

Fallowfield Campus Redevelopment Project

Sustainability and Energy Strategy

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1 Introduction

Purpose of this document

The purpose of this document is to outline the University of Manchester (UoM) Fallowfield Campus Redevelopment Project sustainability strategy and address how the proposed development aligns with Manchester City Council's sustainability ambitions.

Proposed Development – Fallowfield Campus

The proposed development has been instigated by the UoM in order to create attractive and sustainable student accommodation in response to the rising demand for quality student residences. The new development will be fully inclusive, comply with current building regulations. This document sets out how the proposed development is responding to Zero Carbon and sustainability related policies including MCC and Greater Manchester Combined Authority.

The UoM is looking to demolish and redevelop land at Fallowfield Campus currently occupied by student residential halls and facilities including Owens Park, Oak House, Woolton Hall, and The Limes. The new student accommodation buildings will provide up to 3,300 student beds, corresponding to an uplift of circa 950 student beds.

The Limes building which is currently used for catering operations will be demolished under this planning application and relocated elsewhere (under a future planning application).

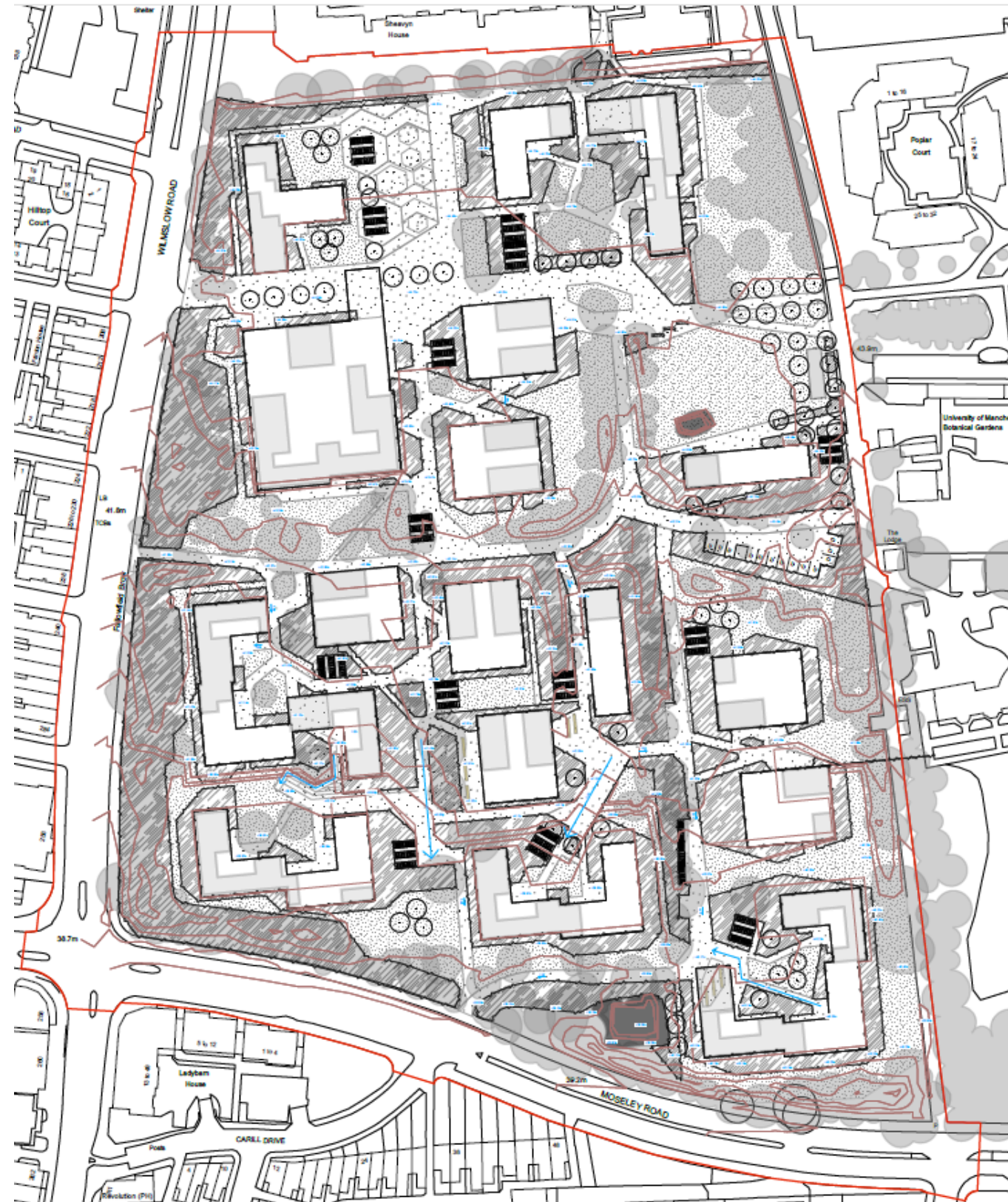


Figure 1-1 - Proposed development – Technical Masterplan (Sheppard Robson)

2 Planning Policy and Supporting Documentation Review

Scope of Review

The purpose of this section is to identify the planning policy and supporting documentation that has been utilised to ensure the proposed scheme aligns with Manchester City Council’s ambitions.

National Policy

National Planning Policy

The National Planning Policy Framework and relevant planning practice guidance sets out the Government’s planning policies for England. **The presumption in favour of sustainable development** is at the heart of the framework, cascading through to local plans and the approval process for planning applications.

Economic Objective

Build a strong, responsible and competitive economy:

- Support growth, innovation and improve productivity
- Identify and coordinate infrastructure

Social Objective

Support strong, vibrant and healthy communities:

- Design a safe built environment
- Provide accessible services and open spaces

Environmental Objective

Contribute to protecting and enhancing our natural, built and historic environment:

- Make effective use of land
- Improve biodiversity
- Minimise waste and pollution
- Mitigate climate change
- Adapt to climate change

Local Policy

Manchester Core Strategy (2021-2027)

The Manchester Local Plan guides development within Manchester. The Core Strategy is the key document in Manchester’s Local Plan, covering a period of 15 years from 2012 to 2027. It sets out the long-term strategic policies for Manchester’s future development, forming the framework for planning applications. The key policy references are outlined below:

Spatial Principles SP 1
• Make a positive contribution to neighbourhoods • Minimise emissions • Reuse previously developed land where possible • Improve access to jobs • Reduce transportation needs
Employment and Economic Growth EC 1
• Improved access to jobs for all public transport, walking, cycling. • Consider employment generating development for locals through construction or use • Improving digital infrastructure • Ensuring continued social, economic and environmental regeneration • Improving portfolio of employment premises (provide a range for SMEs)
Existing Employment EC 2
• Retain and enhance existing employment space and sites.
Transport CC 5
• Proposals will be supported that improve pedestrian safety, improve air quality and increase scope of accessible public realm improvements. • Ensure the development includes adequate parking provision for cars and bicycles
Design and Heritage CC 9
• Development in Manchester City Centre should preserve or enhance the heritage assets that have been identified, including listed buildings, conservation areas and scheduled ancient monuments
A Place for Everyone CC 10
• Appeal to wide range of visitors and residents through: • Increase the diversity of activity, focus on family-oriented activity • High standards to buildings and across spaces in the City Centre
Sustainable Transport H 10
• Proposals for accommodation for people with additional support needs will be supported: • Where there will not be a disproportionate stress on local infrastructure such as health facilities • Where it will contribute to the vitality and viability of the neighbourhood
Sustainable Transport T 1
• To deliver a sustainable, high quality, integrated transport system to encourage modal shift away from car travel to public transport, cycling and walking. • Support the needs of residents and businesses and prepare for carbon free modes of transport.
Accessible Areas TS
• Ensure accessibility to City’s main economic drivers. • Provide appropriate car parking facilities that reflect the highly accessible nature of the location.

Heritage EN2
• Within the regional centre development for employment generating uses will be encouraged
LZC Development EN4
• Seek to reduce fuel poverty and decouple growth in the economy, growth in CO2 emissions and rising fossil fuel prices: • Follow Energy Hierarchy principle • Make use of low and zero carbon energy supplies • Use building materials with low embodied carbon
Framework for CO2 Reductions from LZC Supplies EN 6
• Energy statement demonstrating improvement of 15% over Part L (2010) or improved Part L requirement, whichever is more stringent. • Green infrastructure elements can be used to contribute to CO2 mitigation. • Outline regulated energy demand and CO2 emissions for all phases of the development
Energy Infrastructure Opportunities EN 7
• In favour of low and zero carbon decentralised energy schemes. Consider feasibility of future connections to a local distributed energy scheme.
Adaptation to Climate Change EN 8
• Minimise flood risk • Reduce urban heat island effect • Take opportunities to provide green space to enhance natural habitats
Green Infrastructure EN 9
• New developments should, as a minimum, maintain existing green infrastructure in terms of its quantity, quality and multiple function.
Flood Risk EN 14
• Minimise surface water run-off through SUDS and appropriate use of Green Infrastructure
Air Quality EN 16
• Improve air quality within Manchester. Minimise and mitigate local emissions from traffic and through the use of the development itself (scope 1)
Water Quality EN 17
• Avoid adverse impact on water quality, including during construction
Waste EN 19
• Waste management plan and practices should have full regard of the environmental, social and economic impacts. • Encourage communities to take responsibility for the waste they create through provision of accessible facilities
Minerals EN 20
• Encourage the efficient use of minerals and promote the use of secondary/recycled aggregates, wherever possible. (Alongside EN19)

Manchester Climate Change Framework (2020-2025)

- Climate adaptation and resilience objective
- Health and Wellbeing
- Inclusive, Zero Carbon and Climate Resilient Economy
- Staying withing Carbon Budgets - Direct CO2 Emissions
- Staying within Carbon Budgets – Indirect CO2 Emissions

The Greater Manchester Strategy (Our People, Our Place)

Priorities

1. Children Starting School Ready to Learn
2. Young People Equipped for Life
3. Good jobs, with Opportunities for People for Progress and Develop
4. A Thriving and Productive Economy in all Parts of Greater Manchester
5. World-class Connectivity that keeps Greater Manchester Moving
6. Safe, Decent and Affordable Housing
7. Green City Region and a High-Quality Culture and Leisure for all
8. Safer and Stronger Communities
9. Healthy Lives, with Quality Care Available for Those that need it
10. An age-friendly Greater Manchester Implementation

Draft Manchester Zero Carbon Framework 2020-2038

- New buildings need to generate zero emissions when occupied and have significantly less emissions embodied in their materials and the construction phase,
- Renewable energy generated within the city and city-region, and the supplies for the National Grid, are needed to power our buildings and transport system,
- Well-connected walking and cycling routes, public transport and electric vehicle charging points need to be key components of all new development,
- Our materials and waste will need to come from a new circular economy, involving the reuse and recycling of materials already in circulation, and significantly increased use of sustainable and renewable materials.

UN Sustainable Development Goals

The UN SDGs are a set of goals designed to be a blueprint to achieve a better and more sustainable future for all.

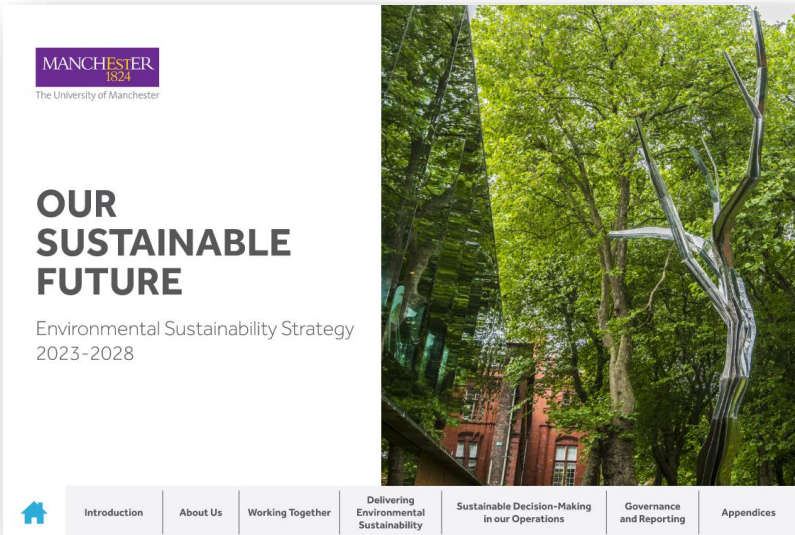
1. No Poverty
2. Zero Hunger
3. Good Health and Wellbeing
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation

7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reducing Inequality
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions
17. Partnerships for Goals

- Reduce energy consumption by 10% against 2018 baseline

University of Manchester Environmental Sustainability Strategy 2023-2028

The University have recently launched a new sustainability strategy, setting out targets and principles to embed sustainability through the organisation out to 2028.



The main headlines that will affect capital projects across the estate are set out below:

- Zero direct emissions by 2038
- Define and measure scope 3 emissions and develop a target
- Fossil fuel free, measuring and monitoring embodied carbon
- Follow Passivhaus principles
- No gas boilers
- 20% biodiversity net gain
- Carry out Post Occupancy Evaluations
- Divert 100% of waste from landfill
- Promote active travel as the preferred form of travel

3 Sustainability Framework

Introduction

The UoM is committed to ensuring best practice sustainability measures are adopted within the proposed development. A sustainability framework has been developed which sets a standard to which the development can be measured.

Throughout this report a number of sustainable strategy themes derived from the UN SDGs (sustainable Development Goals) and framed using the NPPF will be explored to better contextualise how any future development should align with Manchester’s vision for sustainability.

Pillar

The structure of the sustainability strategy is derived from the National Planning Policy Framework (NPPF). Each Pillar outlined responds to one of three overarching objectives outlined in the NPPF which are interdependent and have been pursued in mutually supportive ways:

- Environmental
- Social
- Economic

Vision/Outcome

The vision/outcome assists in distinguishing key aspects of each of the sustainability pillars, with each pillar developing distinct, targeted outcomes that ensure direction within the scheme.

Actions

Actions are used to address in detail how each outcome identified may be met through measures undertaken by the developer, the project design team of the proposed development or contractors.

Where quantitative performance metrics are available to establish how the development performs, they will be displayed.

Pillar	ENVIRONMENTALLY REGENERATIVE			SOCIALLY INCLUSIVE		ECONOMICALLY PROSPEROUS
Visions	 Net Zero Carbon	 Circular Economy Focused	 Biodiversity & Climate Resilience	 Health	 Wellbeing	 Prosperous
Outcome	Ensuring alignment with the Manchester target of Zero Carbon by 2038 Responsible use of materials and resources. Promoting use of low impact materials, recycling and waste reduction Restoring natural assets and designing in resilience to future climate change			Encouraging active and mindful activities, promoting active lifestyles and sustainable travel	Create place, spaces and positive experiences that welcome, engage and inspire all	Creating a hive of enterprise for business growth
Example Actions	Route map to Net Zero Carbon 2038 Follow Passivhaus principles Part L Compliance Grid Decarbonisation Passive Design/ Reducing Primary Energy Maximising Renewable Energy			Green, blue and grey infrastructure Gym/fitness facilities Encouraging walking Sustainable Transport Options Travel Plan Indoor/outdoor air quality	Activating streets through active frontage Places created for both contemplation and social interaction	GVA through indirect and induced employment Investment in construction of high-quality accommodation Driving local economy through local employment and business opportunities

Figure 3-1 Sustainable Strategy Themes

4 Environmentally Regenerative

"Contribute to protecting and enhancing our natural, built and historic environment"		
VISIONS		
 NET ZERO CARBON	Route-map to Net zero carbon 2038	✓
	Improvement on Part L through fabric first design and implementation of PV technologies	✓
	PV Maximised on roof – optimised through performance studies	✓
	High level fabric performance, minimising primary energy requirements	✓
	Outlining associated impact of glazing ratios to optimise façade design	✓
	Fully electrified building mitigating fossil fuel tie in.	✓
	Carbon sequestration through planting	✓
 CIRCULAR ECONOMY FOCUSED	Lifecycle cost informs design	✓
	Regular review of operational practices to improve efficiency	✓
	Promote community recycling and re-use	✓
	Contractor sustainability requirements	✓
	Sustainable transport	✓
 BIODIVERSITY & CLIMATE RESILIENCE	SUDS implemented	✓
	Overheating assessment informs design	✓
	Substantial investment into re-habitation of affected species	✓
	Remediation of contaminated land	✓
	Minimise water consumption through low flow fittings	✓

Table 4-1 - Environmental Theme Summary

ZERO CARBON READY *Strive for reduced carbon emissions throughout the life cycle of the development to deliver a truly sustainable and future-proofed scheme with a carbon pathway demonstrating how net zero carbon in operation will be achieved by 2038*

Zero Carbon 2038 Definition

Manchester is committed to playing its full part in limiting the impacts of climate change by adopting science-based targets aligned with the Paris agreement carbon budgets for limiting global temperature rise below 2 degrees Celsius. Analysis by the Tyndall Centre for Climate Change Research at the University of Manchester has identified the Manchester proportion of this budget and the emissions pathway to support the Paris Agreement. By 2038, Manchester is committed to be net zero carbon relating to total energy used in building and transport.

Part L Compliance

The new policy based on Building Regulations Approved Document Part L 2021 will be used to demonstrate how the proposed development has actively reduced carbon emissions through design. Part L sets out the minimum energy efficiency standards and targets for regulated carbon emissions, i.e. those associated with the fixed building systems, which a design team can influence. Manchester City Council’s planning policy requires a minimum 6% betterment of this carbon emissions target for non-residential developments and 9% betterment for residential developments when compared to the 2013 version of Part L. Note that under Part L, student residential is covered by the non-residential regulation.

Passivhaus Principles

Through best practice design following the ‘Lean, Clean, Green’ energy hierarchy the development will strive to better the existing minimum requirements. Whilst not necessarily pursuing accreditation, Passivhaus principles should be followed to ensure the rigour of this principle is adopted

Grid Decarbonisation

To ensure developments can continue to transition towards net zero carbon in operation by 2038, the building services systems will be designed to operate on electricity to completely omit on-site fossil fuel combustion, avoiding fossil fuel tie in and benefiting from the long-term decarbonisation of the grid.

Maximising Renewable Technologies

In order to achieve the ambitious energy targets, set for the site, in unison with an efficient fabric and practical systems design, PV arrays will be implemented to generate green electricity locally.

Optimisation of PV arrays is essential to ensure as much energy generated can be utilised on site, this has benefits from both a capital cost perspective and when considering the embodied carbon of the site.

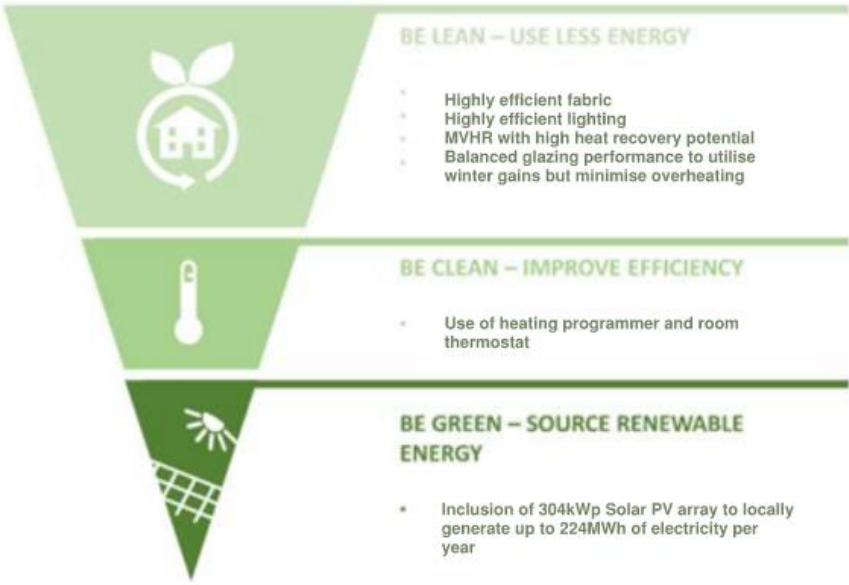


Figure 4-1 Energy Hierarchy

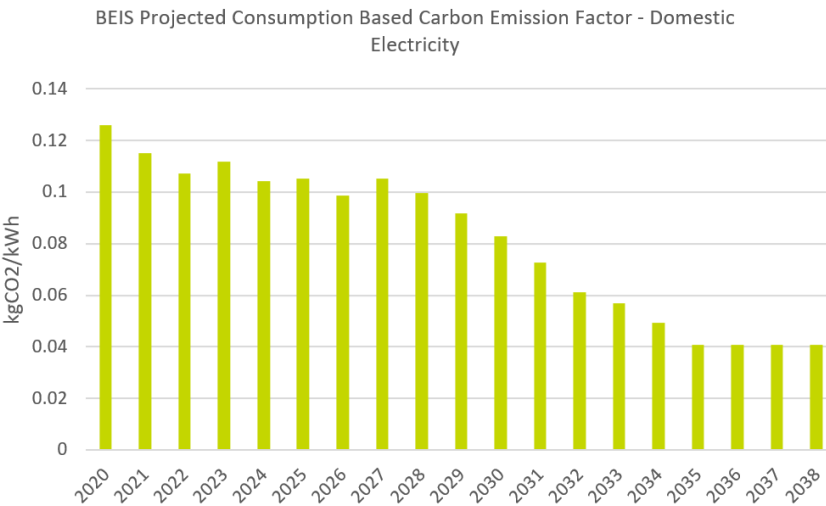


Figure 4-2 BEIS Projected Grid Carbon Factor

CIRCULAR ECONOMY FOCUSED *Use the Earth's limited resources in a sustainable manner whilst eradicating waste and minimising impacts on the environment*

Designing for Whole Life

Long lifecycle approach to architectural finishes etc. are considered from early stage development to ensure both cost and performance viability. Whole life is considered when selecting materials to ensure architectural elements and finishes are easily maintainable and long lasting, thereby maximising usage life and reducing whole life carbon impact.

The table outlined to the right outlines the whole life approach to reducing carbon emissions.

Continual Improvement

Re-assessing briefings for proposed developments and continually developing building scope in line with future regulations.

Addressing future regulations through implementing double glazing, increasing rates of on-site generation and improving on air tightness when compared to existing developments. This continual strive to remain a step ahead of policy means that buildings will perform better and stay 'up to date' for longer.

Exploring more efficient operation of external lighting through assessment.

Sustainable Travel

The proposed development benefits from excellent existing sustainable transport options and local amenities such as public transport facilities just a short walk away, as well as numerous local amenities including a supermarket, doctors surgery, places of worship, schools, cafes, restaurants, shops, and places of recreational activity.

The site also benefits from existing high quality cycle lanes and pedestrian facilities including footways, street lighting and signalised crossing points linking the proposed development to the surrounding area and beyond to key pedestrian routes.

The site is bounded by public footpaths that allow, if not encourage the public to freely enter the site. A public right of way runs along the Armitage Sports Centre up to Whitworth Lane at the eastern edge of the site and joins a designated cycle lane that runs the full length of the site between Old Hall Lane and Moseley Lane

Cycle parking spaces will also be provided on site. These spaces will be provided in secure and covered cycle storage areas. Cycle storage areas will also be accessible from the building's internal circulation. The site is within an accessible 5km cycle route to a number of local areas.

	IMPACTS	KEY ACTIONS
DESIGN	Embodied carbon, emissions associated with the production, transportation, and installation of construction materials, typically accounts for over half of the whole life carbon of a building (Error! Reference source not found.) With increase in building energy efficiency, this share will continue to increase. However, historically this is overlooked due to lack of consistent measuring and reporting mechanisms.	• Use less – material optimisation to minimise use of new materials via Construction Management Plan. • Use less new – explore opportunities for increasing recycled content and materials to reduce the embodied carbon. e.g. recycled aggregates. • Responsible and locally sourced materials • Standardised design for utility cupboard optimises the use of material on site.
CONSTRUCTION	As above, carbon is associated with the delivery and installation of material. Significant construction waste can also arise from packaging, off-cuts and over-ordering.	• Measure - how much CO” (kg) is emitted during the construction process. • The percentage of waste removed from site that has been recycled is measured against set waste targets for the development. • CO2 emissions arising from mileage of all persons visiting and entering sites, all utility and on site fuel usage is recorded and reported in tonnes.
OPERATION	Operational energy results in carbon emissions that can be substantial over the lifetime of a building. Ensuring low carbon design solutions to provide heating and ventilation as well as local generation can offset this.	• Where possible, incorporate local generation through the use of PV. This is coordinated with external roof are, plant and optimised to mitigate shading. • All electric systems are offered that have the benefit of decarbonising alongside the grid.
END OF LIFE	Demolition results in significant waste, with contamination often hindering efficient resource recovery. Considering ease of deconstruction can support recovery, refurbishment and re-use elsewhere. Designing for future flexibility can help the proposed development stay relevant and mitigate the risk of redundancy before the end of this useful design life, minimising the replacement cycle which puts pressure on virgin resources.	• Decentralised plant utilised across the entirety of the development means that individual apartments and zones can be easily re-fit or have components replaced over time. • Design of ventilation systems to mitigate overheating reduces the need to fit cooling systems in the future. • Standardised design optimised the use of material on site

Figure 4-4 Designing for Whole Life

ACCOMMODATION

Accomm. block with basic internal fit-out, Oxford, UK

- Carbon emissions to practical completion
- Carbon emissions in use
- Operational emissions regulated
- Operational emissions unregulated

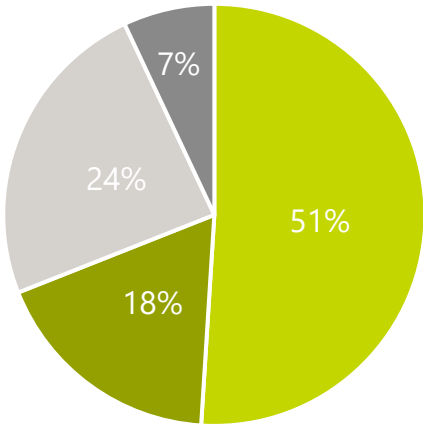


Figure 4-3 - Example split of whole life carbon for accommodation

BIODIVERSITY & CLIMATE RESILIENCE...*Restoring natural assets and
designing in resilience to future climate change*

Water Consumption

A changing climate will result in hotter, drier summers and more extreme weather events. Water conservation for drought tolerance must be considered to reduce consumption and has the added benefit of reducing utility costs for tenants over the system life. The following measures will be adopted across the development:

- Improvement over notional BREEAM (Wat 01) through efficient sanitaryware
- Inclusion of low flow fittings

Grey water harvesting must be considered where possible on schemes however a strong economic and practical case should be made to avoid associated embodied carbon of systems that do not bring benefit. Given typical building typologies (purpose built student accommodation) there is often very little scope for practical inclusion of a water harvesting system.

SUDS

It has been proposed that a surface water flow wayleave is provided at the south-east of the site for offsite flows and that FFLs are raised 300mm above the higher of the surrounding exterior level or the 0.1% EA Surface Water Flood Map water level. The proposed drainage strategy is to intercept surface water runoff from within the proposed site up to a 1% AEP with 45% climate change allowance.

Nature based infiltration drainage solutions are considered in recognition of wider co-benefits that can be delivered through an integrated approach to sustainability. However, these measures are only adopted where spatial constraints, impermeable substrata and ground contamination are not present and are assessed on a site by site basis.

Biodiversity and Green Space

The protection of the site and enhancement of biodiversity in line with Manchester’s Biodiversity strategy has been considered as part of the proposed development.

Trees & Planting

The landscape at Fallowfield has developed the characteristics of mature woodland and woodland edge habitats, with tall trees in belts and groups interspersed with small open spaces and sunny glades. At the same time the range of planting types and species is relatively limited, relying heavily on non-native evergreen shrubs and high-maintenance grass lawns. In the future, the selection and installation of plants must consider the use of species which are adaptable to local and future conditions, and which promote biodiversity. Strategies for planting must consider the following:

- Making use of native-species of forest and woodland edge trees to reinforce the tree belts, and provide a new generation of replacement trees which will maintain the resilience of the site in the face of environmental stresses associated with climate change
- Introducing shade-tolerant native species of under-storey shrubs and small trees which will increase the foliage canopy and biodiversity
- Introducing shade-tolerant native ground-cover herbaceous plants which will supplement the biodiversity of the site
- Providing more seasonal and visual interest by adding shrubs with winter flowers and colourful bark, as well as swathes of early spring bulbs
- Creating shelter beside walkways through the use of multi-species hedges which can clipped low to provide visibility
- Making use of vertical surfaces and screens, such as cycle stores and ancillary structures, as support for climbing plants

- Integrating green roofs into the landscape infrastructure, so that they can provide a continuous high-level habitat which connects with tree belts and groups
- Creating distinctive, colourful planting arrangements to highlight entrances and special places.

Ecology and Biodiversity

An aim of 10% biodiversity net gain should be delivered, Strategies that should be considered:

- Improving the perimeter woodland ecological quality, including incorporating native species ground and understorey planting.
- Enhancing grassland through wildflower planting establishing a varied sward height where feasible to increase ecological value.
- Considering biodiverse green roofs to support invertebrates and black redstart.
- Planting species that are known to be of benefit for pollinators where they are non-native species.
- Providing habitats and animal refuges to encourage biodiversity, such as ponds and bird houses.



Flood Risk

Flood risk continues to be a key consideration for prospective developments and resilience to climate change is critical to ensure building longevity and optimal resident experience.

A Flood Risk Assessment (FRA) has been undertaken as part of the outline planning application in line with national and local policy. This concludes the proposed development is at low risk of flooding from all sources and represents no risk of flooding to adjacent areas.

Overheating

A multifaceted approach is taken in development of dwellings that could potentially overheat which will be developed through conductance of a TM59 overheating assessment. A variety of design options are assessed within the TM59 assessment to ensure a curated design that considers; the cost plan, acoustic performance of the space (MCC Planning & Noise documentation), regulatory requirements (Part F, Part L & Part O) and of course risk of overheating. Compliance with the new Part O of the Building Regulations will be demonstrated.

Ultimately, designs strive to mitigate overheating through the use of natural ventilation as a passive design measure, followed by uplift in mechanical ventilation via the MVHR unit, then cooling.

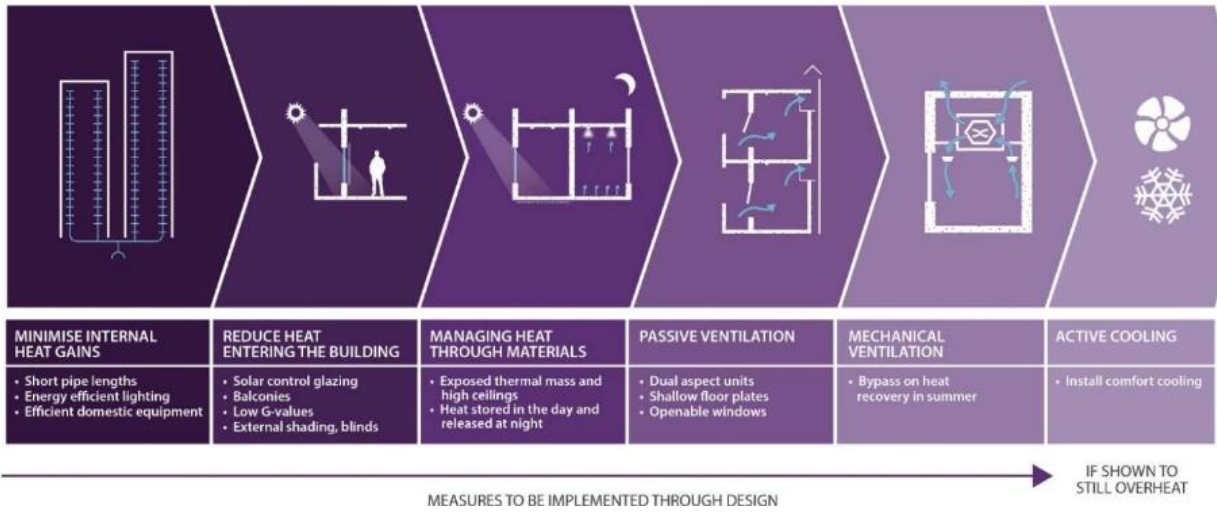


Figure 4-5 Overheating Hierarchy

5 Socially Inclusive

“Support strong, vibrant and healthy communities”

VISIONS		
 HEALTH	Cycle storage and onsite facilities provided	✓
	Walkable to local amenities	✓
	Indoor/Outdoor Air Quality	✓
	Daylighting/Access to outside	✓
	On site gym/health facilities	✓
 WELLBEING	Activating streets through active frontage	✓
	A number of Social Hubs around the development	✓

HEALTH *Encouraging active and mindful activities, promoting active lifestyles and sustainable travel*

Air Quality

The development will strive to minimise pollutants resulting from any associated works to create a healthy positive environment for students and local communities.

An Air Quality Assessment has been undertaken which concludes there are no significant impacts associated with the construction and operation of the development. However, the following mitigation measures will be adopted to reduce impact of emissions generated by the development:

Building services – Whilst the energy strategy is not finalised at this stage, it is anticipated that air source heat pumps will be utilised. These will not give rise to any on-site air pollutant emissions. Therefore, the impact of the typical operational energy strategy on air quality will be not significant and effects will be negligible.

Traffic – 21 disabled car park spaces will be provided as part of the proposed development. Given the limited vehicle access it is envisaged that the proposed development will not generate significant vehicle trips; therefore, there is not expected to be any impacts to local air quality and no mitigation measures are required.

Indoor Air quality - maintained through offering tenants natural and mechanical ventilation in line with Part F requirements. This means that minimum ventilation rates can be provided through a filtered air supply, thereby increasing indoor air quality.

Internal Environment

It is recognised that the internal environmental quality can have a significant impact on the health and wellbeing of people interacting with the building. Best practice design standards will be adopted from BREEAM and CIBSE to create a comfortable internal environment in terms of lighting, temperature, acoustics and air quality.

Access to Nature

Where it is practical and permissible, external courtyards with planting, seating and areas to socialise will be provided to encourage external activity and access to green infrastructure, within the locality, creating a vibrant atmosphere.

Comfortable Microclimate

A range of mitigation measures in the form of green infrastructure will be adopted, where possible, to ensure safe and comfortable conditions for pedestrians within the public realm and at entranceways. Mitigation through green infrastructure also unlocks a number of co-benefits such as biodiversity, health & wellbeing benefits

of interacting with nature. Where possible, cooling systems will be avoided to minimise energy usage and reduce the urban heat island effect that can be propagated through heat rejection.

Climate Resilience – Keeping Cool

The proposed development will be designed for future climate weather data to mitigate the risk of overheating within residences in the short term and ensure it is adaptable in the long term by providing spatial and technical allowances for future retrofit. The cooling hierarchy will be applied to minimise future energy relating to increased cooling with rising temperatures. Externally, where possible, soft landscaping and the building overhangs will provide natural shading and urban cooling during heatwaves.

Encouraging Healthy Lifestyle

Where possible, on-site gym and community areas will be provided to offer prospective students a varied offer and a means of achieving health goals on-site.

Central points will be provided in which students can store and repair bicycles and walking through the centre is to be encouraged by providing secure parking in a desirable area close to amenities, restaurants and shopping.

WELLBEING *Create place, spaces and positive experiences that welcome, engage and inspire all*

Active Frontage

The development will strive to create a safe, community space that encourages engagement from both active tenants and the local community through provision of a varied offer. Developing active frontage is one of the methods in which UoM meet these goals.

Active frontage offers continuous business or retail uses that open directly to the footpath. Benefits of employing an active frontage are enhancement of public security, and passive surveillance, and improvement of the public domain by encouraging pedestrian activity. Additional benefits include the creation of jobs and provision of neighbourhood amenity, enabling more consumption needs to be met in the local area, reducing the need for travel.

6 Economically Prosperous

“Build a strong, responsible and competitive economy”

VISIONS		
PROSPEROUS	GVA approximately £38m during the construction and demolition phase and £2.7m during the operational phase	✓
	639 Full Time Equivalent (FTE) jobs created during construction	✓
	260 on-site jobs created during operation	✓
	£7.2m annual student spending	✓

Table 6-1 Economic Theme Summary



PROSPEROUS *Creating a hive of enterprise for business growth*

The location of the site makes for excellent opportunity to grow the local economy, being in very close proximity to a range of local amenities, and with the addition of accommodation for over 900 students, spending in the local area will rise by a significant amount – estimated to be £7.2 million annually.

The development will have a positive regeneration impact on the local community. The scheme replaces 2,374 student beds that are no longer fit for purpose. The proposal intends to reduce waste production in demolition and maximise the reuse of materials to contribute to resource efficiency and reduce carbon emissions. The proposed development aims at increasing the safety, liveability and vitality of the neighbourhood and consists of student social services aimed at catering to the daily need of the residing students. Additionally, it consists of a robust waste management strategy to mitigate the impact of waste generation. It will have a positive impact on the local community.

The following key benefits will be realised by the proposed development:

- The construction and demolition phase of the proposed development will generate 639 FTE temporary construction jobs, where 426 will be direct construction jobs and 213 jobs in supply chain and construction employee spending.
- In the operational phase, the proposed development will generate approximately 260 permanent jobs. Once existing on-site employment is accounted for, the proposed development is estimated to result in a total net addition of 73 permanent jobs to the local economy.

- Productivity benefits/Gross Value Added (GVA) will equate to approximately £38m during the construction and demolition phase and £2.7m during the operational phase of the proposed development.
- Estimated spending of approximately £7.2m per year within the local area on food, drink, retail and leisure/services.
- The proposed development will have a positive regeneration and infrastructure impact on the local community. The scheme will replace the old, dilapidated building stock with high-quality student accommodation and add circa 950 beds.
- The proposed development will help increase the local vitality by enhancing the safety, liveability and sustainability quotient of the neighbourhood.

7 Headline Outcomes

The purpose of this section is to summarise the headline outcomes of the sustainability strategy as they pertain to the indicative development proposed. Key performance metrics and sustainability achievements of the proposed development are outlined.

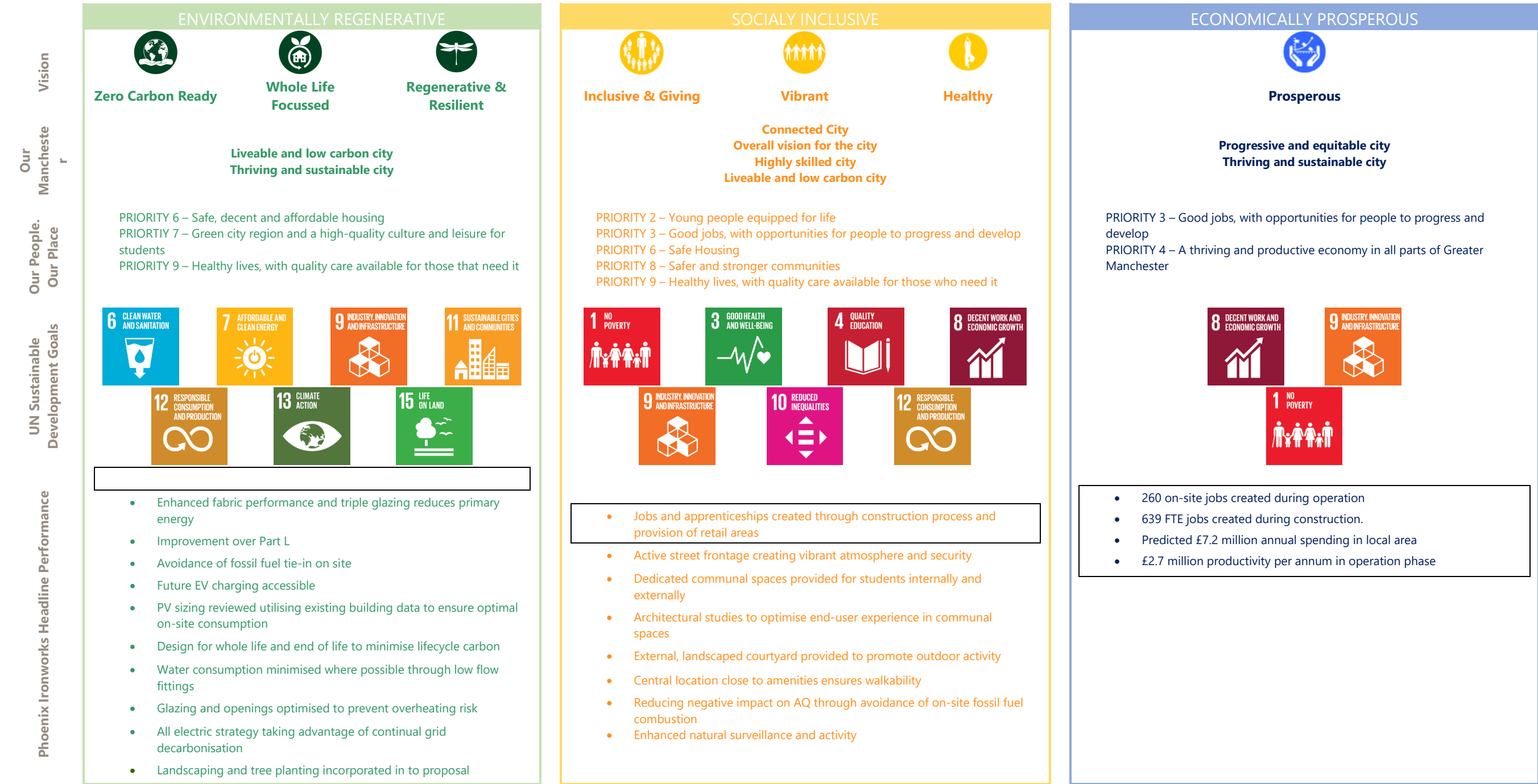


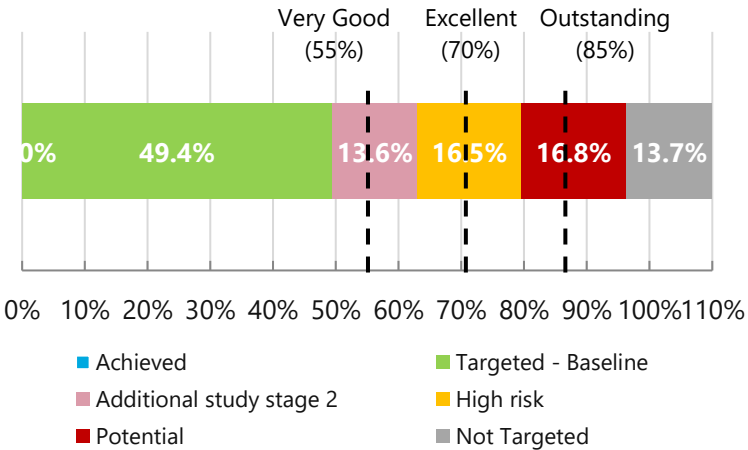
Figure 7-1 Headline Outcomes Summary

Appendix A BREEAM Pre-assessment

BREEAM UK New Construction V6

BURO HAPPOLD

Project name	Fallowfield Campus	BREEAM SCORE SUMMARY		
Project Type	Multi-residential	MINIMUM REQUIRED	55.0%	Very Good
BRE Registration Reference		TARGETED - BASELINE	49.4%	Good
Assessment stage	Pre-assessment	ADDITIONAL STUDY STAGE 2	63.0%	Very Good
Date	14/06/2023	HIGH RISK	79.5%	Excellent
Tracker Revision	1	POTENTIAL	96.3%	Outstanding



BREEAM Credits	Credit Criteria Requirements	RIBA Stage Deadline	Available Credits	% Score Value	Not Applicable	Targeted - Baseline	Additional study stage 2	High risk	Potential	Not Targeted	Ownership	Assessment notes
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MANAGEMENT

Man 01 Project Brief and Design	Credit Aim: Encouraging an integrated design process and considering BREEAM performance targets early to influence decision-making and optimise building performance, while avoiding unnecessary costs.											
Project delivery planning	- Prior to completion of the RIBA Stage 2, the project delivery stakeholders have met to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery, considering the required items.	Stage 2	1	0.52%		1					Project Manager	
Stakeholder consultation (interested parties)	- Prior to completion of the RIBA Stage 2, consult with all interested parties on matters that cover the minimum consultation content - Demonstrate how the stakeholder contributions and consultation exercise outcomes influence the Initial Project Brief and Concept Design - Prior to completion of the RIBA Stage 4, consultation feedback has been given to, and received, by all relevant parties.	Stage 2 Stage 4	1	0.52%		1					Client/Developer	Evidence to be collated
Prerequisite - BREEAM AP (Concept and Developed Design)	- The project team, including the client, formally agree strategic performance targets early in the design process	Stage 2	Achieved ?			Yes					Project Manager	BREEAM AP appointment letter needed during Stage 2 or immediately post-planning.

BREEAM AP (Concept Design)	Involve a BREEAM AP in the project at an appropriate time and level to: - Work with the project team, including the client, to consider the links between BREEAM issues and assist them in maximising the project's overall performance against BREEAM, from their appointment and throughout Concept Design. - Monitor progress against the performance targets, identify risks and opportunities, give feedback and monitor evidence generated	Stage 1 Stage 2	1	0.52%	1	Project Manager
BREEAM AP (Developed Design)	Involve the BREEAM AP in the project at an appropriate time and level to: - Work with the project team, including the client, to consider the links between BREEAM issues and assist them in maximising the project's overall performance against BREEAM, from their appointment and throughout Developed Design. - Monitor progress against the performance targets, identify risks and opportunities, give feedback and monitor evidence generated	Stage 2 Stage 3 Stage 4	1	0.52%	1	Project Manager
Man 02 Life Cycle Cost and Service Life Planning	Credit Aim: Promoting the business case for sustainable buildings through the enhanced understanding of capital cost and improving design, specification, maintenance and operation, by encouraging the use of life cycle costing.					
Elemental LCC	- An elemental life cycle cost (LCC) analysis has been carried out, at process stage 2 together with any design option appraisals in line with "Standardised method of life cycle costing for construction procurement" PD 156865:2008 - The LCC analysis provides an indication of future replacement costs over a period of analysis as required by the client (e.g.20, 30, 50 or 60 years); and includes service life, maintenance and operation cost estimates. - Demonstrate, using appropriate examples provided by the design team, how the elemental LCC plan has been used to influence building and systems design and specification to minimise life cycle costs and maximise critical value.	Stage 2	2	1.05%	2	Cost Consultant Appointment needed
Component level LCC options appraisal	- A Component level LCC plan has been developed by the end of Process Stage 4 in line with PD 156865:2008 and includes the following component types (where present): --Envelope, e.g. cladding, windows, and/or roofing --Services, e.g. heat source, cooling source, and/or controls --Finishes, e.g. Walls, floors and/or ceilings --External Spaces, e.g. alternative hard landscaping, boundary protection. - Demonstrate, using appropriate examples provided by the design team, how the component level LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.	Stage 4	1	0.52%	1	Cost Consultant Appointment needed - Component life cycle cost assessment in line with PD 156865: 2008
Capital cost reporting	- Report the capital cost for the building in pounds per square metre (£/m2), via the BREEAM Assessment Scoring and Reporting tool,	Stage 6	1	0.52%	1	Cost Consultant Report predicted capital cost for the building in pounds per square metre

	Assessment Issue Scoring tab, Management section								of gross internal floor area (£k/ m²)
Man 03 Responsible Construction Practices	Credit Aim: Encouraging construction sites to be managed in an environmentally and socially considerate and responsible manner and monitoring to encourage continuous improvements and utility consumption reduction.								
Prerequisite - Legally harvested and traded timber	- All timber and timber based products used on the project is "Legally harvested and traded timber"	Stage 5 Stage 6	Achieved ?			Yes		Principal Contractor	All timber and timber based products used on the project is "Legally harvested and traded timber". 'Letter from main contractor confirming only legal sources
Environmental management	- The principal Contractor Construction operates an environmental management system (EMS) covering their main operations. The EMS must be either: --Third party certified, to ISO 14001/EMAS or equivalent standard; or --Have a structure that is in compliance with BS 8555:2016 and has reached phase four of the implementation stage, "implementation and operation of the environmental management system", and has completed phase audits one to four, as defined in BS 8555. - The principal Contractor Construction implements best practice pollution prevention policies and procedures on-site in accordance with pollution prevention guidelines, Working at construction and Demolition-sites: PPG6	Stage 4	1	0.52%		1		Principal Contractor	Principal and demolition Contractor's ISO 14001 PPG6 - Best Practice Policies
Prerequisite - BREEAM AP (site)	The client and the contractor formally agree performance targets.	Stage 4	Achieved ?			Yes		Principal Contractor	
BREEAM AP (site)	Involve a BREEAM AP in the project at an appropriate time and level to: - Work with the project team, including the client, to consider the links between BREEAM issues and assist them in maximising the project's overall performance against BREEAM, from their appointment and throughout Construction, Handover and Close Out stages. - Monitor progress against the performance targets, identify risks and opportunities, give feedback and monitor evidence generated	Stage 5 Stage 6	1	0.52%		1		Principal Contractor	BREEAM AP appointed by Contactor to monitor progress against the agreed BREEAM performance targets at Stages 5-6
Responsible construction management	Achieve Responsible construction management items listed as required for one credit and six additional items for 2 credits. Areas include: Risk evaluation and implementation; Training, awareness and feedback; Monitoring and reporting.	Stage 5	2	1.05%		1	1	Principal Contractor	Achieve and implement all responsible construction management measures in table 4.1
Prerequisite - Monitoring of construction site impacts	Responsibility has been assigned to an individual(s) for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from all on-site construction processes (and dedicated off-site monitoring) throughout the build programme. To ensure the robust collection of information, this individuals(s) must have the appropriate	Stage 5	Achieved ?			Yes		Principal Contractor	Appointment of the responsible person for on site monitoring, recording and reporting energy use, water consumption and transportation data

Utility consumption (energy and water)	authority and responsibility to request and access the data required. Where appointed, the sustainability champion could perform this role.									
	- Set targets for the site energy consumption in kWh (and where relevant, litres of fuel used) and potable water consumption (m³) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation. - Monitor and record data for the energy consumption	Stage 5	1	0.52%		1			Principal Contractor	Energy and water monitoring data will be collected throughout development
	- Set targets for transportation movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum cover: - Transport of materials from the point of supply to the building site, including any transport, intermediate storage and point of supply, including: -- Materials used in major building elements including insulation materials -- Ground works and landscaping materials - Transport of construction waste from the construction gate to waste disposal processing/recovery centre gate. This monitoring must be outlined in the waste management plan Report separately for materials and waste, the total fuel consumption and CO2 emissions plus total distance travelled.	Stage 5	1	0.52%		1			Principal Contractor	Transport fuel consumption of construction materials and waste data will be collected throughout the development.
Exemplary - Responsible construction management	Achieve all of the Responsible construction management items.		1	1.00%			1		n/a	Achieve and implement all responsible construction management measures (table 4.1)
Man 04 Commissioning and Handover	Credit Aim: Encouraging a well-managed handover and commissioning process, which will ensure building services and fabric defects are identified and rectified and ensuring that the building responds to the needs of the occupants.									
Commissioning - testing schedule and responsibilities	- Prepare a schedule of commissioning and testing. The schedule identifies and includes a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and for testing and inspecting building fabric. it the appropriate standards for all commissioning activities to be conducted, where applicable, in accordance with: Building Regs, BSRIA and CIBSE guidelines. - BMS - carry out commissioning of air and water systems, Include physical measurements of room temperatures, off-coil temperatures, are fully installed and functional to user interface with staff trained prior to handover. - Appoint an appropriate project team member to monitor and programme pre-commissioning, commissioning and testing. - The principal contractor accounts for the commissioning and testing programme,	Stage 3 Stage 4	1	0.52%		1			Principal Contractor	Schedule is in place for commissioning and recommissioning to appropriate standards, a team member is appointed responsible for monitoring this, contractor responsible for allowing budget and time in their program to complete this

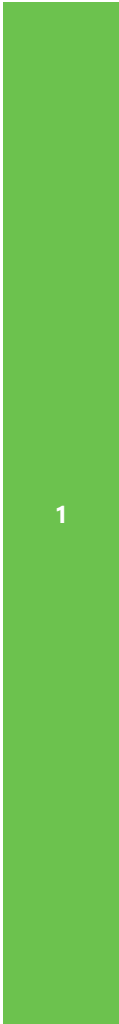
	responsibilities and criteria within their budget and the main programme of works								
Commissioning - design and preparation	Appoint a appropriate project team member to: - Undertake design reviews and giving advice on suitability for ease of commissioning. - Provide commissioning management input to construction programming and during installation stages. - Manage the commissioning, performance testing and handover or post-handover stages. For buildings with complex building services and systems, this role needs to be carried out by a specialist commissioning manager	Stage 3 Stage 4	1	0.52%		1		Principal Contractor	Specialist commissioning manager appointed (Likely to be confirmed at Stage 3-4) to contribute to design reviews, giving advice on commission ability of services. 'Air tightness testing and thermographic survey with subsequent remediation works.
Testing and inspecting building fabric	The commissioning and testing schedule and responsibilities credit is achieved. - Carry out airtightness testing and a thermographic survey in accordance with the appropriate standard. - Rectify any defects identified during post-construction testing and inspection prior to building handover and close out.	Stage 5	1	0.52%			1	Principal Contractor	Air tightness testing and thermographic survey with subsequent remediation works.
Handover	- Two building Use Guide (BUG) is developed prior to handover for distribution to the building occupiers (non-technical) and facilities managers (technical). - A draft copy is developed and discussed with users first (where the building occupants are known) to ensure the guide is most appropriate and useful to potential users. - Prepare two training schedules timed appropriately around handover and proposed occupation plans for the following users: -- A non-technical training schedule for the building occupiers. -- A technical training schedule for the premises facilities managers	Stage 5	1	0.52%		1		Principal Contractor	Development of a Building User Guide (BUG) and training schedule for users or facilities managers.
Man 05 Aftercare	Credit Aim: Encouraging aftercare support during the first year of the building operation, to ensure the building operates in accordance with the design intent and in response to the building occupants' needs.								

Aftercare Support	- There will be operational infrastructure and resources in place to provide aftercare to the building occupiers(s), which includes the following as a minimum: --a meeting between the aftercare team/individual and the building occupier/management --On-site facilities management training, to include a walkabout of the building and introduction to and familiarisation with the building systems. -- Initial aftercare support provision for at least the first month of building occupation. -- Longer term aftercare support provision for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users/management. - There will be operational infrastructure and resources in place to collect and monitor energy and water consumption data for a minimum of 12 months, once the building is occupied.	Stage 6	1	0.52%	1	Project Manager	Operational infrastructure and resources in place to provide Aftercare Support.
Commissioning - implementation	- The following seasonal commissioning activities will be completed cover a minimum 12-month period, once the building becomes substantially occupied: -- Complex systems - Specialist Commissioning Manager: -- Testing of all building services under full load conditions. -- Where applicable, testing should be also carried out during periods of extreme (high or low) occupancy. -- Interviews with building occupants to identify problems or concerns regarding the effectiveness of the systems. --Re-commissioning of systems (following any work needed to serve revised loads), and incorporating any revisions in O&M manuals. -- Simple systems (naturally ventilated) - external consultant/aftercare team/facilities manager. --Review thermal comfort, ventilation, and lighting, at three, six and nine month intervals after initial occupation, either by measurement or occupant feedback. --Take all reasonable steps to re-commission systems following the review to take account of deficiencies identified and incorporate any relevant revisions in operating procedures into the O&M manuals.	Stage 5	1	0.52%	1	Project Manager	Minimum requirement for Excellent and above Commissioning over 12-month period, testing services under full loads (weather, occupancy), recommissioning if necessary
Post-Occupancy Evaluation (POE)	- The client makes a commitment to carry out post-occupancy evaluation (POE) exercise one year after initial building occupation. To gain in use performance feedback from building users to inform operational processes, including re-commissioning activities, and maintain or improve productivity, health, safety, and comfort. The POE is arrived out by an independent party - The client will then disseminate the information on the building's post-occupancy performance.	Stage 6	1	0.52%	1	Project Manager	Post Occupancy Evaluation will be undertaken after 1 year of occupation by a independent third party

HEALTH & WELLBEING

Hea 01 Visual comfort	Credit Aim: Providing occupants with the conditions that facilitate good visual comfort by designing out the potential for glare, achieving good practice daylight factors and having an adequate view out and designing internal and external lighting systems to provide appropriate illuminance (lux) levels, thereby giving a more comfortable environment for occupants Internal lighting is zoned to allow for occupant control.						
Control of glare from sunlight	- Identify areas at risk of glare using a glare control assessment. - Glare control assessment also justifies any areas deemed not at risk of glare - Potential for glare is designed out in relevant areas where risk has been identified. - The glare control strategy does not increase energy consumption used for lighting.	Stage 4	1	0.74%	1	MEP	Glare Control Assessment and Strategy (i.e. External shading)

Daylighting	- Occupied spaces have an Average daylight factor of 2% in 80% of spaces, with at least 80% of the room has a view of sky and the room depth criterion d/w +d/HW < 2/(1-RB) is satisfied.	Stage 2	2	1.47%
View Out	- 95% of the floor area in 95% of spaces in relevant building area is within 8m of a wall which has a window or permanent opening that provides an adequate view out. - The window/opening must be ≥ 20% of the surrounding wall area. Where the room depth is greater than 8m, compliance is only possible where the percentage of window/opening is the same as, or greater than, the values in table 1.0 of BS 8206. (i.e. 14m at 35% glazing area)	Stage 2	1	0.74%
Internal and external lighting levels, zoning and control	Internal Lighting - All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts. - Internal lighting in all relevant areas of the building is designed to provides an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels. - - This can be demonstrated through a lighting design strategy that provides illuminance levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard. - For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 sections 2.4, 2.20, and 6.10 to 6.20. External Lighting - All external lighting located within the construction zone is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. - To demonstrate this, external lighting provided is specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting - lighting of work places - Part 2: Outdoor work places. Zoning and occupant control - Internal lighting is zoned to allow for occupant control in accordance with the criteria for relevant areas present within the building. i.e. In office areas, zones of no more than four workplaces; Workstations adjacent to windows/atria and other building areas separately zoned and controlled.	Stage 4	1	0.74%
Exemplary - Daylighting	- Occupied spaces have an Average daylight factor of 3% in 80% of spaces - Where used, a minimum point daylight factor of 1.2% OR 2.1% for spaces with glazed roofs, such as atria		1	1.00%
Exemplary - Internal and external lighting levels, zoning and control	Lighting in each zone can be manually dimmed by occupants down to 20% of the maximum light output using dimmer switches positioned in accessible locations. Dimming and control gear should avoid flicker and noise.		1	1.00%



Architect	Daylighting analysis to confirm compliance
Architect	If facade glazing is >35% depth of internal space can be >15m
tbc	Internal and external lighting illuminance levels to be designed in accordance with referenced CIBSE and BS standards, Note: Buildings consisting entirely of small rooms or spaces (less than 40m²) which do not require any subdivision of lighting zones or control will meet the zoning criteria by default.
n/a	Daylighting analysis to confirm compliance
n/a / n/a	Lighting in each zone can be manually dimmed by occupants down to 20% of the maximum light output using dimmer switches positioned in accessible locations. Dimming and control gear

[illegible]

Emissions from construction products	1 credit - Three of the five product types meet the emission limits, testing requirements and any additional requirements . Where wood-based products are not one of three selected product types, all wood-based products used for internal fixtures and fittings must be tested and classified as formaldehyde E1 class as a minimum. 2 credits All the product types listed meet the emission limits, testing requirements and any additional requirements.	Stage 4	2	1.47%	1	1	Architect	Specifications confirm 3 out of 5 (one credit) or All (2 credits) of the product categories meet Volatile organic compound (VOC) emission levels
Post-construction indoor air quality measurement	- The formaldehyde concentration in indoor air is measured post construction (but pre-occupancy) and does not exceed 100µg/m³ averaged over 30 minutes (WHO, 2010). - The formaldehyde sampling and analysis is performed in accordance with ISO 16000-2 and ISO 16000-3. - The total volatile organic compound (TVOC) concentration in indoor air is measured post construction and does not exceed 300µg/m³ over 8 hours. - The TVOC sampling and analysis is performed in accordance with ISO 16000-5 and ISO 16000-6 or ISO 16017-1. - Where levels are found to exceed these limits, the project team confirms the measures that have, or will be, undertaken in accordance with the IAQ plan, to reduce the TVOC and formaldehyde levels to within the above limits. - The measured concentration levels of formaldehyde (µg/m³) and TVOC (µg/m³) are reported, via the BREEAM Scoring and Reporting Tool.	Stage 6	1	0.74%		1	Primary Contractor	Formaldehyde (100µg/m³ averaged over 30 minutes) and total volatile organic compound (TVOC) (500µg/m³ over 8 hours) concentration in indoor air is measured post construction and are below required levels
Exemplary - Emissions from construction products	Achieve PC IAQ above Three of the product types listed meet the emission limits, testing requirements and any additional requirements		1	1.00%		1	Primary Contractor	Exemplary level VOC emission levels are specified for 3 out of 5 of the product categories, beyond the 'Emissions from construction products' credit above.
Hea 04 Thermal Comfort	Credit Aim: Thermal modelling informs the building design to provide a comfortable thermal environment that considers current climatic conditions, and projected climate change scenario conditions and giving occupants control over their environment through appropriate temperature control strategies and thermal zoning.							
Thermal modelling	Thermal modelling has been carried out using software in accordance with CIBSE AM11(81) Building Energy and Performance Modelling	Stage 3 Stage 4	1	0.74%	1		Sustainability consultant	Thermal comfort modelling (compliance to CIBSE Guide A for mechanical, TM52 for natural).
Design for future thermal comfort	Criteria 1-4 achieved. The thermal modelling demonstrates that the relevant requirements set out in criterion 3 above are achieved for a projected climate change environment If this criterion is not met, demonstrate how the building has been adapted, or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements. For air-conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM S&R Tool.	Stage 3 Stage 4	1	0.74%	1		Sustainability consultant	As above using future weather data (medium emissions scenario 2030 for mechanical, 2050 for natural)

Thermal zoning and controls	Criteria 1-4 achieved. - The thermal modelling analysis has informed the temperature control strategy for the building and its users. - The strategy for the proposed heating/cooling system(s) demonstrates that it has addressed the following: -- Zones within the building and how the building services could efficiently and appropriately heat or cool these areas. -- The degree of occupant control required for these zones, based on discussions with the end user.	Stage 4	1	0.74%		1		Sustainability consultant	The thermal modelling analysis has informed the temperature control (proposed heating or cooling systems) strategy for the building and its users
Hea 05 Acoustic performance	Credit Aim: Enabling occupants to experience best practice acoustic performance levels appropriate to the functional activities in occupied spaces.								
Acoustic performance	Acoustic performance for Residential institutions: The building meets the appropriate acoustic performance standards and testing requirements defined in the relevant table below. These tables define criteria for the acoustic principles of: 3.a Sound insulation 3.b Indoor ambient noise level 3.c Room acoustics.	Stage 2	4	2.95%		4		Acoustician	Acoustician to design to requirements. Where less than 5% of the assessed building's floor area is 'non-residential', these areas do not need to be assessed, only residential spaces are assessed against the residential criteria
Hea 06 Security	Credit Aim: Designing the building to consider and take into account security needs to ensure occupants safety and wellbeing.								
Security of site and building	- A suitably qualified security specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) during or prior to concept design. - A SQSS develops a set of recommendations or solutions during or prior to Concept Design. - The recommendations or solutions proposed by the SQSS are implemented. Any deviation would need to be justified, documented and agreed in advance with a suitably qualified security specialist.	Stage 2	1	0.74%		1		Security Specialist	Security Needs Assessment required at Stage 2 . Can be achieved through Secured by Design compliance.
Exemplary - Security of site and building	A compliant risk based security rating scheme has been used. SABRE		1	1.00%			1	Security Specialist	SABRE security assessment and certification scheme is followed on site
Hea 07 Safe and healthy surroundings	Credit Aim: Providing external site areas that are safe for occupant use and enhancing the wellbeing of building users by giving access to an outdoor space.								

Safe access	- Dedicated and safe cycle paths are provided from the site entrance to any cycle storage, and connect to off-site cycle paths where applicable. - Dedicated and safe footpaths are provided on and around the site providing suitable links for: site entrance to the building entrance, car parks (where present) to the building entrance, the building to outdoor space, connecting to off-site paths where applicable. - Pedestrian drop-off areas are designed off, or adjoining to, the access road and should provide direct access to other footpaths. - Delivery areas are not accessed through general parking areas and do not cross or share: pedestrian and cyclist paths, outside amenity areas accessible to building users and general public. - There is a dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking.	Stage 2-4	1	0.74%			1		Architect	Dedicated pedestrian and cyclist paths and delivery access routes.
Outside space	There is an outside space providing building users with an external amenity area.	Stage 2-4	1	0.74%		1			Architect	Provision of outside amenity area (landscape, seating etc.)

ENERGY

Ene 01 Reduction of energy and CO ₂ emissions	Credit Aim: Encouraging the design of energy efficient buildings with energy performance above national building regulations and encouraging the accurate modelling of operational energy consumption											
Energy performance	Calculate an Energy Performance Ratio for New Construction (EPR NC). Compare the EPR NC achieved with the benchmarks	Stage 3 Stage 3	9	6.55%		3		2	1	3	Sustainability	Part L compliance energy modelling. Required for planning?
Prediction of operational energy consumption	- Energy design workshop focusing on operational energy performance - Undertake sensitivity analysis to determine the factors that can significantly impact building energy consumption. - Additional energy modelling during the design and post-construction stage to generate predicted operational energy consumption figures - Risk assessment to highlight any significant design, technical, and process risks that should be monitored and managed throughout the construction and commissioning process	Stage 3 Stage 4	4	2.91%				4			Sustainability	Operational energy modelling analyses of proposed building design and development during Technical Design

Exemplary - Energy performance	Up to 3 Credits - Beyond zero net regulated carbon The building achieves an EPRnc ≥ 0.9 and zero net regulated CO2 emissions. An equivalent percentage of the buildings modelled regulated operational energy consumption, is generated by carbon neutral on-site or near-site sources and used to meet energy demand from "unregulated" building systems or processes 2 Credits - Post-occupancy stage - Achieve 2 credits in Ene 02 - Client or building occupier commits funds to pay for the post occupancy stage This requires an assessor to be appointed and to report on the actual energy consumption compared with the targets.		5	5.00%			2	3	Project manager	Post-occupancy stage report on the actual energy consumption
Ene 02 Energy monitoring	Credit Aim: Helping to identify and reduce high energy demands where possible by accurate measurement of the energy consumption of the building by end use.									
Sub-metering of end-use categories	- Energy metering systems are installed that enable at least 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems. - The energy consuming systems are metered using an appropriate energy monitoring and management system. - The end energy consuming uses are identifiable to the building users.	Stage 4	1	0.73%		1			MEP Engineer	Install energy metering systems so that at least 90% of the estimated annual energy consumption of each fuel
Sub-metering of high energy load and tenancy areas	- An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed are provided, covering a significant majority of the energy supply to tenanted areas / relevant function areas or departments within the building. - Sub-meter per floor plate in large single occupancy or single-tenancy buildings with one homogeneous function, for example hotel bedrooms, offices.	Stage 4	1	0.73%	1				n/a	NA since Ene01 post occupancy not targeted
Ene 03 External lighting	Credit Aim: Reducing the building's energy consumption through the specification of energy efficient external lighting.									
External lighting specification	External light fittings within the construction zone with: - Average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt - Automatic control to prevent operation during daylight hours - Presence detection in areas of intermittent pedestrian traffic.	Stage 4	1	0.73%		1			MEP Engineer	Average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt and Automatic controls
Ene 04 Low Carbon Design	Credit Aim: Reducing the building's energy consumption through the adoption of passive design solutions, free cooling and low or zero carbon (LZC) energy sources.									
Passive design analysis	- Achieve the first credit Hea 04 Thermal comfort - The project team analyses the proposed building design and development during Concept Design to identify opportunities for the implementation of passive design measures - Implement passive design measures to reduce the total heating, cooling, mechanical ventilation, lighting	Stage 2	1	0.73%		1			MEP Engineer	

	- Quantify the reduced total energy demand and CO2								
Free cooling		Stage 2	1	0.73%			1	MEP Engineer	Not targeted
Low and zero carbon technologies	Technologies eligible to contribute to achieving the criteria must produce energy from renewable sources and meet all other ancillary requirements as defined by Directive 2009/28/EC. Heat pumps can only be considered as a renewable technology when used in heating mode	Stage 2	1	0.73%		1		MEP Engineer	
Ene 06 Energy efficient transportation systems	Credit Aim: Reducing the building's energy consumption by specifying the optimum number and size of energy efficient transportation systems.								
Energy consumption	- Analysis of the transportation demand and usage in accordance with BS EN ISO 25745 for at least two types of systems. Use of regenerative drives should be considered and the lowest energy consumption is specified.	Stage 4	1	0.73%		1		Lift Specialist	Transportation analysis and lift/escalator energy consumption analysis, in accordance with BS EN ISO 25745
Energy efficient features	The following energy efficient features are specified: - The lifts operate in a standby condition during off-peak periods - The lift car and display lighting provides an average lamp efficacy, of > 70 lamp lumens/circuit Watt. - The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor.		2	1.45%	1	1		Lift Specialist	Specification of lifts energy efficiency features (variable speed/voltage/frequency controls, lighting etc)
Ene 08 Energy efficient equipment	Credit Aim: Demonstrating a meaningful reduction in the total unregulated energy demand of the building by using energy efficient equipment.								
Energy efficient equipment	- Identify the building's unregulated energy consuming loads and estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical/standard specification. - Identify the systems and/or processes that use a significant proportion of the total annual unregulated energy demand of the development and its operation. - Demonstrate a meaningful reduction in the total annual unregulated energy demand of the building.	Stage 4	2	1.45%			2	Project Manager	Analysis of total annual unregulated energy consumption of the building. Laundry facilities with commercial-sized appliances - Specification of heat recovery from waste water, appliances eligible for the UK's Enhanced Capital Allowance Scheme for water - Domestic-scale appliances (individual and communal facilities) available to purchase from the developer: 1. Fridges, fridge-freezers: A+, Washing machines: A++; Dishwashers: A+ , Washer-dryers: A

TRANSPORT										
Tra 01 Transport assessment and travel plan		Credit Aim: Recognising developments in proximity to good public transport networks, thereby helping to reduce transport-related pollution and congestion.								
Travel plan		No later than Concept Design stage, undertake a site-specific transport assessment (or develop a travel statement) and draft travel plan, which can demonstrably be used to influence the site layout and built form.	Stage 2	2	1.67%		2		Transport consultant	Travel plan and site-specific travel assessment/statement required during the feasibility and design stages.
Tra 02 Sustainable transport measures		Credit Aim: Recognising developments in close proximity of, and accessible to, local amenities which are likely to be frequently required and used by building occupants.								
Prerequisite - Achieve Tra 01				Achieved ?			Yes		Transport consultant	
Transport options implementation		Credits awarded according to the existing Accessible Index (AI) = PTAL 6b (AI ≥ 40 3 points = 6 credits) of the project, and the total number of points achieved for the options implemented. Points include: - Site AI - 1 point (PTAL 6b) - Public transport information system (1 point) - Electric Charging provision (1 points) - Install Cycle storage (1 point) and facilities (1 point) - At least three existing accessible amenities (1 point) - Ensure more than one new accessible amenity (3 points)	Stage 2	10	8.33%		8	2	Transport consultant	PTAL 6b - the best BREEAM: (1 per 2 beds + 1 per 10 staff)*50% = (220/2+10/10)*50% = 51 space GLA = 102 spaces Separate facilities for staff (lockers, laundrette, showers)
WATER										
Wat 01 Water Consumption		Credit Aim: Reducing the demand for potable water through the provision of efficient sanitary fittings, rainwater collection and water recycling systems.								
Water consumption		- The water consumption (L/person/day) for the assessed building is compared against a baseline performance with credits awarded based on % improvement. - The efficiency of the following "domestic scale" water-consuming components must be included in the assessment (where specified) -- WCs -- Urinals -- Taps -- Showers -- Baths -- Dishwashers -- Washing Machines - Where a greywater and/or rainwater system is specified, its yield (L/person/day) is used to offset non potable water demand for components that would otherwise be supplied using potable water. - Any greywater systems meet BS 8525-1:2010 and rainwater systems meet BS EN 16941-1:2018	Stage 4	5	3.89%		2	2	1	MEP Engineer Low flow rate sanitary ware fittings specified
										One credit min

Exemplary - Water consumption	Where 65% improvement over the baseline performance is achieved.		1	1.00%		1	n/a	Greywater/Rainwater required to achieve maximum credits
Wat 02 Water Monitoring	Credit Aim: Specification of water meters to allow for management and monitoring of water use in the building. This encourages reductions in water use by identifying areas of high usage and investigating potential causes.							
Water monitoring	- A water meter is specified on the mains water supply to each building. - Water-consuming plan or building areas, consuming 10% or more of the buildings total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plan or area. - Each meter has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. BMS	Stage 4	1	0.78%		1	MEP Engineer	Metering of mains water supply plus sub-metering of areas consuming more than 10% of the total (sub metering by floorplate)
Wat 03 Water Leak Detection	Credit Aim: Reducing the unintended water consumption due to leaks by installing leak detection systems and flow control devices.							
Leak detection system	- A leak detection system which is capable of detecting a major water leak on the utilities water supply within the building and between the building and the utilities water meter is installed. It must be: - A permeant automate water leak detection system that alerts the building occupants to the leak OR an in-built automated diagnostic procedure for detecting leaks is installed. - Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of tie. - Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods. - Programmable to suit the owner/occupiers' water consumption criteria - Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.	Stage 4	1	0.78%		1	MEP Engineer	Leak detection system to be specified.
Flow control devices	- Flow control devices that regulate the supply of water to each WC area/facility according to demand are installed, in order to minimise undetected wastage and leaks from sanitary fittings and supply pipework.	Stage 4	1	0.78%		1	MEP Engineer	Flow control devices to be specified to the water supply to the WCs (even if sanitary fittings are not specified).
Wat 04 Water Efficient Equipment	Credit Aim: Reducing water consumption for non-domestic scale, non-sanitary water uses by specifying efficient systems and improving the design efficiency of any water-using processes.							

Criterion 1 only

Water efficient equipment	- The design team has identified all unregulated water demands that could be realistically mitigated or reduced. - System(s) or processes have been identified to reduce the unregulated water demand, and demonstrate, through either good practice design or specification, a meaningful reduction in the total water demand of the building.	Stage 4	1	0.78%		1		MEP Engineer	Unregulated water demands to be identified and reduced.
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MATERIALS									
Mat 01 Building Life Cycle Assessment (LCA)	Credit Aim: Reducing buildings' environmental life cycle impacts through conducting Life Cycle Assessment and integrating its outcomes in the design decision-making process.								
Superstructure	Stage 2 - Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options. Stage 4 - Carry out building LCA options appraisal of 2 to 3 significantly different superstructure design options.	Stage 2	6	6.43%		6		LCA consultant	LCA analysis for the environmental impact of superstructure materials required
Substructure and hard landscaping options appraisal	Carry out building LCA options appraisal of a combined total of at least six significantly different substructure or hard landscaping design options (at least two shall be substructure and at least two shall be hard landscaping).	Stage 2	1	1.07%		1		LCA consultant	LCA analysis for the environmental impact of substructure and landscaping materials required
Exemplary - Core building services	Carry out building LCA options appraisal of at least 3 significantly different core building services design options.	Stage 2	1	1.00%			1	n/a	LCA analysis for the environmental impact of Core building services materials required
Exemplary - LCA and LCC alignment	Integrate the aligned LCA and LCC options appraisal activity within the wider design decision-making process.	Stage 4	1	1.00%			1	LCA/LCC consultant	Alignment of the design options within the LCA analyses with LCC analyses in Man02
Exemplary - Third party verification	A suitably qualified third party either carries out the building LCA work or verifies the building LCA work	Stage 4	1	1.00%			1	LCA consultant	LCA analyses to be completed by a recognised third party.
Mat 02 Environment Product Declarations (EPD)	Credit Aim: To encourage availability of robust and comparable data on the impacts of construction products by rewarding the specification of products with environmental products declarations.								

Specification of products with a recognised environmental product declaration (EPD)	Specify construction products with EPD that achieve a total EPD points score of at least 20.	Stage 4 Stage 5	1	1.07%				1	Architect / Structures	Materials with EPDs to be specified, achieving at least 20 EPD points using the BREEAM tool.	
Mat 03 Responsible sourcing of construction products	Credit Aim: Recognising and encouraging responsible sourcing of construction products. This includes the source of products and the intermediary companies processing and transporting the product to site.										
Prerequisite - Legally harvested and traded timber	- 100% of timber and timber-based products used on the project are 'Legal' and 'Sustainable' as per the UK Government's Timber Procurement Policy		Achieved ?			Yes			n/a	To be included in contractor requirements.	
Enabling sustainable procurement	A sustainable procurement plan must be used by the design team to guide specification towards sustainable construction products. The plan must be in place before Concept Design. Include a requirement for assessing the potential to procure construction products locally. There must be a policy to procure construction products locally where possible. Include details of procedures in place to check and verify the effective implementation of the sustainable procurement plan	Stage 2	1	1.07%			1		LCA consultant	Sustainable procurement plan required at Stage 2 and required to be used by the design team in specifying materials	
Measuring responsible sourcing	- Bulk building materials are responsibly sourced in accordance with the BREEAM methodology (i.e. BES 6001, ISO 14001, FSC). Credits are awarded for the % of available RSM points achieved. - 1 credit - Superstructure ≥ 10% - 2-3 credits - As above, plus Internal finishes and Substructure and hard landscaping ≥ 20% / 30%		3	3.21%		1		1	1	Architect / Structures / MEP	Design team/contractor to specify and source materials with responsible sourcing certification (i.e. BES 6001, FSC) for the Superstructure, Internal finishes, Substructure and hard landscaping
Exemplary - Measuring responsible sourcing	As above, plus core building services ≥ 50%		1	1.00%					1	As above	Credit not targeted. Requires all core building services to be BES 6001 or equivalent
Mat 05 Designing for durability and resilience	Credit Aim: Increasing the lifespan of the building through designing for durability and protection from degradation and specifying appropriate construction products.										

Protecting vulnerable parts of the building from damage	- The building incorporates suitable durability and protection measures or designed features/ solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This includes: -- Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares -- Protection against any internal vehicular movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas -- Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building facade for all car parking areas and within 2m for all delivery areas.	Stage 4							Architect	Protection measures within the design to reduce damage to the building's fabric or materials
Protecting exposed parts of the building from material degradation	- The relevant building elements incorporate appropriate design and specified to limit long and short term degradation due to environmental factors. - The element or product achieving an appropriate quality or durability standard or design guide, use BS 7543:2015(165) as the default. OR - A detailed assessment of the element's resilience when exposed to the applicable material degradation and environmental factors. - Include convenient access to the roof and façade for cost-effective cleaning, replacement and repair in the building's design. - Design the roof and façade to prevent water damage, ingress and detrimental ponding.	Stage 4	1	1.07%		1			Architect	Elements designed to limit degradation due to environmental factors.
Mat 06 Material Efficiency	Credit Aim: Encouraging the reduction of environmental impacts through optimising the use of materials during all stages of the project.									
Material Efficiency	- Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life. - This is carried out by the design/construction team in consultation with the relevant parties at each of the following stages: -- Preparation and brief -- Concept design -- Developed design -- Technical design -- Construction	Stages 1-6	1	1.07%				1	Design team	Report on opportunities and methods to optimise the use of materials
WASTE										
Wst 01 Construction waste management	Credit Aim: Improving resource efficiency through developing a pre-demolition audit and a Resource Management Plan, maximising the recovery of material during demolition and diverting non-hazardous waste from landfill.									

Pre-demolition audit	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 and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications	Stage 2	1	0.60%		1			Pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition
Construction resource efficiency	Prepare a compliant Resource Management Plan (RMP) covering: - Non-hazardous waste materials (from on-site construction and dedicated off-site manufacture or fabrication, including demolition and excavation waste - Accurate data records on waste arisings and waste management routes. - Meet or improve upon the benchmarks		3	1.80%	1	1	1	Principal Contractor	Waste reduction to be included in contractor requirements. (Construction waste resource efficiency of ≤ 13.3m3 or 11.1 tonnes of waste generated per 100m² GIA)
Diversion of resources from landfill	The percentages of non-demolition (95%) and demolition (95%) waste (where applicable) generated by the project have been diverted from landfill.		1	0.60%	1			Principal Contractor	Diversion from landfill to be included in contractor requirements.
Exemplary - Construction resource efficiency and diversion from landfill	- ≤ 1.9 of construction waste generated per 100m2 - 95% of Demolition/Excavation waste is diverted from landfill - 90% of Non Demolition waste is diverted from landfill - Waste data obtained from licensed external waste contractors is reliable and verifiable, by using data from EA/SEPA/EA Wales/NIEA Waste Return Forms or from a PAS 402:2013 compliant company		1	1.00%			1	Principal Contractor	
Wst 02 Recycled and sustainably sourced aggregates	Credit Aim: Encouraging the use of recycled or secondary aggregate or aggregate types with lower environmental impact to reduce waste and optimise material efficiency.								
Prerequisite - Pre-demolition audit	If demolition occurs on site, to encourage the reuse of site-won material on site, complete a pre-demolition audit	Stage 2	Achieved ?			Yes		n/a	as above for Wst 01
Project sustainable aggregate points	- Identify all aggregate uses and types on the project - Determine the quantity in tonnes for each identified use and aggregate type. - Identify the region in which the aggregate source is located. - Calculate the distance in kilometres travelled by all aggregates by transport type - Calculate the Project Sustainable Aggregate points (3.5-6 1 credit)		1	0.60%		1		Structures	Evaluation of aggregate types/suppliers to determine travel distances and number of points achievable
Exemplary - Project sustainable aggregate points	Project Sustainable Aggregate points of 6 or more		1	1.00%			1	Structures	Sourcing aggregates from recycled/secondary and local sources, to achieve Project Sustainable Aggregate Points score meets or exceeds the exemplary level Performa (6)
Wst 03 Operational waste	Credit Aim: Encouraging the diversion of operational waste form landfill through the provision of space and facilities allowing the segregation and storage of recyclable waste.								

Operational Waste	Dedicated space(s) is provided for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. This space must be: - Clearly labelled, to assist with segregation, storage and collection for the recyclable waste streams - Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management contractors - Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/ weekly operational activities and occupancy rates. - Where there is consistent generation the following facilities are provided: -- Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space. -- Adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery. -- Where organic waste is to be stored/composted on-site a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.	Stage 4	1	0.60%		1	Architect	Operational recyclable and general waste requirements of building to be provided by waste consultant and included in design by Architect.
Speculative floor and ceiling finishes	N/A		1	0.60%	1			
Wst 05 Adaptation to climate change	Credit Aim: To encourage the specification and fitting of floor and ceiling finishes selected by the building occupant and therefore avoid unnecessary waste of materials.							
Resilience of structure, fabric, building services and renewables installation	- A systematic risk assessment to identify the impact of expected extreme weather conditions arising from climate change on the building over its projected life cycle. The assessment covers the installation of building services and renewable systems, as well as structural and fabric resilience aspects - Develop recommendations or solutions based on the climate change adaptation strategy appraisal, before or during Concept Design, that aim to mitigate the identified impact. - Provide an update during Technical Design demonstrating how the recommendations or solutions proposed at Concept Design have been implemented where practical and cost effective. Omissions have been justified	Stage 2 Stage 4	1	0.60%		1	Design team	Conduct a climate change adaptation strategy appraisal, develop recommendations and implement into the design
Exemplary - Responding to climate change	- Achievement of the Structural and Fabric Resilience credit. - Hea 04 Credit 2 modelling demonstrates relevant requirements are achieved for a projected climate change environment - At least 6 Ene 01 credits have been achieved - The passive design analysis credit of Ene 04 had been achieved - Wat 01 Water consumption - 3 credits -Mat 05 material degradation criteria has been achieved - For Pol 03 a minimum of one credit is achieved		1	1.00%			1 n/a	Dependant of Hea04, Ene01 (6 credits), Ene04, Wat01 (3 credits), Mat05, Pol03 (3 credits).

	for Flood Risk and two credits for Surface Water Run-Off								
Wst 06 Design for disassembly and adaptability	Credit Aim: To encourage the specification and fitting of floor and ceiling finishes selected by the building occupant and therefore avoid unnecessary waste of materials.								
Design for disassembly and functional adaptability - recommendations	- Study to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of Concept Design. - Recommendations / solutions based on the study, that aim to enable and facilitate disassembly and functional adaptation	Stage 2	1	0.60%		1		Design team	Functional adaptability strategy required at Stage 2 looking at feasibility, accessibility, versatility, adaptability, convertibility, expandability, refurbishment potential
Design for disassembly and functional adaptability - implementation	Provide an update, during Technical Design, on: - How the recommendations or solutions proposed have been implemented where practical and cost effective. Omissions have been justified in writing to the assessor. - Changes to the recommendations and solutions during the development of the Technical Design. - Produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.	Stage 4	1	0.60%		1		Design team	Adaptability and disassembly guide communicating the implementation of the strategy required at Stage 4
LAND USE AND ECOLOGY									
LE 01 Site selection	Credit Aim: Recognising the reuse of previously developed and contaminated land where appropriate remediation has taken place.								
Previously occupied land	At least 75% of the developments footprint is on an area of land which has previously been occupied by industrial, commercial or domestic buildings or fixed surface infrastructure.		1	1.00%		1		Client / architect	
Contaminated land	A contaminated land specialist's site investigation, risk assessment and appraisal has deemed land within the site to be affected by contamination. They have identified: - The degree of contamination - The contaminant sources/types - The options for remediating sources of contamination which present an unacceptable risk The client or principal contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan as recommended by the contaminated land specialist.		1	1.00%			1	n/a	

LE 02 Identifying and understanding the risks and opportunities for the project	Credit Aim: Identifying and understanding the ecological risks and opportunities associated with the site to inform the determination of the strategic outcome for the site.									
Prerequisite - Assessment route selection	Compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site	Stage 1	Achieved ?				Yes			Ecologist / Principal Contractor
Survey and evaluation	- Suitably Qualified Ecologist (SQE) is appointed at a project stage that ensures early involvement in site configuration and, where necessary, can influence strategic planning decisions. - an appropriate level of survey and evaluation undertaken at stage 1 and shared with project team, to determine the ecological baseline of the site, taking account of the zone of influence to establish: ---Current and potential ecological value and condition of the site, and related areas within the zone of influence. -- Direct and indirect risks to current ecological value -- Capacity and feasibility for enhancement of the ecological value of the site and, where relevant, areas within the zone of influence	Stage 1	1	1.00%			1			Ecologist
Determining the ecological outcomes for the site	- During Concept Design, the project team liaise and collaborate with representative stakeholders to identify the optimal ecological outcome for the site. - The ecological outcome for the site is determined by identifying, appraising and selecting specific solutions and measures. - The optimal ecological outcome for the site is selected after liaising with representative stakeholders and the project team.	Stage 2	1	1.00%			1			Ecologist Project team liaison with stakeholders (local government, local community groups at Stage 2 to identify and consider the ecological outcome of the site.
Exemplary - Determining ecological outcomes for the site	- Determining the optimal ecological outcome for the site consider wider site sustainability-related activities and the potential for ecosystem service related benefits.		1	1.00%				1	n/a	Credit not targeted.
LE 03 Managing impacts on ecology	Credit Aim: Recognition of steps taken to avoid impacts on existing site ecology as far as possible.									
Prerequisite – Ecological risks and opportunities	LE 02 has been achieved	Stage 2	Achieved ?				Yes			Ecologist Contractor to confirm compliance is monitoring against relevant UK and EU legislation
Planning and measures on-site	- Roles and responsibilities for managing negative impacts on the ecology are clearly defined and allocated to support successful delivery of project outcomes at an early enough stage to influence the Preparation and Brief or Concept Design. - The potential impact of site preparation and construction works on ecology are identified at an early project stage to optimise benefits and outputs. - The project team, liaising and collaborating	Stage 2	1	1.00%			1			Ecologist / Principal Contractor Define and allocate roles and responsibilities at Stage 2 to support and implement measures

[illegible]

Planning, liaison, data, monitoring and review management and maintenance	- The project team liaise and collaborate with representative stakeholders taking into consideration data collated and shared, on solutions and measures implemented to: -- Monitor and review the effectiveness with which the plans for LE 03 & LE 04 are implemented -- develop and review management and maintenance solutions, actions or measures - As part of the tenant or building owner information supplied, include a section on Ecology and Biodiversity to inform the owner or occupant of local ecological features, value and biodiversity on or near the site.	Stage 4	1	1.00%		1		Ecologist / Landscape Designer	Project team liaison with stakeholder for monitoring. Reviewing and maintenance of measures and inclusion of Ecology and Biodiversity in the building owner information supplied
Landscape and ecology management plan (or similar) development	- Landscape and ecology management plan, or equivalent, is developed in accordance with BS 42020:2013 Section 11.1 covering as a minimum the first five years after project completion - The landscape and management plan or similar is updated as appropriate to support maintenance of the ecological value of the site.	Stage 4	1	1.00%			1	Landscape Designer	Provision of a compliant landscape and ecology management plan.

POLLUTION

Pol 01 Impact of refrigerants	Credit Aim: Rewarding buildings that reduce the impact of refrigerant gas emissions.								
Prerequisite - Ammonia refrigerants	- All systems (with electric compressors) must comply with the requirements of BS EN 378:2008 (Parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.		Achieved ?		No			MEP Engineer	Prerequisite electric compressors meet BS EN 378:2016 and if ammonia refrigerants are present they comply with the Institute of Refrigeration Ammonia Refrigeration Systems code of practice
Impact of refrigerant	Two Credits - Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELCO2e) of ≤ 100 kgCO2e/kW cooling/heating capacity. OR - Where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤ 10 One Credit - Where the systems using refrigerants have DELCO2e emissions of ≤ 1000 kgCO2e/kW cooling/heating capacity.	Stage 4	2	1.33%	1		1	MEP Engineer	Feasibility of direct effect life cycle CO2 emissions from refrigerants to be assessed by MEP
Leak detection	- All systems are hermetically sealed or only use environmentally benign refrigerants OR - A permanent automated refrigerant leak detection system, that is robust and tested, and capable of continuously monitoring for leaks. In the event of a leak, the system must be capable of automatically responding and managing the remaining refrigerant charge to limit loss of refrigerant	Stage 4	1	0.67%			1	MEP Engineer	Compliant refrigerant leak detection system to be specified.
Pol 02 Local air quality	Credit Aim: Recognising buildings which limit their impact on local air quality, by consideration of the combustion plant and fuel used on site.								

Local air quality	- All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity OR - Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the NOX emissions level (measured on a dry basis at 0% excess) stated	Stage 4	2	1.33%	2	MEP Engineer	All electric systems
Pol 03 Flood and surface water management	Credit Aim: Rewarding buildings and their sites that limit on-site and off-site local flooding and hence the damage this can cause.						
Prerequisite - Appropriate consultant	An appropriate consultant is appointed to carry out and demonstrate the development's compliance with all criteria.	Stage 2	Achieved ?		Yes	Flood risk specialist	Appointment of a suitably qualified professional to carry out a flood risk assessment
Flood Resilience	Two Credits (Low Flood Risk) - Where a site-specific flood risk assessment (FRA) confirms the development is situated in a flood zone that is defined as having a low annual probability of flooding (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration. One Credit (Medium/High Flood Risk) - Where a site-specific flood risk assessment (FRA) confirms the development is situated in a flood zone that is defined as having a low annual probability of flooding (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration. - To increase the resilience and resistance of the development to flooding, one of the following must be achieved: - The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600mm above the design flood level of the flood zone in which the assessed development is located OR - The final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2011	Stage 2	2	1.33%	2	SuDS/Runoff Consultant	
Prerequisite - Surface water run-off	-Surface water run-off design solutions must be bespoke, i.e. they must take account of the specific site requirements and natural or man-made environment of and surrounding the site.	Stage 2	Achieved ?		Yes	SuDS/Runoff Consultant	Appointment of a suitably qualified professional to carry out drainage and surface water runoff calculations

Surface water run-off - Rate	-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. - For Greenfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events - Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place - Calculations include an allowance for climate change; this should be made in accordance with current best practice planning guidance.	Stage 2	1	0.67%	1	SuDS/Runoff Consultant	30% improvement in peak rate runoff post-development
Surface water run-off - Volume	- Where flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance AND EITHER - Drainage design measures are specified to ensure that the post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development 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 Sustainable Drainage System (SuDS) techniques. OR (only if the above cannot be achieved) - Justification from the Appropriate Consultant indicating why this cannot be achieved - Drainage design measures are specified to ensure that the post development peak rate of run-off is reduced to the limiting discharge. The limiting discharge is defined as the highest flow rate from the following options: -- The pre-development 1-year peak flow rate, or -- The mean annual flow rate QBar, or -- 2L/S/ha - Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place - For either option, the calculations must include an allowance for climate change, this should be made in accordance with current best practice planning guidance.	Stage 2	1	0.67%	1	SuDS/Runoff Consultant	No increase in volume runoff post-development or limiting peak rate runoff to 1-year rate, Qbar or 2l/s/ha

Minimising watercourse pollution	- There is no discharge from the developed site for rainfall up to 5mm (confirmed by the Appropriate Consultant). - In areas with a low risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques. - Where there is a high risk of contamination or spillage of substances such as petrol and oil, separators are installed in surface water drainage systems. - Where the building has chemical/liquid gas storage areas, a means of containment is fitted to the site drainage system to prevent the escape of chemicals to natural watercourses. - All water pollution prevention systems have been designed and installed in accordance with the recommendations of documents such as Pollution Prevention Guideline 3 (PPG 3) and/or where applicable the SUDS manual. For areas where vehicle washing will be taken place, pollution prevention systems must be in accordance with Pollution Prevention Guidelines 13 - A comprehensive and up-to-date drainage plan of the site will be made available for the building/site occupiers - Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS must be in place. - Where present, all external storage and delivery areas design and detailed in accordance with the current best practice planning guidance.	Stage 2	1	0.67%		1	SuDS/Runoff Consultant	Potential credit. Required No discharge for rainfall up to 5mm and design of SuDS for watercourse pollution prevention
Pol 04 Reduction of night time light pollution	Credit Aim: Avoiding or reducing the impact of night time light pollution, through careful design and specification of light sources.							
Reduction of night time light pollution	- The external lighting strategy has been designed in compliance with table 2 of the ILP Guidance notes for the reduction of obtrusive light, 2011 - All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00 - If safety or security lighting is provided and will be used between these hours, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes. - Illuminated advertisements, where specified, must be designed in compliance with ILE Technical Report 5 - The Brightness of Illuminated Advertisements.	Stage 4	1	0.67%		1	MEP Engineer	External lighting automatically switch off 23:00-7:00 and meets ILP guidance requirements.
Pol 05 Reduction of noise pollution	Credit Aim: Avoiding or reducing the impact of external noise from the building.							

Reduction of noise pollution	- Where there are, or will be, no noise-sensitive areas or buildings within an 800m radius of the assessed development OR - Alternatively, where the building does have noise-sensitive areas or buildings within the 800m radius the credit may be awarded as follows: - Where a noise impact assessment in compliance with BS 4142:2014 has been carried out and the following noise levels measure/determined: - Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar - The rating noise level resulting from the new noise source. - Noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body. -The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise sensitive development, must be at least 5dB lower than the background noise throughout the day and night. - Where the noise source(s) from the proposed site/building is greater than these, measures have been installed to attenuate the noise at its source to a level where it will comply.	Stage 4	1	0.67%	1	Acoustician	Testing pre and post-completion. Noise levels at sensitive receptors within 800m to be at least 5dB lower than background noise through day and night.
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INNOVATION										
Inn 01 Innovation	Credit Aim: To support innovation within the construction industry through the recognition of sustainability related benefits which are not rewarded by standard BREEAM issues.									
Exemplary level of performance in existing BREEAM issues			10	10.00%			4	6	See Relevant Issues Above	For information on the methodology for exemplary level credits refer to the Methodology section of the relevant BREEAM issues above.
Approved Innovations									Assessor	Innovation applications can be submitted to BRE Global by a licensed BREEAM Assessor using the formal Approved Innovation Application Form

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