a commitment to work towards achieving carbon neutrality across the Borough by 2030.

Following the declaration, the Reading Climate Change Partnership developed the Reading Climate Emergency Strategy[3] setting out the pathway to achieving this goal. It includes a number of key action areas, including increasing the generation of renewable heat and electricity in the Borough, developing Reading's 'circular economy', and ensuring that new development delivers environmental and biodiversity net gains.

2.3.2 Reading Borough Local Plan

The Local Plan[4] was adopted in November 2019 and sets out the overall approach to development in the Borough to up to 2036. Key sustainability policies relevant to this application include:

Policy CC2 Sustainable Design and Construction – Proposals for new development, including the construction of new buildings and the redevelopment and refurbishment of existing building stock, will be acceptable where the design of buildings and site layouts use energy, water, minerals, materials and other natural resources appropriately, efficiently and with care and take account of the effects of climate change. To meet these requirements:

- All major non-residential developments or conversions to residential are required to meet the most up-to-date BREEAM 'Excellent' standards, where possible;
- All non-residential development or conversions to residential should incorporate water conservation measures so that predicted per capita consumption does not exceed the appropriate levels set out in the applicable BREEAM standard.
- Both residential and non-residential development should include recycling greywater and rainwater harvesting where systems are energy and cost-effective.

Policy CC3 Adaptation to Climate Change – All developments will demonstrate how they have been designed to incorporate measures to adapt to climate change. The following measures shall be incorporated into development:

- Wherever possible, new buildings shall be orientated to maximise the opportunities for both natural heating and ventilation and reducing exposure to wind and other elements;
- Proposals involving both new and existing buildings shall demonstrate how they have been designed to maximise resistance and resilience to climate change for example by including measures such as solar shading, thermal mass, heating and ventilation of the building and appropriately coloured materials in areas exposed to direct sunlight, green and brown roofs, green walls, etc;
- Use of trees and other planting, where appropriate as part of a landscape scheme, to provide shading of amenity areas, buildings and streets and help to connect habitat, designed with native plants that are carefully selected, managed and adaptable to meet the predicted changed climatic conditions; and
- All development shall minimise the impact of surface water runoff from the development in the design of the drainage system, and where possible, incorporate mitigation and resilience measures for any increases in river flooding levels as a result of climate change.

[3] our-plan-READING-CLIMATE-EMERGENCY-STRATEGY-2020-25-Final.pdf (readingcan.org.uk)

[4] Local_Plan_Adopted_November_2019.pdf (reading.gov.uk)

Policy CC4 Decentralised Energy – In meeting the sustainability requirements of this plan, developments of the sizes set out below shall demonstrate how consideration has been given to securing energy for the development from a decentralised energy source.

Any development of more than 20 dwellings and/or non-residential development of over 1,000sqm shall consider the inclusion of decentralised energy provision, within the site, unless it can be demonstrated that the scheme is not suitable, feasible, or viable for this form of energy provision.

Where there is existing decentralised energy provision present within the vicinity of an application site, further developments of 10 dwellings or more or non-residential development of 1,000sqm or more will be expected to link into the existing decentralised energy network or demonstrate why this is not feasible.

Policy EN9 Provision of Open Space – All new development should make provision for appropriate open space based on the needs of the development. This can be achieved through on or off-site provision, contributions toward provision or improvement of existing leisure or recreational facilities.

On sites of 50 dwellings or more, or for developments where the availability and quality of existing open space has been identified as deficient, new provision will be sought. Development must ensure satisfactory provision of children's play areas and neighbourhood parks.

Policy EN12 Biodiversity and the Green Network – On all sites, development should not result in a net loss of biodiversity and geodiversity, and should provide a net gain for biodiversity wherever possible. Development should:

- Protect and wherever possible enhance features of biodiversity interest on and adjacent to the application site, incorporating and integrating them into development proposals wherever practicable; and
- Provide new tree planting, wildlife friendly landscaping and ecological enhancements (such as wildlife ponds, bird and bat boxes) wherever practicable.

Policy EN18 Flooding and Sustainable Drainage Systems – All major developments must incorporate sustainable drainage systems (SuDS) as appropriate and in line with the Government's Technical Standards. Wherever possible, SuDS provision should maximise ecological benefits, link into the existing Green Network, incorporate tree planting and landscaping and avoid damage to existing significant trees, including through changes to the site hydrology. All new developments in areas of flood risk should give priority to SuDS.

Policy H5 Standards for New Housing – New build housing should be built to the following standards, unless it can be clearly demonstrated that this would render a development unviable:

a) All new build housing will be built to the higher water efficiency standard under Regulation 36 (3) of the Building Regulations;
b) All major new-build residential development should be designed to achieve zero carbon homes; and
c) All other new build housing will achieve at a minimum a 19% improvement in the dwelling emission rate over the target emission rate, as defined in the 2013 Building Regulations.

Policy TR5 Car and Cycle Parking and Electric Vehicle Charging – Development should provide car parking and cycle parking that is appropriate to the accessibility of locations within the Borough to sustainable transport facilities, particularly public transport.

Development should make the following provision for electric vehicle charging points:

- All new houses with dedicated off-street parking should provide charging points;
- Within communal car parks for residential or non-residential developments of at least 10 spaces, 10% of spaces should provide an active charging point.

2.3.3 Supplementary Planning Documents (SPD)

Sustainable Design and Construction SPD

This SPD[5] explains the planning requirements regarding energy, climate change, water management and waste reduction, and is intended to supplement the policies of the Local Plan. The SPD contains guidance on the following:

- Energy efficiency;
- Climate change adaptation;
- Water management;
- Waste reduction; and
- Decentralised energy and district heating.

Table 3.1 within the SPD also confirms that minor non-residential new and refurbished developments under 1,000sqm require BREEAM 'Very Good' and major non-residential new and refurbished developments of 1,000sqm or above are required to achieve BREEAM 'Excellent'.

2.3.4 Validation Requirements

The Council's Validation Checklist[6] requires the provision of a Sustainability Statement to be submitted with applications. All development will need to demonstrate how it has been designed to incorporate measures to adapt to climate change in accordance with **Policies CC2, CC3, CC4, CC5, EN18 and H5** of the Reading Borough Local Plan. A more formal Energy Statement is required for all major development. In addition to the Energy Statement required by **Policies CC4 and H5**, applicants should demonstrate how developments have been designed to incorporate the following measures:

- New buildings shall be orientated to maximise the opportunities for both natural heating and ventilation and reducing exposure to wind and other elements;
- Proposals involving both new and existing buildings shall demonstrate how they have been designed to maximise resistance and resilience to climate change for example by including measures such as solar shading, heating and ventilation of the building and appropriately coloured materials in areas exposed to direct sunlight, green and brown roofs, etc;
- Use of trees and other planting, where appropriate as part of a landscape scheme, to provide shading of amenity areas, buildings and streets, designed with plants that are carefully selected, managed and adaptable to meet the predicted changed climatic conditions;
- Minimising the impact of surface water runoff from the development in the design of the drainage system;
- Demonstrating the extent to which the proposal has taken account of the need to minimise the consumption of energy and resources (including water) and maximise the use of sustainable or renewable resources; and
- Minimising the generation of waste in the construction, use and life of buildings and promote more sustainable approaches to waste management, including the reuse and recycling of construction waste and the promotion of layouts and designs that provide adequate, well-designed space to facilitate waste storage, reuse, recycling and composting.

2.4 Planning Policy Summary

Both local and national policy aims to ensure the delivery of sustainable and well-designed homes and other buildings which mitigate and adapt to the impacts of climate change.

The Local Plan requires development to consider a range of sustainable design measures, including sustainable and low carbon methods of transport, the incorporation of water efficiency measures and SuDS, energy efficient and low carbon buildings, targeting BREEAM standards where possible, and enhancing biodiversity and green infrastructure.

[5] Sustainable-Design-and-Construction-SPD-Adopted-December-19.pdf (reading.gov.uk)

[6] PLANNING APPLICATION VALIDATION CHECKLIST (reading.gov.uk)

This demonstrates the Borough's commitment to the creation of sustainable new developments.

Latest national planning policy and guidance confirms the Government's approach to sustainable development is being driven through the updates to the Building Regulations to ensure that new buildings are well designed and reduce emissions in line with the UK's national carbon targets.

The following sections of this Sustainability and Energy Statement set out the sustainability measures incorporated into the design of the development to ensure the delivery of a sustainable development and address the requirements of local policy.

3. Hammerson Sustainability

3.1 Introduction

The proposed development is being brought forward by Packaged Living, on behalf of the Site owner Hammerson.

Hammerson has a proactive approach to sustainability and Environmental Social Governance and their latest Sustainability Report[7] released in 2021 sets out their targets and progress they have made thus far. Hammerson's vision for sustainability is it create places that deliver positive environmental and socio-economic impacts.

The following key goals set by Hammerson support the UN Sustainable Development Goals:

- Reduce carbon emissions – by 2030, carbon emissions avoided will exceed emissions generated;
- Reduce water use – by 2030, water replenished by external projects exceeds water consumed from mains supply;
- Reduce resource use – by 2030, waste avoided, recycled or reused exceeds materials that are neither recycled, renewable or sent to landfill;
- Deliver positive socio-economic impacts – Hammerson will deliver measurable positive impact on socio-economic issues relevant to local communities;
- Manage climate risks – Hammerson will proactively identify and respond to climate and legislative risks for the business and its assets.

"Hammerson's forward-thinking approach to sustainability has positioned the business well in responding to the rising ESG expectations of the investor community and our wider stakeholders. Our long-term vision is to ensure we continue to optimise our assets to thrive in a low carbon, city-based, 21st century economy. Our sustainability strategy underpins this vision" (Rita-Rose Gagné, CEO, Hammerson)[8]

3.2 Hammerson's Sustainability Implementation Plan

Hammerson have developed a Sustainability Implementation Plan (SIP) to provide a structure tracking tool throughout the stages of development for teams and sustainability coordinators to use to ensure compliance against Hammerson's Sustainability Targets.

The following objectives and associated targets contained within the SIP are detailed below.

Objective 1 - Energy & Operational Carbon

Aims to deliver Net Zero development where possible, with emissions avoided exceeding emissions generated. This also helps minimise operational utility costs for the building and reduce exposure to energy price risks. This may be done via life cycle assessment, decarbonising heat, and maximising on site renewable energy generation.

Objective 2 - Embodied Carbon & Resource Use

Net Zero for resource use: waste avoided, recycled or re-used exceeds materials used that are neither recycled, renewable or sent to landfill. This may involve undertaking an embodied carbon assessment, ensuring a minimum quantity of materials are from renewable sources, and/or ensuring zero waste is sent to landfill.

Objective 3 - Water

Achieve Net Zero position for annual water by potentially reducing water consumption over

[7] https://www.hammerson.com/sites/hammerson-corp/files/hammerson-corp/sustainability/sustainability-report-2021-hammerson.pdf

[8] https://www.hammerson.com/sustainability

baseline building water consumption and incorporating rain and grey water harvesting and incorporating sustainable Urban Drainage Systems.

Objective 4 – Physical Climate Risk

Minimise exposure to physical climate risks including flood and extreme temperatures which could be identified through a Climate Physical Risk Analysis Report or CRREM Risk Analysis.

Objective 5 - Wellbeing

Deliver a clean development that supports the good health and wellbeing of occupiers and visitors. This could be through measures such as ensuring buildings are accessible to anticipated user groups and providing on-site facilities that support positive health and wellbeing.

Objective 6 – Biodiversity

Provide urban green space and potentially target a 20% biodiversity net gain and ensuring planting is drought tolerant and biodiverse.

Objective 7 – Transport

Facilitate use of sustainable transport to reduce scope 3 carbon emissions by incorporating sufficient cycle storage provision and providing electric vehicle charge points.

Objective 8 – Socio-Economic

Deliver positive for socio-economic impacts, making a measurable positive impact on socio-economic issues relevant to our local communities beyond a measured baseline. A community engagement plan could be provided for the development that addresses issues identified as relevant to the local community.

Objective 9 – Management

This may incorporate management objectives including, handover of a building that performs as designed, undertaking a Post Occupancy Evaluation, and ensuring responsible construction practices are adopted.

Objective 10 – Certification

May consider achieving a high certificate ratings in BREEAM New Construction 2018, NABERS Design for Performance, Home Quality Mark (UK), and Passivhaus.

The following sections of this report set out the sustainability and energy strategy for the proposed development, where appropriate aligning with Hammerson's sustainability strategy.

4. Sustainability and Energy Strategy

This section summarises the sustainability and energy strategy for the proposed development at The Oracle.

This section of the report sets out the sustainability strategy for the proposed development at The Oracle, demonstrating how the development responds to both national and local planning policy, including the NPPF.

In this context the sustainable design measures incorporated into the development masterplan and design of homes at this stage are set out under the following headings which reflect the themes of the NPPF.

4.1 Building a Strong and Competitive Economy

4.2 Promoting Sustainable Transport

4.3 Delivering a Wide Choice of High-Quality Homes

4.4 Requiring Good Design

4.5 Promoting Healthy Communities

4.6 Meeting the Challenge of Climate Change

4.7 Conserving and Enhancing the Natural Environment

4.8 Sustainable Waste Management

4.1 Building a Strong and Competitive Economy

The proposed development will contribute to positive economic growth for the District through construction and occupation of the proposed sustainable new homes, supporting the aims of the NPPF. An Economic and Social Benefits Statement has been produced by Turley setting out the benefits of the development on the local economy and community.

Construction – The economic benefits of construction are well known with considerable direct and indirect positive impacts resulting from new residential construction.

A study by the Confederation of British Industries (CBI) in February 2020[9] demonstrates that construction projects have a significant benefit on the local and wider economy. The report concludes that for every £1 of construction expenditure £2.92 is injected into the economy.

The redevelopment of The Oracle will make way for over 3,034m^2 of new commercial space, including a cinema, restaurants and co-working spaces. It will also include 449 new homes and, reconfigured retail space within retained parts of the existing Debenham's store will provide opportunities for local employment as well as increased revenue locally for materials, services and goods.

According to the Economic Benefits Statement provided by Turley, an average of 260 FTE gross direct jobs could be generated during the estimated construction period of 2.1 years and an average of 265 direct, indirect and induced net additional FTE employment opportunities is

[9] https://www.cbi.org.uk/media/4121/fine-margins-february-2020-cbi.pdf

estimated to be generated for workers in the South East during construction.

Occupation – Further positive economic impacts of the proposed development resulting from the occupation of new homes and associated increase in local population include the following identified by Turley:

- The construction of 449 new homes could accommodate 780 residents, 660 of whom it is estimated would be of working age, economically active and employed;
- Residents could earn a combined gross annual income of £19.2 million, generating new demand in the local economy;
- The increase in population via the new residents would generate retail and leisure-related expenditure which would have the capacity to support up to 85 jobs in the respective sectors;
- It is estimated that the development has the potential to accommodate a total of 70 direct, indirect, and induced net additional FTE jobs in the South East;
- £4.5 million net Additional GVA could be generated annually within the South East economy;
- Business rates revenue of £160,000 per annum would be collected by Reading Borough Council every year, 50% of which will be retained locally; and
- An additional £1.0 million in Council Tax receipts for Reading Borough Council could be generated annually once homes are occupied which would provide additional revenue for public services.

Social Value – Turley have also identified the following social value benefits that would result for the local communities from the proposed development:

- Social value of approximately £1.7 million could be generated by the Proposed Development through delivering employment and skills opportunities;
- The delivery of new high-quality, energy efficient homes; and
- The delivery of a mixed-use urban centre development can ensure a healthy and sustainable development and enable social value to be generated within the community.

In this context it is anticipated that the redevelopment of this part of The Oracle will provide a wide range of economic and social benefits.

4.2 Promoting Sustainable Transport

A Transport Statement has been prepared by Stantec summarising the existing conditions in the vicinity of the site, the accessibility of the site relative to local facilities and services and outlines the development proposal for the site.

This section of the report provides a summary of the sustainable access and transport measures available and incorporated into the development.

Walking/Cycling Services – The site is located within Reading town centre and is therefore ideally placed to encourage walking to access a range of retail and leisure facilities, as well as the town centre. The extent of Reading town centre can be accessed via a 10-minute walk and other areas within the vicinity, such as Caversham, Coley and East Reading are all within a 20-minute walk.

Several signed cycle routes are located on roads surrounding the site, including the NCN 422 and town entre route, which intersect the site and run along the southern side of the River Kennet. This is a shared footway and cycleway. There is an additional shared footway and cycle way adjacent to the site along Mill Lane and the IDR to the south of Yield Hall Place 2. The cycle routes connect to the extended cycle network in Reading and connects the site to Reading Town Centre and Reading Railway Station.

There is existing cycle parking provision within the Riverside car park as well as extensive cycle parking along the riverside path of the River Kennet and to the north of Yield Hall Place.

The development proposals include measures to encourage the uptake of sustainable modes of transport. These include:

- Principal entrances located on the riverside connecting to the existing footpaths within the Oracle;
- Additional access points for YHP1 are provided on the frontage facilitating access to the cycle parking;
- Direct access is provided to the cycle parking within YHP2 from the shared footway and cycleway on IDR;
- A new mall entrance is proposed from the Riverside into the Oracle;
- Public realm enhancements are proposed to improve the pedestrian and cycle environment on the Riverside including significant numbers of new trees and landscaping;
- Cycle parking provision will be made for residents with 200 spaces proposed for YHP1 and 156 spaces proposed for YHP2. The proposed numbers exceed the minimum required by the Reading Parking Standards;
- Existing facilities will be retained or replaced for other site uses as part of the proposals within the public realm.

Bus Services – There are a number of bus routes within a short walking distance of the site. Multiple bus stops can be found on Minster Street, Bridge Street and Kings Road. The services serving these bus stops provide access to Newbury, Wokingham and Reading Railway Station. The Transport Statement contains a summary of the local bus services within the vicinity of the site.

Rail Services – The site is approximately a 10-minute walk from Reading Railway Station which provides connections to the regional and national rail network via services by First Great Western, Cross Country Trains and South Western Trains. The station is also the west end terminus for Elizabeth line (Crossrail) services which provides four trains an hour during peak hours, connecting to stations and key interchanges in central and east London.

Reading station contains cycle parking outside the city centre entrance as well as within the underground short stay car park and the long stay car park.

Local Amenities – The development is located within Reading town centre and is part of the existing Oracle shopping centre, therefore, the site is ideally located with convenient access to local amenities and services. Additionally, it's location is ideal for residents to be able to access town centre jobs.

Car Club – The residential units are proposed to be car-free, however, there will be two spaces made available for car club spaces which will allow residents to have access to a car when required.

Sustainable Transport Summary – The town centre location of the development is inherently sustainable being within walking distance of many services, amenities and jobs and is located in close proximity to cycle routes and bus and rail services.

More detailed information on transportation issues and targets is contained in the Transport Statement and Framework Travel Plan that accompanies the planning application.

4.3 Delivering a Wide Choice of High-Quality Homes

The development is a mixed-used, residential led development with commercial spaces. Residential dwellings will be the primary land use within the site.

Sustainable design measures incorporated into the design of dwellings to deliver high quality homes includes:

- Optimal orientation to prioritise natural daylighting and ventilation;
- Ensuring a wide range of dwelling types to accommodate the needs of a mixture of households, including studios, 1, 2 and 3-bedroom homes;
- Energy efficient design and appliance to reducing operating costs for the occupiers.

Further details on how the development will deliver high quality dwellings are set out in the DAS which accompanies the application.

4.4 Requiring Good Design

The design of the redevelopment of The Oracle aims to respond to the site-specific constraints and includes sustainable elements, to create a well-designed development. The proposed development includes the following principles of good design:

- Improve connections with London Street to the south, Yield Hall Place to Minster Street and Riverside to Bridge Street.
- Enhance feelings of safety, security and attractiveness along to the surrounding streets and Riverside.
- Deliver an improved public realm with welcoming landscaped spaces.
- Green the sites and public realm impacted by the development.
- Ensure good visual connectivity from the south towards the town centre.
- Landmark the site as a new southern gateway to central Reading
- Energy and water efficiency as detailed in Section 3.6.

Further details on how the design of the development has evolved to incorporate a range of good design measures are set out in the DAS which accompanies the application.

In addition to the measures set out above the non-residential elements of the development will be designed to achieve a BREEAM Excellent rating. Further details on the BREEAM performance of the development are set out in Chapter 5.

4.5 Promoting Healthy Communities

Creating a high-quality development that promotes health and wellbeing and community cohesion for residents and local people is a key aim of the scheme and aligns with UN SDG 3, 'Good Health and Wellbeing'. In this context the design has been developed incorporating a number of features to enhance the health and wellbeing of the residents, staff and visitors, including:

- The central location of the development with access to a range of services and facilities, accessible on foot, by bike, or by bus;
- The development is also well connected by rail, bus and cycle routes.

In addition, the design of new homes will consider measures to improve internal living environments to promote health and wellbeing including:

- Prioritisation of natural ventilation, contributing to good internal air quality;
- Open plan arrangement to give a sense of spaciousness and good lighting with full height windows providing views out;
- Many homes will be provided with balconies and others will have level access to external courtyards;
- Each block will be provided with a podium and rooftop terraced amenity, accessible to all residents from corridors;
- A resident only amenity lounge is also provided on Yield Hall Place 2;
- Homes will be designed to be adaptable for the future; and
- Materials and services that have low emission rates and pollutants will be utilised.

More information on how the development has incorporated healthy living opportunities is contained within the DAS which accompanies the planning application.

4.6 Meeting the Challenge of Climate Change

One of the main challenges facing the UK and new development is the need to mitigate and adapt to a changing climate. The Government is committed to tackling climate change and in 2019 set out an ambition to extend the UK Carbon reduction target to reduce carbon emissions by 100% by 2050.

Climate change will cause the UK to become warmer, winters will become wetter, and summers will become drier. Adapting to this changing

climate will impact on the design, construction, location, cost and operation of all new buildings in the next few decades. One of the NPPF's core planning principles is for development to consider climate change adaptation and mitigation during the planning process.

The Council's adopted Local Plan and Supplementary Planning Guidance support the Government's objectives for sustainable development reducing energy use and carbon dioxide emissions, adapting to and mitigating the effects of climate change.

In this context the following sections outlines the key climate change mitigation and adaptation measures considered appropriate for this development based on the latest national guidance.

4.6.1 Mitigating Climate Change – Reducing carbon emissions

Developing energy efficient, low carbon homes and buildings is a key objective of national policy and recent changes to the Building Regulations, supporting the reduction of energy demand though efficient building design to reduce carbon emissions.

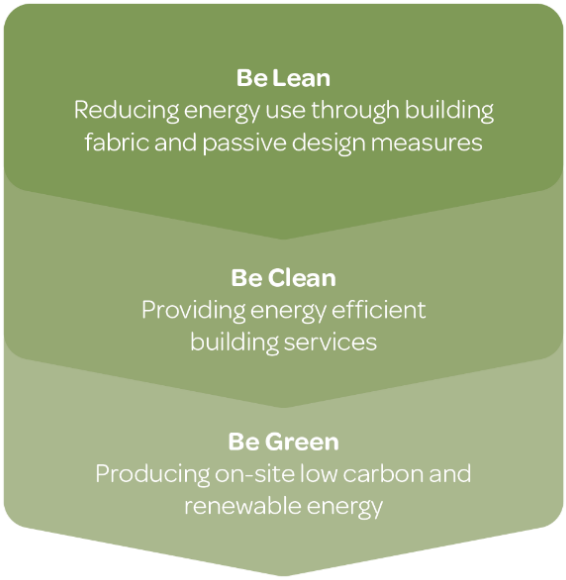
Policy CC4 of the Reading Borough Local Plan requires development to demonstrate how consideration has been given to securing energy for the development from a decentralised energy source. Policy H5 requires all major new-build residential development to be designed to achieve zero carbon homes. Additionally, the Sustainable Design and Construction SPD reinforces the requirement for new residential development to be Zero Carbon but also states that where this is unachievable, development should demonstrate a minimum 35% improvement in the dwelling emission rate over the target emission rate, as defined in the 2013 Building Regulations and planning contribution to offset remaining carbon emissions to zero.

An Energy Statement has been provided by Rolton outlining the energy strategy for the development.

The proposed development has been designed in accordance with the Energy Hierarchy, as shown in **Figure 3,** which aims to reduce energy demand through passive design measures and a fabric first approach before utilising low carbon energy and the production of on-site renewable energy.

The Energy Statement prepared by Rolton includes the consideration of low carbon heating options which make use of local heat sources including the river Kennet.

Figure 3: The Energy Hierarchy



The following sections set out the measures included to deliver an energy efficient, low carbon development.

4.6.1.1 Be Lean – Reducing Energy Use

Central to the delivery of low carbon and energy efficient buildings is the 'Fabric First' principle which recognises the most effective way of minimising carbon emissions is to reduce the demand for heat and power through a well-insulated, energy efficient building fabric and services.

Reducing the primary energy demand of a building through the use of an efficient fabric and services is widely regarded as best practice and is therefore the first and most important step to reducing carbon emissions.

This 'fabric first' approach has a number of distinct benefits including:

- Carbon savings delivered are 'locked-in' for the lifetime of the building (60 years or more);
- Virtually no maintenance and/or replacement costs to maintain carbon reductions through improved fabric;
- No reliance on an occupier's behaviour to deliver carbon reductions.

Energy Efficiency Measures – The commercial aspect of the development will be designed in accordance with the Governments Interim 'Future Buildings Standard' (hereafter, the FBS). The interim carbon reduction target requires a 27% improvement over the previous Part L 2013 standard.

The residential buildings will be designed in accordance with the Governments Interim 'Future Homes Standard' (hereafter, the FHS). The interim carbon reduction target requires a 31% improvement over the previous Part L 2013 standard.

A range of measures will be implemented to reduce energy use and carbon emissions, in line with **Policies CC2 and CC3** of the Reading Borough Local Plan. The detailed design will consider:

- High levels of insulation and air tightness;
- Use of solar shading including the south facing glazed façades to optimise solar heat gain during winter months and minimize summertime heat gain to the building whilst allowing for the best use of natural daylight to reduce lighting usage;
- Provision of exposed thermal mass in the building interior to assist maintaining a steady thermal environment;
- Design to promote daylighting and natural ventilation;
- Use of heat recovery systems within installed mechanical ventilation systems to reclaim heat energy from the building and re-directing to parts of the building requiring heat energy;
- Selection of Active Building Services Systems;
- Use of high efficiency heating systems appropriate to the building use to reduce energy consumption; and,
- Specification of high energy efficient equipment that will use less energy and water.

4.6.1.2 Be Clean – Efficient Energy

The next stage of the Energy Hierarchy is the efficient supply of heat and energy. This means connecting into an existing District Heating Network (referred to as "DHN" hereafter) where possible or providing an on-site communal heat network or individual systems.

Details of the feasibility of a DHN at Land at south of Burford Road is set out below;

District Heating - District Heating Networks can be used to provide centralised heating to developments with a high and constant heat demand. These were deemed not applicable for the development, however, as there are no suitable energy consumers or generators within the local vicinity. The systems would be able to be adapted to accommodate alternative heat / power sources if suitable networks become available in the future.

4.6.1.3 Be Green – Low Carbon Renewable Energy

The final stage of the Energy Hierarchy is the generation of on-site low carbon and/or renewable energy to provide a further reduction in carbon emissions.

A review of potential low carbon or renewable energy technologies and their suitability for inclusion in the development has been completed and are provided below.

Heat Pumps - Heat pumps provide low carbon heat sourced either from the ground (Ground Source Heat Pumps) or air (Air Source Heat Pumps). This type of system is suited to thermally efficient buildings. They require mains electricity to operate but typically provide around three units of heat for every unit of electricity that is consumed. Because the heat generated is at a lower temperature than that produced by a gas boiler, heat pumps typically require underfloor heating or over-sized radiators

to ensure the heat is distributed efficiently. The Government anticipates that the decarbonisation of the electricity network will shift design to using electric heating systems, including heat pumps.

Air Source Heat Pumps - ASHPs extract low grade heat from the air and raise the heat to a higher temperature for domestic heating and hot water loads. They require less space than Ground source heat pumps and less maintenance than combustion-based heating systems. They also have a longer life than combustion boilers.

Heat pumps save carbon emissions. Unlike burning oil, gas, LPG or biomass, a heat pump produces no carbon emissions on site (and no carbon emissions at all, if a renewable source of electricity is used to power them). Heat pumps can also provide cooling in summer, as well as heating in winter.

ASHPs were not deemed suitable for the development due to the limited availability of outdoor locations for an external condensing unit and the complexity of indoor installation.

Ground Source Heat Pumps - Ground source heat pumps (GSHP) draw heat from underground through a refrigeration cycle, and can be a very efficient solution. The ground can also be used as a source of heat and cooling. GSHPs can be either open loop or closed loop. An open loop system will require abstraction and discharge licences from the Environment Agency; a closed loop system comprises of buried pipes. This system requires extensive ground works to extract low grade heat from the earth, proving very expensive.

An open loop system was not deemed a viable technology for the development, however, a closed loop system will be pursued. The river Kennet provides an ideal opportunity to make use of a GSHP that is capable of extracting energy from the river to provide the development with a low carbon heat source to the building. There are sufficient internal plant room sizes and an ideal distance between the development and the nearby river, allowing the required load to be provided as well as reduce the cost in terms of distance excavated.

Wind Power - Wind power can be captured using a catchment device connected to a turbine that will either feed an electrical load directly or charge a battery. It is generally most effective in high, rural locations and as such wind turbine based renewable energy systems are generally not practicable or cost effective for installation in urban locations. Due to planning, cost, height and spatial implications, wind power is not appropriate for this development.

Solar Photovoltaic (PV) - Solar photovoltaic (PV) systems generate zero carbon electricity from sunlight and are well-suited to dwellings with unobstructed south-east to south-west facing roof space. Excess power is exported to the grid or can be harnessed using battery storage. Maintenance requirements are typically minimal. Due to a lack of suitable roof space for plant installation, solar PV will not be pursued.

Solar Thermal - Solar thermal systems generate hot water from sunlight in a similar manner to Solar PV. They require insulated tanks to store the hot water and have greater maintenance demands than solar PV given the need to ensure anti-freeze in the pipework is topped up every few years. They can be a highly cost-effective technology particularly where mains gas supplies are not available, however in energy efficient new homes their benefit can be limited and, due to a lack of suitable roof space for plant installation, solar thermal will not be pursued.

Biomass - Biomass provides useable heat from a range of solid fuels including wood and straw. The installation of a biomass boiler, flue and associated fuel store require significant space which is not considered appropriate for the development.

Combined Heat and Power - CHP boilers simultaneously generate both usable heat and power from the same source. A CHP unit requires a continuous heating or hot water load all year round to operate most efficiently. CHP is not considered appropriate for this development due to the lack of demand for year-round heat

generation and the increased capital cost compared to other technologies.

4.6.1.4 Summary

The detailed Energy Strategy for the proposals at The Oracle will be developed in line with **Policies CC2, CC3 and H5** of the Reading Borough Local Plan, and the energy hierarchy. The detailed design will be undertaken in line with the energy hierarchy utilising a 'Fabric First' principle which recognises the most effective way of minimising carbon emissions is to reduce the demand for heat and power through a well-insulated, energy efficient building fabric and services.

In line with the 'Be Clean' and 'Be Green' energy hierarchy tiers, the development will consider the use of renewables to meet a proportion of energy demand, providing reliable and secure hot water, heating and electricity.

At this stage the design of the development includes the use of a ground source heat pump to provide efficient, low carbon heat to the buildings.

The strategy will ensure the requirements of the interim FHS and FBS will be achieved through the use of energy efficient and renewable energy technologies.

The tables below set out the anticipated carbon emissions of YHP1 and 2, demonstrating a 6-8% reduction in carbon emissions.

Table 1: YHP1 Energy and Carbon Strategy Summary

Baseline Carbon Emissions ($kgCO_2e/m^2/yr$)	Building Carbon Emissions ($kgCO_2e/m^2/yr$)	% Reduction beyond Part L 2021
3.04	2.86	6%

Table 2: YHP2 Energy and Carbon Strategy Summary

Baseline Carbon Emissions ($kgCO_2e/m^2/yr$)	Building Carbon Emissions ($kgCO_2e/m^2/yr$)	% Reduction beyond Part L 2021
3.7	3.05	8%

The current Part L 2021 building regulations have been used to determine the carbon emissions for the building. This already includes a 30% improvement over Part L 2013 and there is an additional 6-8% on that, which therefore meets the Council's minimum requirements as per the Sustainable Design and Construction SPD.

Additionally, in accordance with the SPD, the residual baseline emissions for the development are c.**324 tCO_2/annum** and this gives a carbon offset cost of approximately **£584,726.**

Further information with regards to the energy strategy can be found in the Energy Statement produced by Rolton which accompanies this application and is included in Appendix 2 of this report.

4.6.2 Climate Change Adaptation

The ensure the proposed development is resilient to the effects of climate change it will incorporate a number of key design measures in response to the climate predictions set out in the UKCP18 projections.

The UKCP18 projections demonstrate that over time the UK will experience increased summer and winter temperatures with significantly increased maximum temperatures, reduced summer rainfall, increased winter rainfall and an increase in extreme weather events.

The UK Climate Change Risk Assessment updated in 2021 identifies key risks associated with the effects of climate change and in relation to the built environment and the proposed development these include reduce summer water availability, increased winter rainfall and increased summer temperatures.

This section identifies key measures which will be incorporated into the design of new homes and the proposed development to adapt to climate change.

Water Efficiency

Potable water is an increasingly important natural resource and with the majority of the UK classed as being in an area of moderate or severe water stress the conservation of water is becoming a more significant sustainability metric.

Therefore, the new development will aim to reduce water consumption through a range of water efficiency measures such as:

- Dual flush WCs;
- Water meters;
- Low flow fittings; and
- Where appropriate, water efficient equipment.

Through the use of these measures new homes will target a water consumption rate of 110l/p/d, adhering with **Policy H5** which requires all new build housing will be built to the higher water efficiency standard under the Building Regulations.

Flood Risk and Drainage

ByrneLooby have prepared a Flood Risk Assessment and Drainage Strategy for both sites; Yield Hall Place 1, and Yield Hall Place 2. It is worth noting that the level of flood risk and the resulting proposed drainage strategy for both sites is the same.

Yield Hall Place 1 is located north of the River Kennet, on the Debenhams site, and Yield Hall Place 2 is located south of the River Kennet, covering the Vue Cinema site. Fundamentally, both sites are located within Flood Zone 1, are not located within the vicinity of the coast, nor are situated within the vicinity of a tidal estuary. Therefore, the risk of flooding from this source to both application sites is negligible.

The proposed development, for both application sites, will incorporate SuDS as part of the drainage strategy, aligning with **Policy EN18** of the Reading Borough Local Plan. Surface water from the development will be attenuated within the site boundary prior to being discharged to a maximum flow rate of 2l/s to the existing Thames Water or other operated storm sewer(s).

The design for the proposed development at the application sites include the following SuDS systems:

- Rainwater harvesting will utilise run-off to provide a source of irrigation for green roofs and landscaping that is proposed as part of the application;
- A sedum green roof for approximately 50% of the roof area to provide attenuation and reduce run-off. This will be achieved via a combination of roof gardens with raised beds and pots, rolled-out green planting cells that are filled with soil or compost and planted up with low growing perennials and grasses; and
- Consideration of rainwater harvesting in areas such as the roof to provide irrigation to planting in dry seasons.

The attenuation of surface water within the site boundaries will limit the rate of discharge via an attenuation tank system located below ground floor level. It is intended that the stormwater will discharge via gravity to the existing storm sewers at street level. The attenuation tank will be designed to attenuate a 1 in 100 year + 40% climate change storm event using WinDes hydraulic modelling software.

Further information on the flood risk and the proposed surface water management system for both sites can be viewed in the accompanying Flood Risk Assessment and Drainage Strategy.

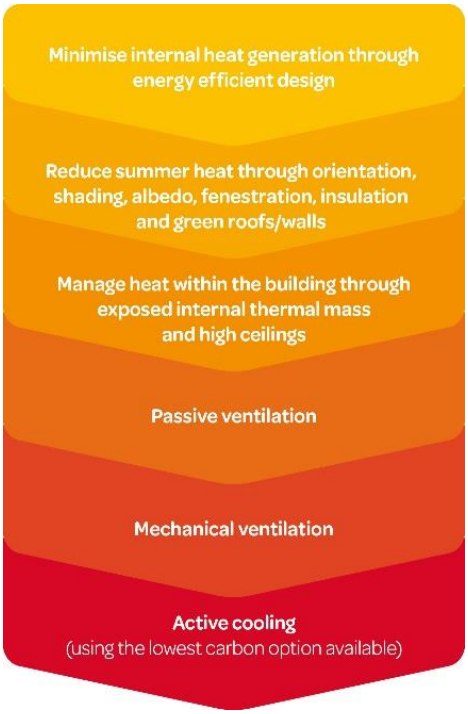
Overheating

With increasing summer temperatures there is an increasing risk of overheating in buildings which could adversely affect building occupants and users.

All homes will be designed in accordance with the new Building Regulations Part O Overheating that came into force in June 2022. Part O requires development to reduce overheating risk through the incorporation of passive solar design measures.

Additionally, the proposed dwellings will be designed in accordance with the cooling hierarchy, as shown in **Figure 4,** which aims to reduce any potential overheating in buildings. Incorporating the cooling hierarchy into the design process means buildings will be better equipped to manage their cooling needs and to adapt to and mitigate climate change.

Figure 4: Cooling Hierarchy



New non-residential elements will also undergo overheating assessments, including thermal dynamic modelling and taking account of future climate scenarios where there is a potential risk of overheating. Where appropriate measures to reduce the risk of overhear5ing will be included in accordance with the cooling hierarchy.

4.7 Conserving and Enhancing the Natural Environment

The redevelopment of The Oracle will incorporate measures to support and enhance the environment through consideration of the existing site ecology, including measures to mitigate the impact of the site and enhance site biodiversity, as well as incorporate measures to reduce pollution from the site.

4.7.1 Ecology

HDA have produced separate Ecological Appraisals for each site (Yield Hall Place 1 and Yield Hall Place 2) to establish the ecological status of the site and the ecological implications of the proposed development at The Oracle.

In line with the objectives of Policy EN12 Biodiversity and the Green Network, to protect the site habitats and species a range of mitigation and enhancement measures have been proposed and recommended as part of the Ecological Appraisal.

Mitigation Measures – Mitigation measures to be incorporated into the development include:

- Construction should be carried out in accordance with the Environment Agency's 'Pollution Prevention for Businesses' guidelines to protect the quality and quantity of water entering the Kennet and Avon Canal;
- Development should seek to minimise the loss of trees where possible and to protect retained trees within and adjacent to the site. Where tree loss is unavoidable, comparable replacement habitat should be provided within the site;
- Removal of trees with low bat roost potential within Yield Hall Place 2 should be done in accordance with best practice guidelines (BCT, 2016);
- The lighting scheme should be designed to minimise light spill onto semi-natural areas, landscape planting, and the Kennet and Avon Canal;
- An ecological check should be carried out prior to any works undertaken to the small area of scrub located at the level of the canal and a precautionary approach should be taken to any clearance of the small area of scrub;
- Any ground level clearance works or removal of refugia/hibernacula should be carried out during suitable climatic conditions at a time of year when reptiles are active (generally April to September inclusive) under the supervision of an appropriately qualified ecologist who would relocate any reptiles to an area of suitable habitat;
- Any shrub/tree clearance and demolition works should be carried out outside of the bird breeding season (March to August inclusive). Where this is not possible, an ecologist should carry out a check for nesting birds before the commencement of works; and
- Within Yield Hall Place 2, Cotoneaster was recorded during the Phase 1 habitat survey. Site works should prevent the spread of Cotoneaster within or outside of the site (unless a further survey confirms only non-invasive forms of Cotoneaster are present at the site).

Enhancement Measures – A number of ecological enhancements have been proposed, which would improve the quality of the site for native flora and fauna. These enhancement measures include:

- Provision of new opportunities for movement of wildlife within and around the site, complementing off-site areas of connective habitat where possible;
- Provision of bird and bat boxes on buildings and retained trees;
- Use of nectar-rich and fruit-producing species within formal landscaping;
- Prioritise native species in landscape planting where appropriate;
- Inclusion of habitats of high nature conservation interest within areas of open space, ideally in locations where they complement existing habitats and/or improve connectivity;
- Provision of log and brash piles to provide habitat for invertebrates, amphibians, and reptiles;
- Sensitive use of lighting to avoid adverse effects on nocturnal wildlife; and
- In accordance with **Policy EN9**, creation of amenity roof terraces and biodiverse green roofs to encourage habitat creation where appropriate. There is an opportunity to provide many pollinating plants and a mixture of plant species across these upper roof levels, as well as small trees.

The above mitigation and enhancement measures would reduce the impacts of the development proposals upon the habitats and species present.

The proposed development will deliver a net gain in biodiversity in accordance with **Policy EN12** of the Reading Borough Local Plan. HDA have

undertaken Biodiversity Impact Assessment calculations for the Debenhams site and the Vue site. It has been determined that, based on the current designs, the Debenhams site (YHP 1) will achieve 49.79% net gain in broad habitats and a 100% net gain in linear habitats and the Vue site (YHP 2) will achieve a 30.72% net gain in broad habitats and a 100% net gain in linear habitats.

4.7.2 Pollution

The proposed development will aim to minimise any negative impacts on the natural environment considering the impacts of water use, materials, and air quality.

Water – Throughout construction water quality will be maintained by the following measures:

- Reduce erosion and run-off by minimising land disturbance and leaving vegetation cover where possible;
- Cover skips and trucks loaded with construction materials and continually damp down with low levels of water;
- Use non-toxic paints, solvents and other hazardous materials wherever possible; and
- Segregate, tightly cover and monitor toxic substances to prevent spills and possible site contamination.

Sustainable Materials – Insulation materials containing substances known to contribute to stratospheric ozone depletion or with the potential to contribute to global warming will not be used. Natural insulation materials such as mineral wool, rock wool or cork board will be considered as they are amongst the lowest Global Warming Potential (GWP) rating.

To further enhance the development a number of additional measures will be considered during the detailed design of new homes to minimise pollution, including:

- The use of key internal finishes and fittings which comply with best practice emissions levels of Volatile Organic Compounds (VOCs) and other substances;
- Where appropriate, the use of low NOx emission boilers, further reducing the impact of the development; and
- Specification of low Global Warming Potential (GWP) and zero Ozone Depleting Potential (ODP) insulation materials.

In addition, the development will aim to use a range of sustainable materials and design features and will make use of;

- Sustainable timber from FSC (or equivalent) sources; and
- Materials specified using the BRE Green Guide to construction.

Through these measures the development aims to protect and enhance the natural environment.

4.8 Waste Management

Construction Waste Management

Prior to the construction phase a Construction Environmental Management Plan (CEMP) will be developed to ensure the use of measures to minimise waste during the construction phases of the development, including the use of a scheme for recycling/disposing of waste arising from demolition and construction works. This will be approved by the Local Planning Authority prior to commencement.

The reduction, reuse and recycling of construction waste is to be prioritised through measures such as avoidance of over-ordering, supervision of deliveries, use of secure materials storage facilities and reuse of materials onsite where feasible.

In addition, the development will be registered with the Considerate Constructors Scheme and achieve certification against the Code of Considerate Practice.

Operational Waste Management

In accordance with the principles of the waste hierarchy the development will make provision for the storage of non-recyclable waste and recyclable waste for both the residential spaces and commercial spaces. According to the Transport

Statement, it is estimated that waste storage for each use will be based on a ratio of 70% separated recyclables and 30% for refuse.

Full consideration will be given to the Council's waste management infrastructure and services to ensure that the occupiers have the necessary infrastructure to participate in any kerbside recycling services.

5. BREEAM Strategy

This Chapter introduces BREEAM and sets out the strategy proposed to achieve an 'Excellent' rating in line with Policy CC2 of the Local Plan.

5.1 BREEAM

BREEAM is the world's leading sustainability assessment tool for new buildings. The scheme is scheme operated by the Building Research Establishment (BRE) and includes a range of criteria against which the sustainability performance of new buildings are assessed.

Since its launch in 1990, BREEAM has been used to certify over 560,000 assessments of buildings across 82 countries. BREEAM has a number of schemes which can be applied to new buildings, refurbishments and existing buildings. Additionally, each scheme regularly updated to ensure it continues to recognise and reward developments that go beyond minimum practice and requirements, for example those set out by Building Regulations.

5.1.1 BREEAM 2018 New Construction

The current BREEAM New Construction standard is Version 6.0 and the current BREEAM Refurbishment and Fit-Out standard is the 2014 Version 2.0, under both of which there are several sub-schemes applicable to the development. The sub-schemes include:

BREEAM New Construction:

- Offices (Co-Working Unit, Yield Hall Place 1);
- Retail (Restaurant, Yield Hall Place 1);
- Assembly & Leisure (Cinema, Yield Hall Place 2); and
- Retail (Restaurant Unit, Yield Hall Place 2).

BREEAM Refurbishment & Fit-Out:

- Assembly & Leisure (Leisure space, Yield Hall Place 1); and
- Retail (Retail space, Yield Hall Place 1)

BREEAM includes nine categories which are listed within **Table 3** overleaf, plus an exemplary section for going above and beyond the standard credit criteria.

5.2 BREEAM Strategy

BREEAM New Construction 2018

In line with **Policy CC2**, the non-residential elements of the proposed redevelopment of Yield Hall Place 1 and Yield Hall Place 2 in Reading will target BREEAM ratings of Excellent.

Turley Sustainability has undertaken pre-assessments for the following new build non-residential areas of the development (see **Appendix 3** using the appropriate methodologies:

- Commercial (co-working space, Yield Hall Place 1) – BREEAM New Construction 2018 'Offices' methodology
- Retail (restaurant, Yield Hall Place 1) – BREEAM New Construction 2018 'Retail' methodology

- Leisure space (replacement cinema, Yield Hall Place 2) – BREEAM New Construction 2018 'Assembly & Leisure' methodology
- Retail (retail units, Yield Hall Place 2) – BREEAM New Construction 2018 'Retail' methodology

Table 3 sets out potential routes to BREEAM Excellent and targeted credits.

It should be noted that the credits achieved as part of the final scheme may vary, as is the norm as the development progresses.

Table 3: BREEAM New Construction 2018 Pre-assessment Results

Category	Offices (Co-Working Unit, YHP 1)	Retail (Restaurant, YHP 1)	Assembly & Leisure (Cinema, YHP 2)	Retail (Restaurant Unit, YHP 2)
Management	10.40%	10.40%	10.40%	10.40%
Health & Wellbeing	4.38%	4.38%	5.00%	4.38%
Energy	5.12%	5.12%	5.12%	5.12%
Transport	10.88%	10.88%	10.88%	10.88%
Water	2.00%	2.00%	2.00%	2.00%
Materials	17.29%	17.29%	17.29%	17.29%
Waste	6.40%	6.40%	6.40%	6.40%
Land Use & Ecology	16.08%	16.08%	16.08%	16.08%
Pollution	3.00%	3.00%	3.00%	3.00%
Exemplary	2.00%	2.00%	2.00%	2.00%
Score	**77.53% (Excellent)**	**77.53% (Excellent)**	**78.15% (Excellent)**	**77.53% (Excellent)**

The currently anticipated BREEAM scores meet the minimum 70% score required for BREEAM Excellent with a margin a safety and includes the relevant mandatory credits.

BREEAM Refurbishment and Fit-Out 2014

For the Refurbishment and Fit-Out (RFO) BREEAM phase, covering the refurbished areas of the existing development, a minimum rating of BREEAM Excellent is required. The development will be assessed under the BREEAM RFO 2014 technical manual.

Following a scoping exercise carried out with the design team, it was determined that the applicable scope of works for the BREEAM RFO assessments would be:

- Part 1: Fabric and Structure

This will be used to assess the following refurbished areas of the development:

- Leisure (leisure space in the retained building at the Riverside level)
- Retail unit (fashion retail space in the retained building across two levels of the lower mall and upper mall)

Table 4 sets out a potential route to achieving BREEAM Excellent for the refurbished areas of the proposed development. Please note that the route to BREEAM Excellent compliance, as set out in the pre-assessments, may be subject to change during ongoing detailed design and construction.

Table 4: BREEAM Refurbish and Fit-Out 2014 Pre-assessment Results

Category	Assembly & Leisure (Leisure space, YHP 1)	Retail (Retail space, YHP 1)
Management	12.73%	13.19%
Health & Wellbeing	4.67%	4.84%
Energy	2.96%	3.07%
Transport	12.57%	10.65%
Water	1.14%	1.18%
Materials	18.13%	18.78%
Waste	6.43%	6.66%
Land Use & Ecology	13.71%	14.20%
Pollution	3.95%	4.10%
Exemplary	2.00%	2.00%
Score	**78.30% (Excellent)**	**78.67% (Excellent)**

The currently anticipated BREEAM scores meet the minimum 70% score required for BREEAM Excellent with a margin a safety and includes the relevant mandatory credits.

Please note that the route to BREEAM Excellent compliance, as set out in the pre-assessments, may be subject to change during ongoing detailed design and construction.

A summary of credits targeted within each category, and the value that meeting the criteria brings to the development, is discussed in the following sections. A full breakdown of each credit targeted is provided within **Appendix 3**.

5.2.1 Management

The management category encourages the adoption of sustainable management practices in connection with design, construction, commissioning, handover and aftercare.

The credits within this category are awarded to project and design teams who consider and incorporate sustainability measures, involving key stakeholders from project brief through to occupation.

Sustainability practices targeted include life cycle costing, seasonal commissioning, consideration of construction site impacts, testing of building fabric and post occupancy evaluation.

5.2.2 Health and Wellbeing

The Health and Wellbeing category of the BREEAM schemes has been aligned with the 'WELL' Standard, bringing the comfort of building occupiers to the forefront of the design.

The visual comfort, acoustic performance, security and safety of the development proposal will be considered to ensure a comfortable, high quality living environment for the building occupants.

The building occupants will have ample access to outside space, including outdoor terraces, to contribute towards their health and wellbeing.

5.2.3 Energy

The Energy category encourages the specification and design of energy efficient solutions, systems and equipment. The credit requirements support the reduction of carbon emissions throughout the operational phase of the development proposal.

Energy modelling will be undertaken for a number of operational scenarios to reduce the performance gap between 'as designed' and 'in use' energy performance. Furthermore, extensive sub-metering will allow the building user to monitor energy performance to establish possible efficiencies during operation.

Studies will also be undertaken to identify opportunities to implement passive design measures and incorporate low and zero carbon technologies to reduce energy demand and consumption.

5.2.4 Transport

A Transport Assessment has been undertaken to assess the effect of the development on local transport infrastructure. A Travel Plan has also been produced for the occupiers, to communicate proposed sustainable transport measures to reduce private car travel to and from site.

Credits are awarded on the basis of number of transport options available to the site pre-development and as a result of the development.

The development is well located for accessibility by public transport and the proposals will include sufficient cycle storage and cyclist facilities for building users. Furthermore, the development users will benefit from the local amenities nearby and the development itself will provide new amenities in the form of new restaurants and outdoor amenity space.

As discussed in **Section 4.2**, cycle storage will be provided.

5.2.5 Water

The aim of the Water category is to reduce the consumption of internal and external potable water over the lifetime of the building and minimising losses through leakage.

Water usage will also be monitored through water meters and a leak detection system.

5.2.6 Materials

The Materials category encourages development to take a 'whole life cycle' approach to construction products, considering impacts of the supply chain from raw material, to end-of-life.

At concept design, a life cycle assessment of the development's superstructure (external walls, frame, roof etc.), substructure and hard landscaping has been undertaken, to model the environmental impact, including carbon emissions, associated with construction and materials. An options appraisal was produced to identify carbon 'hotspots', and any measures which could reduce these emissions. An update will be provided at Technical Design to assess the impact of the superstructure.

To reduce material wastage associated with maintenance and replacement, protection measures will be incorporated into the detailed design to protect from damage that may arise from residents, staff and visitors, such as protecting internal areas from trolley movement, pedestrian traffic or external areas from parking and/or delivery vehicles.

On the refurbishment, the design team will consider the materials and that will reused or have environmental product declarations.

The design team will also consider the effect of environmental factors such as water ingress, solar radiation and temperature variation on the building.

Manufacturers with responsible sourcing accreditation, for example, BES6001, ISO14001, FSC and CARES certification will be prioritised during construction.

5.2.7 Waste

The Waste category encourages the reduction of waste associated with construction methods through measures implemented during the design and on-site management. The category also rewards design measures encouraging the building users to recycle waste during building operation.

The proposed development will minimise construction and operational waste in line with the measures set out within the waste (**Section 4.8**) of this report.

Additionally, the design is flexible and adaptable to climate change, change in use and refurbishment to reduce the environmental impacts of excess material usage and waste in the future.

5.2.8 Land Use and Ecology

The aim of the Land Use and Ecology category is to encourage sustainable land use, habitat protection and creation and improvement of long-term biodiversity.

As discussed within **Section 4.7**, an Ecological Appraisal has been undertaken by HDA for each site which provides a number of enhancement measures. These will be quantified in line with the DEFRA metric to confirm the BREEAM credits targeted.

5.2.9 Pollution

The aim of the Pollution category is to address the prevention and control of pollution and surface water run-off associated with the building's location and use.

Pollution issues covered within the credit requirements include light, noise, flooding and emissions to air, land and water. However, not all of these are applicable to Shell Only (NC) or Part 1 (RFO) assessments.

Pollution impacts associated with light will be reduced and managed appropriately.

A FRA has been undertaken which classifies the site as within Flood Zone 1, and at low risk of flooding from rivers and sea, as set out in **Section 3.6**. Mitigation measures are being incorporated into the design to ensure surface water run-off is appropriately managed.

5.3 Summary

The above section summarises the credits targeted by the proposed development to achieve an Excellent rating on the BREEAM Assessments across the proposed redevelopment. The pre-assessments demonstrate target scores which would achieve the required ratings with a significant margin of safety.

It should be noted that this Sustainability Statement does not guarantee the award of these credits and may not reflect the final route to achieve the required BREEAM ratings. Credits may be removed and replaced with others which may be more viable over the course of the design and construction.

6. Conclusion

This Sustainability and Energy Statement has been prepared to demonstrate how the proposed development responds positively to national and local sustainable policy requirements.

The proposed development at The Oracle has been designed to respond positively to national and local plan policy incorporating measures to deliver social and economic benefits, while also protecting and enhancing the environment where possible. This includes the consideration of measures to mitigate GHG emissions, including an efficient ground source heat pump, as well as measures to adapt to the effects of climate change.

Hammerson ESG – Hammerson has a proactive approach to sustainability and Environmental Social Governance and have a vision to create places that deliver positive environmental and socio-economic impacts. A Sustainability Implementation Plan (SIP) has been developed to provide a structure tracking tool throughout the stages of development.

The Sustainability and Energy Statement which accompanies the application sets out key sustainable design measures incorporated at this stage and to be considered during the detailed design of homes.

Social and Economic Benefits – The development aims to provide a range of social and economic benefits to both new and existing residents, through:

- Provision of 449 news homes and new restaurants, a cinema and co-working space, providing opportunities for local people;
- Incorporation of sustainable transport measures to encourage active travel in the form of walking and cycling, through provision of cycle storage and facilities;
- A development in a sustainable location with a range of services and amenities within walking distance of the site; and
- Homes designed to create healthy living environments which are flexible for the future;

Environmental Protection and Enhancement – Through a range of design measures the development aims to protect and enhance the local environment, including:

- Homes designed to make use of sustainable materials to reduce environmental impacts of construction;
- Provision of measures to protect on-site ecology and enhancement measures, in accordance with **Policy EN12**, to deliver a biodiversity net gain, which also helps reduce the impact of climate change on site habitats; and
- Provision of measures through construction and operation of the site to reduce pollution, minimise waste and encourage recycling.

Mitigating and Adapting to Climate Change – In recognition of the climate emergency and in accordance with **Policy CC3**, the development will incorporate a range of measures to reduce carbon emissions, mitigating the effects of climate change, and adaptation measures to ensure the long-term resilience of the development to the effects of climate change. Measures include:

- Targeting a BREEAM 'Excellent' rating on the non-residential spaces in accordance with **Policy CC2**;
- Homes designed to reduce carbon emissions in accordance with the updated Building Regulations through the use of energy hierarchy, using a fabric first approach to design to reduce energy demand, helping mitigate the effects of climate change;
- The nearby River Kennet will be utilised and a ground source heat pump will provide low carbon heat to the development;
- To meet **Policy H5**, specification of water efficient fittings to reduce water consumption to 110 litres per person per day in line with the government's higher water efficiency standard;
- Development of new homes in Flood Zone 1 and provision of a surface water drainage system designed to mitigate for a small amount of flood water under a 1 in 100 annual probability plus 40% climate change rainfall event; and
- Homes designed to take into account increasing annual temperatures set out in the UKCP18 climate projections to minimise the risk of overheating.

Hammerson are committed to the delivery of sustainable homes and buildings which include measures which provide economic and social benefits, protect and enhance the environment, as well as mitigating and adapting to the long-term effects of climate change.

Appendix 1 – Sustainability Design Checklist

Residential Development		
Energy/CO_2	How has the development been designed to optimise the use of the energy from the sun and limit heat losses?	See section 4.6.2
	How has the development been designed to optimise natural daylighting, energy efficient lighting, external lighting and natural ventilation?	See sections 4.3 and 4.6.1
	How will the design of the building make efficient use of energy? (e.g. use of thermally massive materials, levels of insulation, energy efficient white goods and use of green/ brown roofs etc.).	See sections 4.6.1 and 4.7
	Has local energy generation from renewables and/or decentralised energy been considered as part of the scheme?	See section 4.6.1.2
	How have cycle storage facilities been considered?	See section 4.2
	Does the development meet the requirements of policies H5? Is this clearly illustrated?	See sections 4.6.1 and 4.6.2
	Is a Section 106 contribution required? If so, what amount?	To be prepared separately to this statement
Water	How will the development incorporate the use of water saving devices to achieve the higher water efficiency standard under Regulation 36(3) of the Building Regulations?	See section 4.6.2
	How will the development incorporate recycling rainwater and reduce the use of potable water?	

	Has the collection, treatment and re-use of grey water been considered? If so, how will these facilities be incorporated within the development?	
Materials	How will the selected materials help retain local character, ensure long life and ensure a low environmental impact, including consideration of embodied energy?	See sections 4.3 and 4.4
Surface Water Run-off	How has the development considered flooding and pollution?	See sections 4.6.2 and 4.7.2
	Has the design considered the use of sustainable drainage systems (SuDS) and how will they be incorporated within the development?	See section 4.6.2
	Does the development meet the requirements of policy EN18?	
Waste	How will the development minimise waste sent to landfill?	See section 4.8
	How will the development make the maximum use of construction and demolition waste?	
	How will the development make maximum use of re-used and recycled materials?	
	How will provision be made for the storage and recycling of waste for all users of the site?	
Pollution	What measures have been incorporated to ensure that noise and light pollution will be minimised through the development?	See section 4.7.2
	What measures have been incorporated to reduce nitrogen oxide emissions and reduce the global warming potential of insulants?	See section 4.7.2 ???

	What measures have been incorporated to reduce the release of pollution into the atmosphere?	See section 4.7.2
Health & Wellbeing	How has the development been designed to maximise natural lighting, reduce the likelihood of noise complaints, incorporate private outdoor space and ensure the layout of the development can be easily adapted to meet the needs of future occupants?	See sections 4.3, 4.4 and 4.5
Management	What measures have been taken to ensure the construction of the site is managed in an environmentally and socially considerate manner, mitigating environmental impacts?	See section 4.8 ???
	How has the development been designed to ensure people feel safe and secure?	See DAS
Ecology	How have the wildlife habitats and natural features on and adjacent to the site been considered and how will they be retained, protected and enhanced?	See section 4.7.1 and accompanying ecological survey.
Non-Residential Development		
Management	Will guidance for the non-technical building user be provided so they can understand and operate the building efficiently and understand how the design reduced the overall environmental impact of the building and raise environmental awareness?	See section 5 and appendix 2 containing the BREEAM pre-assessments.
	What consideration has been given to resource use, energy consumption and pollution in terms of the construction site impacts?	
	Will site investigation and appropriate remedial action be undertaken?	
	Will the community and stakeholders be involved in the design process encouraging flexibly designed buildings which cater for shared use with the local community?	
	How has the building been designed to reduce the opportunity for and the fear of crime?	

	What consideration has been given to the maintenance of the building?	The non-residentials areas are shell only so maintenance is not deemed applicable.
Health & Wellbeing	How has the development been designed to ensure users have sufficient daylight, an external view, adequate and appropriate lighting, ventilation, air quality and drinking water?	See sections 4.3, 4.4, 4.5, 5 and appendix 2 containing the BREEAM pre-assessments.
Energy	How has the building been designed to minimise CO2 emissions associated with their operational energy consumption?	See section 4.6.1
	How has the development been designed to optimise the use of the energy from the sun, natural daylighting and controlled natural ventilation?	See sections 4.3 and 4.6.1
	How will the design of the building make efficient use of energy? (e.g. use of thermally massive materials, levels of insulation and use of green/brown roofs etc.).	See sections 4.6.1 and 4.7
	Have renewable energy sources or decentralised energy been considered for this development and if so, how would they be incorporated within the development?	See section 4.6.1.2
Transport	How has the design and layout incorporated measures to reduce the need to travel, especially by car, and promote alternative and sustainable modes of transport such as walking, cycling and the use of public transport?	See sections 4.2, 5 and appendix 2 containing the BREEAM pre-assessments.
	How have public transport networks been considered in terms of the location of the development and proximity to local amenities?	See section 4.2
	How have deliveries and the manoeuvring of delivery vehicles been considered?	See Transport Assessment
Water	How will the development incorporate the use of water saving devices to achieve a maximum consumption of 5.5 cubic m per year per person for office developments? (or the most appropriate benchmark for other types of development).	See section 4.6.2

	Will the development and access to and from it such as roads and paths be located away from areas of potential flooding?	See FRA and Drainage Strategy
	How will the development incorporate harvesting and re-use of rainwater?	See section 4.6.2
	Does this development meet the requirements of EN18?	See section 4.6.2
Materials	How will the selected materials help retain local character, ensure long life and ensure a low environmental impact, including consideration of embodied energy?	See sections 4.3, 4.4, 5 and appendix 2 containing the BREEAM pre-assessments. A Life Cycle Assessment has been undertaken.
	What consideration has been given to reusing materials in-situ, responsibly sourcing materials and re-using existing structures?	See section 5 and appendix 2 containing the BREEAM pre-assessments.
Waste	Has an audit of the materials present on the site been conducted with an assessment of the extent to which materials could be re-used?	See sections 4.8, 5 and appendix 2 containing the BREEAM pre-assessments.
	How will the development make the maximum use of construction, demolition waste and recycled materials?	
	How will provision be made for the storage and recycling of waste for all users of the site?	
Land Use and Ecology	How have the wildlife habitats and natural features on and adjacent to the site been considered and how will they be retained, protected and enhanced?	See section 4.7.1 and accompanying Ecological Survey.
	What consideration has been given to not using previously undeveloped land?	See accompanying DAS.
	What consideration has been given to the removal of contamination from the land?	There is no contamination on site.
Pollution	What measures have been incorporated to ensure that noise and light pollution plus pollution transported through surface water runoff or infiltration will be minimised through the development?	See sections 4.7.2, 5 and appendix 2 containing the BREEAM pre-assessments.

	What measures have been incorporated to ensure that light pollution will be minimised through the development?	
	What consideration has been given to reducing refrigerants and minimising nitrogen dioxide emissions?	
	How has the development been sited to minimise the impact of flooding?	See sections 4.6.2, 5 and appendix 2 containing the BREEAM pre-assessments.
	How has the design considered the use of sustainable drainage systems (SuDS) and how will they be incorporated within the development?	
Innovation	What consideration has been given to innovative sustainability measures in terms of a procurement strategy, design feature, management process or technological	See section 5 and appendix 2 containing the BREEAM pre-assessments.

Appendix 2 – Energy Strategy (Source: Rolton)

ROLTON GROUP
ENGINEERING THE FUTURE™

ENERGY STATEMENT

FOR

THE ORACLE, READING - BUILD TO RENT SCHEME

PROJECT NUMBER:	21-0388
DOCUMENT REFERENCE:	210388-RGL-ZZ-XX-RP-U-95-0003
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1.0 EXECUTIVE SUMMARY

This report has been produced by the Rolton Group to outline the high-level energy strategy for the proposed development for the Oracle Centre in Reading and is intended to assess the means of achieving the requirements set out in the national and local planning policies particularly relating to the site.

This energy strategy has been developed in line with the widely recognised Energy Hierarchy model, which utilises a three-stage approach in order to reduce the site's carbon emissions. The strategy focuses on the "Be Lean, "Be Clean" and "Be Green" methodology to minimise the energy consumption of the development. A fabric first approach, adoption of energy efficient equipment, passive and active design measures and renewable technologies are considered for the scheme to achieve both carbon and energy reduction.

Based on the current model there is a reduction in both energy and carbon emission for of 6% and 8% for YHP1 for YHP2 respectively - relative to the notional building.

When comparing the proposed system to a conventional boiler system there is 224% difference in carbon emissions and 225% difference in energy rate for YHP1.YHP2 has a 142% for carbon emissions and 146% for energy rate.

This will equate to an energy Opex savings of approximately £83k per annum relative to the notional building.

2.0 INTRODUCTION

The Oracle, Reading is a large indoor shopping/leisure mall situated near the River Kennet. The property is currently owned and developed by a joint venture between Hammerson and Abu Dhabi Investment Authority. The property was acquired in 1997 and is approximately 22 acres in size. The site currently contains approximately 90 retail stores, mixture of 22 restaurants, cafes and bars as well as a 11-screen cinema. There is parking on site with an estimated total capacity of 2,300 spaces.

The current proposal is for a demolition of the buildings which currently house VUE cinema and Debenhams. The new build will contain a mixture of residential and retail. The proposal will include the lower levels for retail and upper levels for residential apartments. Debenhams which has been given to connotation Yield Hall Place 1 (YHP1) shall be constructed with a total of 19 floors which contain 11 studio apartments, 119 one-bedroom apartments, 64 two-bedroom apartments and 4 three-bedroom apartments. VUE which has been given the connotation Yield Hall Place 2(YHP2) side will be constructed with a total of 16 floors which contain 20 studio apartments, 119 one-bedroom apartments, 98 two-bedroom apartments and 10 three-bedroom apartments.

The philosophy of the project is to reduce as much carbon as possible for an environmentally friendly operation. The current proposal for MEP operation includes a number of heat pumps which will operate via an ambient loop system. A ground source system is ideal for this site as the river Kennet runs relatively close by and renewable energy can be harnessed to provide heating/cooling for the site. Gas will be avoided where possible and energy efficient technologies will be utilised across the build.

The initial energy assessments for the development use a mixture of energy modelling methodologies to define the baseline energy consumption and carbon dioxide emissions benchmarks used within this strategy. The required information for each building has been derived through approved software (Tas) as well as information gathered from energy strategies used on previous similar projects.

During the modelling of the building type we have used the hierarchical methodology of "Be Lean, "Be Clean" and "Be Green" to reduce energy for the development as outlined below: -

"Be Lean" energy efficiency measures will include passive and active solutions such as: optimised U-Values, low air permeability, low energy lighting, heat recovery ventilation, natural ventilation strategies, limitation of overheating, etc.

"Be Clean" stage of the energy hierarchy reviews and considers air source heat pump technologies, or other such technologies.

With respect to the "Be Green" element a number of renewable energy technologies have been considered and these have been assessed on their suitability for the development and the varying building types. Those technologies deemed as most feasible for the development have been reviewed in more detail and proposed for the various building types. The general overall strategy is that Air source heat pumps would offer the greatest contribution to the reduction of carbon and energy emissions, whilst minimising the environmental impact.

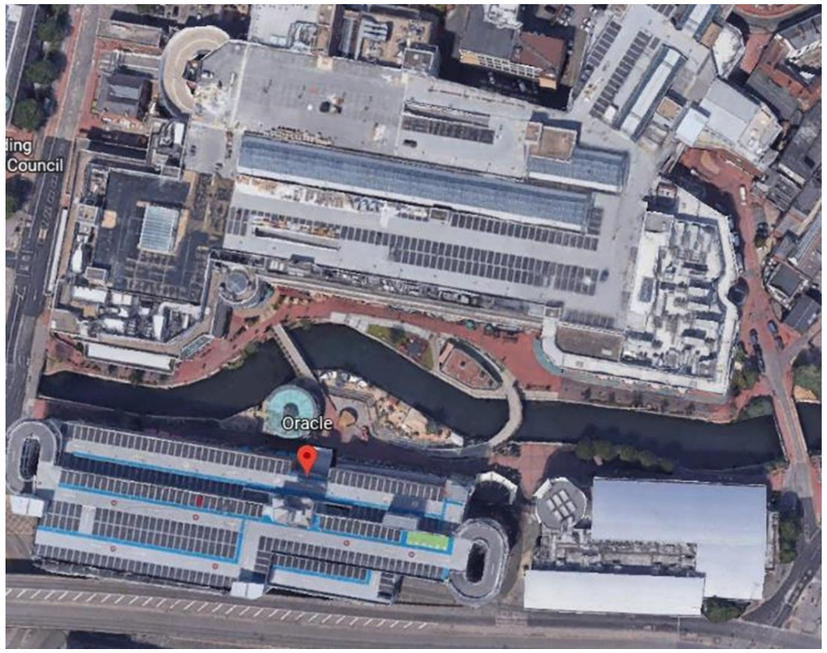

Figure 1 – Site Overview

Budget	Carbon budget level	Reduction below 1990 levels	Met?
1st carbon budget (2008 to 2012)	3.018 $MtCO_2e$	25%	Yes
2nd carbon budget (2013 to 2017)	2.782 $MtCO_2e$	31%	Yes
3rd carbon budget (2018 to 2022)	2.544 $MtCO_2e$	37% by 2020	On track
4th carbon budget (2023 to 2027)	1.950 $MtCO_2e$	51% by 2025	Off track
5th carbon budget (2028 to 2032)	1.725 $MtCO_2e$	57% by 2030	Off track
6th carbon budget (2033 to 2037)	965 $MtCO_2e$	78% by 2035	Off track
Net Zero Target		At least 100% by 2050	

Figure 2 - UK Govt. Carbon Reduction Target

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2.1 NATIONAL POLICY

Due to the current climate there is a significant push for renewable projects to be utilised. The UK government plans to reduce their carbon emissions by at least 100% when compared to the 1990 levels by 2050. For this reason, the 'Climate Change Act' was implemented to promote renewable and low carbon technologies to allow the country to achieve this goal. System efficiencies play a key part in this goal as there is a reduced carbon implication for high efficiency systems.

2.2 LOCAL POLICY & PLANNING CRITERIA

In February 2019, Reading Borough Council declared a Climate Emergency and set out on a journey to achieve a carbon neutral borough by 2030.

The Carbon Plan 2020-25 will work towards four headline targets as follows - by 2025 we will:

- Reduce the organisation's carbon emissions by 85%, against a 2008/9 baseline
- Generate equivalent to 50% of our energy from renewable sources by 20252
- Reduce our use of fossil fuels by 50%, against a 2008/09 baseline
- Achieve a 5% p.a. reduction in water use against a 2019/20 baseline.

By achieving these targets Reading Borough Council will be on track to meet its challenging ambition of becoming a net zero carbon organisation by 2030.

The SPD is intended to guide developers and decision-makers on the implementation of key sustainability policies set out in the Reading Local Plan namely CC2-CC5 and H5.

CC2: SUSTAINABLE DESIGN AND CONSTRUCTION

Proposals for new development, including the construction of new buildings and the redevelopment and refurbishment of existing building stock, will be acceptable where the design of buildings and site layouts use energy, water, minerals, materials and other natural resources appropriately, efficiently and with care and take account of the effects of climate change.

To meet these requirements:

All major non-residential developments or conversions to residential are required to meet the most up-to-date BREEAM 'Excellent' standards, where possible;

- All minor non-residential developments or conversions to residential are required to meet the most up-to-date BREEAM 'Very Good' standard as a minimum;
- All non-residential development or conversions to residential should incorporate water conservation measures so that predicted per capita consumption does not exceed the appropriate levels set out in the applicable BREAM standard. Both residential and non-residential development should include recycling greywater and rainwater harvesting where systems are energy and cost effective.

CC3: ADAPTION TO CLIMATE CHANGE

All developments will demonstrate how they have been designed to incorporate measures to adapt to climate change. The following measures shall be incorporated into development:

Wherever possible, new buildings shall be orientated to maximise the opportunities for both natural heating and ventilation and reducing exposure to wind and other elements;

- Proposals involving both new and existing buildings shall demonstrate how they have been designed to maximise resistance and resilience to climate change for example by including measures such as solar shading, thermal mass, heating and ventilation of the building and appropriately coloured materials in areas exposed to direct sunlight, green and brown roofs, green walls, etc;
- Use of trees and other planting, where appropriate as part of a landscape scheme, to provide shading of amenity areas, buildings and streets and to help to connect habitat, designed with native plants that are carefully selected, managed and adaptable to meet the predicted changed climatic conditions; and
- All development shall minimise the impact of surface water runoff from the development in the design of the drainage system, and where possible incorporate mitigation and resilience measures for any increases in river flooding levels as a result of climate change

CC4 DECENTRALISED ENERGY

In meeting the sustainability requirements of this plan, developments of the sizes set out below shall demonstrate how consideration has been given to securing energy for the development from a decentralised energy source.

Any development of more than 20 dwellings and/ or non-residential development of over 1,000 sq m shall consider the inclusion of decentralised energy provision, within the site, unless it can be demonstrated that the scheme is not suitable, feasible or viable for this form of energy provision.

Where there is existing decentralised energy provision present within the vicinity of an application site, further developments of 10 dwellings or more or non-residential development of 1,000 sq m or more will be expected to link into the existing decentralised energy network or demonstrate why this is not feasible.

H4: BUILD TO RENT SCHEMES

Planning permission will be granted for developments of self-contained, private rented homes which:

1) Are secured in single ownership providing solely for the rental market for a minimum 20-year term with provision for clawback of affordable housing contributions should the covenant not be met; and;
2) Provide tenancies for private renters for a minimum of three years with a six-month break clause in the tenant's favour and structured and limited in-tenancy rent increases agreed in advance; and;
3) Provide a high standard of professional on-site management and control of the accommodation; and;
4) Provide a commitment to high-quality rental arrangements, through meeting Reading Borough Council's voluntary Rent with Confidence Standards or equivalent measures; and;
5) Provide for a mix of unit sizes in accordance with Policy H2 or CR6; and;
6) Meet the standards of design set out in Policy H5; and;
7) Provide 30% on-site affordable housing, either in accordance with Policy H3 and any relevant Supplementary Planning Document; or in the form of Affordable Private Rent Housing as defined and set out in a relevant Supplementary Planning Document.

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We can see from the tables that in terms of efficiencies, there is no competition when a ground/water source heat pump is involved and these do not produce any carbon emissions directly. The initial capital cost is greater but there is reduction in running cost when means the system will pay itself back in general energy savings. A significant factor is the building construction make up and insulation levels within the building which has to do with heat losses and heat gains. As this is a new build and the BREEAM target is excellent, if heat losses and heat gains within the building can be reduced this will reduce the energy required to both heat and cool the building resulting in reduced carbon footprint in line with aspirations of both Part L2a and BREEAM.

	OPTION 1	OPTION 2
	POLICY COMPLIANT SPECIFICATION	GOOD PRACTICE SPECIFICATION
Element	U value [W/m^2K]	U value [W/m^2K]
External Wall	0.18	0.10
Roof	0.13	0.10
Floor	0.11	0.08
Doors	1.40	1.00
Windows	1.40	1.30
Air Test	$5m^3/h.m^2$ at 50Pa	$3m^3/h.m^2$ at 50Pa

Table 1 - U Value Comparison

From the table above, we are aiming to achieve U values which are inline with the good practice specification. These values exceed part L and will be much more difficult to achieve. The closer we get to these U values, the more efficient the installed heating system will perform. As the total system operates more efficiently, there will be an energy saving attached to it.

H5: STANDARDS FOR NEW HOUSING

New build housing should be built to the following standards, unless it can be clearly demonstrated that this would render a development unviable:

a) All new build housing outside the Central Area as defined on the Proposals Map will comply with the nationally-described space standard.
b) All new build housing will be built to the higher water efficiency standard under
c) Regulation 36(3) of the Building Regulations
d) All major new-build residential development should be designed to achieve zero carbon homes.
e) All other new build housing will achieve at a minimum a 19% improvement in the dwelling emission rate over the target emission rate, as defined in the 2013 Building Regulations.
f) All new build holying will be accessible and adaptable in line with M412) of the
g) Building Regulations, unless it is built in line with M4(3) (see below).
h) On developments of 20 or more new build dwellings, at least 5% of dwellings will be wheelchair user dwellings in line with M4(3) of the Building Regulations. Any market homes provided to meet this requirement will be 'wheelchair adaptable' as defined in part M, whilst homes where the Council is responsible for allocating or nominating an individual may be 'wheelchair accessible

2.3 ENERGY EFFICIENCY AND USE OF RESOURCE

To ensure that a building is designed in the most energy and cost-efficient manner a specific energy hierarchy should be followed.

The hierarchy is as follows:

- Use less energy (be lean).
- Supply energy efficiently (be clean).
- Use renewable energy (be green).

Consequently, before considering Low Zero Carbon (LZC) technologies, the design strategy should be to reduce building energy consumption through use of energy efficiency measures.

The new building elements will be required to work harder/more efficiently before the associated Mechanical & Electrical (MEP) building services are designed to provide for comfort needs of occupants. This includes use of natural ventilation, solar shading and thermal mass in preference to mechanical systems and the optimisation of lighting control and energy efficient luminaires.

A number of energy efficiency measures are included within the proposals. These include designing in —passive systems and maximising building fabric insulation performance. The identified measures will be subject to review and refinement as the client brief and detailed design for the development. (Refer to the passive proposal Report for additional information 210388-RGL-ZZ-XX-RP-U-95-0003)

Measures included are described below (unless noted otherwise refer to the Planning Application drawings for details):

- U-values – Minimising heat loss conducted through the building envelope by providing high levels of insulation and high-performance glazing in excess of performance requirements of Part L of the Building Regulations.
- Air leakage – ensuring that the building is built tight to achieve the requirements of latest Part L2 for air leakage testing.
- Shading – south facing glazed façades will be shaded to optimise solar heat gain during winter months and minimize summertime heat gain to the building whilst allowing for the best use of natural daylight to reduce lighting usage.
- Thermal mass – provision of exposed thermal mass in the building interior to assist maintaining a steady thermal environment, i.e., reduce peak heat gains in summer and fill the troughs of peak heat loss in winter.
- Daylighting and natural ventilation – North facing facades optimise daylight penetration compared with winter heat loss through glazing. The building floor plate and façade design make maximum use of daylight penetration and natural ventilation strategies.
- Casual gains – using heat recovery systems within installed mechanical ventilation systems to reclaim heat energy from processes, people and equipment within the building and re-directing this energy to parts of the building requiring heat energy, e.g., heating or hot water systems.
- The selection of Active Building Services Systems – to provide acceptable levels of comfort for the building occupants, active building services systems will be a fundamental part of the energy usage within the development. The following mechanical systems are proposed to be as energy efficient as possible:
    - Mechanical ventilation: The energy performance of the installed mechanical ventilation system will be designed in line with Best Practice. A target of energy consumption from the non-domestic building services compliance guide for new buildings shall be used.
    - Heat recovery: where mechanical ventilation systems are used, due to the densely populated spaces, large quantities of air will be exhausted which contain considerable useful heat or coolth energy. Where contents of exhausted air permits, air to air heat recovery devices shall be incorporated into the mechanical ventilation systems to reclaim heat back to the incoming fresh air supply or to provide pre-heat of the hot water system.

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- Air conditioning: full air conditioning (humidity control/air filtration) will not be provided to the development. Mechanical comfort cooling systems, however, will be provided where passive measures cannot achieve satisfactory internal temperatures for occupants or associated processes within the building. The mechanical refrigeration plant will be considered in the light of their Coefficient of Performance (COP) and specification of refrigerant gas. These comfort cooling systems shall also utilise waste heat reclaim to provide heating to the hot water systems and/or over door heaters.

- The following electrical systems are proposed to be as energy efficient as possible:
  - Daylight-linked artificial lighting: a daylighting and occupancy linked lighting control system shall be provided. The automatic dimming of artificial light in response to useful daylight levels and room usage/occupancy shall maintain optimum visual comfort.
  - Artificial lighting: the most efficient lighting systems will be targeted including modern high efficacy LED fittings. In addition, this system will provide for the monitoring of the presence, or absence of people and control the lighting accordingly.
  - Low energy appliances & luminaires – new equipment will be specified to be low energy/Energy Star compliant. LED's luminaires shall be used throughout.
  - Motors: All motors fitted to pumps and fans shall have variable speed drive controls, to ensure at partial load conditions the motor speeds are reduced to match load and thereby reduce associated energy consumption and CO2 emissions.

Energy meters will be provided throughout the development to enable at least 90% of energy consumption for each fuel/energy type to be assigned to its end use category.

2.4 LOW CARBON TECHNOLOGIES

2.4.1 BIOMASS

Biomass covers a range of organic fuels used as combustible materials for boiler plant to produce heat and/or electrical power. There are two types: direct combustion and biogas. Direct combustion uses the burning of the fuel (usually wood chips or pellets) to generate heat for the boilers. Biogas is produced either through gasification or anaerobic digestion of the materials which is subsequently burnt as a fuel.

Biomass can be used to fuel both heating and Combined Heat and Power (CHP) systems. If technically viable for this site, a biomass heating system would deliver significant CO_2 savings.

Important considerations when determining the suitability of biomass are the availability of fuel sources, the space available for fuel storage and the route by which fuel deliveries would be made.

Due to the size of the building and the required load, the size of the biomass boiler would be extensive. If a suitable location was selected, there would be a need for a dedicated section for fuel storage and delivery. As the site is located in a heavily congested location, this will cause significant issues in the long run.

The combustion of wood-based material generates unfavourable emissions that can adversely affect local air quality. To overcome this issue would require the construction of a tall chimney or flue dilution system. Local Clean Air requirements also impact upon the viability of this as a renewable energy source.

Having considered the following factors, biomass systems have not been pursued as a viable LZC technology:

- Limited localised sources of biomass fuel supply.
- Limited plantroom space (or external storage) to accommodate the biomass fuel supplies.
- The residential nature of adjacent properties.
- NO_x emissions associated with biomass systems.
- Increased capital cost of flues and flue treatment systems.
- Biomass Fuel Delivery access routes.

2.4.2 WIND POWER

Wind power can be harnessed using a catchment device connected to a turbine that will either feed an electrical load directly or charge a battery. When well located, wind turbines can present significant carbon savings.

Wind power is generally much more effective in high, rural locations and as such wind turbine based renewable energy systems are generally not practicable or cost effective for installation in urban locations.

Turbines need to be much taller than other buildings around them, to ensure they are properly installed within a reasonable strength & constant speed ambient air flow, unaffected by eddies created from adjacent buildings/structures. The movement of air across rotating turbine blades also generates noise, which is not ideal for the project given the urban/residential nature of adjacent properties.

Having considered the following factors, wind turbines have not been pursued as a viable LZC technology:

- Availability of suitable areas for installation of large/tall wind turbines.
- Height of turbines required.
- Planning implications due to likely scale of turbines.
- Planning implications of associated noise outputs from turbines.
- Relatively high capital cost of turbines compared to their CO_2 emission reduction.

2.4.3 AIR SOURCE HEAT PUMP (ASHP)

ASHP technology extracts their heating/cooling energy from the surrounding ambient air. In a temperate climate such as the UK, this allows them to provide electrical heating/cooling with a typical average COP of around 3.0–4.5 dependant on the time of year.

They are ideally suited to highly efficient modern buildings with low heating requirements alongside cooling demands during summer months.

As an alternative to ground source systems, air source systems enjoy similar heating efficiencies, but is significantly cheaper when compared its ground source alternative and does not require as much space. A further advantage of utilising both air and Ground Source heat pump (GSHP) is their ability to be reversed and used to provide cooling services.

This application to provide both heating and cooling is particularly suited to this development.
Due to the nature of ASHP, they are commonly installed outdoors to have the relevant exposure to the environment. If this is not possible, there are ways to provide the required exposure via mechanical ventilation, but this can prove tricky depending on the restrictions within the development. As there are no suitable outdoor locations for this heat pump and advanced design nature of providing the exposure via mechanical ventilation, it would prove difficult to utilise ASHP to its full potential within this development.

This low energy design strategy will further reduce the buildings CO_2 emissions.

Having considered the following factors, air source heat pumps should not be adopted as a viable LZC technology:

- Limited outdoor locations for the external condensing unit.
- Complexity of install for indoor installation as no allocated areas available for outdoor units to be installed.

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2.4.4 GROUND SOURCE HEAT PUMP (GSHP) OPEN LOOP

Water is drawn by an aquifer from deep within the ground to provide heating / cooling as necessary. Ground conditions may mean it is uneconomic to drill boreholes to an adequate depth to reach a suitable source of ground water. The ground water temperature is relatively constant at between 6 and 10°C throughout the year. Through reversible heat pumps, the energy in this water can be concentrated efficiently to provide heating or cooling supplies. In a temperate climate such as the UK, this allows them to provide electrical heating/cooling with a typical average COP / SEER of around 3.0–4.0 dependant on the time of year.

Typically, an open loop system comprises two boreholes, a "warm well" and a "cold well". When cooling is required, water is drawn from the cold well to pass through the heat pump/heat exchanger, heat is extracted from the building and discharged into the ground source water through heat transfer. The warmed ground source water is then returned to the ground via the warm well aquifer.

If heating is instead required in the building, the system will run in reverse; water is drawn from the warm well, heat is extracted from the ground source water, i.e., the water is cooled, & heat supplied into the building through the heat pump. The cooled ground source water is then returned to the ground via the cold well aquifer.

The following factors are key to the successful selection of an open loop system:

- Timescales to ascertain the suitability of the local geology for open loop GSHP.
- Approval period from the Environment Agency to obtain an extraction licence.
- Cost of drilling the boreholes.

Licence Approval is required from the Environment Agency (EA) to extract water from aquifers. Further investigation and ground conditions testing are also required to confirm the suitability of open loop GSHP for the development. The costs of these investigations are estimated at £50-100,000 and have associated timescales of around 6 months.

Having considered the following factors, open loop GSHP have not been pursued as a viable LZC technology:

- Programme implications to obtain EA approval.
- At risk investigative costs.
- Programme implications to remove the risk of ground conditions.
- Maintenance
- Water extraction permits

2.4.5 GROUND SOURCE HEAT PUMP CLOSED LOOP

As suggested by their name, closed loop systems do not draw water from the aquifer below the ground. They instead consist of a loop of pipework that passes through the ground providing heat exchange between the flow water and the aquifer. They can either be vertical or horizontal loops of pipework.

Horizontal loops take up significantly larger horizontal area when compared to the vertical loop but do not require the as deep as their vertical counterpart. This is perfect for developments with large amounts of free land.

Vertical loops are more expensive to install due to the increased bore hole depth required; however, they provide a more stable temperature of ground source water due to the increased depth at which they operate and hence an improved system efficacy.

Due to the site location ground source heat pump technology will be perfect for this development as there is sufficient internal plant room sizes as well the distance between the nearby river will prove useful to provide the load as well as reduce the cost in terms of distance excavated.

Having considered the following factors, closed loop ground source heat pumps have been pursued as a viable LZC technology:

- Available internal plant room sizes
- Stable temperatures to provide the required load
- Distance between river and site

2.4.6 FUEL CELLS

Fuel cells provide heat and electrical power from electrochemical reactions. Within the built environment, this is a relatively immature/new technology. Cells generally consist of an anode, a cathode and an electrolyte. The cell is supplied with oxygen to the cathode and hydrogen, which is available from a number of sources (coal, natural gas, biogas and other fuels containing hydrogen) to the anode. Ions flow through the electrolyte from the anode to cathode generating an electric current.

One single fuel cell produces only around 1V of electricity and so a number are usually arranged into a stack of over 100 cells.

Fuel cells are currently quite expensive in comparison to some other renewable technologies. This leaves them as an uneconomical option compared to a number of other possible LZC solutions.

Having considered the following factors, fuel cells have not been pursued as a viable LZC technology:

- Limited application of the technology in similar projects.
- Limited plantroom space to accommodate the fuel cells.
- Increased capital cost of the fuel cells.
- Risks associated with an unproven technology.

2.4.7 PHOTOVOLTAIC (PV) SYSTEM

PV utilise solar power and convert it directly into Direct Current (DC) electricity. The panels themselves consist of a thin piece of semiconducting material (usually silicon). Certain wavelengths of light striking the panel ionises some of the silicon atoms, giving some positive and some negative charge. These are then attracted to each other and when recombining produces the output DC power.

PV are competitively priced and a well-established and proven renewable energy technology.

PV technology require roof space which is not available on this site. If relevant roof spacing was available, it proves to be useful to install PV technology to offset grid electricity and its associated carbon.

Having considered the following factors, PV panels have not been adopted as a viable LZC technology:

- No allocated roof space for plant installation

2.4.8 SOLAR THERMAL HOT WATER

Solar thermal hot water panels utilise heat from the sun to produce Hot Water Service (HWS). Solar infra-red heat striking the panels heats up a liquid inside the panels which in turn is passed through a coil to heat up water within a separate cylinder. This cylinder is also supplied with heat from another source to provide heat on particularly overcast or cool days.

Solar hot water panels are relatively inexpensive and are a well-established and proven renewable energy technology.

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Having considered the following factors, solar thermal hot water has not been pursued as a viable LZC technology:

- Restricted access of suitable roof areas for installation.

2.4.9 COMBINED HEAT AND POWER

CHP boilers simultaneously generate both usable heat and power from the same source. The mechanical power of an engine is used to generate electricity and the heat emitted from the engine (waste heat in a conventional engine) is used for space heating or hot water. CHP can be powered by either gas or biomass.

A CHP unit requires a continuous heating or hot water load all year round (run time of 4500 – 5000 hours) to operate most efficiently. Hence CHP is most viable when serving a building that has a significant year-round heating and electrical demand.

Most buildings have a minimal summertime heat demand to provide heat to generate hot water. However as noted previously, summertime heat output from a CHP unit can be adventitiously used to provide heat to an absorption chiller. This provides low carbon cooling, displacing the need for traditional carbon intensive electrically powered chiller & air-conditioning units.
Having considered the following factors, CHP has not been pursued as a viable LZC technology:

- No demand for constant year-round heat generation from the CHP plant.
- System would not run for 5000-5500 hours per annum to be efficient.
- Capital cost higher than for technologies providing comparable levels of carbon reduction.

2.5 FURTHER CONSIDERATIONS

2.5.1 ENERGY EXPORT

Import and export of energy via district heating and / or power systems were considered, however with no suitable energy consumers or generators within the local vicinity, these were deemed not applicable for the development.

Should suitable networks become available in the future, systems would be able to be adapted to accommodate alternative heat / power sources.

The proposed ambient loop system is very similar to district heating but operates at a much lower heat loss due to the temperatures involved within the system.

2.5.2 ENERGY STORAGE

Energy storage was considered; however, this technology would only be suitable when energy on site is being generated at a scale such to produce a significant excess. This is unlikely to be the case in this site. Additional plant space would also be required and additional capital expenditure could not be justified.

2.6 MODEL AND SIMULATION

A thermal model was produced for both YHP1 and YHP2. These models are capable of producing estimated energy consumption and carbon emission production via simulation. The simulation software used was TAS, which is capable of simulating conditions close to real world scenarios.

Within the software a notional building shall be available to provide comparison to the actual building(s) standards. This will have pre-set parameters of the software and will used to determine how the proposed building is rated compared to the notional building.

The software utilises parameters which can be altered such as the designed u values and specific performance values of components of the building to allow for a more customisable approach. As the software is quite advanced the location data was also considered i.e., weather profiles and average temperatures of the specific region.

We can see from the table below that there is a significant improvement when compared to the part L requirements for 2013.

ELEMENT	2013 PART L REQUIREMENTS	PROPOSE VALUES	% DIFFERENCE
Roof	0.18	0.10	57.14
External Wall	0.26	0.10	88.89
Floors	0.25	0.08	103.03
Windows	2.2	1.3	51.43
Air	10	3	230%

Table 2- Comparison With 2013 Part L Values

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3.0 ENERGY CONSUMPTION & CO2 EMISSION RATE

The tables below highlight models CO_2 emission and primary energy rate of the modelled building. The target rates have also been included to allow for a baseline comparison.

Utilising the modelled data highlighted in tables 3 and 4 we can determine the amount of carbon offsetting that is required and a high-level cost can be produced:

Combined target CO2 emission: 6.74 $kgCO_2/m^2$.annum
6.74kgCO2/m2.annum*48,197m2 (Architect stated total area) = 324,847.78 $kgCO_2$/annum= 324.84778 tonnesCO2/annum
324.84778 tonnesCO2/annum *£1800= £584,726.004

Currently at RIBA stage 2 there is approximately an 6% reduction in both BER and BPER when compared to their target values.

Target CO_2 emission rate (TER), $kgCO_2/m^2$.annum	3.04
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	2.86
Target primary energy rate (TPER), kWh/m^2.annum	33.27
Building primary energy rate (BPER), kWh/m^2.annum	31.34

Table 3 – YHP1 Model Results

Currently at RIBA stage 2 there is approximately an 8% reduction in both BER and BPER when compared to their target values.

Target CO_2 emission rate (TER), $kgCO_2/m^2$.annum	3.7
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	3.05
Target primary energy rate (TPER), kWh/m^2.annum	40.19
Building primary energy rate (BPER), kWh/m^2.annum	33.08

Table 4 – YHP2 Model Results

3.1 REGULATED AND UNREGULATED ENERGY

The section highlights the regulated and unregulated energy for the project. The regulated energy values were obtained using the dynamic model simulation while the unregulated energy values were obtained via a high level TM54 calculation. The calculation below will only provide an estimation as due to the nature of RIBA stage 2 there is not enough information to produce and accurate regulated and unregulated energy value.

LOCATION	MODELLED KWH/M²	NOTIONAL KWH/M²
YHP1 Total	21.32	22.59
YHP2 Total	22.38	27.18

Table 5 – Regulated Energy Model Data

LOCATION	UNREGULATED ENERGY (KWH)
Co-working	69.962
retail	14.173
leisure	12.171
cinema	83.229
restaurant	269.225
Typical flat	35.058
External Lighting	3317
Lifts and escalator	251.930

Table 6 -Unregulated Energy Calculation

3.2 SAVINGS AND COST IMPLICATION

As the philosophy of the building is to maximise efficiency the building is working off a fabric first approach. This is where as much savings are gathered from the fabric i.e., insulation. As table 1 highlights the building shall try to achieve to U values which are far more stringent than the current part L guidelines. This will allow for heat loss to reduced as much as possible which will in turn reduce carbon emissions and energy generation.

The cost per kWh of electricity on average is approximately £0.34. if we compare the values from Table 3 & 4 we can see there is a difference of 1.93kWh/m^2 and 7.11kWh/m^2 respectively. There will be £0.66/m^2 and £2.42/m^2 cost saving when compared to target rates.

Implementation of solar panels would reduce the carbon emissions significantly as well as increase the energy savings as the proposed system utilises a significant proportion of electricity. This is currently not feasible as there has been no allocated roof space for installation.

To highlight further savings table 6 below shows the identical building if a standard boiler system was utilised instead of a high efficiency renewable system. we can see that there is 224% difference in carbon emissions and 225% difference in energy rate for YHP1. For YHP2 there is a 142% for carbon emissions and 146% for energy rate.

LOCATION & DESCRIPTION	DATA
YHP1 Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	6,42
YHP2 Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	4.33
YHP1 Building primary energy rate (BPER), kWh/m^2.annum	70.74
YHP2 Building primary energy rate (BPER), kWh/m^2.annum	48.14

Table 7 – Regulated Energy Model Data

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The Development: **THE ORACLE, READING - BUILD TO RENT SCHEME**

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Appendix 3 – BREEAM Pre-Assessments

BREEAM New Construction V6 (Offices - Shell Only) Pre-Assessment

Yield Hall Place 1, Co-Working Unit

November 2022

Key

	Mandatory Credit for 'Excellent'
	Pre-Planning Study / Appointment
	Flexible Stage 2 Requirement (can be later i.e. Stage 3)
POSSIBLE	**May be achievable - requires further information**

TARGET (>70%)	77.53%	Excellent

Credit Summary BREEAM V6: Office Shell Only			Credit Ref.	Credits Available	Excellent Target	Comments	Responsibility	Risk
MANAGEMENT								
Credit Value 0.80%	**Project Brief and Design**	Project Delivery Planning	Man 01	1	1	Prior to the end of **Stage 2**, roles & responsibilities must have been issued to the project team, and internal consultation occurred, resulting in changes to the design.	Hammersons / Packaged Living	**Low**
		Stakeholder Consultation		1	1	Prior to the end of Stage 2, all interested parties should be consulted on an extensive range of topics. All relevant parties receive consultation feedback by the end of Stage 4.	Turley / Hammersons / Packaged Living	**Low**
		BREEAM Advisory Professional		1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stage 2.** Turley have been appointed to provide RIBA Stage 2 support.	Turley / Hammersons / Packaged Living	**Low**
				1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stages 2-4.**	Hammersons / Packaged Living to appoint	**Medium**
	Life Cycle Costing (LCC) and Service Life Planning	Elemental Life Cycle Cost	Man 02	2	0	Requires an entire asset LCC plan at Process Stage 2 that details an indication of future replacement costs over a period of analysis as required by the client.		
		Component Life Cycle Cost		1	1	Component life cycle costing must be undertaken during **Stage 4** by cost consultant.	Cost Consultant	**Low**
		Capital Cost Reporting		1	1	Report cost per sqm (£/100m2).	Cost Consultant	**Low**

	Responsible Construction Practices	Legally harvested and traded timber - Pre-requisite	Man 03	-	Y	Contractor must demonstrate that all timber is FSC certified.	Contractor	**Low**
		Environmental Management		1	1	All demolition and main contractors must operate EMS (ISO14001).	Contractor	**Low**
		Sustainability Champion		1	1	Ensure a BREEAM AP / Site Sustainability Champion is appointed to cover stages 5 & 6.	Contractor	**Low**
		Responsible Construction Management		2	2	Achieve an overall score of 39 in the Considerate Constructors Scheme with at least 13 in each section.	Contractor	**Medium**
		Monitoring of Construction Site Impacts		2	2	The contractor must monitor energy, water and transport of materials and waste on site. Note that these will need to be reported to the BRE.	Contractor	**Low**
	Commissioning and Handover	Testing and Inspecting Building Fabric	Man 04	1	1	Thermographic survey & air tightness testing must be undertaken post completion - any defects are rectified.	Contractor	**Medium**
Section Credit Total				15	13			
Weighted Section Total				12%	10.40%			
HEALTH & WELLBEING								
Credit Value 0.88%	**Visual Comfort**	Daylight factors	Hea 01	2	**POSSIBLE**	80% of occupied areas would need to achieve an average daylight factor of 2% - to be reviewed - to be reviewed.		
		View Out		1	**POSSIBLE**	95% of the floor area in 95% of spaces for each relevant building area provides an adequate view out - to be reviewed.		
		External Lighting Levels		1	1	External lighting must meet BS5489-1:2013 and BSEN12464-2:2014.	Rolton	**Low**
	Acoustic Performance		Hea 05	1	1	The building meets the appropriate acoustic performance standards and testing requirements for indoor ambient noise level as defined in the relevant table in the manual.	Acoustician	**Medium**
	Security		Hea 06	1	1	Security specialist should be consulted by the end of **Stage 2** and undertake a full site assessment with bespoke recommendations. All recommendations must be implemented. Where appointed after Stage 2, the SQSS will need to confirm they have not been restricted by late appointment.	Hammerson / Packaged Living to appoint SQSS	**Medium**

	Safe and Healthy Surroundings	Safe access	Hea 07	1	1	Further investigation / drawings required to determine compliance but the building appears to meet the requirements for safe access as defined in the manual as it can be accessed directly from the road.	CRTKL	**Medium**
		Outside Space		1	1	There should be an outside space providing building users with an external amenity area. This space is noted as being; - Of an appropriate size to provide enough amenity for the predicted number of building users – be an outdoor landscaped area, for example a garden, balcony or terrace; the majority of the space should be open to the sky – have appropriate seating areas and be non-smoking, be located to ensure it is accessible to all building users and avoids areas that will have disturbances from sources of noise (e.g. building services, car parks, busy roads, delivery areas etc.).	CRTKL	**Medium**
Section Credit Total				8	5			
Weighted Section Total				7%	4.38%			
ENERGY								
Credit Value	**Reduction of Energy Use and CO2 Emissions**	Energy Performance Ratio	Ene 01	9	4	4 credits required as a minimum for BREEAM 'Excellent'. BRUKL's requested to check what the building is currently achieving. This requires an uplift over Part L 2021. **If these cannot be achieved then the credits below for Prediciton of Operational Energy Consumption will be required as mandatory to cover the mandatory 4 credits for Ene 01.**	Rolton	**High**
	External Lighting		Ene 03	1	1	External lighting must have average luminous efficacy of 70 lumens / circuit Watt. Lighting should be controlled by photocell and PIR in areas of intermittent pedestrian use.	Rolton	**Medium**
	Low Carbon Design	Passive Design Analysis (PDA)	Ene 04	1	1	During **Stage 2**, a PDA should be undertaken to identify opportunities to implement passive design.	Rolton	**Medium**
		Low and Zero Carbon Feasibility Study		1	1	LZC Feasibility Study required during design stage covering each requirement within the BREEAM Manual. The recommendations must be implemented to achieve a 'meaningful' reduction i.e. 10%	Rolton	**Low**
		Free Cooling		1	0	It is assumed that there will be cooling in the units.		
Section Credit Total				13	7			
Weighted Section Total				9.5%	5.12%			
TRANSPORT								
Credit Value	**Transport Assessment and Travel Plan**		Tra 01	2	2	A transport assessment must be produced during the design and feasibility stages alongside a draft travel plan. Full travel plan required at later stage. Note that the transport assessment must include accessibility index, disabled access and a number of other topics (see credit criteria within manual).	Transport Consultant	**Low**

1.21%	**Sustainable Transport Measures**		Tra 02	10	7	Sustainable transport measures provides credits based on measures provided on site. This would need to be confirmed with the Transport Consultant and Client but have been estimated based on the following: - AI >8 - Install cycle spaces for staff (1 per 10 building occupants) - Future fit-out layout showing shower(s) and/or lockers and/or changing areas provided for staff - At least three existing amenities - Two new amenities (new restaurant and outdoor space as part of masterplan) The AI is to be confirmed and whether any car parking spaces will be provided with EV charging.	Transport Consultant / Occupier / Client / CRTKL	**Medium**
Section Credit Total				12	9		
Weighted Section Total				14.5%	10.88%		
WATER							
0.67%	**Water Monitoring**		Wat 02	1	1	A pulsed water meter must be installed on the supply to each building and connected to the BMS. Areas consuming over 10% of the building's water demand must also be sub-metered.	Rolton	**Low**
	Water Leak Detection & Prevention	Leak Detection System	Wat 03	1	1	A water leak detection will be installed to monitor the internal pipework.	Rolton	**Low**
	Water Efficient Equipment (Process)		Wat 04	1	1	It is assumed that the only water demand will be planting which will rely on natural precipitation and no irrigation systems are currently proposed.	LDA / HDA	**Low**
Section Credit Total				3	3		
Weighted Section Total				2%	2.00%		
MATERIALS							
Credit Value 1.57%	**Environmental Impacts from Construction Products - Building Life Cycle Assessment (LCA)**		Mat 01	7	7	Credits are available for undertaking a Life Cycle Assessment and options appraisal during **Stages 2 & 4**. The options appraisal must include substructure, superstructure and hard landscaping. The 2 credits associated with comparison against the BRE benchmark are not targeted as they are not applicable for a mixed use building. The results must be submitted to the BRE before planning submission. Turley have been appointed to undertake this assessment.	CRTKL / Civil / Turley	**Low**
	Environmental Impacts from Construction Products - Environmental Product Declarations (EPD)		Mat 02	1	0	Specify construction products with EPD that achieve a total EPD points score of at least 20. Can be challenging to achieve.		
	Responsible Sourcing of Construction Products	Pre-requisite - Legal and Sustainable Timber	Mat 03	-	Y	All timber used to be FSC.	Contractor	**Low**
		Enabling Sustainable Procurement		1	1	Compliant SPP must be provided during RIBA Stage 2. Turley will provide guidance on this.	Turley / Hammersons	**Medium**
		Measuring Responsible Sourcing		3	2	20% of available points must be achieved, the scope expands to internal finishes, substructure and hard landscaping. Relevant responsible sourcing accreditations include BES6001 (highest scorer), CARES, FSC, PEFC & ISO14001. An extra credit may be possible here.	Contractor	**Medium**
	Designing for Durability and Resilience		Mat 05	1	1	Vulnerable areas of the building must be protected from damage e.g. vehicle manoeuvring. Exposed parts of the building should also be protected against the elements. The architect will need to produce reports and drawings demonstrating this.	CRTKL	**Low**

	Material Efficiency		Mat 06	1	0	At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. This can be difficult to achieve based on the level of detail required at such early stages.		
Section Credit Total				14	11			
Weighted Section Total				22.0%	17.29%			
WASTE								
Credit Value 0.80%	**Construction Waste Management**	Pre-Demolition Audit	Wst 01	1	1	Prior to the end of Concept Design complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible.	Demolition Contractor	**Medium**
		Construction Resource Efficiency		3	2	A Resource Management Plan must be produced - no more than 7.5m³ or 6.5 tonnes of construction waste can be generated per 100m² GIFA.	Contractor	**Medium**
		Diversion of Resources from Landfill		1	1	70% (80%) by volume or 80% (90%) by tonnage of construction (demolition) waste must be diverted from landfill.		**Low**
	Use of Recycled and Sustainably Sourced Aggregates		Wst 02	1	0	Procured aggregates will be in line with the Table 10.5. It is often difficult to procure sustainable aggregates.		
	Operational Waste		Wst 03	1	1	An area for recycled waste must be provided of an appropriate capacity. The space must be labelled and accessible to occupants and waste collectors. The building is unlikely to produce waste needing a compactor but this must be confirmed based on similar building's waste streams. There must be an areas for food waste storage with a tap and drain if food preparation will be undertaken.	CRTKL	**Low**
	Adaptation to Climate Change		Wst 05	1	1	A climate change adaptation strategy must be undertaken during **Stage 2 / early Stage 3**. This strategy must cover all points listed within the BREEAM requirements. Turley can provide a fee proposal for undertaking this work.	Hammerson / Packaged Living to appoint	**Medium**
	Design for Disassembly and Adaptability		Wst 06	2	2	A study must be conducted to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of **Stage 2**. This strategy must cover all points listed within the BREEAM requirements. An update will need to be provided on the above at technical design, including how the study has developed the design. The team must produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.	CRTKL	**Low**
Section Credit Total				10	8			
Weighted Section Total				8.0%	6.40%			

LAND USE & ECOLOGY								
Credit Value 1.46%	**Site Selection**	Previously Developed Land	LE 01	1	1	At least 75% of the proposed development is on previously occupied land.	CRTKL	**Low**
		Contaminated Land		1	0	A contaminated land professional undertakes a site investigation, risk assessment and appraisal, which deems that land within the development footprint to be affected by contamination. A remediation strategy is required to be implemented to achieve the credit. It is assumed there is no contamination on site.		
	Ecological Risks and Opportunities		LE 02	2	2	A suitably qualified ecologist must be appointed to undertake a survey and evaluation in line with the BREEAM methodology. The project team liaise with stakeholders to identify the ecological outcomes of the site and identify measures to meet this outcomes in line with the mitigation hierarchy.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
	Managing Negative Impacts on Ecology	Prerequisite - Ecological risks and Opportunities	LE 03	-	Y	Achieve LE02.		**Low**
		Planning and Measures On-site		1	1	Roles and responsibilities will be clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief. On site measures for managing negative ecological impacts will be implemented.		
		Managing Negative Impacts		2	2	Negative impacts from site preparation and construction works must be managed according to the mitigation hierarchy. It is assumed there will be no loss in ecological value.		
	Ecological Change and Enhancement	Prerequisite - Managing Negative Impacts on Ecology	LE 04	-	Y	Criterion 8 in LE 03 has been achieved (negative impacts from site preparation and construction works are managed). The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
		Ecological Enhancement		1	1	Measures must be implemented to enhance ecological value, based on input from the project team and SQE in collaboration with representative stakeholders and data collated. Measures are implemented in the following order: - On site, and where this is not feasible, - Off site within the Zone of Influence. Data collated are analysed and where potentially valuable, provided to the local environmental records centres.		**Medium**
		Change and Enhancement of Ecology		3	2	Credits are awarded on a scale of 1 to 3, based on the calculation of the change in ecological value occurring as a result of the project.		

	Long Term Ecological Management and Maintenance	Management and Maintenance throughout the Project	LE 05	1	1	The client or contractor to confirm that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site. Criterion 8 (Managing Negative Impacts) in LE 03 has been achieved, and one credit under LE04 Enhancement of Ecology is achieved.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
		Landscape and Ecology Management Plan		1	1	A Landscape and Ecology Management Plan is developed in accordance with BS 42020:2013 Section 1.1. It must cover the first 5 years after project completion and be updated.		
Section Credit Total				13	11			
Weighted Section Total				19%	16.08%			
POLLUTION								
Credit value 1.00%	**Surface Water Run Off**	Flood Resilience	Pol 03	2	1	Flood Risk Assessment to be provided confirming the site risk of flooding. Development at medium to high risk must demonstrate an increase in the resilience and resistance of the development to flooding, via one of the following: - The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600 mm above the design flood level of the site's flood zone OR - The final design of the building and the wider site reflects the recommendations made by an appropriate consultant. EA maps on Gov webiste suggestes high risk of surface water flooding.	Civil	**Medium**
		Surface Water Run-Off - Rate		1	1	For brownfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the pre-developed site. This should comply at the 1-year and 100-year return period events Calcs must include allowance for climate change.	Civil	**Medium**
		Surface Water Run-Off - Volume		1	**POSSIBLE**	Flooding of property will not occur in the event of local drainage system failure. Post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. This must be for the 100-year 6-hour event, including an allowance for climate change. Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other SuDS techniques. To be reviewed and confirmed by Civil engineer.		
		Minimising Watercourse Pollution		1	**POSSIBLE**	There is no discharge from the developed site for rainfall up to 5mm. Areas which carry a risk of watercourse pollution are designed appropriately (please see manual for full details). To be reviewed and confirmed by Civil engineer.		
	Reduction of Night Time Light Pollution		Pol 04	1	1	External lighting must be designed in compliance with ILP Guidance Table 2 and is switched off between 23:00 and 07:00.	Rolton	**Low**
Section Credit Total				6	3			
Weighted Section Total				6%	3.00%			

INNOVATION						
Credit Value 1.00%	Man 03 Responsible Construction Practices	1	1	Achieve an overall score of 39 in the Considerate Constructors Scheme with at least 13 in each section.	Contractor	**Medium**
	Hea 01 Visual Comfort	1	0			
	Hea 06 Security	1	0			
	Ene 01 Beyond Zero Net Regulated Carbon	5	0			
	Ene 01 Post Occupancy Stage	0	0			
	Wat 01 Water Consumption	1	0			
	Mat 01 Life Cycle Impacts	3	1	Third party verification.	Turley	**Low**
	Mat 03 Responsible Sourcing of Materials	1	0			
	Wst 01 Construction Waste Management	1	0			
	Wst 02 Recycled Aggregates	1	0			
	Wst 05 Adaptation to climate change	1	0			
	LE 02 Ecological Risks and Opportunities	1	0			
	LE 04 Ecological Change and Enhancement	1	0			
Section Credit Total		18	2			
Weighted Section Total		18%	2%			

TARGET SCORE	**77.53%**
TARGET RATING	**Excellent**

It should be noted therefore that this score is indicative only at this stage and must be reviewed throughout design development as well as audited by the BRE to confirm the final rating.

Not all credit requirements are listed within this document, it must be read in conjunction with the BREEAM UK New Construction V6.0

BREEAM®

BREEAM Refurb and Fit Out 2014 (Assembly & Leisure - Part 1) Pre-Assessment

Yield Hall Place 1, Leisure

November 2022

Turley Sustainability

Key

	Mandatory Credit for 'Excellent'
	Pre-Planning Study / Appointment
	Flexible Stage 2 Requirement (can be later i.e. Stage 3)
POSSIBLE	**May be achievable - requires further information**

TARGET (>70%)	**78.30%**	**Excellent**

Credit Summary BREEAM 2014: Refurb & Fit-Out			Credit Ref.	Credits Available	Excellent Target	Comments	Responsibility	Risk
MANAGEMENT								
Credit Value 0.98%	**Project Brief and Design**	Project Delivery Planning	Man 01	1	1	Prior to the end of **Stage 2**, roles & responsibilities must have been issued to the project team, and internal consultation occurred, resulting in changes to the design.	Hammersons / Packaged Living	**Low**
		Stakeholder Consultation		1	1	Prior to the end of Stage 2, all interested parties should be consulted on an extensive range of topics. All relevant parties receive consultation feedback by the end of Stage 4.	Turley / Hammersons / Packaged Living	**Low**
		Sustainability Champion (Design)		1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stage 2.** Turley have been appointed to provide RIBA Stage 2 support.	Turley / Hammersons / Packaged Living	**Low**
		Sustainability Champion (Monitoring Progress)		1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stages 2-4.**	Hammersons / Packaged Living to appoint	**Medium**
	Life Cycle Costing (LCC) and Service Life Planning	Elemental Life Cycle Cost	Man 02	2	0	An outline, entire asset elemental life cycle cost (LCC) plan has not been carried out at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2), therefore, this credit cannot be targeted.		
		Component Life Cycle Cost		1	1	A component level LCC plan will be developed by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008.	Cost Consultant	**Low**
		Capital Cost Reporting		1	1	Report cost per sqm (£/100m2).	Cost Consultant	**Low**

	Responsible Construction Practices	Legally harvested and traded timber - Pre-requisite	Man 03	-	Y	Contractor must demonstrate that all timber is FSC certified.	Contractor	**Low**
		Environmental Management		1	1	Main contractor must operate EMS (ISO14001) and best practice pollution prevention policies and procedures must be implemented on site.	Contractor	**Low**
		Sustainability Champion		1	1	Ensure a BREEAM AP / Site Sustainability Champion is appointed to cover stages 5 & 6.	Contractor	**Low**
		Considerate Construction (1 credit mandatory)		2	2	The contractor must comply with the Considerate Constructors Scheme (CCS) and achieve a score of at least 39 with a minimum of 13 in each section (to also achieve the exemplary credit).	Contractor	**Medium**
		Monitoring of Construction Site Impacts (Energy & Water)		1	1	The contractor must monitor energy, water and transport of materials and waste on site. Note that these will need to be reported to the BRE.	Contractor	**Low**
		Monitoring of Construction Site Impacts (Transport of Materials & Waste)		1	1	The contractor must transport of materials and waste on site. Note that these will need to be reported to the BRE.	Contractor	**Low**
	Commissioning and Handover	Testing and Inspecting Building Fabric	Man 04	1	1	Thermographic survey & air tightness testing must be undertaken post completion - any defects are rectified.	Contractor	**Medium**
Section Credit Total				15	13			
Weighted Section Total				14.69%	12.73%			
HEALTH & WELLBEING								
Credit Value 1.17%	**Visual Comfort**	Daylight factors	Hea 01	3	0	It is assumed that 80% of relevant areas will not achieve 2% daylight factor plus daylight uniformity criteria.		
		View Out		2	0	There may be some internal rooms that do not meet these requirements.		
	Indoor Air Quality	Indoor Air Quality (IAQ) Plan	Hea 02	1	1	The team would need to produce an indoor air quality plan detailing actions which minimise indoor air pollution, ideally prior to detailed design.	Rolton	**Low**
		Ventilation		1	0	It is unlikely that ventilation intakes and exhausts are placed 10m apart from each other, and windows / intakes unlikely to be 10m away from pollution such as roads / car parking areas.		
		Potential for Natural Ventilation		1	0	It is assumed that the space will not be naturally ventilated.		
	Thermal Comfort	Thermal Modelling	Hea 04	1	1	Thermal modelling is conducted in accordance with CIBSE AM11 and carries out full dynamic thermal analysis. For air conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with ICBSE Guide A. For naturally ventilated buildings, winter operative temperature ranges CIBSE Guide A and the building is designed to limit the risk of overheating in accordance with CIBSE TM52. The suitability of existing building services and controls will also be assessed to identify any changes that may be required as a result of fit-out work. PMV and PPD figures will be proided for air conditioned buildings.	Rolton	**Medium**
		Adaptability for Projected Climate Change Scenario		1	1	The thermal modelling criteria is achieved for a projected climate change scenario or if it fails it must be demonstrated how it could be met in future.	Rolton	**Medium**

	Acoustic Performance	Indoor Ambient Noise Levels and Reverberation	Hea 05	1	**POSSIBLE**	Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233:2014. This credit can be explored if needed.		
				1	**POSSIBLE**	Achieve the requirements relating to reverberation times set out within Section 1 of BB93. This credit can be explored if needed.		
	Security		Hea 06	1	1	Security specialist should be consulted by the end of **Stage 2** and undertake a full site assessment with bespoke recommendations. All recommendations must be implemented. Where appointed after Stage 2, the SQSS will need to confirm they have not been restricted by late appointment.	Hammerson / Packaged Living to appoint SQSS	**Medium**
Section Credit Total				13	4			
Weighted Section Total				15.19%	4.67%			
ENERGY								
Credit Value 0.99%	**Reduction of Energy Use and CO_2 Emissions**	Energy Performance Ratio (6 credits mandatory)	Ene 01	2	2	Option 2 - Elemental Level Energy Model The BREEAM Refurbishment and Fit-out energy model will be used to calculate the energy score to determine the number of credits awarded. Please note, we won't know how many credits are achievable until the exercise is carried out.	Rolton	**High**
	Low Carbon Design	Passive Design Analysis (PDA)	Ene 04	1	1	A Passive Design Analysis is to be undertaken during RIBA Stage 2 and recommended passive design measures are to beimplemented within design and construction.	Rolton	**Medium**
		Free Cooling		1	0	It is assumed that there will be cooling in the building.		
Section Credit Total				4	3			
Weighted Section Total				3.95%	2.96%			
TRANSPORT								
Credit Value 1.14%	**Sustainable Transport Solutions (Accessibility Index)**		Tra 01	5	5	Based on the central location of the development and proximity to public transport nodes, it is assumed 5 credits will be achieved, however, this is to be confirmed.	Turley / Transport Consultant	**Low**
	Proximity to Amenities		Tra 02	1	1	The site is within 500m of at least two amenities.	Turley	**Low**
	Cyclist Facilities	**Cycle Storage**	Tra 03	1	1	Cycle storage will need to be installed at a provision of 1 per 10 staff (or a minimum of 4) and 1 per 10 visitor.	CRTKL	**Medium**
		Cyclist Facilities		1	1	A future fit-out layout showing shower(s) and/or lockers and/or changing areas are provided for staff.	CRTKL	**Medium**
	Maximum car parking capacity		Tra 04	2	2	It is understood that there is minimal car parking on the development, so these credits should be achievable.	CRTKL	**Low**
	Travel Plan		Tra 05	1	1	A Transport Assessment / Statement and travel plan must prepared for the development.	Transport Consultant	**Low**
Section Credit Total				11	11			
Weighted Section Total				12.57%	12.57%			

WATER							
Credit Value 1.14%	**Water Efficient Equipment**		Wat 04	1	1	Landscaping will rely solely on natural precipitation.	Rolton	**Low**
Section Credit Total				1	1		
Weighted Section Total				1.14%	1.14%		
MATERIALS							
Credit Value 1.65%	**Environmental Impact of Materials (Project Life Cycle Assessment Study)**		Mat 01	6	6	There are two options to achieve credits under Mat 01, full credits can be awarded for undertaking a 'project life cycle assessment study'. An LCA is undertaken for new materials included in the refurbishment. Relevant elements include (but are not limited to): - Superstructure e.g. windows, wall, roofs - Hard landscaping (if applicable) Maximum (6 + 1 exemplary) credits can be achieved based on the quality of the LCA tool, and number of elements included. The project team must also demonstrate how the LCA has reduced the environmental impact. Turley are able to carry this out.	CRTKL / Civil / Turley	**Low**
	Responsible Sourcing of Construction Products	Pre-requisite - Legal and Sustainable Timber	Mat 03	-	Y	All temporary and permanent site timber to be FSC.	Contractor	**Low**
		Enabling Sustainable Procurement		1	1	The contractor must source materials in accordance with a documented Sustainable Procurement Plan (can be site specific or organisation level).	Contractor	**Low**
		Measuring Responsible Sourcing		3	2	36% of available points are achieved by procuring materials from suppliers with responsible sourcing accreditation. Relevant responsible sourcing accreditations include BES6001 (highest scorer), CARES, FSC, PEFC & ISO1400.	Contractor	**Medium**
	Insulation		Mat 04	1	1	Any new insulation within the external walls, ground floor, roof and building services should meet a Green Guide rating of A+.	CRTKL / Contractor / M&E	**Medium**
	Designing for Durability and Resilience		Mat 05	1	1	Vulnerable areas of the building must be identified and protected from damage e.g. vehicle manoeuvring. Measures include walls upgraded to severe duty, and bollards present where vehicles are within 1m of the façade. Additionally a material degradation study based on environmental factors needs to be undertaken and measures implemented.	CRTKL	**Low**
	Material Efficiency		Mat 06	1	0	This credit is not targeted due to extensive requirements, including during RIBA Stages 1 and 2 that were not captured.		
Section Credit Total				13	11		
Weighted Section Total				21.43%	18.13%		

WASTE								
Credit Value 1.07%	**Project Waste Management**	Pre-refurbishment Audit	Wst 01	1	1	A pre-refurbishment audit should be carried out during RIBA Stage 2. It should be carried out by a 'competent person' and include predicted waste arisings, potential for re-use and targets for waste management.	Demolition Contractor	**Medium**
		Reuse and Direct Recycling of Materials		2	0	Requires at least 50% of strip out / demo material to be recycled via closed loop.		
		Construction Resource Efficiency		3	1	A Resource Management Plan must be developed with targets and procedures to minimise on site waste. Non-hazardous waste related to the construction / refurbishment must not exceed 11.3m³ or 3.5 tonnes (4.5m³ and 1.2 tonness if Excellent is targeted) per 100m² GIFA. This excludes strip out works.	Contractor	**Medium**
		Diversion of Waste from Landfill		1	1	85% (90%) by volume or 90% (95%) by tonnage of construction (demolition) waste must be diverted from landfill.	Contractor	**Low**
	Operational Waste		Wst 03	1	1	An area for recycled waste must be provided of an appropriate capacity. The space must be labelled and accessible to occupants and waste collectors. The building is unlikely to produce waste needing a compactor but this must be confirmed based on similar building's waste streams.	CRTKL	**Low**
	Adaptation to Climate Change		Wst 05	1	1	A climate change adaptation strategy must be undertaken during **Stage 2 / early Stage 3**. This strategy must cover all points listed within the BREEAM requirements. Turley can provide a fee proposal for undertaking this work.	Hammerson / Packaged Living to appoint	**Medium**
	Functional Adaptability		Wst 06	1	1	A study to explore the ease of disassembly and the functional adaptation potential of different design scenarios should be conducted by the end of **Stage 2 or early Stage 3**.	CRTKL	**Low**
Section Credit Total				10	6			
Weighted Section Total				10.71%	6.43%			
LAND USE & ECOLOGY								
Credit Value 3.43%	**Protection of Ecological Features**		LE 02	1	1	All existing features of ecological value within or surrounding the boundary are adequately protected. Protection must be constructed in line with a suitably qualified ecologist's recommendations.	Ecologist	**Medium**
	Enhancing Site Ecology		LE 04	1	1	A suitably qualified ecologist must be appointed before the end of RIBA Stage 1, and undertake a report by the end of RIBA Stage 2. The report provides recommendations for the enhancement of ecology, which must be implemented.	Ecologist / Contractor	**Medium**

	Long Term Impact on Biodiversity		LE 05	2	2	A suitably qualified ecologist must be appointed before start on site, and confirm that all UK and EU legislation has been complied with. A landscape and habitat management plan must be produced covering at least the first 5 years after occupation, in line with BS 42020. Additional measures (at least 4) in line with the BREEAM manual must be undertaken by the contractor. These include appropriate timing of construction programme to account for ecology and training of workforce. See manual for full list of additional measures.	Ecologist / Contractor	**Low**
Section Credit Total				4	4			
Weighted Section Total				13.71%	13.71%			
POLLUTION								
Credit Value 1.32%	**Flood Risk Management and Reducing Surface Water Run-Off**	Flood Risk Management	Pol 03	2	2	EA flood mapping says there is a high risk of flooding, however, this will need to be confirmed by a Flood Risk Assessment (FRA). Avoidance of flooding should be achieved through either: The refurbishment and fit-out zone is located entirely on the first floor or above and a flood emergency plan has been developed OR As a result of the building's floor level or measures to keep water away, the building is defined as achieving avoidance from flooding by following Checklist 1, Checklists and tables. Where avoidance is not possible, two credits are achieved where a full flood resilience/resistance strategy is implemented for the building's scope of works in accordance with recommendations made by a Suitably Qualified Building Professional	Civil Engineer	**Medium**
		Surface Water Run-Off		2	1	It is assumed that there will be a neutral impact on surface water i.e. there is no increase in impermeable surfaces as a result of the refurbishment.	Civil Engineer	**Low**
		Minimising watercourse pollution		1	0	Assumed this is not achievable - there would need to be no discharge from site for rainfall up to 5mm.		
Section Credit Total				5	3			
Weighted Section Total				6.59%	3.95%			

INNOVATION						
Credit Value 1.00%	**Man 03 Responsible Construction Practices**	1	1	A CCS score of 39 with at least 13 in each section must be achieved.	Contractor	**Medium**
	Man 05 Aftercare	1	0			
	Hea 01 Visual Comfort	1	0			
	Hea 02 Indoor Air Quality	2	0			
	Ene 01 Reduction of Energy Use and Carbon Emissions	5	0			
	Wat 01 Water Consumption	1	0			
	Mat 01 Life Cycle Impacts	1	1	The LCA will achieve 85% of BREEAM Mat 01 calculator points.	CRTKL / Civil / Turley	**Low**
	Mat 03 Responsible Sourcing of Materials	1	0			
	Wst 01 Construction Waste Management	2	0			
	Wst 02 Recycled Aggregates	1	0			
	Wst 05 Adaptation to climate change	1	0			
	Pol 03 Flood Risk Management and Reducing Surface Water Run-Off	1	0			
Section Credit Total		18	2			
Weighted Section Total			2%			
		TARGET RATING	**78.30%**	It should be noted therefore that this score is indicative only at this stage and must be reviewed throughout design development as well as audited by the BRE to confirm the final rating.		

BREEAM New Construction V6 (Retail - Shell Only) Pre-Assessment

Yield Hall Place 1, Restaurant Unit

November 2022

Key

	Mandatory Credit for 'Excellent'
	Pre-Planning Study / Appointment
	Flexible Stage 2 Requirement (can be later i.e. Stage 3)
POSSIBLE	**May be achievable - requires further information**

TARGET (>70%)	77.53%	Excellent

Credit Summary BREEAM V6: Retail Shell Only			Credit Ref.	Credits Available	Excellent Target	Comments	Responsibility	Risk
MANAGEMENT								
Credit Value 0.80%	**Project Brief and Design**	Project Delivery Planning	Man 01	1	1	Prior to the end of **Stage 2**, roles & responsibilities must have been issued to the project team, and internal consultation occurred, resulting in changes to the design.	Hammersons / Packaged Living	**Low**
		Stakeholder Consultation		1	1	Prior to the end of Stage 2, all interested parties should be consulted on an extensive range of topics. All relevant parties receive consultation feedback by the end of Stage 4.	Turley / Hammersons / Packaged Living	**Low**
		BREEAM Advisory Professional		1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stage 2.** Turley have been appointed to provide RIBA Stage 2 support.	Turley / Hammersons / Packaged Living	**Low**
				1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stages 2-4.**	Hammersons / Packaged Living to appoint	**Medium**
	Life Cycle Costing (LCC) and Service Life Planning	Elemental Life Cycle Cost	Man 02	2	0	Requires an entire asset LCC plan at Process Stage 2 that details an indication of future replacement costs over a period of analysis as required by the client.		
		Component Life Cycle Cost		1	1	Component life cycle costing must be undertaken during **Stage 4** by cost consultant.	Cost Consultant	**Low**
		Capital Cost Reporting		1	1	Report cost per sqm (£/100m2).	Cost Consultant	**Low**

	Responsible Construction Practices	Legally harvested and traded timber - Pre-requisite	Man 03	-	Y	Contractor must demonstrate that all timber is FSC certified.	Contractor	**Low**
		Environmental Management		1	1	All demolition and main contractors must operate EMS (ISO14001).	Contractor	**Low**
		Sustainability Champion		1	1	Ensure a BREEAM AP / Site Sustainability Champion is appointed to cover stages 5 & 6.	Contractor	**Low**
		Responsible Construction Management		2	2	Achieve an overall score of 39 in the Considerate Constructors Scheme with at least 13 in each section.	Contractor	**Medium**
		Monitoring of Construction Site Impacts		2	2	The contractor must monitor energy, water and transport of materials and waste on site. Note that these will need to be reported to the BRE.	Contractor	**Low**
	Commissioning and Handover	Testing and Inspecting Building Fabric	Man 04	1	1	Thermographic survey & air tightness testing must be undertaken post completion - any defects are rectified.	Contractor	**Medium**
Section Credit Total				15	13			
Weighted Section Total				12%	10.40%			
HEALTH & WELLBEING								
Credit Value	**Visual Comfort**	Daylight factors	Hea 01	2	**POSSIBLE**	80% of occupied areas would need to achieve an average daylight factor of 2% - to be reviewed - to be reviewed.		
0.88%		View Out		1	**POSSIBLE**	95% of the floor area in 95% of spaces for each relevant building area provides an adequate view out - to be reviewed.		
		External Lighting Levels		1	1	External lighting must meet BS5489-1:2013 and BSEN12464-2:2014.	Rolton	**Low**
	Acoustic Performance		Hea 05	1	1	The building meets the appropriate acoustic performance standards and testing requirements for indoor ambient noise level as defined in the relevant table in the manual.	Acoustician	**Medium**
	Security		Hea 06	1	1	Security specialist should be consulted by the end of **Stage 2** and undertake a full site assessment with bespoke recommendations. All recommendations must be implemented. Where appointed after Stage 2, the SQSS will need to confirm they have not been restricted by late appointment.	Hammerson / Packaged Living to appoint SQSS	**Medium**

	Safe and Healthy Surroundings	Safe access	Hea 07	1	1	Further investigation / drawings required to determine compliance but the building appears to meet the requirements for safe access as defined in the manual as it can be accessed directly from the road.	CRTKL	**Medium**
		Outside Space		1	1	There should be an outside space providing building users with an external amenity area. This space is noted as being; - Of an appropriate size to provide enough amenity for the predicted number of building users – be an outdoor landscaped area, for example a garden, balcony or terrace; the majority of the space should be open to the sky – have appropriate seating areas and be non-smoking, be located to ensure it is accessible to all building users and avoids areas that will have disturbances from sources of noise (e.g. building services, car parks, busy roads, delivery areas etc.).	CRTKL	**Medium**
Section Credit Total				8	5			
Weighted Section Total				7%	4.38%			
ENERGY								
Credit Value	**Reduction of Energy Use and CO2 Emissions**	Energy Performance Ratio	Ene 01	9	4	4 credits required as a minimum for BREEAM 'Excellent'. BRUKL's requested to check what the building is currently achieving. This requires an uplift over Part L 2021.	Rolton	**High**
	External Lighting		Ene 03	1	1	External lighting must have average luminous efficacy of 70 lumens / circuit Watt. Lighting should be controlled by photocell and PIR in areas of intermittent pedestrian use.	Rolton	**Medium**
	Low Carbon Design	Passive Design Analysis (PDA)	Ene 04	1	1	During **Stage 2**, a PDA should be undertaken to identify opportunities to implement passive design.	Rolton	**Medium**
		Low and Zero Carbon Feasibility Study		1	1	LZC Feasibility Study required during design stage covering each requirement within the BREEAM Manual. The recommendations must be implemented to achieve a 'meaningful' reduction i.e. 10%	Rolton	**Low**
		Free Cooling		1	0	It is assumed that there will be cooling in the units.		
Section Credit Total				13	7			
Weighted Section Total				10%	5.12%			

TRANSPORT							
Credit Value 1.21%	**Transport Assessment and Travel Plan**		Tra 01	2	2	A transport assessment must be produced during the design and feasibility stages alongside a draft travel plan. Full travel plan required at later stage. Note that the transport assessment must include accessibility index, disabled access and a number of other topics (see credit criteria within manual).	Transport Consultant	**Low**
	Sustainable Transport Measures		Tra 02	10	7	Sustainable transport measures provides credits based on measures provided on site. This would need to be confirmed with the Transport Consultant and Client but have been estimated based on the following: - AI >8 - Install cycle spaces for staff (1 per 10 building occupants) - Future fit-out layout showing shower(s) and/or lockers and/or changing areas provided for staff - At least three existing amenities - Two new amenities (new restaurant and outdoor space as part of masterplan) The AI is to be confirmed and whether any car parking spaces will be provided with EV charging.	Transport Consultant / Occupier / Client / CRTKL	**Medium**
Section Credit Total				12	9			
Weighted Section Total				14.5%	10.88%			
WATER								
0.67%	**Water Monitoring**		Wat 02	1	1	A pulsed water meter must be installed on the supply to each building and connected to the BMS. Areas consuming over 10% of the building's water demand must also be sub-metered.	Rolton	**Low**
	Water Leak Detection & Prevention	Leak Detection System	Wat 03	1	1	A water leak detection will be installed to monitor the internal pipework.	Rolton	**Low**
	Water Efficient Equipment (Process)		Wat 04	1	1	It is assumed that the only water demand will be planting which will rely on natural precipitation and no irrigation systems are currently proposed.	LDA / HDA	**Low**
Section Credit Total				3	3			
Weighted Section Total				2%	2.00%			
MATERIALS								
Credit Value 1.57%	**Environmental Impacts from Construction Products - Building Life Cycle Assessment (LCA)**		Mat 01	7	7	Credits are available for undertaking a Life Cycle Assessment and options appraisal during **Stages 2 & 4**. The options appraisal must include substructure, superstructure and hard landscaping. The 2 credits associated with comparison against the BRE benchmark are not targeted as they are not applicable for a mixed use building. The results must be submitted to the BRE before planning submission. Turley have been appointed to undertake this assessment.	CRTKL / Civil / Turley	**Low**
	Environmental Impacts from Construction Products - Environmental Product Declarations (EPD)		Mat 02	1	0	Specify construction products with EPD that achieve a total EPD points score of at least 20. Can be challenging to achieve.		
	Responsible Sourcing of	Pre-requisite - Legal and Sustainable Timber	Mat 03	-	Y	All timber used to be FSC.	Contractor	**Low**
		Enabling Sustainable Procurement		1	1	Compliant SPP must be provided during RIBA Stage 2. Turley will provide guidance on this.	Turley / Hammersons	**Medium**

	Construction Products	Measuring Responsible Sourcing	Mat 05	3	2	20% of available points must be achieved, the scope expands to internal finishes, substructure and hard landscaping. Relevant responsible sourcing accreditations include BES6001 (highest scorer), CARES, FSC, PEFC & ISO14001. An extra credit may be possible here.	Contractor	**Medium**
	Designing for Durability and Resilience		Mat 05	1	1	Vulnerable areas of the building must be protected from damage e.g. vehicle manoeuvring. Exposed parts of the building should also be protected against the elements. The architect will need to produce reports and drawings demonstrating this.	CRTKL	**Low**
	Material Efficiency		Mat 06	1	0	At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. This can be difficult to achieve based on the level of detail required at such early stages.		
Section Credit Total				14	11			
Weighted Section Total				22.0%	17.29%			
WASTE								
Credit Value 0.80%	**Construction Waste Management**	Pre-Demolition Audit	Wst 01	1	1	Prior to the end of Concept Design complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible.	Demolition Contractor	**Medium**
		Construction Resource Efficiency		3	2	A Resource Management Plan must be produced - no more than 7.5m³ or 6.5 tonnes of construction waste can be generated per 100m² GIFA.	Contractor	**Medium**
		Diversion of Resources from Landfill		1	1	70% (80%) by volume or 80% (90%) by tonnage of construction (demolition) waste must be diverted from landfill.		**Low**
	Use of Recycled and Sustainably Sourced Aggregates		Wst 02	1	0	Procured aggregates will be in line with the Table 10.5. It is often difficult to procure sustainable aggregates.		
	Operational Waste		Wst 03	1	1	An area for recycled waste must be provided of an appropriate capacity. The space must be labelled and accessible to occupants and waste collectors. The building is unlikely to produce waste needing a compactor but this must be confirmed based on similar building's waste streams. There must be an areas for food waste storage with a tap and drain if food preparation will be undertaken.	CRTKL	**Low**
	Adaptation to Climate Change		Wst 05	1	1	A climate change adaptation strategy must be undertaken during **Stage 2 / early Stage 3**. This strategy must cover all points listed within the BREEAM requirements. Turley can provide a fee proposal for undertaking this work.	Hammerson / Packaged Living to appoint	**Medium**

	Design for Disassembly and Adaptability		Wst 06	2	2	A study must be conducted to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of **Stage 2**. This strategy must cover all points listed within the BREEAM requirements. An update will need to be provided on the above at technical design, including how the study has developed the design. The team must produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.	CRTKL	**Low**
Section Credit Total				10	8			
Weighted Section Total				8%	6.40%			
LAND USE & ECOLOGY								
Credit Value	**Site Selection**	Previously Developed Land	LE 01	1	1	At least 75% of the proposed development is on previously occupied land.	CRTKL	**Low**
1.46%		Contaminated Land		1	0	A contaminated land professional undertakes a site investigation, risk assessment and appraisal, which deems that land within the development footprint to be affected by contamination. A remediation strategy is required to be implemented to achieve the credit. It is assumed there is no contamination on site.		
	Ecological Risks and Opportunities		LE 02	2	2	A suitably qualified ecologist must be appointed to undertake a survey and evaluation in line with the BREEAM methodology. The project team liaise with stakeholders to identify the ecological outcomes of the site and identify measures to meet this outcomes in line with the mitigation hierarchy.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
	Managing Negative Impacts on Ecology	Prerequisite - Ecological risks and Opportunities	LE 03	-	Y	Achieve LE02.		**Low**
		Planning and Measures On-site		1	1	Roles and responsibilities will be clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief. On site measures for managing negative ecological impacts will be implemented.		
		Managing Negative Impacts		2	2	Negative impacts from site preparation and construction works must be managed according to the mitigation hierarchy. It is assumed there will be no loss in ecological value.		

	Ecological Change and Enhancement	Prerequisite - Managing Negative Impacts on Ecology	LE 04	-	Y	Criterion 8 in LE 03 has been achieved (negative impacts from site preparation and construction works are managed). The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
		Ecological Enhancement		1	1	Measures must be implemented to enhance ecological value, based on input from the project team and SQE in collaboration with representative stakeholders and data collated. Measures are implemented in the following order: - On site, and where this is not feasible, - Off site within the Zone of Influence. Data collated are analysed and where potentially valuable, provided to the local environmental records centres.		**Medium**
		Change and Enhancement of Ecology		3	2	Credits are awarded on a scale of 1 to 3, based on the calculation of the change in ecological value occurring as a result of the project.		
	Long Term Ecological Management and Maintenance	Management and Maintenance throughout the Project	LE 05	1	1	The client or contractor to confirm that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site. Criterion 8 (Managing Negative Impacts) in LE 03 has been achieved, and one credit under LE04 Enhancement of Ecology is achieved.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
		Landscape and Ecology Management Plan		1	1	A Landscape and Ecology Management Plan is developed in accordance with BS 42020:2013 Section 1.1. It must cover the first 5 years after project completion and be updated.		
Section Credit Total				13	11			
Weighted Section Total				19%	16.08%			

POLLUTION								
	Surface Water Run Off	Flood Resilience	Pol 03	2	1	Flood Risk Assessment to be provided confirming the site risk of flooding. Development at medium to high risk must demonstrate an increase in the resilience and resistance of the development to flooding, via one of the following: - The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600 mm above the design flood level of the site's flood zone OR - The final design of the building and the wider site reflects the recommendations made by an appropriate consultant. EA maps on Gov webiste suggestes high risk of surface water flooding.	Civil	**Medium**
		Surface Water Run-Off - Rate		1	1	For brownfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the pre-developed site. This should comply at the 1-year and 100-year return period events Calcs must include allowance for climate change.	Civil	**Medium**
		Surface Water Run-Off - Volume		1	**POSSIBLE**	Flooding of property will not occur in the event of local drainage system failure. Post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. This must be for the 100-year 6-hour event, including an allowance for climate change. Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other SuDS techniques. To be reviewed and confirmed by Civil engineer.		
		Minimising Watercourse Pollution		1	**POSSIBLE**	There is no discharge from the developed site for rainfall up to 5mm. Areas which carry a risk of watercourse pollution are designed appropriately (please see manual for full details). To be reviewed and confirmed by Civil engineer.		
	Reduction of Night Time Light Pollution		Pol 04	1	1	External lighting must be designed in compliance with ILP Guidance Table 2 and is switched off between 23:00 and 07:00.	Rolton	**Low**
Section Credit Total				6	3			
Weighted Section Total				6%	3.00%			

INNOVATION						
Credit Value 1.00%	Man 03 Responsible Construction Practices	1	1	Achieve an overall score of 39 in the Considerate Constructors Scheme with at least 13 in each section.	Contractor	**Medium**
	Hea 01 Visual Comfort	1	0			
	Hea 06 Security	1	0			
	Ene 01 Beyond Zero Net Regulated Carbon	5	0			
	Ene 01 Post Occupancy Stage	0	0			
	Wat 01 Water Consumption	1	0			
	Mat 01 Life Cycle Impacts	3	1	Third party verification.	Turley	**Low**
	Mat 03 Responsible Sourcing of Materials	1	0			
	Wst 01 Construction Waste Management	1	0			
	Wst 02 Recycled Aggregates	1	0			
	Wst 05 Adaptation to climate change	1	0			
	LE 02 Ecological Risks and Opportunities	1	0			
	LE 04 Ecological Change and Enhancement	1	0			
Section Credit Total		18	2			
Weighted Section Total		18%	2%			

TARGET SCORE	**77.53%**
TARGET RATING	**Excellent**

It should be noted therefore that this score is indicative only at this stage and must be reviewed throughout design development as well as audited by the BRE to confirm the final rating.

Not all credit requirements are listed within this document, it must be read in conjunction with the BREEAM UK New Construction V6.0

BREEAM®

BREEAM Refurb and Fit Out 2014 (Retail - Part 1) Pre-Assessment

Yield Hall Place 1, Retained Retail

November 2022

Turley Sustainability

Key

	Mandatory Credit for 'Excellent'
	Pre-Planning Study / Appointment
	Flexible Stage 2 Requirement (can be later i.e. Stage 3)
POSSIBLE	**May be achievable - requires further information**

TARGET (>70%)	**78.67%**	**Excellent**

Credit Summary BREEAM 2014: Refurb & Fit-Out			Credit Ref.	Credits Available	Excellent Target	Comments	Responsibility	Risk
MANAGEMENT								
Credit Value 1.01%	**Project Brief and Design**	Project Delivery Planning	Man 01	1	1	Prior to the end of **Stage 2**, roles & responsibilities must have been issued to the project team, and internal consultation occurred, resulting in changes to the design.	Hammersons / Packaged Living	**Low**
		Stakeholder Consultation		1	1	Prior to the end of Stage 2, all interested parties should be consulted on an extensive range of topics. All relevant parties receive consultation feedback by the end of Stage 4.	Turley / Hammersons / Packaged Living	**Low**
		Sustainability Champion (Design)		1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stage 2.** Turley have been appointed to provide RIBA Stage 2 support.	Turley / Hammersons / Packaged Living	**Low**
		Sustainability Champion (Monitoring Progress)		1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stages 2-4.**	Hammersons / Packaged Living to appoint	**Medium**
	Life Cycle Costing (LCC) and Service Life Planning	Elemental Life Cycle Cost	Man 02	2	0	An outline, entire asset elemental life cycle cost (LCC) plan has not been carried out at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2), therefore, this credit cannot be targeted.		
		Component Life Cycle Cost		1	1	A component level LCC plan will be developed by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008.	Cost Consultant	**Low**
		Capital Cost Reporting		1	1	Report cost per sqm (£/100m2).	Cost Consultant	**Low**

	Responsible Construction Practices	Legally harvested and traded timber - Pre-requisite	Man 03	-	Y	Contractor must demonstrate that all timber is FSC certified.	Contractor	**Low**
		Environmental Management		1	1	Main contractor must operate EMS (ISO14001) and best practice pollution prevention policies and procedures must be implemented on site.	Contractor	**Low**
		Sustainability Champion		1	1	Ensure a BREEAM AP / Site Sustainability Champion is appointed to cover stages 5 & 6.	Contractor	**Low**
		Considerate Construction (1 credit mandatory)		2	2	The contractor must comply with the Considerate Constructors Scheme (CCS) and achieve a score of at least 39 with a minimum of 13 in each section (to also achieve the exemplary credit).	Contractor	**Medium**
		Monitoring of Construction Site Impacts (Energy & Water)		1	1	The contractor must monitor energy, water and transport of materials and waste on site. Note that these will need to be reported to the BRE.	Contractor	**Low**
		Monitoring of Construction Site Impacts (Transport of Materials & Waste)		1	1	The contractor must transport of materials and waste on site. Note that these will need to be reported to the BRE.	Contractor	**Low**
	Commissioning and Handover	Testing and Inspecting Building Fabric	Man 04	1	1	Thermographic survey & air tightness testing must be undertaken post completion - any defects are rectified.	Contractor	**Medium**
Section Credit Total				15	13			
Weighted Section Total				15.22%	13.19%			
HEALTH & WELLBEING								
Credit Value 1.21%	**Visual Comfort**	Daylight factors	Hea 01	3	0	It is assumed that 80% of relevant areas will not achieve 2% daylight factor plus daylight uniformity criteria.		
		View Out		2	0	There may be some internal rooms that do not meet these requirements.		
	Indoor Air Quality	Indoor Air Quality (IAQ) Plan	Hea 02	1	1	The team would need to produce an indoor air quality plan detailing actions which minimise indoor air pollution, ideally prior to detailed design.	Rolton	**Low**
		Ventilation		1	0	It is unlikely that ventilation intakes and exhausts are placed 10m apart from each other, and windows / intakes unlikely to be 10m away from pollution such as roads / car parking areas.		
	Thermal Comfort	Thermal Modelling	Hea 04	1	1	Thermal modelling is conducted in accordance with CIBSE AM11 and carries out full dynamic thermal analysis. For air conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with ICBSE Guide A. For naturally ventilated buildings, winter operative temperature ranges CIBSE Guide A and the building is designed to limit the risk of overheating in accordance with CIBSE TM52. The suitability of existing building services and controls will also be assessed to identify any changes that may be required as a result of fit-out work. PMV and PPD figures will be proided for air conditioned buildings.	Rolton	**Medium**
		Adaptability for Projected Climate Change Scenario		1	1	The thermal modelling criteria is achieved for a projected climate change scenario or if it fails it must be demonstrated how it could be met in future.	Rolton	**Medium**

	Acoustic Performance	Indoor Ambient Noise Levels and Reverberation	Hea 05	1	**POSSIBLE**	Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233:2014. This credit can be explored if needed.		
				1	**POSSIBLE**	Achieve the requirements relating to reverberation times set out within Section 1 of BB93. This credit can be explored if needed.		
	Security		Hea 06	1	1	Security specialist should be consulted by the end of **Stage 2** and undertake a full site assessment with bespoke recommendations. All recommendations must be implemented. Where appointed after Stage 2, the SQSS will need to confirm they have not been restricted by late appointment.	Hammerson / Packaged Living to appoint SQSS	**Medium**
Section Credit Total				12	4			
Weighted Section Total				14.53%	4.84%			
ENERGY								
Credit Value 1.02%	**Reduction of Energy Use and CO_2 Emissions**	Energy Performance Ratio (6 credits mandatory)	Ene 01	2	2	Option 2 - Elemental Level Energy Model The BREEAM Refurbishment and Fit-out energy model will be used to calculate the energy score to determine the number of credits awarded. Please note, we won't know how many credits are achievable until the exercise is carried out.	Rolton	**High**
	Low Carbon Design	Passive Design Analysis (PDA)	Ene 04	1	1	A Passive Design Analysis is to be undertaken during RIBA Stage 2 and recommended passive design measures are to beimplemented within design and construction.	Rolton	**Medium**
		Free Cooling		1	0	It is assumed that there will be cooling in the building.		
Section Credit Total				4	3			
Weighted Section Total				4.09%	3.07%			
TRANSPORT								
Credit Value 1.18%	**Sustainable Transport Solutions (Accessibility Index)**		Tra 01	5	5	Based on the central location of the development and proximity to public transport nodes, it is assumed 5 credits will be achieved, however, this is to be confirmed.	Turley / Transport Consultant	**Low**
	Proximity to Amenities		Tra 02	1	1	The site is within 500m of at least two amenities.	Turley	**Low**
	Cyclist Facilities	**Cycle Storage**	Tra 03	1	1	Cycle storage will need to be installed at a provision of 1 per 10 staff (or a minimum of 4) and 1 per 10 visitor.	CRTKL	**Medium**
		Cyclist Facilities		1	1	A future fit-out layout showing shower(s) and/or lockers and/or changing areas are provided for staff.	CRTKL	**Medium**
	Travel Plan		Tra 05	1	1	A Transport Assessment / Statement and travel plan must prepared for the development.	Transport Consultant	**Low**
Section Credit Total				9	9			
Weighted Section Total				10.65%	10.65%			

WATER							
Credit Value 1.18%	**Water Efficient Equipment**		Wat 04	1	1	Landscaping will rely solely on natural precipitation.	Rolton	**Low**
Section Credit Total				1	1		
Weighted Section Total				1.18%	1.18%		
MATERIALS							
Credit Value 1.71%	**Environmental Impact of Materials (Project Life Cycle Assessment Study)**		Mat 01	6	6	There are two options to achieve credits under Mat 01, full credits can be awarded for undertaking a 'project life cycle assessment study'. An LCA is undertaken for new materials included in the refurbishment. Relevant elements include (but are not limited to): - Superstructure e.g. windows, wall, roofs - Hard landscaping (if applicable) Maximum (6 + 1 exemplary) credits can be achieved based on the quality of the LCA tool, and number of elements included. The project team must also demonstrate how the LCA has reduced the environmental impact. Turley are able to carry this out.	CRTKL / Civil / Turley	**Low**
	Responsible Sourcing of Construction Products	Pre-requisite - Legal and Sustainable Timber	Mat 03	-	Y	All temporary and permanent site timber to be FSC.	Contractor	**Low**
		Enabling Sustainable Procurement		1	1	The contractor must source materials in accordance with a documented Sustainable Procurement Plan (can be site specific or organisation level).	Contractor	**Low**
		Measuring Responsible Sourcing		3	2	36% of available points are achieved by procuring materials from suppliers with responsible sourcing accreditation. Relevant responsible sourcing accreditations include BES6001 (highest scorer), CARES, FSC, PEFC & ISO1400.	Contractor	**Medium**
	Insulation		Mat 04	1	1	Any new insulation within the external walls, ground floor, roof and building services should meet a Green Guide rating of A+.	CRTKL / Contractor / M&E	**Medium**
	Designing for Durability and Resilience		Mat 05	1	1	Vulnerable areas of the building must be identified and protected from damage e.g. vehicle manoeuvring. Measures include walls upgraded to severe duty, and bollards present where vehicles are within 1m of the façade. Additionally a material degradation study based on environmental factors needs to be undertaken and measures implemented.	CRTKL	**Low**
	Material Efficiency		Mat 06	1	0	This credit is not targeted due to extensive requirements, including during RIBA Stages 1 and 2 that were not captured.		
Section Credit Total				13	11		
Weighted Section Total				22.19%	18.78%		

WASTE								
Credit Value 1.11%	**Project Waste Management**	Pre-refurbishment Audit	Wst 01	1	1	A pre-refurbishment audit should be carried out during RIBA Stage 2. It should be carried out by a 'competent person' and include predicted waste arisings, potential for re-use and targets for waste management.	Demolition Contractor	**Medium**
		Reuse and Direct Recycling of Materials		2	0	Requires at least 50% of strip out / demo material to be recycled via closed loop.		
		Construction Resource Efficiency		3	1	A Resource Management Plan must be developed with targets and procedures to minimise on site waste. Non-hazardous waste related to the construction / refurbishment must not exceed 11.3m³ or 3.5 tonnes (4.5m³ and 1.2 tonness if Excellent is targeted) per 100m² GIFA. This excludes strip out works.	Contractor	**Medium**
		Diversion of Waste from Landfill		1	1	85% (90%) by volume or 90% (95%) by tonnage of construction (demolition) waste must be diverted from landfill.	Contractor	**Low**
	Operational Waste		Wst 03	1	1	An area for recycled waste must be provided of an appropriate capacity. The space must be labelled and accessible to occupants and waste collectors. The building is unlikely to produce waste needing a compactor but this must be confirmed based on similar building's waste streams.	CRTKL	**Low**
	Adaptation to Climate Change		Wst 05	1	1	A climate change adaptation strategy must be undertaken during **Stage 2 / early Stage 3**. This strategy must cover all points listed within the BREEAM requirements. Turley can provide a fee proposal for undertaking this work.	Hammerson / Packaged Living to appoint	**Medium**
	Functional Adaptability		Wst 06	1	1	A study to explore the ease of disassembly and the functional adaptation potential of different design scenarios should be conducted by the end of **Stage 2 or early Stage 3**.	CRTKL	**Low**
Section Credit Total				10	6			
Weighted Section Total				11.10%	6.66%			
LAND USE & ECOLOGY								
Credit Value 3.55%	**Protection of Ecological Features**		LE 02	1	1	All existing features of ecological value within or surrounding the boundary are adequately protected. Protection must be constructed in line with a suitably qualified ecologist's recommendations.	Ecologist	**Medium**
	Enhancing Site Ecology		LE 04	1	1	A suitably qualified ecologist must be appointed before the end of RIBA Stage 1, and undertake a report by the end of RIBA Stage 2. The report provides recommendations for the enhancement of ecology, which must be implemented.	Ecologist / Contractor	**Medium**

	Long Term Impact on Biodiversity		LE 05	2	2	A suitably qualified ecologist must be appointed before start on site, and confirm that all UK and EU legislation has been complied with. A landscape and habitat management plan must be produced covering at least the first 5 years after occupation, in line with BS 42020. Additional measures (at least 4) in line with the BREEAM manual must be undertaken by the contractor. These include appropriate timing of construction programme to account for ecology and training of workforce. See manual for full list of additional measures.	Ecologist / Contractor	**Low**
Section Credit Total				4	4			
Weighted Section Total				14.20%	14.20%			
POLLUTION								
Credit Value 1.37%	**Flood Risk Management and Reducing Surface Water Run-Off**	Flood Risk Management	Pol 03	2	2	EA flood mapping says there is a high risk of flooding, however, this will need to be confirmed by a Flood Risk Assessment (FRA). Avoidance of flooding should be achieved through either: The refurbishment and fit-out zone is located entirely on the first floor or above and a flood emergency plan has been developed OR As a result of the building's floor level or measures to keep water away, the building is defined as achieving avoidance from flooding by following Checklist 1, Checklists and tables. Where avoidance is not possible, two credits are achieved where a full flood resilience/resistance strategy is implemented for the building's scope of works in accordance with recommendations made by a Suitably Qualified Building Professional	Civil Engineer	**Medium**
		Surface Water Run-Off		2	1	It is assumed that there will be a neutral impact on surface water i.e. there is no increase in impermeable surfaces as a result of the refurbishment.	Civil Engineer	**Low**
		Minimising watercourse pollution		1	0	Assumed this is not achievable - there would need to be no discharge from site for rainfall up to 5mm.		
Section Credit Total				5	3			
Weighted Section Total				6.83%	4.10%			

INNOVATION						
Credit Value 1.00%	**Man 03 Responsible Construction Practices**	1	1	A CCS score of 39 with at least 13 in each section must be achieved.	Contractor	**Medium**
	Man 05 Aftercare	1	0			
	Hea 01 Visual Comfort	1	0			
	Hea 02 Indoor Air Quality	2	0			
	Ene 01 Reduction of Energy Use and Carbon Emissions	5	0			
	Wat 01 Water Consumption	1	0			
	Mat 01 Life Cycle Impacts	1	1	The LCA will achieve 85% of BREEAM Mat 01 calculator points.	CRTKL / Civil / Turley	**Low**
	Mat 03 Responsible Sourcing of Materials	1	0			
	Wst 01 Construction Waste Management	2	0			
	Wst 02 Recycled Aggregates	1	0			
	Wst 05 Adaptation to climate change	1	0			
	Pol 03 Flood Risk Management and Reducing Surface Water Run-Off	1	0			
Section Credit Total		18	2			
Weighted Section Total			2%			
		TARGET RATING	**78.67%**	It should be noted therefore that this score is indicative only at this stage and must be reviewed throughout design development as well as audited by the BRE to confirm the final rating.		

BREEAM®

BREEAM New Construction V6 (Assembly & Leisure - Shell Only)

Yield Hall Place 2, Cinema

November 2022

Turley Sustainability

Key

	Mandatory Credit for 'Excellent'
	Pre-Planning Study / Appointment
	Flexible Stage 2 Requirement (can be later i.e. Stage 3)
POSSIBLE	**May be achievable - requires further information**

TARGET (>70%)	78.15%	Excellent

Credit Summary BREEAM V6: Assembly & Leisure Shell Only			Credit Ref.	Credits Available	Excellent Target	Comments	Responsibility	Risk
MANAGEMENT								
Credit Value 0.80%	**Project Brief and Design**	Project Delivery Planning	Man 01	1	1	Prior to the end of **Stage 2**, roles & responsibilities must have been issued to the project team, and internal consultation occurred, resulting in changes to the design.	Hammersons / Packaged Living	**Low**
		Stakeholder Consultation		1	1	Prior to the end of Stage 2, all interested parties should be consulted on an extensive range of topics. All relevant parties receive consultation feedback by the end of Stage 4.	Turley / Hammersons / Packaged Living	**Low**
		BREEAM Advisory Professional		1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stage 2.** Turley have been appointed to provide RIBA Stage 2 support.	Turley / Hammersons / Packaged Living	**Low**
				1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stages 2-4.**	Hammersons / Packaged Living to appoint	**Medium**
	Life Cycle Costing (LCC) and Service Life Planning	Elemental Life Cycle Cost	Man 02	2	0	Requires an entire asset LCC plan at Process Stage 2 that details an indication of future replacement costs over a period of analysis as required by the client.		
		Component Life Cycle Cost		1	1	Component life cycle costing must be undertaken during **Stage 4** by cost consultant.	Cost Consultant	**Low**
		Capital Cost Reporting		1	1	Report cost per sqm (£/100m2).	Cost Consultant	**Low**

	Responsible Construction Practices	Legally harvested and traded timber - Pre-requisite	Man 03	-	Y	Contractor must demonstrate that all timber is FSC certified.	Contractor	**Low**
		Environmental Management		1	1	All demolition and main contractors must operate EMS (ISO14001).	Contractor	**Low**
		Sustainability Champion		1	1	Ensure a BREEAM AP / Site Sustainability Champion is appointed to cover stages 5 & 6.	Contractor	**Low**
		Responsible Construction Management		2	2	Achieve an overall score of 39 in the Considerate Constructors Scheme with at least 13 in each section.	Contractor	**Medium**
		Monitoring of Construction Site Impacts		2	2	The contractor must monitor energy, water and transport of materials and waste on site. Note that these will need to be reported to the BRE.	Contractor	**Low**
	Commissioning and Handover	Testing and Inspecting Building Fabric	Man 04	1	1	Thermographic survey & air tightness testing must be undertaken post completion - any defects are rectified.	Contractor	**Medium**
Section Credit Total				15	13			
Weighted Section Total				12%	10.40%			
HEALTH & WELLBEING								
Credit Value 1.00%	**Visual Comfort**	Daylight factors	Hea 01	1	0	80% of occupied areas would need to achieve an average daylight factor of 2% - to be reviewed - to be reviewed.		
		View Out		1	0	95% of the floor area in 95% of spaces for each relevant building area provides an adequate view out - to be reviewed.		
		External Lighting Levels		1	1	External lighting must meet BS5489-1:2013 and BSEN12464-2:2014.	Rolton	**Low**
	Acoustic Performance		Hea 05	1	1	The building meets the appropriate acoustic performance standards and testing requirements for indoor ambient noise level as defined in the relevant table in the manual.	Acoustician	**Medium**
	Security		Hea 06	1	1	Security specialist should be consulted by the end of **Stage 2** and undertake a full site assessment with bespoke recommendations. All recommendations must be implemented. Where appointed after Stage 2, the SQSS will need to confirm they have not been restricted by late appointment.	Hammerson / Packaged Living to appoint SQSS	**Medium**

	Safe and Healthy Surroundings	Safe access	Hea 07	1	1	Further investigation / drawings required to determine compliance but the building appears to meet the requirements for safe access as defined in the manual as it can be accessed directly from the road.	CRTKL	**Medium**
		Outside Space		1	1	There should be an outside space providing building users with an external amenity area. This space is noted as being; - Of an appropriate size to provide enough amenity for the predicted number of building users – be an outdoor landscaped area, for example a garden, balcony or terrace; the majority of the space should be open to the sky – have appropriate seating areas and be non-smoking, be located to ensure it is accessible to all building users and avoids areas that will have disturbances from sources of noise (e.g. building services, car parks, busy roads, delivery areas etc.).	CRTKL	**Medium**
Section Credit Total				7	5			
Weighted Section Total				7%	5.00%			
ENERGY								
Credit Value 0.73%	**Reduction of Energy Use and CO2 Emissions**	Energy Performance Ratio	Ene 01	9	4	4 credits required as a minimum for BREEAM 'Excellent'. BRUKL's requested to check what the building is currently achieving. This requires an uplift over Part L 2021.	Rolton	**High**
	External Lighting		Ene 03	1	1	External lighting must have average luminous efficacy of 70 lumens / circuit Watt. Lighting should be controlled by photocell and PIR in areas of intermittent pedestrian use.	Rolton	**Medium**
	Low Carbon Design	Passive Design Analysis (PDA)	Ene 04	1	1	During **Stage 2**, a PDA should be undertaken to identify opportunities to implement passive design.	Rolton	**Medium**
		Low and Zero Carbon Feasibility Study		1	1	LZC Feasibility Study required during design stage covering each requirement within the BREEAM Manual. The recommendations must be implemented to achieve a 'meaningful' reduction i.e. 10%	Rolton	**Low**
		Free Cooling		1	0	It is assumed that there will be cooling in the units.		

Section Credit Total			13	7			
Weighted Section Total			9.5%	5.12%			
TRANSPORT							
Credit Value 1.21%	**Transport Assessment and Travel Plan**	Tra 01	2	2	A transport assessment must be produced during the design and feasibility stages alongside a draft travel plan. Full travel plan required at later stage. Note that the transport assessment must include accessibility index, disabled access and a number of other topics (see credit criteria within manual).	Transport Consultant	**Low**
	Sustainable Transport Measures	Tra 02	10	7	Sustainable transport measures provides credits based on measures provided on site. This would need to be confirmed with the Transport Consultant and Client but have been estimated based on the following: - AI >8 - Install cycle spaces for staff (1 per 10 building occupants) - Future fit-out layout showing shower(s) and/or lockers and/or changing areas provided for staff - At least three existing amenities - Two new amenities (new restaurant and outdoor space as part of masterplan) The AI is to be confirmed and whether any car parking spaces will be provided with EV charging.	Transport Consultant / Occupier / Client / CRTKL	**Medium**
Section Credit Total			12	9			
Weighted Section Total			14.5%	10.88%			
WATER							
0.67%	**Water Monitoring**	Wat 02	1	1	A pulsed water meter must be installed on the supply to each building and connected to the BMS. Areas consuming over 10% of the building's water demand must also be sub-metered.	Rolton	**Low**
	Water Leak Detection & Prevention — Leak Detection System	Wat 03	1	1	A water leak detection will be installed to monitor the internal pipework.	Rolton	**Low**
	Water Efficient Equipment (Process)	Wat 04	1	1	It is assumed that the only water demand will be planting which will rely on natural precipitation and no irrigation systems are currently proposed.	LDA / HDA	**Low**
Section Credit Total			3	3			
Weighted Section Total			2%	2.00%			
MATERIALS							
Credit Value 1.57%	**Environmental Impacts from Construction Products - Building Life Cycle Assessment (LCA)**	Mat 01	7	7	Credits are available for undertaking a Life Cycle Assessment and options appraisal during **Stages 2 & 4**. The options appraisal must include substructure, superstructure and hard landscaping. The 2 credits associated with comparison against the BRE benchmark are not targeted as they are not applicable for a mixed use building. The results must be submitted to the BRE before planning submission. Turley have been appointed to undertake this assessment.	CRTKL / Civil / Turley	**Low**
	Environmental Impacts from Construction Products - Environmental Product Declarations (EPD)	Mat 02	1	0	Specify construction products with EPD that achieve a total EPD points score of at least 20. Can be challenging to achieve.		

	Responsible Sourcing of Construction Products	Pre-requisite - Legal and Sustainable Timber	Mat 03	-	Y	All timber used to be FSC.	Contractor	**Low**
		Enabling Sustainable Procurement		1	1	Compliant SPP must be provided during RIBA Stage 2. Turley will provide guidance on this.	Turley / Hammersons	**Medium**
		Measuring Responsible Sourcing		3	2	20% of available points must be achieved, the scope expands to internal finishes, substructure and hard landscaping. Relevant responsible sourcing accreditations include BES6001 (highest scorer), CARES, FSC, PEFC & ISO14001. An extra credit may be possible here.	Contractor	**Medium**
	Designing for Durability and Resilience		Mat 05	1	1	Vulnerable areas of the building must be protected from damage e.g. vehicle manoeuvring. Exposed parts of the building should also be protected against the elements. The architect will need to produce reports and drawings demonstrating this.	CRTKL	**Low**
	Material Efficiency		Mat 06	1	0	At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. This can be difficult to achieve based on the level of detail required at such early stages.		
Section Credit Total				14	11			
Weighted Section Total				22.0%	17.29%			
WASTE								
Credit Value 0.80%	**Construction Waste Management**	Pre-Demolition Audit	Wst 01	1	1	Prior to the end of Concept Design complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible.	Demolition Contractor	**Medium**
		Construction Resource Efficiency		3	2	A Resource Management Plan must be produced - no more than 7.5m³ or 6.5 tonnes of construction waste can be generated per 100m² GIFA.	Contractor	**Medium**
		Diversion of Resources from Landfill		1	1	70% (80%) by volume or 80% (90%) by tonnage of construction (demolition) waste must be diverted from landfill.		**Low**
	Use of Recycled and Sustainably Sourced Aggregates		Wst 02	1	0	Procured aggregates will be in line with the Table 10.5. It is often difficult to procure sustainable aggregates.		
	Operational Waste		Wst 03	1	1	An area for recycled waste must be provided of an appropriate capacity. The space must be labelled and accessible to occupants and waste collectors. The building is unlikely to produce waste needing a compactor but this must be confirmed based on similar building's waste streams. There must be an areas for food waste storage with a tap and drain if food preparation will be undertaken.	CRTKL	**Low**
	Adaptation to Climate Change		Wst 05	1	1	A climate change adaptation strategy must be undertaken during **Stage 2 / early Stage 3**. This strategy must cover all points listed within the BREEAM requirements. Turley can provide a fee proposal for undertaking this work.	Hammerson / Packaged Living to appoint	**Medium**

	Design for Disassembly and Adaptability		Wst 06	2	2	A study must be conducted to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of **Stage 2**. This strategy must cover all points listed within the BREEAM requirements. An update will need to be provided on the above at technical design, including how the study has developed the design. The team must produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.	CRTKL	**Low**
Section Credit Total				10	8			
Weighted Section Total				8%	6.40%			
LAND USE & ECOLOGY								
Credit Value 1.46%	**Site Selection**	Previously Developed Land	LE 01	1	1	At least 75% of the proposed development is on previously occupied land.	CRTKL	**Low**
		Contaminated Land		1	0	A contaminated land professional undertakes a site investigation, risk assessment and appraisal, which deems that land within the development footprint to be affected by contamination. A remediation strategy is required to be implemented to achieve the credit. It is assumed there is no contamination on site.		
	Ecological Risks and Opportunities		LE 02	2	2	A suitably qualified ecologist must be appointed to undertake a survey and evaluation in line with the BREEAM methodology. The project team liaise with stakeholders to identify the ecological outcomes of the site and identify measures to meet this outcomes in line with the mitigation hierarchy.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
	Managing Negative Impacts on Ecology	Prerequisite - Ecological risks and Opportunities	LE 03	-	Y	Achieve LE02.		**Low**
		Planning and Measures On-site		1	1	Roles and responsibilities will be clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief. On site measures for managing negative ecological impacts will be implemented.		
		Managing Negative Impacts		2	2	Negative impacts from site preparation and construction works must be managed according to the mitigation hierarchy. It is assumed there will be no loss in ecological value.		

	Ecological Change and Enhancement	Prerequisite - Managing Negative Impacts on Ecology	LE 04	-	Y	Criterion 8 in LE 03 has been achieved (negative impacts from site preparation and construction works are managed). The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
		Ecological Enhancement		1	1	Measures must be implemented to enhance ecological value, based on input from the project team and SQE in collaboration with representative stakeholders and data collated. Measures are implemented in the following order: - On site, and where this is not feasible, - Off site within the Zone of Influence. Data collated are analysed and where potentially valuable, provided to the local environmental records centres.		**Medium**
		Change and Enhancement of Ecology		3	2	Credits are awarded on a scale of 1 to 3, based on the calculation of the change in ecological value occurring as a result of the project.		
	Long Term Ecological Management and Maintenance	Management and Maintenance throughout the Project	LE 05	1	1	The client or contractor to confirm that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site. Criterion 8 (Managing Negative Impacts) in LE 03 has been achieved, and one credit under LE04 Enhancement of Ecology is achieved.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
		Landscape and Ecology Management Plan		1	1	A Landscape and Ecology Management Plan is developed in accordance with BS 42020:2013 Section 1.1. It must cover the first 5 years after project completion and be updated.		
Section Credit Total				13	11			
Weighted Section Total				19%	16.08%			

POLLUTION								
Credit Value 1.00%	**Surface Water Run Off**	Flood Resilience	Pol 03	2	1	Flood Risk Assessment to be provided confirming the site risk of flooding. Development at medium to high risk must demonstrate an increase in the resilience and resistance of the development to flooding, via one of the following: - The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600 mm above the design flood level of the site's flood zone OR - The final design of the building and the wider site reflects the recommendations made by an appropriate consultant. EA maps on Gov webiste suggestes high risk of surface water flooding.	Civil	**Medium**
		Surface Water Run-Off - Rate		1	1	For brownfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the pre-developed site. This should comply at the 1-year and 100-year return period events Calcs must include allowance for climate change.	Civil	**Medium**
		Surface Water Run-Off - Volume		1	**POSSIBLE**	Flooding of property will not occur in the event of local drainage system failure. Post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. This must be for the 100-year 6-hour event, including an allowance for climate change. Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other SuDS techniques. To be reviewed and confirmed by Civil engineer.		
		Minimising Watercourse Pollution		1	**POSSIBLE**	There is no discharge from the developed site for rainfall up to 5mm. Areas which carry a risk of watercourse pollution are designed appropriately (please see manual for full details). To be reviewed and confirmed by Civil engineer.		
	Reduction of Night Time Light Pollution		Pol 04	1	1	External lighting must be designed in compliance with ILP Guidance Table 2 and is switched off between 23:00 and 07:00.	Rolton	**Low**
Section Credit Total				6	3			
Weighted Section Total				6%	3.00%			

INNOVATION						
Credit Value 1.00%	Man 03 Responsible Construction Practices	1	1	Achieve an overall score of 39 in the Considerate Constructors Scheme with at least 13 in each section.	Contractor	**Medium**
	Hea 01 Visual Comfort	1	0			
	Hea 06 Security	1	0			
	Ene 01 Beyond Zero Net Regulated Carbon	5	0			
	Ene 01 Post Occupancy Stage	0	0			
	Wat 01 Water Consumption	1	0			
	Mat 01 Life Cycle Impacts	3	1	Third party verification.	Turley	**Low**
	Mat 03 Responsible Sourcing of Materials	1	0			
	Wst 01 Construction Waste Management	1	0			
	Wst 02 Recycled Aggregates	1	0			
	Wst 05 Adaptation to climate change	1	0			
	LE 02 Ecological Risks and Opportunities	1	0			
	LE 04 Ecological Change and Enhancement	1	0			
Section Credit Total		18	2			
Weighted Section Total		18%	2%			

TARGET SCORE	**78.15%**
TARGET RATING	**Excellent**

It should be noted therefore that this score is indicative only at this stage and must be reviewed throughout design development as well as audited by the BRE to confirm the final rating.

Not all credit requirements are listed within this document, it must be read in conjunction with the BREEAM UK New Construction V6.0

BREEAM New Construction V6 (Retail - Shell Only) Pre-Assessment

Yield Hall Place 2, Restaurant Unit

November 2022

Key

	Mandatory Credit for 'Excellent'
	Pre-Planning Study / Appointment
	Flexible Stage 2 Requirement (can be later i.e. Stage 3)
POSSIBLE	**May be achievable - requires further information**

TARGET (>70%)	77.53%	Excellent

Credit Summary BREEAM V6: Retail Shell Only			Credit Ref.	Credits Available	Excellent Target	Comments	Responsibility	Risk
MANAGEMENT								
Credit Value 0.80%	**Project Brief and Design**	Project Delivery Planning	Man 01	1	1	Prior to the end of **Stage 2**, roles & responsibilities must have been issued to the project team, and internal consultation occurred, resulting in changes to the design.	Hammersons / Packaged Living	**Low**
		Stakeholder Consultation		1	1	Prior to the end of Stage 2, all interested parties should be consulted on an extensive range of topics. All relevant parties receive consultation feedback by the end of Stage 4.	Turley / Hammersons / Packaged Living	**Low**
		BREEAM Advisory Professional		1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stage 2.** Turley have been appointed to provide RIBA Stage 2 support.	Turley / Hammersons / Packaged Living	**Low**
				1	1	A BREEAM AP must have been appointed to work with the project team and monitor progress against performance targets during **RIBA Stages 2-4.**	Hammersons / Packaged Living to appoint	**Medium**
	Life Cycle Costing (LCC) and Service Life Planning	Elemental Life Cycle Cost	Man 02	2	0	Requires an entire asset LCC plan at Process Stage 2 that details an indication of future replacement costs over a period of analysis as required by the client.		
		Component Life Cycle Cost		1	1	Component life cycle costing must be undertaken during **Stage 4** by cost consultant.	Cost Consultant	**Low**
		Capital Cost Reporting		1	1	Report cost per sqm (£/100m2).	Cost Consultant	**Low**

	Responsible Construction Practices	Legally harvested and traded timber - Pre-requisite	Man 03	-	Y	Contractor must demonstrate that all timber is FSC certified.	Contractor	**Low**
		Environmental Management		1	1	All demolition and main contractors must operate EMS (ISO14001).	Contractor	**Low**
		Sustainability Champion		1	1	Ensure a BREEAM AP / Site Sustainability Champion is appointed to cover stages 5 & 6.	Contractor	**Low**
		Responsible Construction Management		2	2	Achieve an overall score of 39 in the Considerate Constructors Scheme with at least 13 in each section.	Contractor	**Medium**
		Monitoring of Construction Site Impacts		2	2	The contractor must monitor energy, water and transport of materials and waste on site. Note that these will need to be reported to the BRE.	Contractor	**Low**
	Commissioning and Handover	Testing and Inspecting Building Fabric	Man 04	1	1	Thermographic survey & air tightness testing must be undertaken post completion - any defects are rectified.	Contractor	**Medium**
Section Credit Total				15	13			
Weighted Section Total				12%	10.40%			
HEALTH & WELLBEING								
Credit Value	**Visual Comfort**	Daylight factors	Hea 01	2	**POSSIBLE**	80% of occupied areas would need to achieve an average daylight factor of 2% - to be reviewed - to be reviewed.		
0.88%		View Out		1	**POSSIBLE**	95% of the floor area in 95% of spaces for each relevant building area provides an adequate view out - to be reviewed.		
		External Lighting Levels		1	1	External lighting must meet BS5489-1:2013 and BSEN12464-2:2014.	Rolton	**Low**
	Acoustic Performance		Hea 05	1	1	The building meets the appropriate acoustic performance standards and testing requirements for indoor ambient noise level as defined in the relevant table in the manual.	Acoustician	**Medium**
	Security		Hea 06	1	1	Security specialist should be consulted by the end of **Stage 2** and undertake a full site assessment with bespoke recommendations. All recommendations must be implemented. Where appointed after Stage 2, the SQSS will need to confirm they have not been restricted by late appointment.	Hammerson / Packaged Living to appoint SQSS	**Medium**

	Safe and Healthy Surroundings	Safe access	Hea 07	1	1	Further investigation / drawings required to determine compliance but the building appears to meet the requirements for safe access as defined in the manual as it can be accessed directly from the road.	CRTKL	**Medium**
		Outside Space		1	1	There should be an outside space providing building users with an external amenity area. This space is noted as being; - Of an appropriate size to provide enough amenity for the predicted number of building users – be an outdoor landscaped area, for example a garden, balcony or terrace; the majority of the space should be open to the sky – have appropriate seating areas and be non-smoking, be located to ensure it is accessible to all building users and avoids areas that will have disturbances from sources of noise (e.g. building services, car parks, busy roads, delivery areas etc.).	CRTKL	**Medium**
Section Credit Total				8	5			
Weighted Section Total				7%	4.38%			
ENERGY								
Credit Value	**Reduction of Energy Use and CO2 Emissions**	Energy Performance Ratio	Ene 01	9	4	4 credits required as a minimum for BREEAM 'Excellent'. BRUKL's requested to check what the building is currently achieving. This requires an uplift over Part L 2021.	Rolton	**High**
	External Lighting		Ene 03	1	1	External lighting must have average luminous efficacy of 70 lumens / circuit Watt. Lighting should be controlled by photocell and PIR in areas of intermittent pedestrian use.	Rolton	**Medium**
	Low Carbon Design	Passive Design Analysis (PDA)	Ene 04	1	1	During **Stage 2**, a PDA should be undertaken to identify opportunities to implement passive design.	Rolton	**Medium**
		Low and Zero Carbon Feasibility Study		1	1	LZC Feasibility Study required during design stage covering each requirement within the BREEAM Manual. The recommendations must be implemented to achieve a 'meaningful' reduction i.e. 10%	Rolton	**Low**
		Free Cooling		1	0	It is assumed that there will be cooling in the units.		
Section Credit Total				13	7			
Weighted Section Total				10%	5.12%			

TRANSPORT							
Credit Value 1.21%	**Transport Assessment and Travel Plan**		Tra 01	2	2	A transport assessment must be produced during the design and feasibility stages alongside a draft travel plan. Full travel plan required at later stage. Note that the transport assessment must include accessibility index, disabled access and a number of other topics (see credit criteria within manual).	Transport Consultant	**Low**
	Sustainable Transport Measures		Tra 02	10	7	Sustainable transport measures provides credits based on measures provided on site. This would need to be confirmed with the Transport Consultant and Client but have been estimated based on the following: - AI >8 - Install cycle spaces for staff (1 per 10 building occupants) - Future fit-out layout showing shower(s) and/or lockers and/or changing areas provided for staff - At least three existing amenities - Two new amenities (new restaurant and outdoor space as part of masterplan) The AI is to be confirmed and whether any car parking spaces will be provided with EV charging.	Transport Consultant / Occupier / Client / CRTKL	**Medium**
Section Credit Total				12	9		
Weighted Section Total				14.5%	10.88%		
WATER							
0.67%	**Water Monitoring**		Wat 02	1	1	A pulsed water meter must be installed on the supply to each building and connected to the BMS. Areas consuming over 10% of the building's water demand must also be sub-metered.	Rolton	**Low**
	Water Leak Detection & Prevention	Leak Detection System	Wat 03	1	1	A water leak detection will be installed to monitor the internal pipework.	Rolton	**Low**
	Water Efficient Equipment (Process)		Wat 04	1	1	It is assumed that the only water demand will be planting which will rely on natural precipitation and no irrigation systems are currently proposed.	LDA / HDA	**Low**
Section Credit Total				3	3		
Weighted Section Total				2%	2.00%		
MATERIALS							
Credit Value 1.57%	**Environmental Impacts from Construction Products - Building Life Cycle Assessment (LCA)**		Mat 01	7	7	Credits are available for undertaking a Life Cycle Assessment and options appraisal during **Stages 2 & 4**. The options appraisal must include substructure, superstructure and hard landscaping. The 2 credits associated with comparison against the BRE benchmark are not targeted as they are not applicable for a mixed use building. The results must be submitted to the BRE before planning submission. Turley have been appointed to undertake this assessment.	CRTKL / Civil / Turley	**Low**
	Environmental Impacts from Construction Products - Environmental Product Declarations (EPD)		Mat 02	1	0	Specify construction products with EPD that achieve a total EPD points score of at least 20. Can be challenging to achieve.		
	Responsible Sourcing of	Pre-requisite - Legal and Sustainable Timber	Mat 03	-	Y	All timber used to be FSC.	Contractor	**Low**
		Enabling Sustainable Procurement		1	1	Compliant SPP must be provided during RIBA Stage 2. Turley will provide guidance on this.	Turley / Hammersons	**Medium**

	Construction Products	Measuring Responsible Sourcing	Mat 05	3	2	20% of available points must be achieved, the scope expands to internal finishes, substructure and hard landscaping. Relevant responsible sourcing accreditations include BES6001 (highest scorer), CARES, FSC, PEFC & ISO14001. An extra credit may be possible here.	Contractor	**Medium**
	Designing for Durability and Resilience		Mat 05	1	1	Vulnerable areas of the building must be protected from damage e.g. vehicle manoeuvring. Exposed parts of the building should also be protected against the elements. The architect will need to produce reports and drawings demonstrating this.	CRTKL	**Low**
	Material Efficiency		Mat 06	1	0	At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. This can be difficult to achieve based on the level of detail required at such early stages.		
Section Credit Total				14	11			
Weighted Section Total				22.0%	17.29%			
WASTE								
Credit Value 0.80%	**Construction Waste Management**	Pre-Demolition Audit	Wst 01	1	1	Prior to the end of Concept Design complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible.	Demolition Contractor	**Medium**
		Construction Resource Efficiency		3	2	A Resource Management Plan must be produced - no more than 7.5m³ or 6.5 tonnes of construction waste can be generated per 100m² GIFA.	Contractor	**Medium**
		Diversion of Resources from Landfill		1	1	70% (80%) by volume or 80% (90%) by tonnage of construction (demolition) waste must be diverted from landfill.		**Low**
	Use of Recycled and Sustainably Sourced Aggregates		Wst 02	1	0	Procured aggregates will be in line with the Table 10.5. It is often difficult to procure sustainable aggregates.		
	Operational Waste		Wst 03	1	1	An area for recycled waste must be provided of an appropriate capacity. The space must be labelled and accessible to occupants and waste collectors. The building is unlikely to produce waste needing a compactor but this must be confirmed based on similar building's waste streams. There must be an areas for food waste storage with a tap and drain if food preparation will be undertaken.	CRTKL	**Low**
	Adaptation to Climate Change		Wst 05	1	1	A climate change adaptation strategy must be undertaken during **Stage 2 / early Stage 3**. This strategy must cover all points listed within the BREEAM requirements. Turley can provide a fee proposal for undertaking this work.	Hammerson / Packaged Living to appoint	**Medium**

	Design for Disassembly and Adaptability		Wst 06	2	2	A study must be conducted to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of **Stage 2**. This strategy must cover all points listed within the BREEAM requirements. An update will need to be provided on the above at technical design, including how the study has developed the design. The team must produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.	CRTKL	**Low**
Section Credit Total				10	8			
Weighted Section Total				8%	6.40%			
LAND USE & ECOLOGY								
Credit Value	**Site Selection**	Previously Developed Land	LE 01	1	1	At least 75% of the proposed development is on previously occupied land.	CRTKL	**Low**
1.46%		Contaminated Land		1	0	A contaminated land professional undertakes a site investigation, risk assessment and appraisal, which deems that land within the development footprint to be affected by contamination. A remediation strategy is required to be implemented to achieve the credit. It is assumed there is no contamination on site.		
	Ecological Risks and Opportunities		LE 02	2	2	A suitably qualified ecologist must be appointed to undertake a survey and evaluation in line with the BREEAM methodology. The project team liaise with stakeholders to identify the ecological outcomes of the site and identify measures to meet this outcomes in line with the mitigation hierarchy.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
	Managing Negative Impacts on Ecology	Prerequisite - Ecological risks and Opportunities	LE 03	-	Y	Achieve LE02.		**Low**
		Planning and Measures On-site		1	1	Roles and responsibilities will be clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief. On site measures for managing negative ecological impacts will be implemented.		
		Managing Negative Impacts		2	2	Negative impacts from site preparation and construction works must be managed according to the mitigation hierarchy. It is assumed there will be no loss in ecological value.		

	Ecological Change and Enhancement	Prerequisite - Managing Negative Impacts on Ecology	LE 04	-	Y	Criterion 8 in LE 03 has been achieved (negative impacts from site preparation and construction works are managed). The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
		Ecological Enhancement		1	1	Measures must be implemented to enhance ecological value, based on input from the project team and SQE in collaboration with representative stakeholders and data collated. Measures are implemented in the following order: - On site, and where this is not feasible, - Off site within the Zone of Influence. Data collated are analysed and where potentially valuable, provided to the local environmental records centres.		**Medium**
		Change and Enhancement of Ecology		3	2	Credits are awarded on a scale of 1 to 3, based on the calculation of the change in ecological value occurring as a result of the project.		
	Long Term Ecological Management and Maintenance	Management and Maintenance throughout the Project	LE 05	1	1	The client or contractor to confirm that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site. Criterion 8 (Managing Negative Impacts) in LE 03 has been achieved, and one credit under LE04 Enhancement of Ecology is achieved.	Ecologist / Contractor / Landscape / Hammersons / Packaged Living	**Low**
		Landscape and Ecology Management Plan		1	1	A Landscape and Ecology Management Plan is developed in accordance with BS 42020:2013 Section 1.1. It must cover the first 5 years after project completion and be updated.		
Section Credit Total				13	11			
Weighted Section Total				19%	16.08%			

POLLUTION								
	Surface Water Run Off	Flood Resilience	Pol 03	2	1	Flood Risk Assessment to be provided confirming the site risk of flooding. Development at medium to high risk must demonstrate an increase in the resilience and resistance of the development to flooding, via one of the following: - The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600 mm above the design flood level of the site's flood zone OR - The final design of the building and the wider site reflects the recommendations made by an appropriate consultant. EA maps on Gov webiste suggestes high risk of surface water flooding.	Civil	**Medium**
		Surface Water Run-Off - Rate		1	1	For brownfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the pre-developed site. This should comply at the 1-year and 100-year return period events Calcs must include allowance for climate change.	Civil	**Medium**
		Surface Water Run-Off - Volume		1	**POSSIBLE**	Flooding of property will not occur in the event of local drainage system failure. Post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. This must be for the 100-year 6-hour event, including an allowance for climate change. Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other SuDS techniques. To be reviewed and confirmed by Civil engineer.		
		Minimising Watercourse Pollution		1	**POSSIBLE**	There is no discharge from the developed site for rainfall up to 5mm. Areas which carry a risk of watercourse pollution are designed appropriately (please see manual for full details). To be reviewed and confirmed by Civil engineer.		
	Reduction of Night Time Light Pollution		Pol 04	1	1	External lighting must be designed in compliance with ILP Guidance Table 2 and is switched off between 23:00 and 07:00.	Rolton	**Low**
Section Credit Total				6	3			
Weighted Section Total				6%	3.00%			

INNOVATION						
Credit Value 1.00%	Man 03 Responsible Construction Practices	1	1	Achieve an overall score of 39 in the Considerate Constructors Scheme with at least 13 in each section.	Contractor	**Medium**
	Hea 01 Visual Comfort	1	0			
	Hea 06 Security	1	0			
	Ene 01 Beyond Zero Net Regulated Carbon	5	0			
	Ene 01 Post Occupancy Stage	0	0			
	Wat 01 Water Consumption	1	0			
	Mat 01 Life Cycle Impacts	3	1	Third party verification.	Turley	**Low**
	Mat 03 Responsible Sourcing of Materials	1	0			
	Wst 01 Construction Waste Management	1	0			
	Wst 02 Recycled Aggregates	1	0			
	Wst 05 Adaptation to climate change	1	0			
	LE 02 Ecological Risks and Opportunities	1	0			
	LE 04 Ecological Change and Enhancement	1	0			
Section Credit Total		18	2			
Weighted Section Total		18%	2%			

TARGET SCORE	**77.53%**
TARGET RATING	**Excellent**

It should be noted therefore that this score is indicative only at this stage and must be reviewed throughout design development as well as audited by the BRE to confirm the final rating.

Not all credit requirements are listed within this document, it must be read in conjunction with the BREEAM UK New Construction V6.0

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Turley
Sustainability