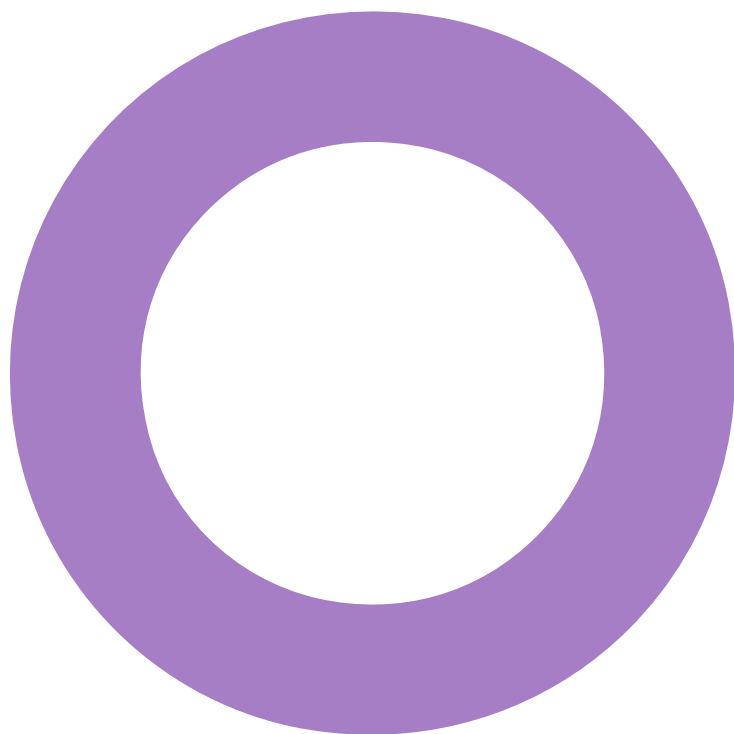


**Prestwich Village.
Bury, Greater Manchester.
The Prestwich Regeneration LLP.**

SUSTAINABILITY AND ENERGY STATEMENT

REVISION 08 – 19 JANUARY 2024



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	06/10/2023	First draft for comment	S. Hunt	V. Wall	J. Nuttall
01	11/10/2023	Draft issue	S. Hunt	V. Wall	J. Nuttall
02	26/10/2023	Revision to address feedback from Asteer	S. Hunt	V. Wall	J. Nuttall
03	16/11/2023	Revision to address feedback from Asteer	S. Hunt	V. Wall	J. Nuttall
04	07/12/2023	Revision to address feedback from Asteer	S. Hunt	V. Wall	J. Nuttall
05	08/12/2023	Updated development description	S. Hunt	V. Wall	J. Nuttall
06	14/12/2023	Revision to address feedback from Asteer	S. Hunt	V. Wall	J. Nuttall
07	17/01/2024	Amended DoD and redline boundary	S. Hunt	V. Wall	J. Nuttall
08	19/01/2024	Amended redline boundary	S. Hunt	V. Wall	J. Nuttall

This document has been prepared for The Prestwich Regeneration LLP only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. The consequences of climate change and the effects of future changes in climatic conditions cannot be accurately predicted. This report has been based solely on the specific design assumptions and criteria stated herein.

Project number: 23/24996
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Introduction.

The proposals for Prestwich Village aim to create a **low carbon development** which **regenerates** the Longfield Centre site. Cafes and retail spaces will spill out into a **new village square** that will provide the backdrop for a **community hub** comprising a library, medical and health services, new residential units, spaces for **independent businesses** and a **diverse** retail, leisure and food and drink offer all supported by a new travel hub.

The five capitals framework has been adopted to demonstrate the Proposed Development's approach to sustainable development. Traditionally, sustainable development has been defined by three pillars: environment, social and economic. Nowadays, however, thinking around sustainability has broadened beyond these three themes and is better encapsulated by the five capitals approach which provides a more robust framework to appraise sustainable development:

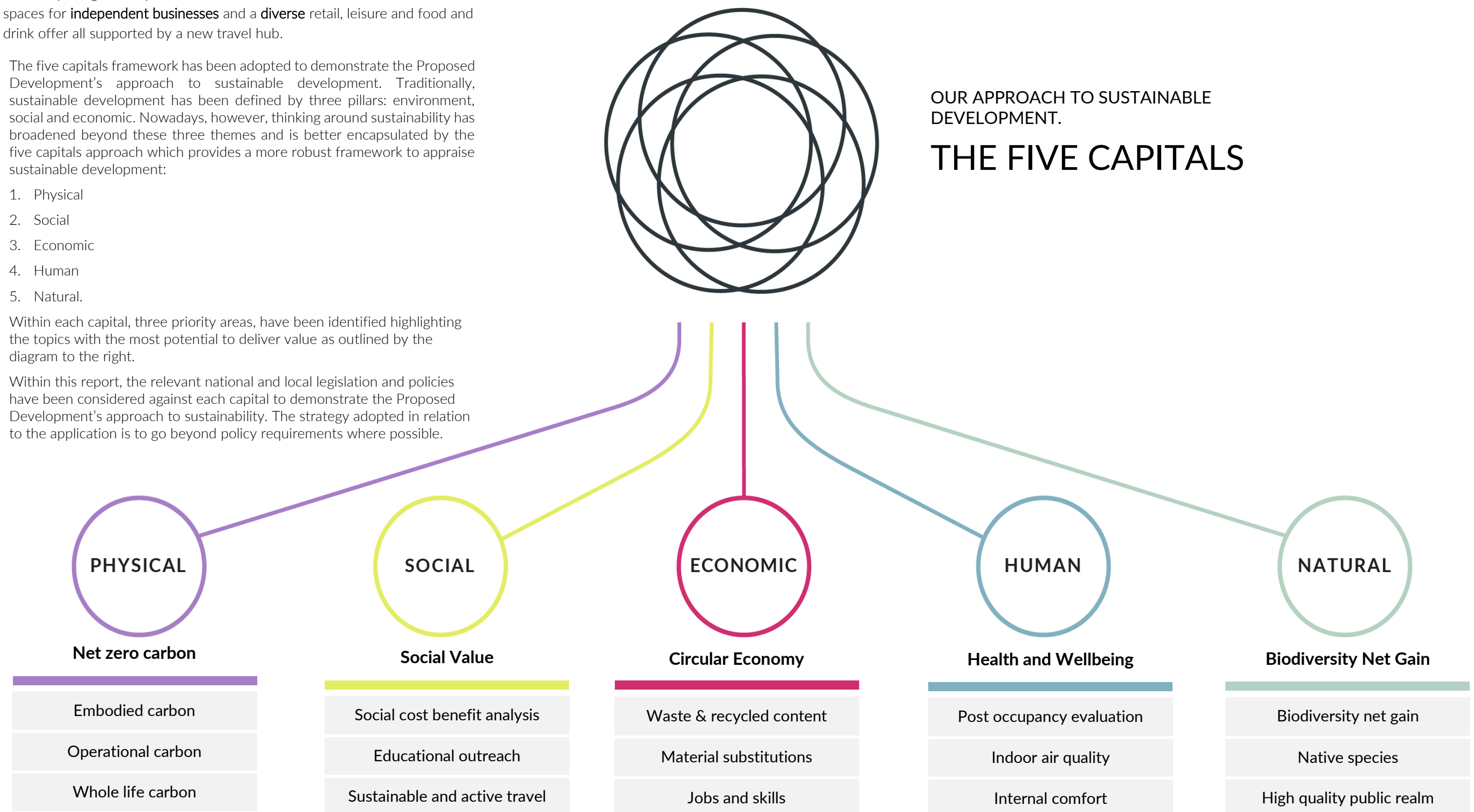
1. Physical
2. Social
3. Economic
4. Human
5. Natural.

Within each capital, three priority areas, have been identified highlighting the topics with the most potential to deliver value as outlined by the diagram to the right.

Within this report, the relevant national and local legislation and policies have been considered against each capital to demonstrate the Proposed Development's approach to sustainability. The strategy adopted in relation to the application is to go beyond policy requirements where possible.

OUR APPROACH TO SUSTAINABLE
DEVELOPMENT.

THE FIVE CAPITALS



1. Approach.

Purpose of this report.

This Sustainability Statement has been prepared by Hoare Lea on behalf of The Prestwich Regeneration LLP, a Joint Venture ('JV') between Bury Council and Muse Places, and is submitted in support of an application for hybrid planning permission at "Prestwich Village."

The key national and local legislation and policy documents are summarised in Section 2 and include the following:

- Climate Change Act 2008
- The Building Regulations 2010, Approved Documents Part L, F and O 2021
- Future Building Standards 2025
- Future Homes Standard 2025
- Heat and Building Strategy 2021
- National Planning Policy Framework 2023
- Adopted Bury UDP
- Emerging Bury Local Plan 2018
- Emerging Places for Everyone

These policies have been mapped against the targets in five capital framework to provide a direction on how the Proposed Development will meet the policy requirements and targets. The ambition for the project goes far beyond planning requirements, aiming to create an exemplar sustainable development.

The development proposals are intended to help Bury Council achieve its ambition of carbon neutrality by 2038 and fulfil the sustainable development objectives. The project vision is to,

"create exemplar, sustainable, net-zero developments that maximise social benefits and enhance the environment for generations."

This vision is underpinned by their Sustainable Development Strategy that includes minimum and aspirational targets under 5 pillars:

1. Net zero carbon
2. Social value
3. Circular economy
4. Health and wellbeing

Prestwich Village masterplan.

The Prestwich Village LLP are proposing a hybrid planning application formed of two components which include:

- Phase 1: Full Application Area (Plot A, B, C and G)
- Phase 2: Outline Application Area (Plot D, E and F)

"Hybrid application comprising: Full planning application proposing demolition of existing buildings and structures and the erection of a phased mixed use development including a Community Hub comprising flexible uses including library, offices, medical or health services (Use Classes F1 (a-f), F2(b), E(c), E(e), E(g)) and retail uses (Use Classes E(a), E(b) F2(a)) and Sui Generis (hot food takeaway and bar), a new Market Hall (Use Classes E(a), E(b) and Sui Generis (hot food takeaway and bar)), a Commercial Building comprising flexible uses including retail, offices, gymnasium (Use Classes E(a), E(b), E(c), E(d), E(g), F2(a), a Travel Hub comprising car parking and cycle parking (Sui Generis), a public square and public realm and associated landscaping, car parking provision, cycle storage and other associated works; and part Outline planning application (with all matters reserved) proposing a phased residential led mixed use development comprising residential (Use Class C3), flexible commercial, business, service, local community and learning uses (Use Classes E, F) and Sui Generis (hot food takeaway and bar), engineering works to Rectory Lane, new public realm, associated landscaping, car parking provision, cycle storage and other associated works."



2. Sustainability Policy.

This section outlines the national and local legislation and policies relevant to the sustainability of the Proposed Development.

2.1 National Policy

The national legislation and policies relevant to the sustainability of the Proposed Development include:

2.1.1 Climate Change Act (2008).

The Climate Change Act 2008 established the legal framework for the UK's long-term Greenhouse Gas (GHG) emission targets. The overall aim of the Act is to reduce GHG emissions by 80% by 2050, compared to the 1990 levels. The 2008 Act also introduced a carbon budgeting system which operates on a five-year basis to limit overall emissions within each period.

2.1.2 Climate Change Act 2008 (2050 Target amendment Order) 2019.

The 2008 Act was later amended by the Climate Change Act 2008 (2050 Target Amendment Order) 2019 which increased the 80% GHG emission reduction target to 100%. The carbon budget system remains in effect but with a modified aim of achieving net zero carbon by 2050.

2.1.3 The Building Regulations, Approved Document Part L 2021: Conservation of fuel and power.

Part L of the Building Regulations is the mechanism by which Government is driving reductions in the regulated CO₂ emissions from new buildings. The Proposed Development will comply with Part L of Approved Document Part L 2021 (ADL 2021) which was enforced on 15th June 2022.

The main updates under ADL 2021 (since its 2013 predecessor) are as follows:

- It is now significantly more challenging to achieve compliance with fossil fuel heating, therefore an all-electric heat pump strategy is likely to be the preferred solution;
- A varying carbon factor associated with grid electricity is 73% lower on average than ADL 2013;
- A new non-domestic building will deliver a 27% reduction in CO₂ emissions on average across the new-build non-domestic building mix relative to ADL 2013;
- A new domestic building will be required to deliver a 30% reduction in CO₂ emissions on average across the new-build domestic building mix relative to ADL 2013;
- A primary energy target has been introduced and the Fabric Energy Efficiency target retained;
- In order to satisfy Part L, dwellings must now comply with an additional target called the Target Primary Energy Rate (TPER) as well as improving upon the Target Carbon Emission Rate (TER) and Target Fabric Energy Efficiency (TFEE) as required under the previous regulations, and;
- Significant improvements in the construction fabric U-Values will be needed, with the new regulations updating building U-Value requirements.

2.1.4 The Building Regulations, Approved Document F (England), 2021: Ventilation.

Approved Document F was last fully updated in 2010, with amendments in 2013 and 2021. Volume 1 applies to domestic buildings and Volume 2 to non-domestic buildings.

The main updates to Approved Document F 2021 are provided below:

- New guidance on performance-based ventilation standards will allow designers to assess ventilation strategies against individual volatile organic compounds as an alternative route to using a total VOC limit.
- The whole dwelling ventilation rates per bedroom have increased by nearly 50% in ADF 2021, compared to ADF 2010. The ventilation rates for continuous extract and intermittent extract have not changed, and passive stack ventilation (PSV) is no longer included as an option in ADF 2021.

- Air quality monitors (which may be CO₂ monitors) are required to be installed in offices; in rooms where “singing, loud speech or aerobic exercise or other aerosol generating activities” take place; in rooms “where members of the public are likely to gather”; and in rooms that are maintained at both low temperatures and low humidities.
- Occupiable rooms in offices require outdoor air to be supplied at the greater of 10 l/s per person or 1 l/s.m² (the l/s.m² criterion is new).
- Common spaces in offices (including circulation spaces) require either natural ventilation openings of at least 1/50 of the floor area, or a mechanical supply of outdoor air at a minimum rate of 0.5 l/s.m² (note that this is less than the 1 l/s.m outlined in the Government's draft proposals.)
- Amended guidance on recirculating systems states that systems should be capable of operating in a mode that prevents the recirculation of air between different spaces, rooms, or zones, unless suitable filtering or cleaning systems are in place.
- Government proposals to increase required ventilation capacity in offices and specify ventilation rates in ‘high risk’ rooms, in response to Covid-19, have not been adopted. This is in anticipation of more concrete evidence on the impacts.

2.1.5 The Building Regulations, Approved Document O England, 2021: Overheating

In December 2021, the Government published a new Approved Document O, Overheating, to support a new Building Regulations (England) Requirement O1: Overheating mitigation. This subject was previously only tackled through provisions in Approved Documents L and F. The new requirements include the need for overheating to be considered in all new residential buildings in England.

Previously, Building Regulations had rudimentary methodologies to assess overheating in new dwellings (Part L1A Criterion 3). The new Approved Document aims to incorporate a formalised and more detailed approach to the assessment of and mitigation against overheating in new homes.

2.1.6 Future Buildings Standard 2025¹.

The Government consulted on the forthcoming changes to the Building Regulations for non-domestic buildings between January and April 2021. The consultation was the second part and built on the Future Homes Standard consultation which set out energy and ventilation standards for non-domestic buildings, existing homes and includes proposals to mitigate against overheating in residential buildings. The consultation establishes the pathway to highly efficient non-domestic buildings which are zero carbon ready, better for the environment and fit for the future.

The Future Buildings Standard 2025 is expected to deliver the following for new non-domestic buildings:

- From 2025, the Future Buildings Standard will deliver new non-domestic buildings that are zero-carbon ready, using low-carbon heat and the best fabric standards possible.

2.1.7 The Future Homes Standard 2025

This document sets out the Government's response to the first stage of a two-part consultation on proposed changes to Part L (Conservation of fuel and power) of the Building Regulations:

- From 2025, the Future Homes Standard will deliver homes that are zero-carbon ready: New homes will not be built with fossil fuel heating and designed to ensure no further energy efficiency retrofitting will be required to enable them to become zero-carbon as the electricity grid decarbonises.
- The Future Buildings Standard introduced an interim uplift in Part L standards that deliver a meaningful reduction in carbon emissions.
- New homes will be expected to produce 31% less CO₂ emissions compared to current standards.
- All proposals set out within the standard help to reduce the performance gap by improving the accuracy of as-built energy calculations and providing clearer information about the as-built specifications of new buildings to both building control bodies and homeowners.

¹ <https://www.gov.uk/government/consultations/the-future-buildings-standard>

- Ensures transitional arrangements to provide all developers with certainty about the standards they are building to.
- To ensure as many homes as possible are being built in line with new energy efficiency standards, transitional arrangements will now apply to individual homes rather than an entire development and the transitional period will be one year.

2.1.8 Heat and Buildings Strategy 2021.

Released in October 2021, the Government's Heat and Buildings Strategy outlines the mechanisms required to reduce the cost of low-carbon heating technologies to support transition away from fossil fuels.

All privately rented commercial buildings are required to have minimum EPC band B by 2030 in England and Wales. Further, all commercial buildings >1,000 m² will require an operational energy assessment, completed as part of the Part L2A 2021 update. The building log book should include a forecast of the building's actual energy use (kWh/year) broken down by fuel type, including all metered energy uses and unregulated loads. The forecast may be determined using design calculations, energy benchmarks, an energy forecasting methodology such as CIBSE's TM54 or any other building modelling or spreadsheet tools.

2.1.9 National Planning Policy Framework 2023.

The updated National Planning Policy Framework (NPPF) was published in July 2021 and has since been amended in September 2023. The NPPF sets out the Government's strategy on the delivery of sustainable development.

The NPPF places responsibility for policy making with the Local Planning Authority, who shall communicate their policies through Local Plans and facilitate the creation of Neighbourhood Plans. The NPPF states that there is a presumption in favour of sustainable development. The following is extracted from paragraph 11 of the NPPF:

"Plans and decisions should apply a presumption in favour of sustainable development. For plan-making this means that:

- a. all plans should promote a sustainable pattern of development that seeks to: meet the development needs of their area; align growth and infrastructure; improve the environment; mitigate climate change (including by making effective use of land in urban areas) and adapt to its effects;
- b. strategic policies should, as a minimum, provide for objectively assessed needs for housing and other uses, as well as any needs that cannot be met within neighbouring areas, unless:
 - i. the application of policies in this Framework that protect areas or assets of particular importance provides a strong reason for restricting the overall scale, type or distribution of development in the plan area; or
 - ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.

For decision-taking this means:

- a. approving development proposals that accord with an up-to-date development plan without delay; or
- b. where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:
 - i. the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or
 - ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole."

In respect of meeting the challenge of climate change the NPPF, paragraph 155 sets out that:

"To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
- b. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- c. identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers."

2.2 Local Policy.

2.2.1 Bury Unitary Development Plan (UDP)²

The Bury UDP was adopted on 29th August 1997 to act as a guide for future development or protection of land within the borough. Until the new Local Plan is produced the UDP will continue be used to inform planning decisions.

2.2.2 The Emerging Bury Local Plan³.

The emerging Bury Local Plan sets out the policies Bury council are looking to adopt for future developments. The following policies, relevant to sustainability, have been mapped against the five capitals targeted by the Proposed Development. It should be noted that the emerging Bury Local Plan policies listed below are policy directions and have not been adopted.

Table 1 Summary of relevant policies from Bury's Local Plan against the five capitals

Policy	Policy description
Net Zero Carbon	
Bury UPD	
EN4- Energy conservation	The Council will encourage development which contributes to energy conservation in the Borough. The use of renewable energy resources and the incorporation of energy efficiency measures in built development and the transport system will be encouraged.
The Emerging Bury Local Plan	
Emerging Policy OP3 Climate Change	Establishes the Borough's proactive approach towards mitigating against and adapting to the cause and effects of climate change.
Emerging Policy IN1 Renewable and Low Carbon Energy Infrastructure	Supports the development of renewable and low carbon energy infrastructure as a means of contributing towards the Greater Manchester's Net Zero targets.
Social Value	
Bury UPD	
OL3- Urban Open Space	The Council will seek to ensure that valuable areas of urban open space are retained wherever possible for their amenity value.
The Emerging Bury Local Plan	
Emerging Policy TC1 Hierarchy and Role of Centres	Seeks to maintain and enhance the vitality of the Borough's hierarchy. The hierarchy comprises the town, district, local and neighbourhood centres; the policy seeks to make these the key focus of new developments, with additions to the retail and residential sphere deemed particularly appropriate to cater for the area's major population growth.
Emerging Policy TC2 Town Centre Development Opportunities	Encourages the development and regeneration of the key sites within the Borough centres. The Policy is in place to support aims to capitalise on opportunities to strengthen the vitality and resilience of the town centres.
Emerging Policy CF1 Community Facilities	Shows consideration for the important contribution community facilities make to quality of life. The Policy acknowledges the need to

² <https://www.bury.gov.uk/planning-building-control/policy-and-projects/planning-policy/adopted-bury-unitary-development-plan>

Policy	Policy description
	safeguard existing community sites and premises, restrict the loss of these facilities and outline key considerations under which new and improved community facilities will be assessed.
Emerging Policy AC1 Connectivity and Accessibility	This policy looks to ensure new significant developments are located in areas which encourage sustainable transport choices by reducing the length and number of journeys and overall improving connectivity and accessibility.
Emerging Policy AC2 Transport Requirements in New Development	Encourages new developments coordinate with transport planning to optimise the use of public transport, cycling and walking over the use of motorised vehicles as well as improve accessibility. The policy also establishes the requirement for all proposals to set out the generated travel demand created by the development.
Emerging Policy IN3 Digital and Communications Infrastructure	Sets out the provisions for enhanced electronic communications infrastructure and establishes the key considerations when dealing with proposals for communications infrastructure.
Circular economy	
The Emerging Bury Local Plan	
Emerging Policy NE9 Waste Development	Ensures that all development proposals will look to manage waste disposal in line with the policy framework established through the Greater Manchester Joint Waste Development Plan Document which sets out Greater Manchester's future waste management requirements.
Emerging Policy EC3 Employment Generating Areas	Employment Generating Areas (EGAs) have been established to encourage investment for solely employment purposes in specified areas within the Borough, to provide certainty to businesses operating within them and to maintain existing and future employment opportunities for the Borough's local population.
Health and Wellbeing	
Bury UPD	
EN7- Pollution control	The Council will seek to control environmental nuisance and minimise pollution levels associated with development by limiting the environmental impact of pollution, wherever possible, in conformity with current legislation and prescribed standards
EN9- Landscape	The Council will seek to control environmental nuisance and minimise pollution levels associated with development by limiting the environmental impact of pollution, wherever possible, in conformity with current legislation and prescribed standards.
OL3- Urban Open Space	The Council will seek to ensure that valuable areas of urban open space are retained wherever possible for their amenity value.

³ <https://www.bury.gov.uk/asset-library/bury-local-plan-policy-directions.pdf>

Policy	Policy description
The Emerging Bury Local Plan	
Emerging Policy OP2 Health and Wellbeing	Ensures that all proposals for developments make a positive contribution to the health and wellbeing of the local community.
Emerging Policy OP4 Air Quality and Pollution Control	The policy has been established to ensure any new or existing developments do not contribute towards unacceptable levels of pollution and in turn are not affected by unacceptable levels of pollution. The policy also sets out what factors should be considered when assessing the pollution associated with a development and any mitigation measures.
Enhancing biodiversity	
Bury UPD	
EN5- Flood protection and defence	The Council will seek to control development in a manner consistent with flood protection and the maintenance of flood defence systems
EN6- Conservation of the natural environment	The Council will retain, protect and enhance the natural environment of the Borough, particularly in relation to areas of ecological, wildlife and geological importance.
EN9- Landscape	The Council will seek to protect, conserve and improve the landscape quality of the Borough, and will encourage the enhancement of landscapes, where appropriate.
EN10- Environmental improvement	The Council will seek to improve the environmental quality of the Borough, within which priority will be given to an on-going environmental improvement programme.
The Emerging Bury Local Plan	
Emerging Policy OP5 Flood Risk Management	Looks to manage flood risk by ensuring any proposals for new developments comply with the flood risk management hierarchy. New developments should not increase flood risk and where possible reduce overall risk.
Emerging Policy OP6 Efficient Use of Land	Policy OP6 is in place to ensure all new developments make efficient use of the land.
Emerging Policy NE1 Green Infrastructure	Looks to protect and enhance multi-functional green infrastructure and ensure any new developments or changes to existing buildings that could negatively impact green infrastructure networks are avoided, where possible.
Emerging Policy NE 2 Biodiversity	Policy NE2 is for the maintenance and enhancement of the Borough’s biodiversity assets. The policy seeks to ensure that any adverse biodiversity impacts are minimised and a net gain is achieved where possible.

These policies are discussed in turn across Section 3.

2.2.3 Bury Council’s Climate Action Strategy 2021

The following critical success factors have been identified within “Bury Council’s Climate Action Strategy 2021” in order for them to meet their carbon-neutral target:

- Eliminate emissions from gas boilers and vehicles
- Rapidly decarbonise public and private sector operations
- Ensure buildings are carbon neutral
- Maximise renewable heat and power generation
- Enhance green and blue spaces, improving them for sustainable uses and biodiversity
- Engage local communities to increase understanding of the climate emergency
- Source electricity from certified renewable or low-carbon sources
- Challenge the business sector to adopt sustainability as a central tenant
- Incorporate carbon offsetting into the design process when determined to be absolutely necessary

The ambitions above have been developed into nine priority action areas including energy supply; homes, workplaces and public buildings; low carbon travel; consumption and waste; food; natural environment; green economy; environmental justice; climate resilience and adaptation.

2.2.4 Emerging Places for Everyone Plan.

Nine of the ten councils in Greater Manchester have submitted the Places for Everyone⁴ Joint Development Plan to the Secretary of State for Levelling Up, Housing and Communities for independent review. Examination hearings were later held in November 2022 and July 2023. Following the hearings, a series of modifications for Greater Manchester’s Places for Everyone plans were introduced to ensure the emerging plan is sound and legally compliant. These modifications must now be subject to a consultation. Assuming the plan is approved, it sets out a framework for sustainable, inclusive growth across the nine districts. Of particular reference to the Proposed Development, the emerging plan sets out the following strategic objectives:

- Objective 2: Prioritise the use of brownfield land;
- Objective 6: Focus new development within 800m of sustainable transport hubs and ensure it is designed to encourage and enable active and sustainable travel;
- Objective 7: Promote carbon neutrality of new development by 2028, reduce car dependency, facilitate provision of infrastructure for cleaner vehicles and improve energy efficiency and generation of renewable and low carbon energy; and
- Objective 8: Enhance special landscapes, green infrastructure, biodiversity and geodiversity. Promote the role of green space in climate resilience and reducing flood risk.

The draft Policy JP-S 2 Carbon and Energy includes an expectation that, up to 2028, new development will follow the energy hierarchy to achieve operational net zero carbon. From 2028 onwards, the development will seek to achieve net zero carbon ‘in construction’ too.

⁴ <https://www.greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/places-for-everyone/>

3. Sustainable Development Strategy.

The five capitals framework is the holistic approach adopted to demonstrate the Proposed Developments approach to sustainability.

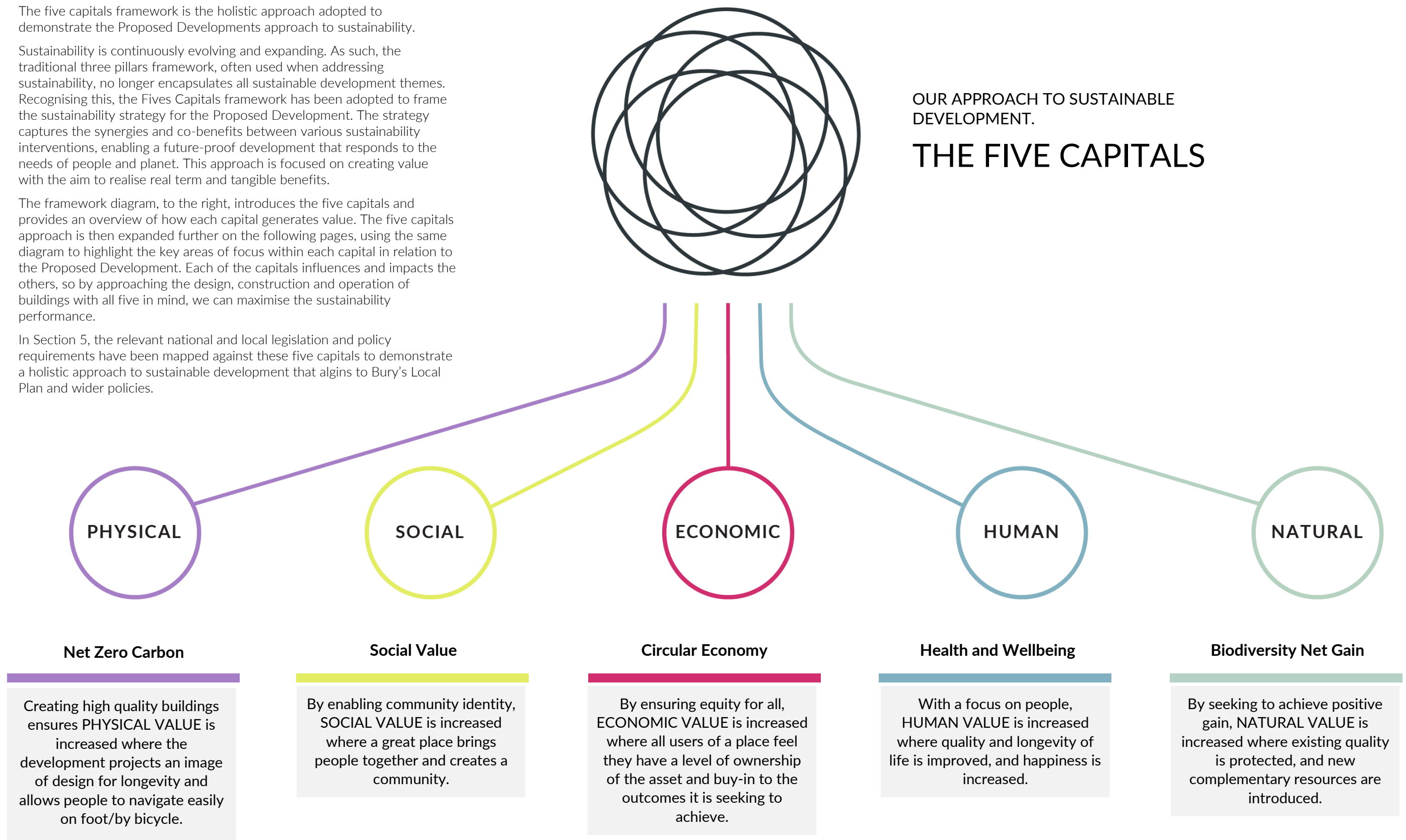
Sustainability is continuously evolving and expanding. As such, the traditional three pillars framework, often used when addressing sustainability, no longer encapsulates all sustainable development themes. Recognising this, the Fives Capitals framework has been adopted to frame the sustainability strategy for the Proposed Development. The strategy captures the synergies and co-benefits between various sustainability interventions, enabling a future-proof development that responds to the needs of people and planet. This approach is focused on creating value with the aim to realise real term and tangible benefits.

The framework diagram, to the right, introduces the five capitals and provides an overview of how each capital generates value. The five capitals approach is then expanded further on the following pages, using the same diagram to highlight the key areas of focus within each capital in relation to the Proposed Development. Each of the capitals influences and impacts the others, so by approaching the design, construction and operation of buildings with all five in mind, we can maximise the sustainability performance.

In Section 5, the relevant national and local legislation and policy requirements have been mapped against these five capitals to demonstrate a holistic approach to sustainable development that aligns to Bury's Local Plan and wider policies.

OUR APPROACH TO SUSTAINABLE
DEVELOPMENT.

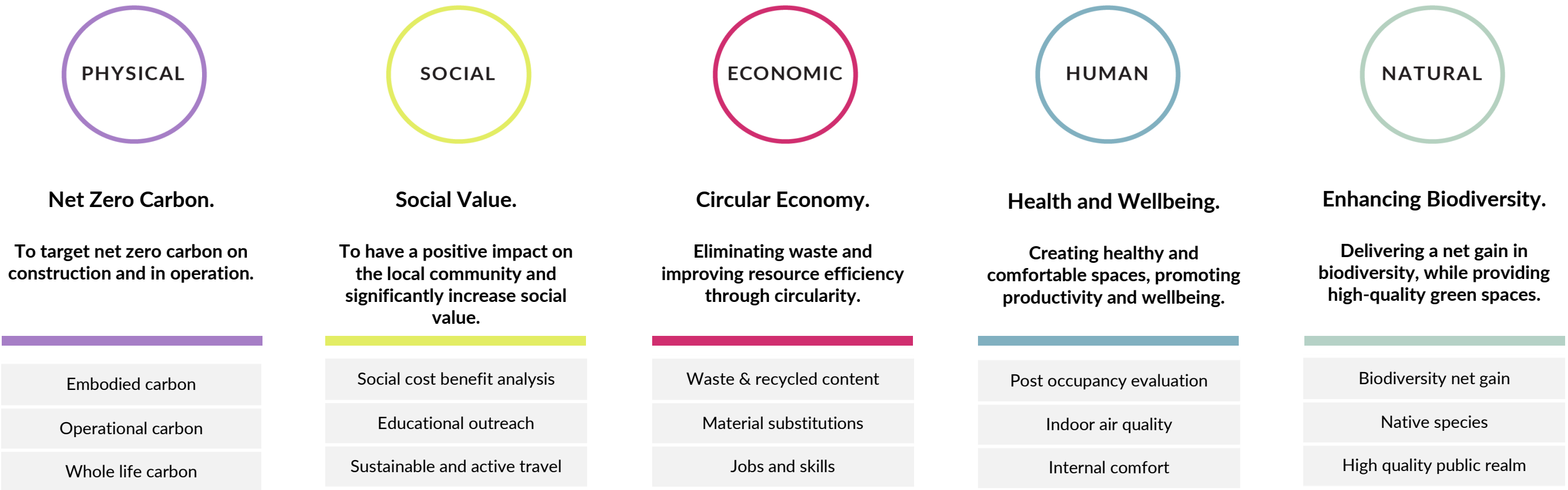
THE FIVE CAPITALS



4. Project vision.

The Sustainable Development Strategy captures opportunities to have a positive impact across all five capitals, ensuring a broad approach to sustainability which capitalises on synergies and co-benefits between social and environmental value, as well as considering sustainability through the lifecycle of the assets, to maximise positive effects as a result of the Proposed Development. As such, the strategy is structured around the five capitals, with three priority areas of focus identified within each running through these are underlying ambitions for sustainability through each phase of development. Each priority area will address the following to ensure long-term sustainability and value creation.

- Design: Design solutions will strive for positive environment impact and contribute to a place which is restorative and enjoyable to spend time in
- Construction: During construction the development will utilise environmentally conscious practices and provide exemplar working conditions
- Operation: The building will achieve high standards of operational performance and provide continued opportunities and support for the local community, delivering ongoing social value



Net Zero Carbon.

To target net zero carbon on construction and in operation.

- Relevant legislation and policies
- Climate Change Act (2008)
 - Climate Change Act 2008 (2050 Target amendment Order) 2019.
 - Building Regulations, Approved Document Part L 2021: Conservation of fuel and power.
 - Future Buildings Standard 2025
 - Future Homes Standard 2025
 - Heating and Building Strategy 2021
- Bury Council's Climate Action Strategy 2021
- Bury UDP
- EN3- Energy conservation
- Emerging Bury Local Plan – Policy directions:
- Policy OP3 Climate Change
 - Policy IN1 Renewable and Low Carbon Energy

Physical capital

The physical infrastructure in our built environment, from high quality buildings to user friendly and connected transport, sits within the natural environment, and relies on nature for its functionality. This will provide the foundation for thriving communities and prosperous economies.

High quality infrastructure lasts longer and produces less waste, consuming less materials and generating less carbon emissions. Sustainable construction methods enable the recovery of materials, reducing the need for further extraction of natural resources decreasing the negative impacts of this on air-pollution, health & wellbeing, biodiversity loss and climate change.

It provides people with better work and home environments, with improved access to transport networks for work, and accessing education and leisure activities.

Development Plot	Part L Assessment		Predicted EPC Rating
Plot A (Flexible Use – Library, Offices, Medical or Health Services & Retail)	BER < TER BPER < TPER	(PASS) (PASS)	A
Plot B (Flexible Use – Office/Gymnasium & Retail)	BER < TER BPER < TPER	(PASS) (PASS)	A
Plot C (Market Hall)	BER < TER BPER < TPER	(PASS) (PASS)	A
Plot G (Travel Hub)	N/A		N/A

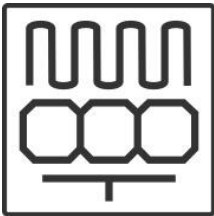
Figure 1: Part L compliance for each plot.

HOW THE DEVELOPMENT RESPONDS TO CITED POLICY DOCUMENTS

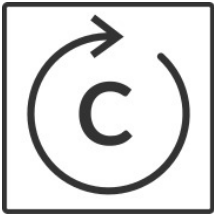
EMBODIED CARBON



OPERATIONAL CARBON



WHOLE LIFE CARBON



Physical value in the Prestwich Village masterplan

The Proposed Development will aim to have a limited impact on climate change by reducing the CO₂ emissions associated with the construction and operation of the development. This is discussed in further detail in the Chapter 11 Climate Change Chapter in the Environmental Statement.

The new buildings will be designed in line with the Building Regulations 2021, the Future Buildings and Homes Standard 2025 and the Heating and Building Strategy 2021. An assessment of performance against Approved Document Part L Volume 2 has been undertaken for each plot based on the proposed building form, building fabric and building services installations. Each plot complies with the Target Emission Rate (TER) and Primary Energy Rate TPER) as shown by Figure 1. Further, each plot is predicted to achieve an EPC rating of A, demonstrating compliance with the targets set out in the Heating and Building Strategy 2021 ahead of the 2030 deadline.

The Proposed Development looks to reduce embodied carbon in construction by embedding circular economy principles and selecting materials on the basis of their carbon impact, exploring alternatives and capitalising on the opportunities of reclaimed and recycled materials. In order to minimise embodied carbon, various structural options have been considered through design development with each one appraised to understand its impact. Where feasible, materials with low embodied carbon have been selected, such as the terracotta facade panels and the use of concrete with higher than standard GGBS content. Opportunities for the use of reclaimed or recycled materials have also been explored. Further, the development will endeavour to source materials locally to reduce embodied carbon by limiting transportation related emissions. All materials, where viable, will additionally be procured through sustainable sources and products will be preferred with environmental certification such as BES6001 and ISO14001 certified supply chains. Any timber will be sourced from sustainable sources accredited by the Forest Stewardship Council (FSC).

Maintaining low CO₂ throughout the buildings whole lifespan is essential; where possible preference will be given to robust materials to enable a long life with low maintenance to reduce emissions associated with replacing building components.

In addition, the Proposed Development will seek to maintain low CO₂ emissions and energy usage during the operation of the development through enhanced u-values and air permeability, efficient building services and renewable energy generation from roof-mounted PVs on the pitched roof of Plot A and B.

The Proposed Development is designed to be Net Zero Carbon Ready in operation. Space heating and/ or cooling and hot water will be provided by Air Source Heat Pumps which will be located within dedicated external plant enclosures. Photovoltaic panels (PVs) will be fitted on Plot A and B to generate electrical energy. As the national grid decarbonises there is potential for the development to become Zero Carbon in operation.

The decarbonisation of the grid has resulted in the carbon intensity of mains gas being higher than for electricity, and therefore strengthening the argument that moving forward building services strategies should be electric led to support wider net zero-carbon ambitions; an approach that is supported by the updated Building Regulations and forthcoming Future Homes and Buildings Standard. No gas combustion devices will be installed on site. Throughout the design stage the operational performance of the building has been assessed. Design for Performance operational energy modelling has been completed using bespoke benchmarks to suit the buildings' intended use and expected hours of operation.

Water consumption will be minimised through efficient fittings and careful management strategies to limit resource requirements, associated CO₂ emissions and ensure that any future impact of water scarcity is limited.

Social Value.

To have a positive impact on the local community and significantly increase social value.

Relevant legislation and policies

Bury UDP:

- OL3- Urban Open Space

Emerging Bury Local Plan – Policy directions:

- Policy TC1 Hierarchy and Role of Centres
- Policy TC2 Town Centre Development Opportunities
- Policy CF1 Community Facilities
- Policy AC1 Connectivity and Accessibility
- Policy AC2 Transport Requirements in New Development
- Policy IN3 Digital and Communications Infrastructure

Social capital

People are at the centre of the built environment, and it is vital that development supports all the communities who are impacted by it, from end users to local residents. Delivering social value within development projects ensures that the development serves the needs of these communities and contributes to the creation of a more equitable society.

Social value builds on the foundations of the physical infrastructure to create engaging places that people can enjoy spending time in. It ensures that everyone can feel part of a diverse and inclusive community with a strong identity.

Forming partnerships with other organisations harnesses specific expertise to continue generation of social value in operation for all stakeholder groups.

HOW THE DEVELOPMENT RESPONDS TO CITED POLICY DOCUMENTS

SOCIAL COST
BENEFIT ANALYSIS



EDUCATIONAL
OUTREACH



SUSTAINABLE &
ACTIVE TRAVEL



Social value in the Prestwich Village masterplan

The Prestwich Regeneration LLP is highly engaged in delivering social value in Prestwich, framing the masterplan around a community hub and provision of a diverse mix of retail and leisure facilities, as well as providing improved access to transport links.

The Proposed Development will deliver a number of new buildings which will provide space for new retail, food/beverage, community, GP and health care services, and office spaces within the Borough's centre as well as new residential dwellings, a Travel Hub and public realm improvements. The Proposed Development will also provide public spaces for recreational use and increased social value. The creation of these new community facilities and housing will support the local residents and improve quality of life as well as attract new economic opportunities, through providing employment and attracting people to Prestwich town centre.

A social cost benefit analysis has been completed to demonstrate the social value created. Extensive stakeholder engagement has been carried out to support BREEAM and maximise project success.

Educational outreach is an important part of the sustainability of the project, and efforts will be taken to develop links with local education facilities, especially during the construction phase when opportunities for apprenticeships and work experience will be explored.

The Site's town centre location encourages sustainable travel alternatives with many building users anticipated to arrive at the building on foot, by bike or via public transport. The Proposed Development is highly accessible by public transport with the Site benefiting from excellent access to local bus, train and tramline routes. The masterplan will support sustainable and active travel by improving links to local public transport networks and providing enhanced pedestrian links and cyclist facilities, including secure cycle storage facilities. EV charging will be included in the Travel Hub.

The Travel Hub will provide a total of 275 new car parking spaces in Prestwich town centre, of which 20 will be accessible (including 2 Electric Vehicle spaces), 2 reserved for the City Car Club and 26 equipped with EV charging. Additional parking spaces will also be located within each residential plot to provide residents with onsite car parking. Within each residential plot between 7-12 mixed standard and accessible parking spaces will be provided.

The Proposed Development will be equipped with high quality electronic communication services, such as access to high speed broadband, to support the enhancement of electronic communications infrastructure within the Borough. This infrastructure is essential to the development of a sustainable local economy, providing increased educational opportunities and enhancing community facilities.

Circular Economy.

Eliminating waste and improving resource efficiency
through circularity.

Relevant legislation and policies

Bury Council's Climate Action Strategy 2021

Emerging Bury Local Plan – Policy directions:

- Policy NE9 Waste Development
- Policy EC3 Employment Generating Areas

Economic capital

A regenerative economy is one which provides opportunity for everyone to participate, working to reduce wealth inequality without causing environmental degradation.

Economic capital provides the foundation of this and relies on the infrastructure of offices, commercial premises, transport, and homes to achieve it. As flexible and hybrid working practices become more prevalent, it is key that we harness the built environment to capture the opportunities that this provides for innovation and improved quality of life.

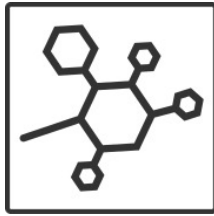
Local businesses support the creation of local character and provide people with the specific services and amenities they need, so supporting them to become future-proof and remain successful is key. This brings income for the local population and increases economic resilience.

HOW THE DEVELOPMENT RESPONDS TO CITED POLICY DOCUMENTS

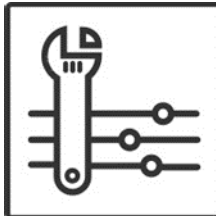
WASTE & RECYCLED
CONTENT



MATERIAL
SUBSTITUTIONS



JOBS & SKILLS



Economic value in the Prestwich Village masterplan

Circular design solutions will ensure spaces within the building are flexible and can be used for multiple purposes throughout the lifetime of the development, as well as fully adapted to suit other uses in the future.

A Circular Economy Statement [REP-2324996-5A-SH-20231021-Prestwich Circular Economy Statement-Rev01] has been produced to outline how circular economy principles have been embedded through design. Opportunities to reduce waste and increase the reused and recycled content of building resources have been explored. The Proposed Development has been designed for longevity, adaptability, and flexibility to ensure the buildings and components within are resilient to future climate conditions and can be replaced, updated and modified as and when required. These opportunities might not be restricted to the building fabric alone, but also the building services where it might be possible to reduce waste through leasing and product as a service models.

A number of existing buildings on site are to be demolished to enable construction of the proposals. Prior to demolition, opportunities to identify any materials that could be salvaged for re-use on site or elsewhere will be explored. This process will reduce the need for virgin materials to be used for aggregates and other such applications. Waste that can't be reused on site will be processed through an approved waste management contractor and monitored as part of a Construction Environmental Management Plan (CEMP). Careful waste management procedures will be put in place during construction and in operation to reduce the volume of waste sent to landfill during the lifetime of the building. The principles of the waste hierarchy will be applied at each stage.

A Resource Management Plan, forming part of the CEMP will be developed early in the project development to identify the most appropriate way to monitor and minimise waste, and encourage recycling through construction.

It is expected that the Proposed Development will produce moderate volumes of waste in operation which will be carefully managed through dedicated recyclable waste storage areas to maximise recycling rates and improve upon the existing scenario where possible. To encourage or move towards closed loop waste management, suitable waste storage and facilities will be provided allowing for the segregation of recyclable and non-recyclable general waste.

The selection of materials will also consider end of life and recyclability. Materials that can be salvaged at the end of life will be incorporated wherever possible to reduce the instances of waste produced in the future.

The Proposed Development will support the local business community, setting high standards of sustainable and ethical procurement through construction and operation, and supporting suppliers to achieve these. Supply chain engagement could lead to innovative solutions to provision of goods and services, ensuring resources are locally sourced and keeping economic gains within the community.

The Proposed Development will create jobs during construction and operation, with local businesses and suppliers used where possible, which will support the local economy. In creating jobs which are accessible to local people who need them or who may not have the opportunity to reach them through a traditional route, and ensuring these jobs are good quality, the project can contribute to significant regeneration.

Health and Wellbeing.

Creating healthy and comfortable spaces, promoting productivity and wellbeing.

Relevant legislation and policies

- Approved Document Part O 2021: Overheating

Bury Council's Climate Action Strategy 2021

Bury UDP

- EN7- Pollution control
- EN9- Landscape
- OL3- Urban Open Space

Emerging Bury Local Plan – Policy directions:

- Policy OP2 Health and Wellbeing
- Policy OP4 Air Quality and Pollution Control

Human capital

The built environment has a significant impact on our health and wellbeing through physical infrastructure, presence of nature and opportunity for social connection. Health inequality is a key global challenge and good design and well considered actions can contribute to reducing this.

Improved health & wellbeing positively contributes to our productivity, creativity and ability to innovate. Human capital is the value of what we create as people; knowledge, skills innovation and impact, and providing a good quality built environment in public realm and indoor spaces supports this.

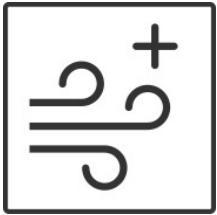
Creating places that enable movement and encourage healthy eating can improve our physical wellbeing and providing restorative spaces and beautiful surroundings can improve our mental wellbeing. Good design embraces the synergy between these, taking an inclusive approach to reduce health inequality.

HOW THE DEVELOPMENT RESPONDS TO CITED POLICY DOCUMENTS

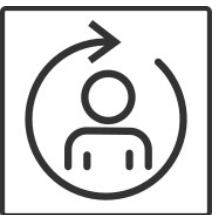
POST OCCUPANCY EVALUATION



INDOOR AIR QUALITY



INTERNAL COMFORT



Human value in the Prestwich Village masterplan

Health & wellbeing will be supported through environmental quality in design i.e. indoor air quality, optimised daylight provision, thermal and acoustic comfort. The Proposed Development has been designed in line with the requirements set out in the Building Regulations approved Document Part O and ensures unwanted solar gains are limited and that adequate ventilation is in place to remove excess heat. This will create a highly productive space for work and leisure for people to enjoy spending time in.

The consultation process has informed the iterative design process which will continue through the detailed design, construction and operation.

Cycle facilities will be provided to encourage active travel and promote healthy lifestyle choices. Alongside this, the community hub will provide space for community events, clubs, arts and culture, providing inclusive, safe spaces which support the local residents. The regeneration of this town centre location will help improve and contribute towards community wellbeing.

The building services design has been carefully considered to enable the indoor environment to be free of pollutants. Building services plant have been selected based on efficient and ultra-low emissions of NOx SOx and COx (where applicable), and will not substantially contribute to local air pollution.

Measures to mitigate potential sources of light pollution as a result of the new buildings, have been considered and implemented where possible, to reduce impacts felt by the residential buildings surrounding the Development.

Enhancing Biodiversity.

Delivering a net gain in biodiversity, while providing high-quality green spaces.

Relevant legislation and policies

Bury Council's Climate Action Strategy 2021

Bury UDP

- EN5- Flood Protection and Defence
- EN6- Conservation of the natural environment
- EN9- Landscape
- EN10- Environmental improvement

Emerging Bury Local Plan – Policy directions:

- Policy OP5 Flood Risk Management
- Policy OP6 Efficient Use of Land
- Policy NE1 Green Infrastructure
- Policy NE 2 Biodiversity

Natural capital

The natural environment is impacted by all human activity, and the construction industry has historically had a significant role in its degradation. Nature also has a positive impact on our health & wellbeing and provides enjoyable spaces to socialise.

Nature provides us with the ecosystem services we need to survive and makes the planet more resilient to extreme weather events and physical climate impacts. Extraction of natural resources causes further degradation to nature and increases the risk of these impacts.

Design of built environment infrastructure which minimises the use of natural resources and generation of waste, and which integrates nature as part of the building and public realm, contributes to climate resilience. Conserving water rebalances the water cycle and reduces carbon emissions, minimising waste reduces emissions and pollution, and use of nature-based solutions provides passive insulation and cooling, improved drainage and biodiversity net gain, all of which improve climate adaptation.

HOW THE DEVELOPMENT RESPONDS TO CITED POLICY DOCUMENTS

BIODIVERSITY NET
GAIN



NATIVE
SPECIES



HIGH QUALITY
PUBLIC REALM



Natural value in the Prestwich Village masterplan

The development will re-vitalise the area and improve the quality of both townscape and public realm, making efficient use of land in this location. The design will harness nature for climate resilience; to mitigate overheating and flooding, create biodiversity net gain and provide long term habitats for wildlife, through incorporating green roofs and tree planting.

The site is not located within or adjacent to any statutory or non-statutory designated ecological sites and there are no Tree Preservation Orders designated on or adjacent to the site. However, to further promote biodiversity net gain, existing trees will be retained where possible and 120 new trees are to be planted. Native and non-native plants and species will be introduced.

The landscape designs have been developed to deliver Biodiversity Net Gain (BNG) of 40.78% through the provision of enhanced public realm, rain gardens and green roofs.

The site is not at risk of fluvial flooding though, there are small areas of the site's northern extent which are subject to low-medium risk of surface water flooding. The Proposed Development will incorporate rain gardens and plants to help ensure no increase in surface runoff is caused as a result of the development and that measures are in place to prevent pollutants reaching the water streams. There should be no increase in flood risk as a result of the development.

The Proposed Development will incorporate green roofs on Plot A and C, to enhance biodiversity and operate as a nature based Sustainable Drainage System (SuDS) solution. As well as nature-based SuDS solutions, the Proposed Development will also incorporate multiple below ground attenuation tanks to store excess rainwater and release it in a controlled manner.

The public realm around the buildings will be designed to fit seamlessly into the local character, through introducing outdoor seating and recreational areas, and improving the experience for the local community through access to greenspace.

5. Summary

The development proposals are intended to help Bury Council achieve its ambition of carbon neutrality by 2038 and work towards the objectives for sustainable development as set out in Bury’s local strategies and emerging policies.

The above report highlights the key legislation and policies that the development must comply with against the Five Capitals Framework.

The key approaches and findings within each sustainable development themes are as follows:

Capital	Summary
 Net Zero Carbon.	– Comply with the latest Building Regulations Part L requirements – Achieve EPC A – Ensure selection of low carbon materials through ongoing LCA reviews – Deliver an all-electric scheme served by low carbon ASHPs – Renewable energy provision through roof-mounted PV arrays on Plots A and B – Aim to be Net Zero Carbon Ready in operation
 Social Value.	– Create new community facilities and housing for local residents which will: – attract people to Prestwich town centre – bring new economic opportunities through additional employment – enhance possibility for social interaction – improve quality of life – Improve transport links, provide a new travel hub and encourage sustainable active travel.
 Circular Economy.	– Circular economy principles have been embedded in the design by designing for longevity, adaptability and flexibility – Efforts have been taken to reduce materials used in construction and prioritise reused and recycled resources.
 Health and Wellbeing.	– The Proposed Development has been designed with the end users in mind, ensuring the spaces are comfortable and cater to the needs of the community. – Cycle storage facilities promote active travel to support health and well-being – Community spaces and improved public realm promote well-being
 Enhancing Biodiversity.	– The Proposed Development will achieve a Biodiversity Net Gain (BNG) of at least 40.78% through green roofs and tree planting. – The green roofs will also act as a nature-based SuDS, under-ground attenuation tanks will also be incorporated.

Beyond planning.

This strategy responds to National Policy including Building Regulations Part L, F and O, as well as Bury’s local strategies and policies such as Bury Council’s Climate Action Strategy 2021, the Bury UDP and the emerging Local Plan, responding to the specific needs of the local area. This has provided a foundation to build upon, but the aims and objectives of the charter go far beyond what is required by planning, setting a leading example of sustainability in the region.

The charter is aligned with the principles in the five capital Sustainable Development Strategy; the targets within contribute to fulfilling these overarching themes of net zero carbon, social value, circular economy, health and wellbeing, enhancing biodiversity and wider sustainability commitments. The charter has also been benchmarked against UKGBC guidance on carbon, circular economy, climate resilience and social value.

Accreditations.

All plots within the development are expected to undergo assessment against BREEAM New Construction criteria tailored to suit their function/use. A minimum ‘Excellent’ rating will be targeted, with an aspiration for ‘Outstanding’.

Appendix A- Energy Strategy

The Prestwich Regeneration LLP

Prestwich Village

Energy Strategy Report

17th January 2024

Ref: 4007-HAN-ME-XX-T-ME-0005

Revision P04

Document Control

Document Authority

Prepared by	Killian Prall
Date	23 / 10 / 2023
Checked by	Thomas Cutt
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Date	27 / 10 / 2023

Document History

Issue	Issue Date	Status
Rev P00	27 / 10 / 2023	DRAFT Issue – For Comment
Rev P01	08 / 12 / 2023	Issued for Planning
Rev P02	12 / 12 / 2023	Updated in line with comments received
Rev P03	13 / 12 / 2023	Development description updated
Rev P04	17 / 01 / 2024	Development description updated

1.0 Introduction

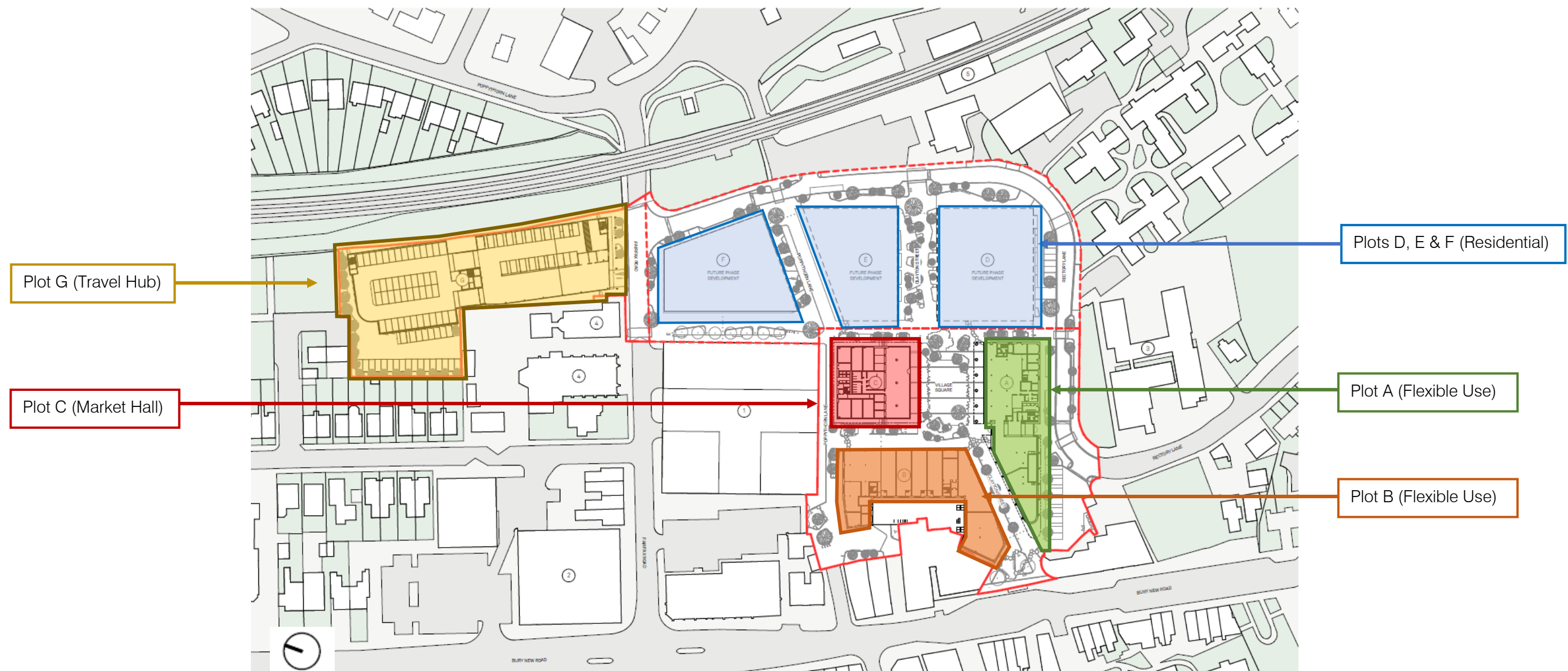
This Energy Strategy Report has been prepared by Hannan Associates on behalf of The Prestwich Regeneration LLP, a Joint Venture ('JV') between Bury Council and Muse Places and is submitted in support of an application for hybrid planning permission at "Prestwich Village".

The subsequent sections of this report provide an overview of the development proposals and a summary of what measures have been taken to minimise energy use and improve efficiency, in order to work towards achieving future Net Zero targets.

1.1 Development Description

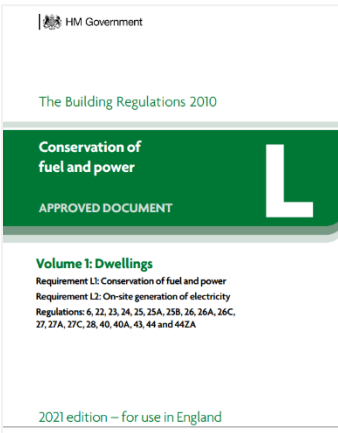
The existing brownfield site is bound by Bury New Road (west), Fairfax Road, Rectory Lane (south), and Metrolink (east). The masterplan will comprise two phases; Phase 1 (full application) includes Plots A, B, C, and G, while Phase 2 (outline) includes Plots D, E, and F which will be subject to future reserved matters applications and therefore only high-level principles are included within this report. Full details would be required to be submitted with subsequent reserved matters applications.

Hybrid application comprising: Full planning application proposing demolition of existing buildings and structures and the erection of a phased mixed use development including a Community Hub comprising flexible uses including library, offices, medical or health services (Use Classes F1 (a-f), F2(b), E(c), E(e), E(g)) and retail uses (Use Classes E(a), E(b) F2(a)) and Sui Generis (hot food takeaway and bar), a new Market Hall (Use Classes E(a), E(b) and Sui Generis (hot food takeaway and bar)), a Commercial Building comprising flexible uses including retail, offices, gymnasium (Use Classes E(a), E(b), E(c), E(d), E(g), F2(a), a Travel Hub comprising car parking and cycle parking (Sui Generis), a public square and public realm and associated landscaping, car parking provision, cycle storage and other associated works; and part Outline planning application (with all matters reserved) proposing a phased residential led mixed use development comprising residential (Use Class C3), flexible commercial, business, service, local community and learning uses (Use Classes E, F) and Sui Generis (hot food takeaway and bar), engineering works to Rectory Lane, new public realm, associated landscaping, car parking provision, cycle storage and other associated works.



2.0 Building Regulations Compliance

The Building Regulations set out minimum requirements for new developments. An overview of the key parts of the Building Regulations applicable to the energy strategy have been provided below:



Part L - Conservation of Fuel and Power:

The 2021 updates to the Building Regulations Part L (effective June 2022) are an interim step in the direction of The Future Homes and Future Building Standards, which are proposed to come into force in 2025. It is anticipated that the CO₂ emissions associated with new developments will be reduced by approximately 30% with respect to new dwellings and approximately 27% in buildings other than dwellings, when compared to previous version of Part L (2013 inc. 2016 Amendments).

In order to achieve this, a number of updates have been made, which include, but are not limited to the following:

- The minimum performance standards and the notional building specification has been improved.
- A new metric of 'Target Primary Energy Rate' (TPER), measured in kWh_{PE}/m²/year has been introduced.
- Primary energy factor of electricity has been reduced to account for decarbonisation of the grid. This makes an all-electric servicing strategy much more favourable than utilising fossil fuels.
- The clause 'limiting the effects of solar gains in summer', previously referred to as Criterion 3 has been amended. The intention of which is to reduce the reliance on mechanical cooling.

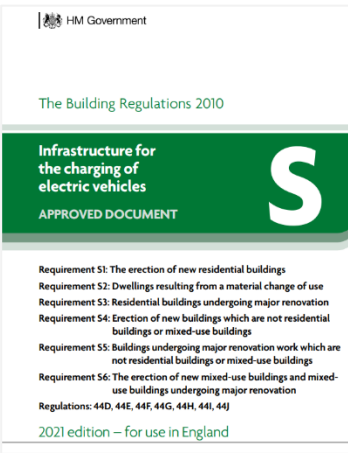


Part O - Overheating

The 2021 updates to the Building Regulations saw the introduction of a new regulation: Approved Document O. This document applies to new residential buildings only and is the new standard for limiting overheating. Part O has been introduced to improve the previous rudimentary overheating checks associated with Part L and Part F.

The primary objectives of Part O are to:

- Limit unwanted solar gains during the summer months.
- Provide an adequate means of removing excess heat from the indoor environment.
- The document includes guidance on how to achieve the above objectives, taking cognisance of any acoustic restrictions, pollution, security risk, entrapment and falls from height.



Part S: Infrastructure for Charging Electric Vehicles:

Part S is also a recent addition to the suite of Building Regulations and was introduced as part of the 2021 update.

As a result of the looming ban on internal combustion engines and the drive towards adoption of plug-in hybrid and electric vehicles; the government has published new guidance relating to provision of infrastructure for EVC's, which is applicable to domestic and non-domestic sites.

Generally;

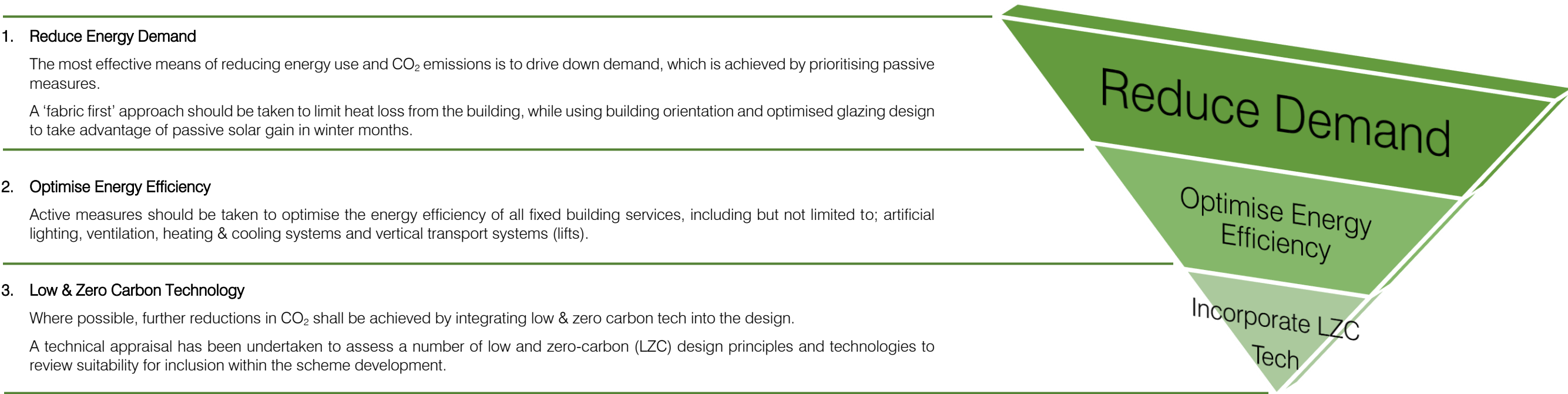
- 100% of spaces delivered as part of residential developments shall have access to charge points.
- A minimum of 10% of parking spaces delivered as part of non-residential buildings or mixed-use schemes shall have access to charge points.
- A further 20% of parking spaces should be provided with passive provision for future installation of EV charge points i.e. cable/duct routes.

3.0 The Energy Hierarchy

National Policy, local legislation and the Clients' sustainability policies will operate to reduce energy demand and CO₂ emissions, enhancing the sustainability credentials of the development. The Unitary Development Plan sets out the policies which Bury Council have adopted for future developments. The following policies relevant to Energy and Sustainability have been identified.

ENERGY & SUSTAINABILITY RELATED POLICIES		
Policy	Description	How the Policy will be met
EN4 Energy Conservation	Contribute to energy conservation in the Borough. The use of renewable energy resources and the incorporation of energy efficiency measures in built development and the transport system will be encouraged.	An energy hierarchy shall form the basis of the overarching design philosophy. Tier 3 of the energy hierarchy below shall look to assess the feasibility of incorporating renewable and low carbon energy infrastructure into the scheme.
EN10 Environmental Improvement	Seek to improve the environmental quality of the Borough, within which priority will be given to an on-going environmental improvement programme	The MEP strategy for the development is based on all-electric, with no fossil fuels. A Climate Change Risk Assessment has been commissioned to understand the potential risks to the development and implement mitigation measures for short, medium and long-term timescales to deliver a sustainable and long-lasting development.

To demonstrate compliance with the Building Regulations, Policy and the Client's sustainability targets, an energy hierarchy has been employed, as summarised below:



4.0 Low Carbon Design Principles

4.1 Overview

To follow the Bury Council's goal of promoting sustainability (Bury Unitary Development Plan), the following have been considered in the design of the development:

- **Passive Measures**
 - Exploration of orientation on performance.
 - Building Fabric.
 - Reduced air permeability.
 - Maximising daylighting.
- **High Efficiency Systems**
 - Energy-efficient lighting.
 - Energy-efficient vertical transportation including the use of regenerative drive and variable speed drives.
 - Use of heat recovery systems.
 - Reducing the volume of water used in sanitaryware.
 - Building Energy Management Systems
- **Transport**
 - Cycle storage
 - Promoting Public Transportation - Nearby Metrolink, Bus stops
 - Electric Vehicle Charging

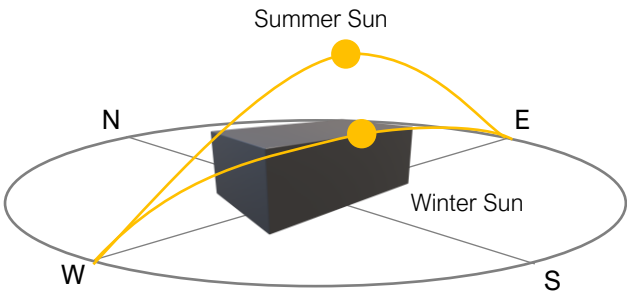
The table below summarises the low carbon design principles viability. Each principle has been considered in the subsequent pages to determine the suitability to allow an informed decision as to whether they would be beneficial to the development. The findings within this report are subject to review at the next stages of design.

LOW CARBON DESIGN PRINCIPLES			
MEASURE	PASSIVE MEASURES	HIGH-EFFICIENCY SYSTEMS	LOW-CARBON TRANSPORTATION MEASURES
	Optimise Building Orientation	Energy Efficient Lighting	Cycle Storage
	Enhanced Building Fabric Performance	Reduced Water Consumption	Electric Vehicle Charging
	Reduced Air Permeability	Vertical Transportation	Local Public Transport Links
	Maximise Daylighting	Ventilation Systems incorporating Heat Recovery	
		Intelligent Design Features & BEMS	
FEASIBLE	YES	YES	YES

4.2 Passive Measures

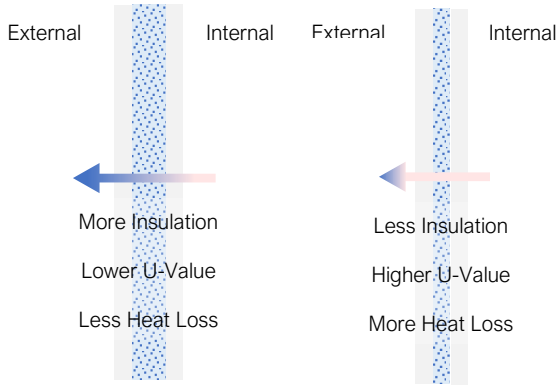
4.2.1 Building Orientation

- Building and room orientation can have a significant impact on the energy consumption of a building.
- For example, rooms that are used more regularly, and thus require more heating, should be located on the south side of the building where possible. By doing so, these rooms benefit from increased solar heat gains thus minimising heating demand.
- Optimise glazing design to reduce overheating risk.



4.2.2 Building Fabric

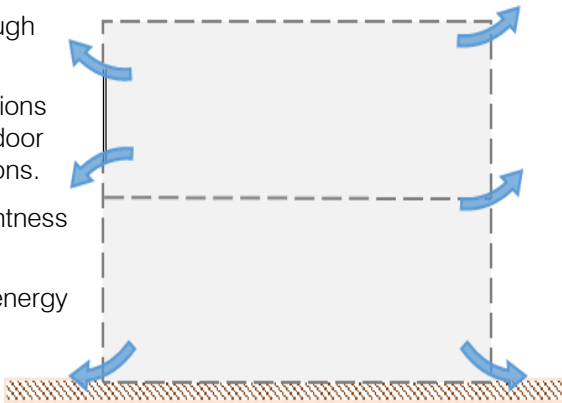
- U-values show the rate of heat transfer through a building fabric - The lower the U-value, the less heat that is lost through the build-up.
- Building fabric choice determines the U-value of the building element, for example using more insulation will reduce heat loss through the element.
- Part L of the Building Regulations sets limiting values for U-values (tabulated below).
- The plots which form the development will target achieving the Notional Building Fabric Specification (also included below).



BUILDING FABRIC SPECIFICATION			
Fabric Element	Part L Minimum Performance (W/m²K)	Notional Building (W/m²K)	Improvement (%)
External Wall	0.26	0.18	30.7%
Roof	0.18	0.15	16.7%
Floor	0.18	0.15	16.7%
Glazing	1.60	1.30	18.8%

4.2.3 Air Permeability

- Building airtightness is the resistance to air leakage through the external building envelope.
- Air leakage in buildings tends to be located at junctions between building elements, the wall and window and door frames, electrical equipment, and other building penetrations.
- The air leakage can be reduced through the use of airtightness tapes and grommets.
- Reducing the air leakage in a building also improves energy performance by reducing heating demand.
- Part L of the building regulations sets limiting values for air permeability. The lower the air permeability, the more airtight the building.



AIRTIGHTNESS

	Part L Minimum Performance (m³/m².hr @ 50Pa)	Notional Building (m³/m².hr @ 50Pa)	Improvement (%)
Air Permeability	8.0	3.0	63%

➤

4.2.4 Daylighting

- By providing natural daylighting to a building, the use of artificial lighting can be minimised, thus reducing lighting loads and energy consumption.
- However, there is a balance to be found between maximising daylighting but not providing excessive glazed area such that summer overheating and glare risks increase and building fabric u-values and airtightness are compromised.



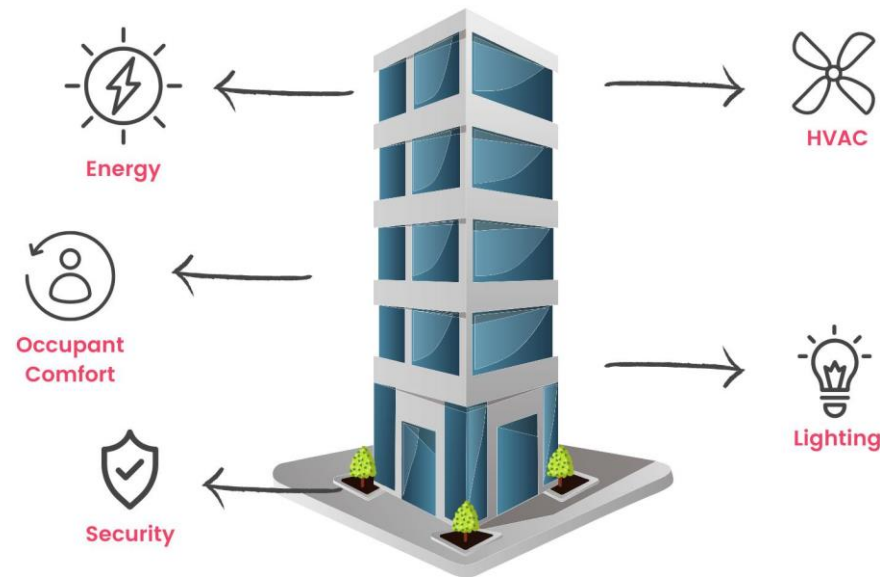
PASSIVE MEASURES CONSIDERED VIABLE

TO BE INCORPORATED INTO SCHEME WHERE POSSIBLE

4.3 Intelligent Design Features

4.3.1 Building Energy Management System

- A building energy management system (BEMS) is a controls system that can be used to monitor and manage the mechanical and electrical services in a facility.



- The BEMS enables the centralised monitoring and management of systems which traditionally have been independent of each other. This holistic approach allows the building systems to be operated safely and efficiently.
- A BEMS can maintain environmental conditions, keep equipment operating efficiently and allow facility personnel/building owners to monitor plant operations.
- Through the monitoring of environmental conditions using dedicated sensors, the BEMS control process can produce corrective actions, such as driving outputs or actuators, in response to changing conditions or highlight functional inconsistencies across the development and thus enable the facilities management to investigate and correct the issues.

4.3.2 The Benefits of a Building Energy Management System

- Improved energy efficiency through control on demand.
- Improved well-being and productivity for the occupants.
- Improved visibility of the building performance through trending and monitoring.
- Benefit from assessment of historic trend logs and alarm indication of faults.
- Proactive maintenance for predicting when plant equipment needs replacing or servicing before it goes into fault.

INTELLIGENT DESIGN FEATURES CONSIDERED VIABLE

TO BE INCORPORATED INTO SCHEME WHERE POSSIBLE

4.4 Water Efficient Systems

Due to increasing population densities and relatively high levels of water consumption, much of the UK is at risk of water shortages which are likely to increase over time as rainfall patterns vary due to climate change. Reducing water consumption in the UK is, therefore, crucial.

Potable water also requires significant quantities of energy in both processing and distribution. The embedded CO₂ associated with potable water equates to 0.298g CO₂ per litre.

4.4.1 Low Consumption Sanitary Fittings

Efficient sanitary fittings play an important role in water conservation by reducing demand, and associated operational costs, whilst maintaining a hygienic and high-quality experience for occupants.



4.4.2 Leak Detection System

Monitored link from the utility meter at the site boundary and internal building meter to monitor the flow of water.

The systems are fully programmable and can be set to monitor a specific amount of water at a specific time allowing it to take into account particular flow rates and consumption requirements.

Can also be connected to a BEMS, record water consumption and signal that a leak has been detected.

Latching valves are also available to shut off the water supply should a leak be detected.

4.4.3 Leak Prevention

Water solenoid vales are connected to a passive infrared leak detection sensor (PIR) to detect the presence of people in a particular room which, when activated, uses the solenoid valve to open the water supply.

If a room is unoccupied for a user-defined period of time, the valve closes to shut off the water supply.

Can prevent water wastage from fittings such as cisterns and taps, helping to reduce excessive consumption and water damage.

Can also be connected to a lighting system to switch the lights on and off as room occupancy changes.

4.4.4 Water Monitoring and Management

- Sub-metering water consumption means that water consumption can be better accounted for. Large water consumers can be identified to encourage the reduction in water use where practical.
- Moreover, changes in consumption can be identified and dealt with as appropriate, thereby minimising risks of systems failures which can have costly and disruptive consequences.
- Pulse output water meters can be connected to the BEMS to enable the live monitoring of water consumption on a local or system-wide basis, as described (left).

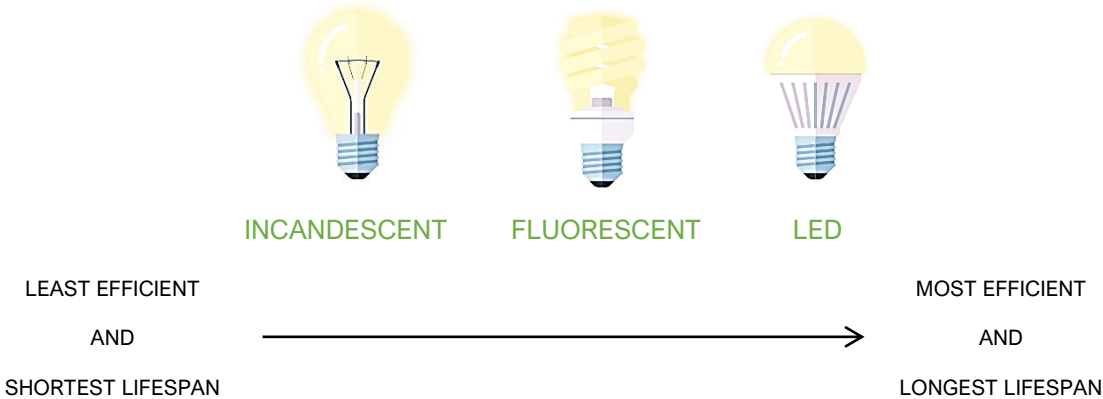


WATER EFFICIENT SYSTEMS CONSIDERED VIABLE
TO BE INCORPORATED INTO SCHEME WHERE POSSIBLE

4.5 High Efficiency Systems

4.5.1 Energy Efficient Lighting

- LED lighting is highly efficient, they use around 75% less energy than incandescent bulbs.
- When compared to fluorescent lighting, LED lighting is more efficient, provides full brightness instantly and lasts longer.
- As such, LED lighting will be incorporated into the design where possible.



- Automatic lighting controls will be utilised in areas such as corridors to prevent unnecessary light usage during unoccupied periods.

4.5.2 Water Consumption

- It takes a large amount of energy for water companies to treat and distribute potable water to developments accompanied by the energy required to heat the water at a proposed development.
- As such, it is important to reduce water consumption where possible through metering, leak detection, flow control and sanitaryware specification (discussed in previous section).



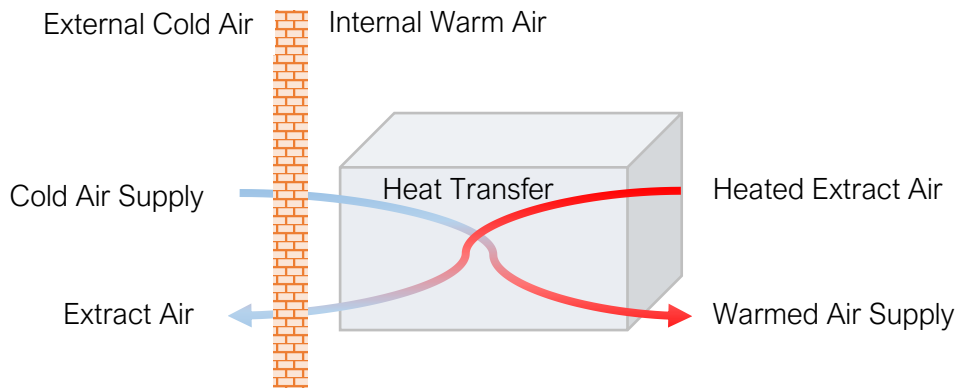
4.5.3 Vertical Transportation

- Lift traffic analysis should be undertaken to ensure the correct number of lifts are specified for the development needs.
- Regenerative drives capture wasted energy associated with lift use and divert this back to the supply network, which can result in energy savings. As such regenerative drives should be considered.



4.5.4 Heat Recovery

- Heat recovery systems utilise heat from the inside heated space to warm external air intake thus minimising the heating requirement and reducing carbon impact.
- All specified ventilation units should include heat recovery.



HIGH-EFFICIENCY SYSTEMS CONSIDERED VIABLE
TO BE INCORPORATED INTO SCHEME WHERE POSSIBLE

4.6 Low Carbon Transportation Measures

4.6.1 Cycle Storage

- Cycle spaces will be provided to offer building users with sustainable transport options whilst helping to reduce the carbon footprint associated with travel to and from the development.
- This will encourage users to choose active travel, contribute to improving health and wellbeing, local air quality and reduce local congestion.
- Quantum of cycle parking proposed:

APPLICATION	PLOT REFERENCE	QUANTUM OF CYCLE SPACES	
Full	Plot A (Flexible Use – Library, Offices, Medical or Health Services & Retail)	16	124 Total
	Plot B (Flexible Use – Office/Gym & Retail)	12	
	Plot C (Market Hall)	0	
	Plot G (Travel Hub)	76	
	Public Realm	20	
Outline	Plots D, E & F (Residential)	204	210 Total
	Public Realm	6	

- Cycle spaces will be BREEAM compliant and therefore meet the following criteria:
 - Number of cycle spaces provided to target 1 per 10 staff.
 - Cycles will be able to be secured within spaces in racks with overhead covering. The cycle racks are set in or fixed to a permanent structure (building or hardstanding) or will be located in a locked structure fixed to, or part of, a permanent structure with appropriate surveillance.
 - The distance between each cycle rack, and the cycle racks and other obstructions, e.g., a wall, allows appropriate access to the cycle storage space for easy storage and access to bikes.
 - The storage facility or entrance to the facility will be in a prominent site location visible to potential users from either an occupied building or a main access to a building.
 - The cycle storage facility has adequate lighting.
 - The lighting will be controlled to avoid out-of-hours use and operation during daylight hours, where there is sufficient daylight in or around the facility.



4.6.2 Electric Vehicle Charging Provision

- EV charging points will be provided to support the use of electric vehicles, aiming to reduce the reliance on internal combustion engines.
- In accordance with Approved Document S: Infrastructure for Charging Electric Vehicles, for new non-residential buildings with more than 10 parking spaces, at least one of those spaces must have an electric vehicle charger (i.e. 10% active provision). This is reflective of the base level of provision to be delivered as part of the Phase 1 works.
- The government has published proposals to ban the production of petrol and diesel vehicles. The provision of EV charge points is subsequently becoming more important as we move towards the ban being enforced. EV charging points allow the building users to charge their vehicles.
- BREEAM criteria require charging stations to be a minimum of 3kW and make up 10% of the total car parking capacity. It is proposed that 7kW ‘fast type’ chargers shall be installed.
- Fast and Superfast charging points can be installed to accommodate those staying for a shorter time.



ELECTRIC VEHICLE CHARGING

Appropriateness of technology to the site/ system viability	Relatively easy to incorporate. Consideration is needed to the availability of electricity supply capacity is sufficient to meet the expected long-term demand.
Lifetime & Payback	Lifetime: 20 years. Payback: N/A.
Land Use	Minimum space required to accommodate the EV Charge Posts.
Noise	No noise issues
Grant	OLEV Grant is available under the Workplace Charging Scheme.
Carbon Savings	Relative to miles travelled by Building Users.

LOW-CARBON TRANSPORTATION MEASURES CONSIDERED VIABLE
TO BE INCORPORATED INTO SCHEME WHERE POSSIBLE

4.6.3 Public Transport

- The development location naturally promotes the use of public transport encouraging users to reduce individual transport, resulting in reduced CO₂ emissions.
- The government and local councils are increasingly encouraging the decarbonisation of transport systems, with a focus on all-electric methods of transport in town and city centres (trams, busses etc.).
- Having access to local public transport provides a benefit to the BREEAM rating of the building by influencing the Accessible Index.



PUBLIC TRANSPORTATION	
Appropriateness of technology to the site/ system viability	Routes are not to be adversely affected by the proposed development and shall generally be enhanced.
Lifetime & Payback	Lifetime: 20 years. Payback: N/A.
Land Use	Minimum space required, already in place.
Noise	Noise levels associated with a town centre and busy main roads.
Grant	N/A
Carbon Savings	When compared to cars, it has been reported that approx. 42% CO ₂ is saved when using buses and 73% if travelling by train (Benefits of public transport) and tram networks are reported to produce a further reduction of 20% when compared to train travel.

LOW-CARBON TRANSPORTATION MEASURES CONSIDERED VIABLE

TO BE INCORPORATED INTO SCHEME WHERE POSSIBLE

5.0 Low and Zero Carbon Technologies

The following low or zero-carbon technologies have been considered for use within the development:

- District Heat Network.
- Air Source Heat Pumps (ASHPs).
- Ground Source Heat Pumps (GSHPs).
- Biomass Heating.
- Combined Heat and Power (CHP).
- Wind Power.
- Photovoltaics
- Battery Storage.
- Solar Water Heating.

5.1 LZC Appraisal

The table below summarises the advantages and disadvantages of each LZC technology, whether there are any available funding schemes, and subsequently which technologies are considered viable for inclusion into the scheme.

Technologies identified as 'viable' or 'feasible' for incorporation into the scheme design have been discussed further in the subsequent sections of this report.

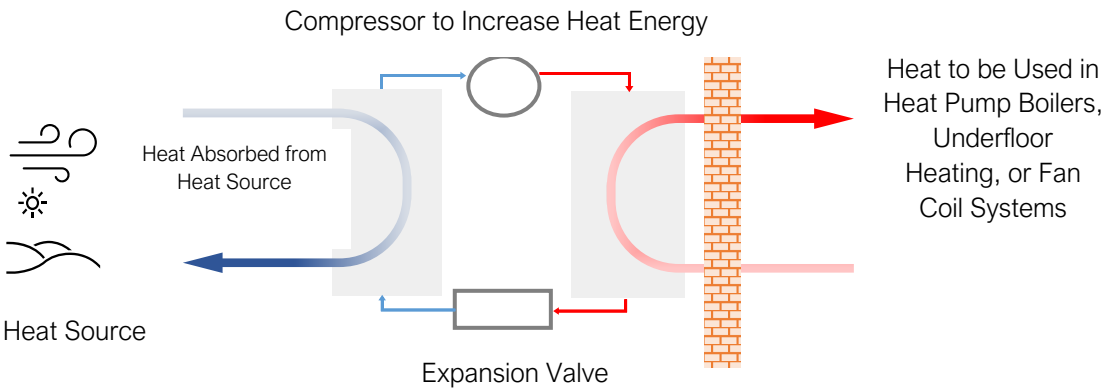
LZC TECHNOLOGIES	ADVANTAGES	DISADVANTAGES	AVAILABLE SCHEMES	STATUS
District Heat Network	Utilises heat energy that would typically be wasted. Can deliver hot water and heating.	Lack of availability for local connections to a district heat network. Some heat networks still utilise fossil fuels	Non-Domestic Renewable Heat Incentive (RHI) ended in March 2021.	Not Considered Viable
Heat Pumps (Air Source)	High efficiency compared to direct electric. Well established technology.	Use of refrigerant gasses. Plant space & ongoing maintenance requirements	Non-Domestic Renewable Heat Incentive (RHI) ended in March 2021.	Considered Viable
Heat Pumps (Ground Source)	High efficiency compared to direct electric.	Space required for the pipework system does not suit urban environment. Additional piling & ground works likely required.	Non-Domestic Renewable Heat Incentive (RHI) ended in March 2021.	Not Considered Viable
Biomass Heating	Fuel cheaper than gas and electric	High capital cost. Plant space & noise considerations associated with operation and fuel deliveries.	Non-Domestic Renewable Heat Incentive (RHI) ended in March 2021.	Not Considered Viable
Combined Heat and Power	High efficiency under appropriate load. Utilises heat energy that would typically be wasted.	Requires constant heat load. Plant space & noise associated with operation.	Smart Export Scheme available as of January 2020. Rate not guaranteed	Not Considered Viable
Wind Power	Low operating costs	Insufficient wind speed at site location & small variations in wind speed can produce large changes in energy output. Planning & visual implications.	Smart Export Scheme available as of January 2020. Rate not guaranteed	Not Considered Viable
Photovoltaics	Well established technology. Electricity can be exported back to the grid.	Large external area required to accommodate array.	Smart Export Scheme available as of January 2020. Rate not guaranteed	Considered Feasible
Battery Storage	Enables 'load shifting' to enable energy use when required.	Increased plant area required to accommodate. Potential fire strategy implications	None	Not Considered Viable
Solar Thermal Water Heating	Low noise	Large external area required to accommodate installation. Constant DHW demand is required.	Non-Domestic Renewable Heat Incentive (RHI) ended in March 2021.	Not Considered Viable

5.2 Heat Pumps

- Heat pumps extract thermal energy from a variety of renewable sources, including the air, earth, or water. If the heat source for the system is the air, it is known as an air source heat pump and if the source is the ground, it is a ground source heat pump.
- The thermal energy is then upgraded to a higher, more useful temperature. Therefore, heat pumps supply more useful energy than they consume. As such, the use of heat pumps can lead to reduced use of fossil fuels and subsequently, a reduction in the emission of greenhouse gases.

5.2.1 Air Source Heat Pump (ASHP)

- By using an air source heat pump, it is possible to extract considerable heat from the air, even at temperatures as low as -15°C.
- The air source heat pump system consists of a compressor and a carefully matched evaporator coil and heat exchanger.
- There is a refrigerant liquid that circulates within the system; it has a boiling point as low as minus 40°C and evaporates into gas when absorbing heat from the outside air. This gas is then compressed, increasing its heat energy, and raising its temperature to around 75°C. This is used to heat internal spaces.
- Space heating using an air source heat pump is usually provided through underfloor heating, utilising heat pump boilers located internally, or by heating the air using fan coil systems.
- This heat pump cycle is also reversible, allowing for the provision of space cooling i.e., the circulating refrigerant liquid evaporates when absorbing heat from the air within the building, and expels it into the atmosphere via air-cooled condensers.
- Consideration would have to be given to noise generation from the roof mounted condensing units.
- The final plant and equipment selection will need to incorporate noise attenuation where necessary to ensure any planning conditions stipulating external noise levels are not exceeded and the system operation does not cause a nuisance to adjacent buildings.



ADVANTAGES	DISADVANTAGES
Low capital cost.	Increased use of refrigerant gas.
Increased cooling output.	Increased plant space requirements.
High efficiency.	Medium running costs.
Proven technology.	Medium maintenance costs.
	Only considered renewable in heating mode.

AIR SOURCE HEAT PUMP – SUMMARY TABLE

Appropriateness of Technology to the Site/ System Viability.	System can provide heating and comfort cooling
Lifetime and Payback.	Lifetime: 15 – 20 years. Payback: No Payback.
Land Use.	The external condensers can be located within an external plant enclosure on the roof of the building.
Noise.	Plant noise attenuation requirements are to be reviewed by the acoustic consultant and attenuation is included within the design and installation as necessary to prevent noise egress.
Carbon Savings	0.136kgCO _{2e} /kWh carbon factor for electricity.

AIR SOURCE HEAT PUMP CONSIDERED VIABLE

TO BE INCORPORATED INTO DESIGN WHERE POSSIBLE

5.3 Photovoltaics (PV) and Battery Storage

5.3.1 Photovoltaics (PV)

- Photovoltaics work by converting solar energy into electricity, which can then be used to power ordinary electrical equipment such as household appliances, computers, and lighting.
- PVs output in DC so, DC motors for plant and equipment need to be sourced to use the DC current, or an inverter and other equipment is needed to deliver the power to a building or the grid in AC form.
- Any number of modules can be connected together to give the desired electrical output.
- South facing PV panels, at a pitch of 35°, can produce around 150kWh/yr/m² PV of DC electrical energy or 110kWh/yr/m² PV of AC electrical energy. East or West facing panels provide approximately 80% of that yielded from a South facing panel.
- PV systems can be incorporated in various ways: on sloped roofs, on flat roofs, in facades, atria, and shading devices. Modules can be mounted using frames or incorporated into the building fabric; for example, PV roof tiles are available which can be fitted in place of standard tiles.



ADVANTAGES	DISADVANTAGES
Electricity generated without producing greenhouse emissions.	
Electricity can be sold back to the grid during periods of low demand within the building.	Large external area required to locate PV panels.
No moving parts so minimal maintenance and low maintenance costs.	PV panels will have a visual impact and would require planning approval.
Mature technology.	Medium capital expenditure.
Silent operation	

PHOTOVOLTAICS – SUMMARY TABLE

Appropriateness of Technology to the Site/ System Viability.	Easily integrated and can be used alongside other LZCs. It is not influenced by the building services strategy.
Lifetime and Payback.	Lifetime: PV Panels - 25 years, Inverters – 10 years Payback: Subject to calculation if taken forward at the next design stage.
Land Use.	Often installed at roof level at an incline of 10 - 45° Optimum efficiency achieved when south facing.
Noise.	Not an issue with this type of system.
Carbon Savings	0.136kgCO _{2e} /kWh carbon factor for electricity.

PHOTOVOLTAICS CONSIDERED FEASIBLE

TO BE CONSIDERED FURTHER

6.0 BREEAM

The proposed development is targeting a minimum standard of BREEAM (Shell & Core) ‘Excellent’.

To achieve BREEAM ‘Excellent’ a score of 70% must be achieved, it is recommended that a minimum buffer of 5% is maintained to ensure that variations during design development do not affect the overall rating.

Under the BREEAM Assessment, many aspects of sustainable best practice design will be assessed.

These sustainability measures will in turn, support various policies within the Bury Unitary Development Plan.

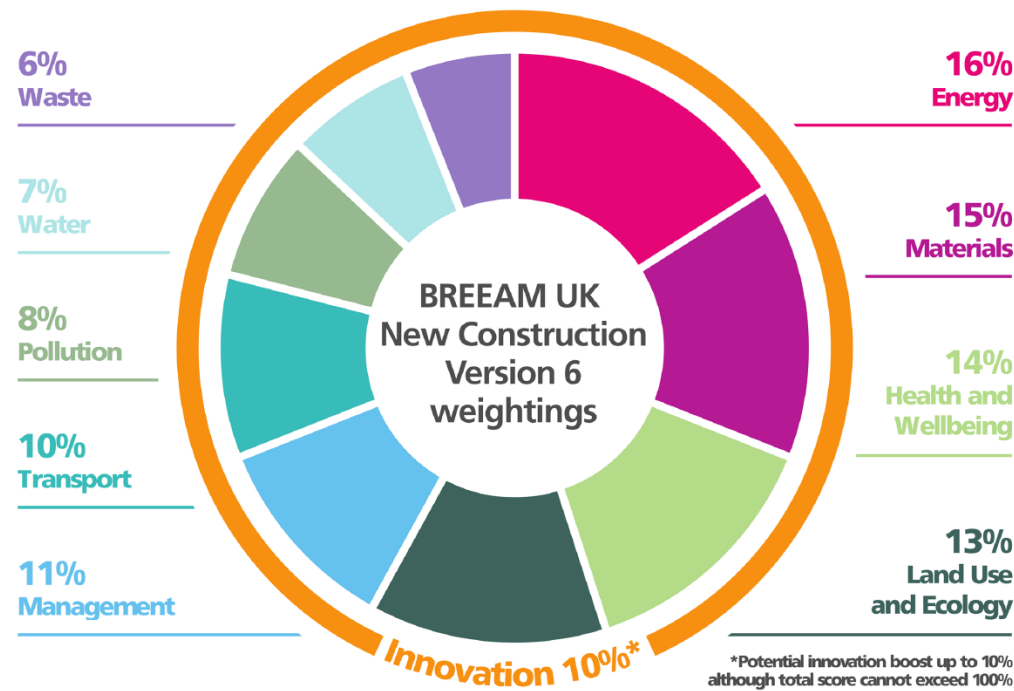
The following BREEAM UK New Construction Version 6 Assessments have been agreed with the BRE.

Development Plot	BREEAM Assessment
Plot A (Flexible Use – Library, Offices, Medical or Health Services & Retail)	Bespoke Assessment (Shell & Core)
Plot B (Flexible Use – Office/Gymnasium & Retail)	Retail Assessment (Shell & Core)
Plot C (Market Hall)	Retail Assessment (Shell & Core)
Plot G (Travel Hub)	No Assessment, as not applicable

6.1 Category Weightings

Once each section of BREEAM credits has been assessed, the category percentage scores are determined (based on the number of credits achieved over those available within a category), and an environmental weighting is applied (as shown in the below table).

The weighted category scores are then totalled to give an overall score, and any additional score for innovation is added to give the final BREEAM score which is used to determine the BREEAM rating. The BREEAM category environmental weightings are as follows:



6.2 BREEAM Accredited Professional (AP)

A BREEAM Accredited Professional should be appointed to provide the construction team with expert advice on built environment, sustainability, environmental design and environmental assessment process. The AP will facilitate the team's efforts to successfully schedule activities, set priorities and negotiate the trade-offs required to achieve a target BREEAM rating when the design is formally assessed.

6.3 Operational Energy

Dynamic Simulation Modelling allows for accurate prediction of operational energy consumption, offering a comprehensive analysis of the individual building components.

Initially, Approved Document L served as the benchmark for simulation models, demonstrating compliance with energy usage regulations. However, the introduction of CIBSE TM54 brought a new set of standards that more closely reflect real-world conditions. This was accompanied by an updated simulation methodology.

As the industry progresses toward achieving net-zero energy goals, there's a growing emphasis on monitoring operational energy, utilising the results to future-proof buildings, and assessing their performance against established criteria.

For more complex buildings systems and even further refinement of simulation, Design for Performance (DfP) may also be used and is typically the methodology used to secure a NABERS UK Rating for offices.

The current intention is to employ Part L dynamic thermal modelling and the CIBSE TM54 methodology to assess the operational performance of each applicable building.

7.0 Conclusion

This report outlined the energy hierarchy used to demonstrate compliance with Building Regulations, achieve local sustainable policies and assess the feasibility of incorporating Low and Zero Carbon design principles and technologies for the development, in conjunction with achieving a minimum BREEAM rating of ‘Excellent’.

7.1 Low Carbon Design Principles

The following low carbon design principles have been considered in the design of the development and incorporated into the design, as outlined below:

Passive Measures	Implementation
Optimised building orientation	Passive Design Analysis undertaken as part of BREEAM assessment.
Enhanced building fabric.	Notional building specification used to set targets for construction elements.
Reduced air permeability	Notional building specification used to set targets for air permeability.
Maximise daylighting	Optimised glazing design for thermal performance and daylighting.
Active Measures	Implementation
Energy efficient lighting	100% low energy LED lighting installed throughout.
Regenerative drive lifts	Regenerative drive incorporated to vertical transport systems.
Heat recovery systems	Incorporated to all mechanical supply & extract ventilation systems.
Reduced operational water consumption	Low flow sanitaryware to be specified to reduce water usage, solenoid valves installed on cold water supplies.
Building Energy Management System	Automatic controls systems to be installed to monitor performance and operation of mechanical & electrical systems.
Sustainable Transport Measures	Implementation
Cycle Storage	To be integrated into the scheme as indicated on the Architect plans.
Public Transport	The site itself is favourably positioned for local public transport links.
Electric Vehicle Charging	Minimum 10% active provision to be made.
Low & Zero Carbon Tech	Implementation
Air Source Heat Pumps	Proposed to be integrated into the heating & cooling systems design.
Photovoltaic Array	Dedicated zones identified on the roof of plots for potential installation.

7.2 Low and Zero Carbon Technologies

Of the low & zero carbon technologies considered as part of the Energy Strategy, the most viable LZC technologies have been identified as Air Source Heat Pumps and Photovoltaics. This report also considered the following Low or Zero Carbon technologies:

- District Heat Network.
- Air Source Heat Pumps (ASHP's).
- Ground Source Heat Pumps (GSHP's).
- Biomass Heating.
- Combined Heat and Power (CHP).
- Wind Power.
- Photovoltaics and Battery Storage.
- Solar Water Heating.

The other renewable energy technologies investigated are not considered to be viable options due to the development's location, space limitations, fiscal restraints, and technology payback period.

7.3 Part L Compliance

Preliminary Part L compliance checks have been completed and each plot has been demonstrated to comply with the Building Regulations.

Development Plot	Part L Assessment		Predicted EPC Rating
Plot A (Flexible Use – Library, Offices, Medical or Health Services & Retail)	BER < TER BPER < TPER	(PASS) (PASS)	A
Plot B (Flexible Use – Office/Gymnasium & Retail)	BER < TER BPER < TPER	(PASS) (PASS)	A
Plot C (Market Hall)	BER < TER BPER < TPER	(PASS) (PASS)	A
Plot G (Travel Hub)	N/A		N/A

It is not currently anticipated that the plots strictly require PV generation to demonstrate compliance with Part L, as each has incorporated heat pumps to generate heating and/or cooling, however dedicated zones have been identified at roof level for installation, if instructed.

7.4 BREEAM UK New Construction V6

The proposed development is targeting a minimum standard of BREEAM ‘Excellent’.

As such a minimum BREEAM score of 75% should be targeted to provide a 5% buffer.

Hannan Associates

MEP Design Solutions

Mechanical | Electrical | Public Health

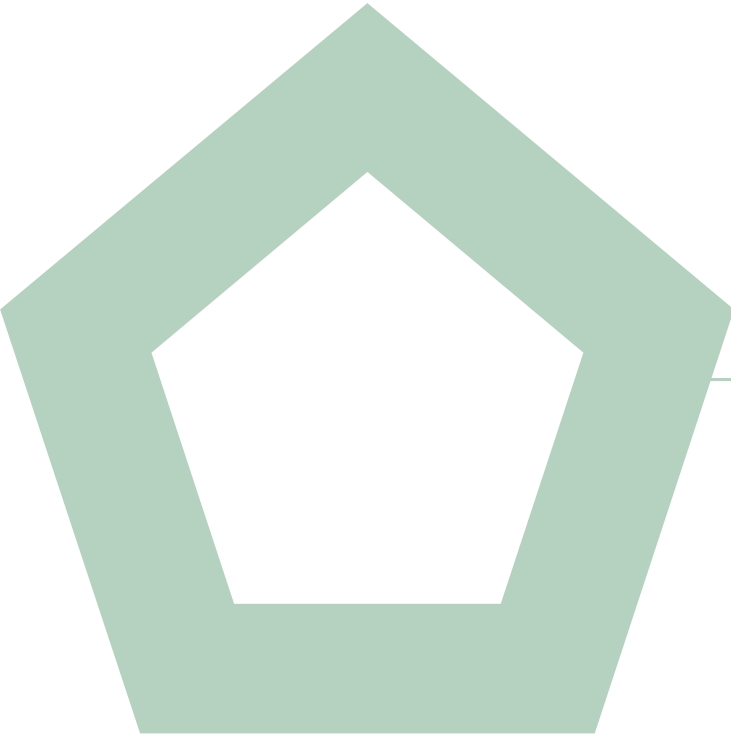
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Appendix B- Circular Economy Statement

Prestwich Village.
Bury, Greater Manchester.
The Prestwich Regeneration LLP.

SUSTAINABILITY
STAGE 3 REPORT
CIRCULAR ECONOMY STATEMENT
REVISION 05 – 17 JANUARY 2024



STAGE 3

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
01	21/11/2023	First draft	S. Hunt	J. Robb	J. Nuttall
02	08/12/2023	Updated front cover and figure 2	S. Hunt	J. Robb	J. Nuttall
03	14/12/2023	Updated following Asteer comments	S. Hunt	V. Wall	J. Nuttall
04	15/01/2024	Amended section 2.1.2	S. Hunt	V. Wall	J. Nuttall
05	17/01/2024	Amended DoD and redline boundary	S. Hunt	V. Wall	J. Nuttall

This document has been prepared for The Prestwich Regeneration LLP only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. The consequences of climate change and the effects of future changes in climatic conditions cannot be accurately predicted. This report has been based solely on the specific design assumptions and criteria stated herein.

Project number: 23/24996
Document reference: REP-2324996-5A-SH-20231213-Prestwich Circular Economy Statement-Rev05.docx

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Executive summary.

This Circular Economy Statement has been prepared by Hoare Lea on behalf of Prestwich Regeneration LLP, (hereafter referred to as 'the applicant') in support of the planning application for the Prestwich Village, Bury (hereafter 'the Proposed Development') within Greater Manchester.

Scope.

This report sets out the strategic approach to Circular Economy implemented by the project. The Circular Economy Statement focuses on the work carried out to define a strategic approach to Circular Economy principles for the project and identify high level strategic opportunities early in the development process.

Current Practice.

Our economy has grown and thrived upon a linear model where we:

- Take finite resource out of the ground
- Manufacture goods from them; and then
- Dispose of them into landfill after, an often, short lifespan.

This model relies on large quantities of cheap, easily accessible materials and energy, and it is reaching its physical limits. Globally, we are using resources and ejecting waste at a rate which would require approximately 3 planet earths for it to be sustained.

The construction industry runs on a linear economy:

- Buildings designed for a 60-year life can be demolished after only 30 years
- They are often stripped out at the end of every lease, leaving waste that can only be 'downcycled' into lower grade products.
- Solid timber is chipped or burnt, structural concrete becomes non-structural aggregate and even modular units like bricks are crushed rather than reclaimed.

The built environment demands around 40% of the world's extracted materials and demolition waste represents the largest waste stream in many countries.

Towards a Circular Economy.

In contrast to a linear economy, a circular economy creates and maintains value of products, materials and buildings by using them for as long as possible and minimising both resource use and waste. The use of virgin materials is minimised whilst re-use, repurposing and recycling are maximised.

In a pure circular economy, resources are not lost from the system so nothing is landfilled.

Designing for longevity and adaptability and maximising the use of recycled and renewable materials could reduce greenhouse gas emissions while increasing innovation opportunities and economic growth. Replacing finite and fossil-based materials with responsibly managed renewable materials can decrease carbon emissions whilst reducing dependency on finite resources.

Before considering future waste elimination and sustainable waste management practices, though, opportunities for retaining and refurbishing /re-purposing existing buildings, materials and other resources on site have been assessed by the design team to maximise the residual value of existing structures and conserve resources by reducing the need for new materials.

The Proposed Development will follow best practice principles in design and construction with the overarching aims of reducing material usage, minimising waste, and embedding longevity, flexibility and adaptability.

Furthermore, advances in innovation and best practice over time, combined with effective feedback mechanisms are expected to lead to continuous improvement as the design and construction develops.

An initial assessment of material efficiency has identified the following key aspects for consideration within the design:

- Early-stage assessment of the existing building to determine the extent of reuse possible.
- Rationalising the structural grid to be as efficient as possible, minimising the quantity of material within the build structure and ensuring that the material composition is as low carbon as possible.
- Superstructure designed for longevity & maintenance.
- Façade options appraisal undertaken based on durability, disassembly, and embodied carbon to establish the optimal solution at this stage of the design.

A project-specific Waste Management Strategy has been developed for the Proposed Development. The Strategy outlines how the Proposed Development has been designed to be sustainable and forward-thinking in its approach to waste and recycling, whilst remaining workable during operation, including:

- Estimated volumes and types of waste produced by the development;
- Details of internal and external stores for both waste and recycling, including any plans and designs;
- Location of the proposed collection point and details of the route the collection vehicle will take;
- Details of how waste will be transferred between waste stores and the collection location; and
- Details of the number and capacity of bins proposed and collection frequency.

Designing for adaptability and disassembly is another key principle of the circular economy, and the design includes but is not limited to the following measures to reduce waste arisings at replacement or end of life:

- Allowance for all major plant to be dismantled and removed.
- All services infrastructure through the building to be designed within designated risers. All risers to be accessible.
- High quality, robust materials palette proposed.

Proposed Development targets.

Table 1: The table summarises the Proposed Developments circular economy targets and the current position.

Indicator	Requirement	Aspiration	Current position
Non-hazardous construction waste	3.2 t/100m²GIA	1.9 t/100m²GIA	Assumed to be achievable. Target to be adopted by building contractor.
Non-hazardous waste diverted from landfill	97%	100%	Assumed to be achievable. Target to be adopted by building contractor.
Cement replacement – Substructure	40%	60%	40% assumed in carbon modelling.
Cement replacement – Superstructure	20%	30%	20% assumed in carbon modelling.
Cement replacement – Precast	10%	20%	No precast concrete present in design.
Recycled content – Structural steel	20%	30%	20% assumed as minimum. Aspiration to incorporate a % of reused steel and/or high recycled content XCarb steel.
Recycled content – Aluminium	20%	30%	70% assumed in carbon modelling. TBC during stage 4.
Recycled content – Steel reinforcement	98%	100%	97% assumed in carbon modelling
Recycled content – Blockwork	50%	60%	Not yet adopted. TBC during stage 4.

1. Introduction.

1.1 Description of development.

1.1.1 The Application.

This Circular Economy report has been prepared by Hoare Lea on behalf of The Prestwich Regeneration LLP, a Joint Venture ('JV') between Bury Council and Muse Places, and is submitted in support of an application for hybrid planning permission at "Prestwich Village".

The main function of the Proposed Development is the demolition of the existing buildings on site and the construction of 6 new mixed-use buildings and multi-storey car park.

1.1.2 The Proposed Development.

The Proposed Development seeks to demolish the existing Longfield centre site and create a new low-carbon development, providing 6 mixed-use building, enhanced public realm and a travel hub.

"Hybrid application comprising: Full planning application proposing demolition of existing buildings and structures and the erection of a phased mixed use development including a Community Hub comprising flexible uses including library, offices, medical or health services (Use Classes F1 (a-f), F2(b), E(c), E(e), E(g)) and retail uses (Use Classes E(a), E(b) F2(a)) and Sui Generis (hot food takeaway and bar), a new Market Hall (Use Classes E(a), E(b) and Sui Generis (hot food takeaway and bar)), a Commercial Building comprising flexible uses including retail, offices, gymnasium (Use Classes E(a), E(b), E(c), E(d), E(g), F2(a), a Travel Hub comprising car parking and cycle parking (Sui Generis), a public square and public realm and associated landscaping, car parking provision, cycle storage and other associated works; and part Outline planning application (with all matters reserved) proposing a phased residential led mixed use development comprising residential (Use Class C3), flexible commercial, business, service, local community and learning uses (Use Classes E, F) and Sui Generis (hot food takeaway and bar), engineering works to Rectory Lane, new public realm, associated landscaping, car parking provision, cycle storage and other associated works"

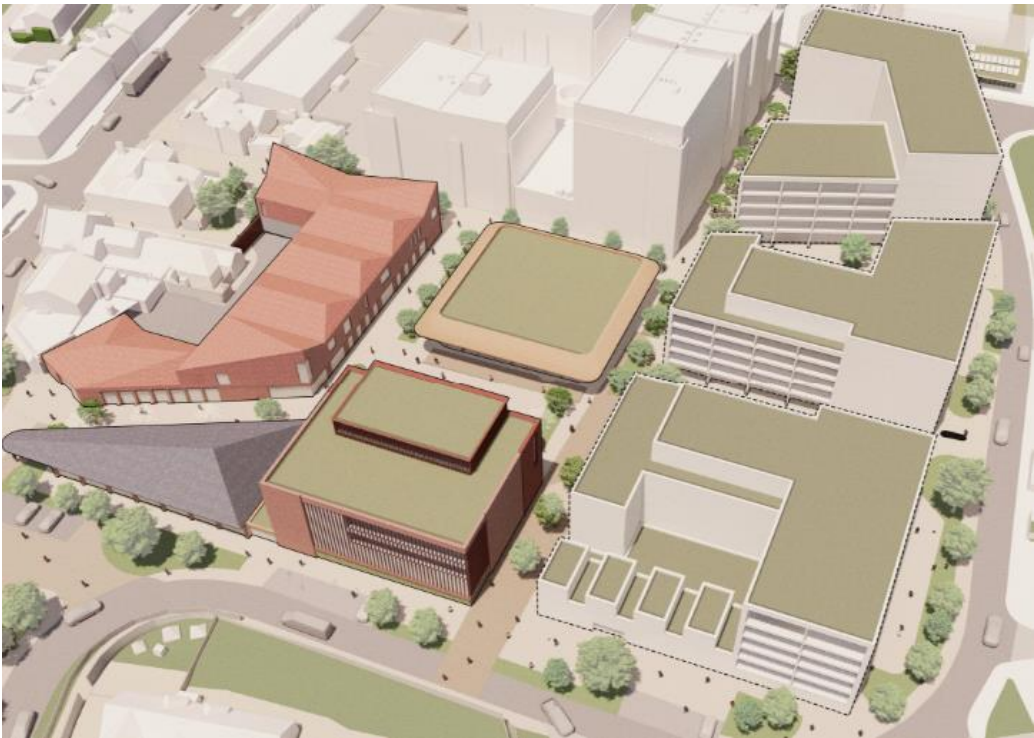


Figure 1 Architectural Visualisation of the Proposed Development (Jon Mathews Architects).



Figure 2 Existing building onsite (Google).

1.1.3 Site Context.

The application site as existing is 2.48 hectares and comprises a mixture of surface level car parking bound by Rectory Lane to the south and east and existing buildings including; the Longfield Centre, Prestwich Library and Prestwich Health Centre. The application site also incorporates an existing surface level car park north of Fairfax Road. The site is irregular in shape and bound by Rectory Lane to the east and south; existing retail units and Bury New Road to the west; with retail units and residential dwellings, including The Radius building to the north. In addition, the Prestwich Metrolink stop is located adjacent to the site's eastern boundary.

1.1.4 Project Team.

Table 2: Key Project Team Members.

Discipline	Organisation
Client / Developer	The Prestwich Regeneration LLP
Architect	Jon Mathews Architects
Landscape Architect	Planit-ie
Building Services Consultant	Hannan Associates
Sustainability Consultant	Hoare Lea
Structural Consultant	Civic Engineers
Ecologist	Tyler Grange
Acoustic Consultant	Cundalls
Transport Consultant	Civic Engineers
Cost Consultant	Mac Construction Consultants

1.2 Method Statement.

1.2.1 Sustainability Strategy.

A holistic, interdisciplinary approach has been adopted to define and communicate the sustainability strategy for the Proposed Development. The framework utilises systems thinking and spans the whole project lifecycle with the project legacy in mind from day one.

The design of the Proposed Developments is based on sustainable design and construction principles as informed by planning requirements and industry best practice. The project has utilised a sustainability framework based on five defined factors; the people, the building, the social network, the natural environment, and the economic aspects to capture the multi-faceted sustainability benefits and values that the development seeks to bring to the application site; local community; surrounding businesses and future building users.



Social Capital	Create a lasting positive social impact in our communities.
Human Capital	Put Health & Wellbeing front and centre.
Natural Capital	Design climate change resilient and adaptable spaces.
Physical Capital	Decarbonised development.
Economic Capital	Supporting local communities.

Figure 3: Five Capitals

1.3 Circular Economy Aspirations.

Consumption of natural resources has historically followed a linear approach, heightened by the industrial revolution which, while lifting the living standards of millions, also dramatically increased pressure on environmental resources. Under the traditional 'take → make → use → dispose' model, raw materials are collected, then transformed into products that are used until they are finally discarded as waste. Apart from failing to capture value over the lifetime of products, this approach also produces a range of negative externalities that include resource scarcity, unsustainable levels of water extraction, rising carbon emissions, and widespread ecosystem pollution.

In a circular economy, built environment assets are designed so that whole buildings, and materials, components and parts can be continually and easily recycled.

The built environment sector is a major consumer of natural resources. There is growing industry consensus that the way we design, build, operate and dispose of our buildings and associated facilities needs a major overhaul to obviate waste and increase efficiency. There is an incredible breadth of opportunity that this shift in approach will create across the entire supply chain.

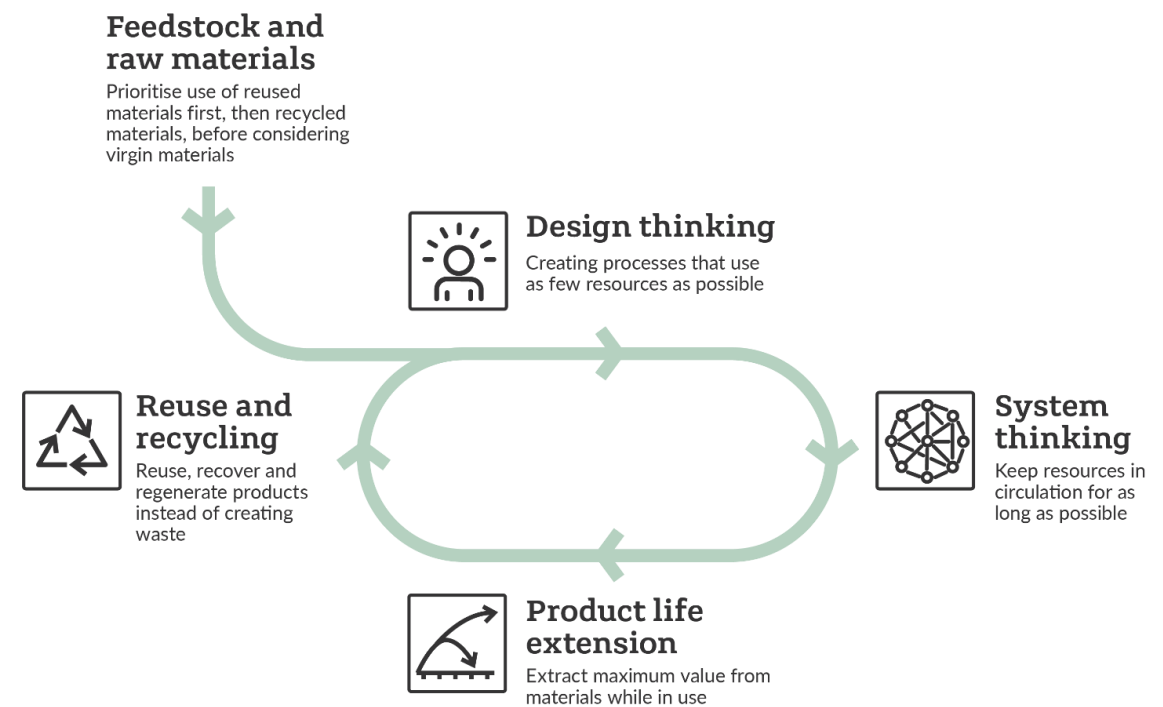


Figure 4: Circular economy approach.

Circular Economy considerations have formed a key part of the project sustainability strategy, given the scale of the Proposed Development, and the client's wider sustainability aspirations. It is recognised that in order to implement Circular Economy principles most effectively, it is helpful to explore strategic opportunities as early in the Proposed Development process as possible.

Considerations around resource efficiency, material circularity and ethical sourcing have been considered within the overarching sustainability strategy from the early stages.

It is acknowledged that the approach to Circular Economy will evolve as the design evolves, or in response to wider considerations and feedback from key stakeholders.

An effective incorporation of circular economy principles represents an opportunity for the site and the UK as a whole. With its system-wide perspective, the circular economy has the potential to help us make better decisions about resource use, design out waste, provide added value for business and society, and proceed along a secure route to society-wide prosperity and environmental sustainability for future generations.

While specific values and levels of ambition / benchmarks have been defined for some of the metrics, it is recognised that these are preliminary targets and commitments which will be reviewed and may be adjusted as appropriate during the detailed design to respond to the specific requirements of each element and ensure that current best practice is being followed and opportunities to innovate are maximised.

The design team will have to engage and collaborate extensively with the supply chain to foster knowledge sharing and fast track innovative ideas and techniques spanning the design, construction and operation stages thus enabling synergies.

1.4 The Circular Economy Targets of the Proposed Development

The key circular economy targets for the Proposed Development are presented in the table below. These address the waste and recycled content requirements and project specific aspirations for the major structural elements of Plot A, B and C.

While these targets have not been explicitly applied to the Travel Hub (Plot G) it is anticipated that the same principles will apply.

Table 3: The circular economy targets– Plot A, B and C.

Indicator	Requirement	Aspiration
Non-hazardous construction waste	3.2 t/100m²GIA	1.9 t/100m²GIA
Non-hazardous waste diverted from landfill	97%	100%
Cement replacement – Substructure	40%	60%
Cement replacement – Superstructure	20%	30%
Cement replacement – Precast	10%	20%
Recycled content – Structural steel	20%	30%
Recycled content – Aluminium	20%	30%
Recycled content – Steel reinforcement	98%	100%
Recycled content – Blockwork	50%	60%

2. Circular economy design approach.

Circular Economy considerations have formed a key part of the project's sustainability strategy. It is recognised that in order to implement Circular Economy principles most effectively, it is helpful to explore high level strategic opportunities as early in the development process as possible.

A sustainability-focused workshop was held in collaboration with the project team to help craft a holistic and consistent sustainability approach for the development. Considerations around resource efficiency, material circularity and ethical sourcing have been a critical element of the overarching sustainability strategy. The following pages detail the design strategies and elaboration on the proposed design approaches.

2.1 Proposed strategy for existing structures/ buildings.

Due to the nature of the site and Proposed Development, the favoured strategy is to demolish the existing buildings and rebuild. The existing site comprises the Longfield Centre, a Library, Iceland, Shopping Centre, Health Centre and two surface car parks. In the following section the buildings and external public areas have been considered in turn, with discussion into the material build-up. The following photographs of the existing buildings were taken during a site visit on 18th October 2023 and have been used to identify some of the primary materials.

2.1.1 Prestwich Library



The existing Prestwich Library has a brick façade with sections of aluminium frame curtain walling and steel roller shutters which cover the ground level openings.

2.1.2 Prestwich NHS Health Care Centre



The NHS Health Care Centre is also encapsulated by a brick façade with upvc windows and doors and aluminium coping. It is assumed that the building has a bitumen flat roof.

2.1.3 Longfield Shopping Centre



Within the Longfield shopping centre the shops have a largely glazed front, with aluminium frame windows and some plywood cladding above the windows. The shops have a brick façade with metal soffit and cement tile hanging at high level.

2.1.4 The Undercroft to the Shopping Centre



The shopping undercroft again comprises a brick façade with steel roll shutters over the steel service doors and a metal sheet ceiling.

2.1.5 Rear of the Shopping Centre, including Iceland



Similar to the front of the Shopping Centre, the façade is brick with aluminium frame curtain walling and cement tile hinging.

2.1.6 Prestwich Walk-In Centre



This 2-Storey modular building has composite cladding and upvc windows

2.1.7 Public Realm Infront of Shopping Centre



The public realm in front of the shopping centre and library is covered by paving stones. These paving stones could be of value, appearing to be relatively new and in good condition.

2.1.8 Prestwich Car park



The existing Prestwich Car Park is covered by a surface layer of tarmac

2.1.9 The Proposed Strategy

Due to the nature of the existing site and the low-carbon aspirations of the Proposed Development in operation, retain and refurbish is not a suitable approach to facilitate the types of spaces required. Demolishing and rebuilding will allow for the complete regeneration of the site and enable long-term sustainability goals to be achieved.

It is anticipated that a pre-demolition audit will be completed to assess any opportunities for re-use of existing materials on-site. High level opportunities are noted in the table below. Circular economy principles have been adopted throughout the design stage to promote the reuse and recycling of existing materials on site where feasible.

Disassemble/ Deconstruct and reuse.

Reuse opportunities will be explored and prioritised before resorting to downcycling of the existing materials on site, which can be considered a waste of embodied carbon and money. The identified reuse opportunities have been discussed in the following section. Reusing existing materials on site reduces the need for the use of raw virgin materials during construction.

Demolish/ Deconstruct and Recycle.

Where direct re-use of building elements after deconstruction may not be feasible, it has been suggested that some demolition waste will be repurposed as part of the landscaping and within concrete mixes to increase circularity and reduce waste generated. The identified recycling opportunities have been discussed in the following section.

This will be investigated further in the next design stages when quantities become more refined.

Key existing materials are identified in the following table, defined by the quantity on site and/or their value. Please note that this is not an exhaustive list and based on the author’s observations during a recent site visit.

A pre-demolition audit would identify many more material types, quantities and potential applications for re-use.

Table 4 Key existing materials and their reuse opportunities

Key existing material	Highest value chain Reuse or recycling opportunities
Brickwork	Deconstruct in panelised form for reuse on or off site as a cladding element.
Aluminium framed curtain walling/ windows	Deconstruct to allow segregation for recycling into new glass an aluminium products.

Key existing material	Highest value chain Reuse or recycling opportunities
Hard landscaping; mix of stone, concrete and clay block.	Deconstruct in original form for reuse on or off site as a paving material.
Asphalt road and car park surfaces	Remove and process for use within new asphalt mixes off site.
Structural steel elements	Dismantle in original form and transport to steel reuse merchant for recertification and finishing prior to resale for other projects or for use within new buildings on this site.

2.2 Proposed Lifetime Strategy.

This section sets out the proposed strategy for the new buildings over the lifetime of the development.

The Proposed Development has adopted a circular economy approach which looks to create and maintain the value of products and the building itself by reusing and recycling building materials as opposed to importing virgin resources and embedding longevity, adaptability and flexibility through design.

These circular economy principles have been considered for each building layer to ensure the most appropriate approach is adopted. As highlighted by the diagram below, each building layer has a different lifespan and it is this life expectancy which influences which circular economy principles are most suitable and which should be embedded.

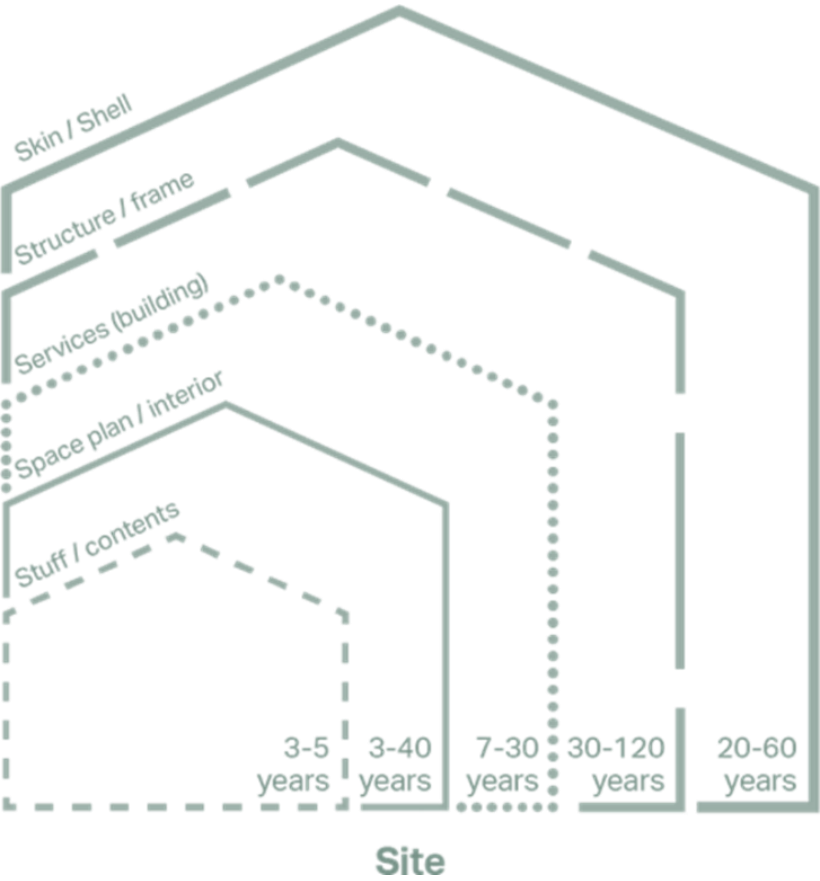


Figure 5: Building Layers and their indicative lifespan (GLA)

2.2.1 Site/ Substructure

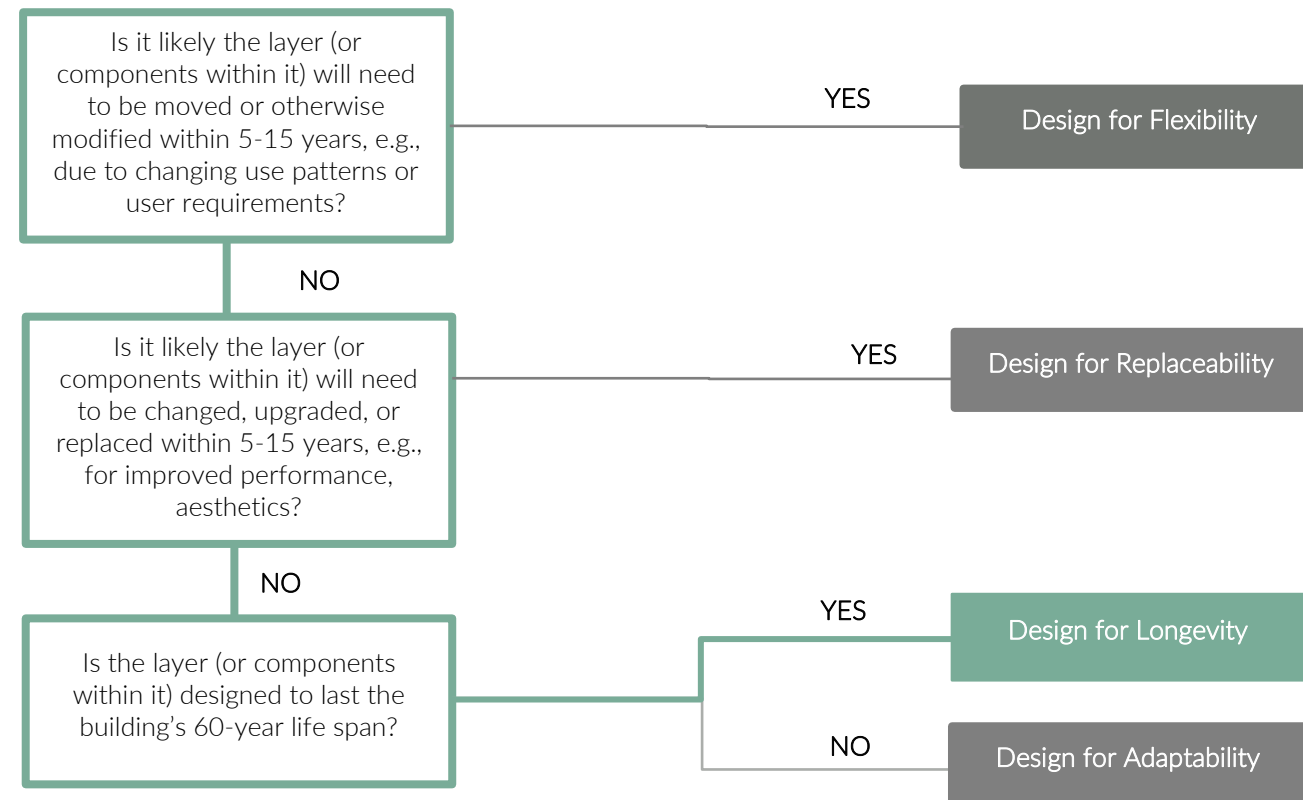


Figure 6: Decision tree to highlight the most appropriate design approach for the site/ substructure.

Following the demolition and excavation, opportunities for the re-use of materials on site will be explored.

The paving stones across the existing public realm area present an ideal opportunity for the reuse of existing site materials. Efforts should be taken to carefully remove the paving to allow the reuse potential to be assessed. If direct onsite reuse is not viable, sustainable alternatives will be assessed such as mixed paving with clay and concrete or processing as aggregate for off-site use.

There is potential to remove and process the existing surface tarmac across the existing car parks for use as recycled asphalt plantings within new tarmac mixes on site. Similarly, at present there are plans to ensure minimal bulk earthwork to ensure any removal from the site is minimised.

These opportunities for to reduce, re-use and recycle will be assessed and implemented where possible. If successful, this will reduce waste from the site and the need to import materials.

The substructure has been designed for longevity, with reinforced steel and concrete used within the foundations of the Proposed Development. Through design, various potential future risks have been accounted for, such as rising temperatures and flood risk. These durable and resilient materials are able to withstand a changing climate. The long lifespan of the building materials within the substructure also supports a future change in building use type. This will work to further extend the building lifespan by keeping the building in operation and reducing the likelihood of demolition.

2.2.2 Structure/ Frame

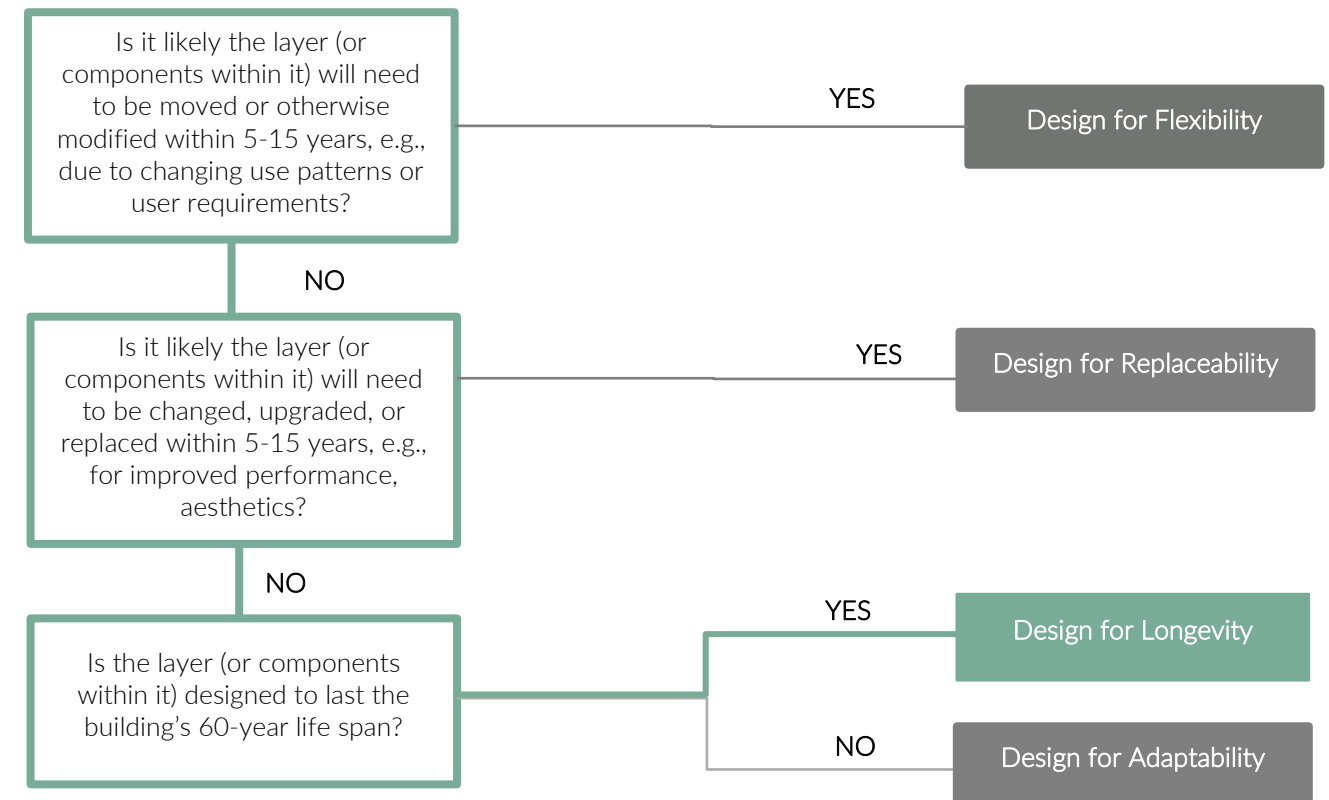


Figure 7: Decision tree to highlight the most appropriate design approach for the structure/ frame.

Various materials options were considered for the frame of the Proposed Development, each appraised for embodied carbon and circularity. The structural steel frame has been designed to optimise span and grid dimensions and therefore reduce material use. The steelwork frame has a long lifespan without the need for maintenance once in use. As discussed, the incorporation of structural steel also ensures the Proposed Development is compatible with future changes in climate and other external environmental factors.

The steel frame has been designed with fully accessible and visible bolted connections so that they can be disconnected and re-used in the future. No welded connections are used in the structure.

Procurement of reused steel is recognised as a major potential carbon saving and this will continue to be investigated during Stage 4, alongside the option of procuring high recycled content 'XCarb' steel from Europe.

2.2.3 Skin/ Shell

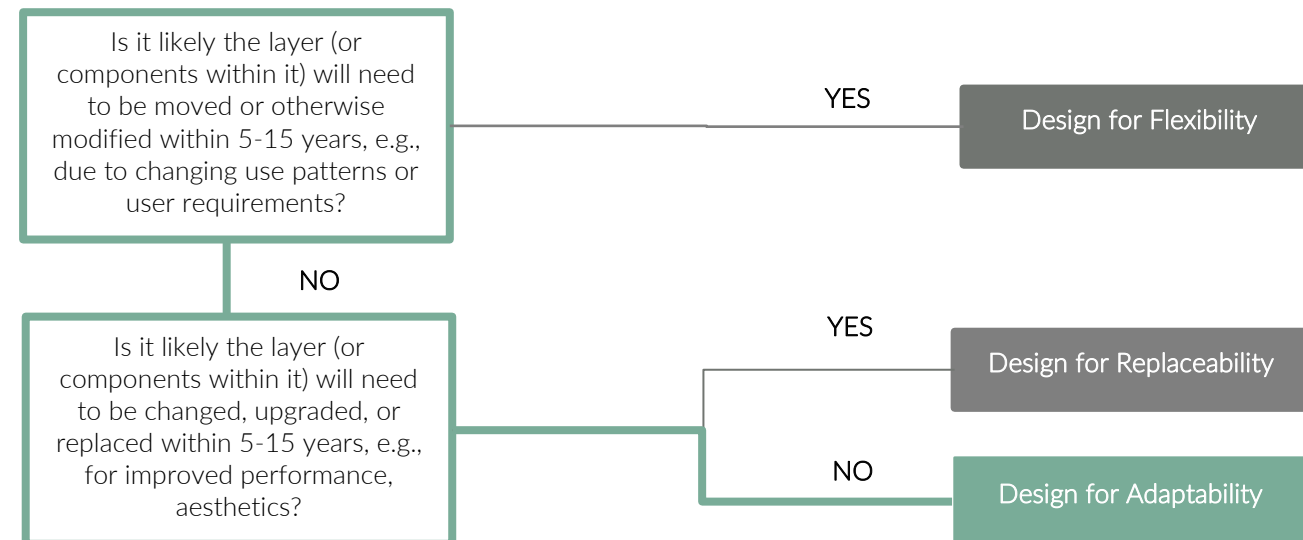


Figure 8: Decision tree to highlight the most appropriate design approach for the skin/ shell.

The Proposed Development has been designed to ensure the façade and external components will not require modifying, upgrading or replacing within 5-15 years of construction completion. However, due to the nature of the building components, these materials will likely need replacing within the building's 60 year life span. Therefore, to ensure the building remains in operation, the building's skin/ shell has been designed for adaptability.

Standard size manufactured components utilised for external doors and loading equipment mean these components will be easily replaced and minimises waste during construction. The external wall and roof panels are modular allowing for easy refurbishment or replacement.

Brick is to be used for the façade of the Proposed Development across Plots A and B. There are opportunities to incorporate re-used or recycled brick to further promote circularity. There are also opportunities for recycled glass to be sourced and incorporated for the glazed curtain walling in Plot C.

At the end of material or building life, the aluminium façade cladding and door frames are highly recyclable and the timber window frames have re-use potential. The cladding and roof components are largely bolted or screwed facilitating removal with minimal detriment to the structure.

2.2.4 Services

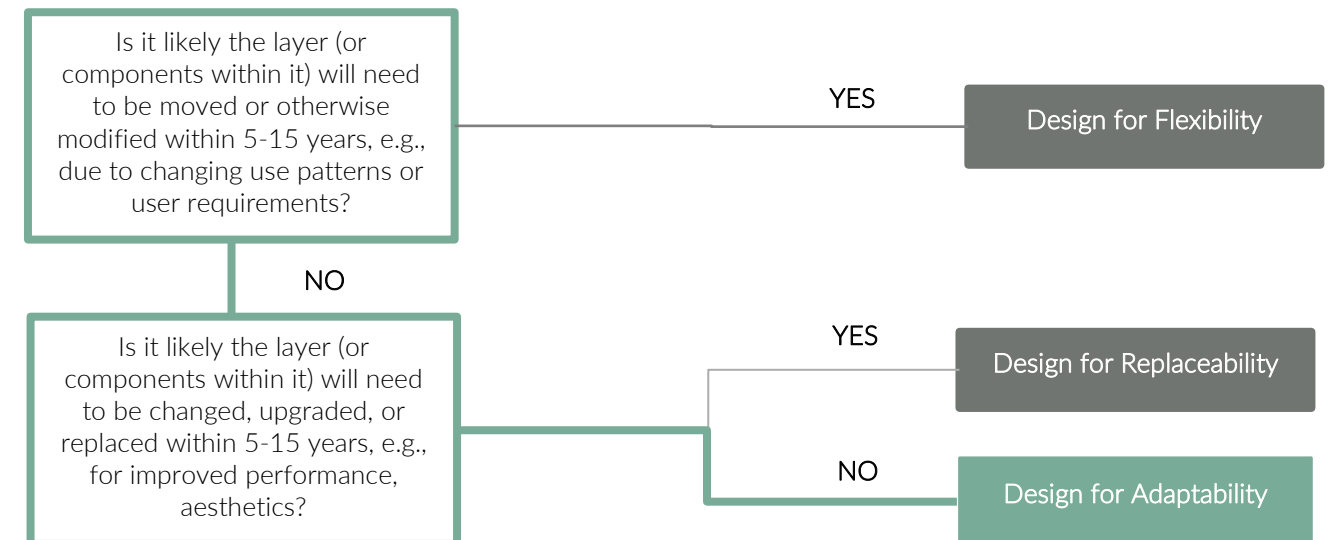


Figure 9: Decision tree to highlight the most appropriate design approach for the building services.

As the Proposed Development is a new build, the majority of building services will be newly fitted systems and should be designed to withstand a minimum life span of 15 years. To ensure this, services will be installed internally where possible to reduce wear. PV panels will be securely fixed to reduce damage caused by external weather conditions and ensure longevity. Services are designed with long term adaptability to extreme climate scenarios. Systems will be designed to accommodate worst case cold events and opportunities for natural ventilation and air conditioning will be included for during warm events.

Electrical and plumbing services will be located behind accessible panels and suspended ceiling tiles where possible for maintenance and replacement of fittings. This ensures building services are highly adaptable, allowing for replacement, modification and upgrading when required. This ability to replace and upgrade building services allows the buildings to be updated in line with future technical advancements and keep the Proposed Development in operation.

Component disassembly has been considered throughout the design to ensure building services can be easily removed without damage to other building components or the building service itself therefore, increasing opportunities for reuse and recycling.

2.2.5 Space plan/ interior

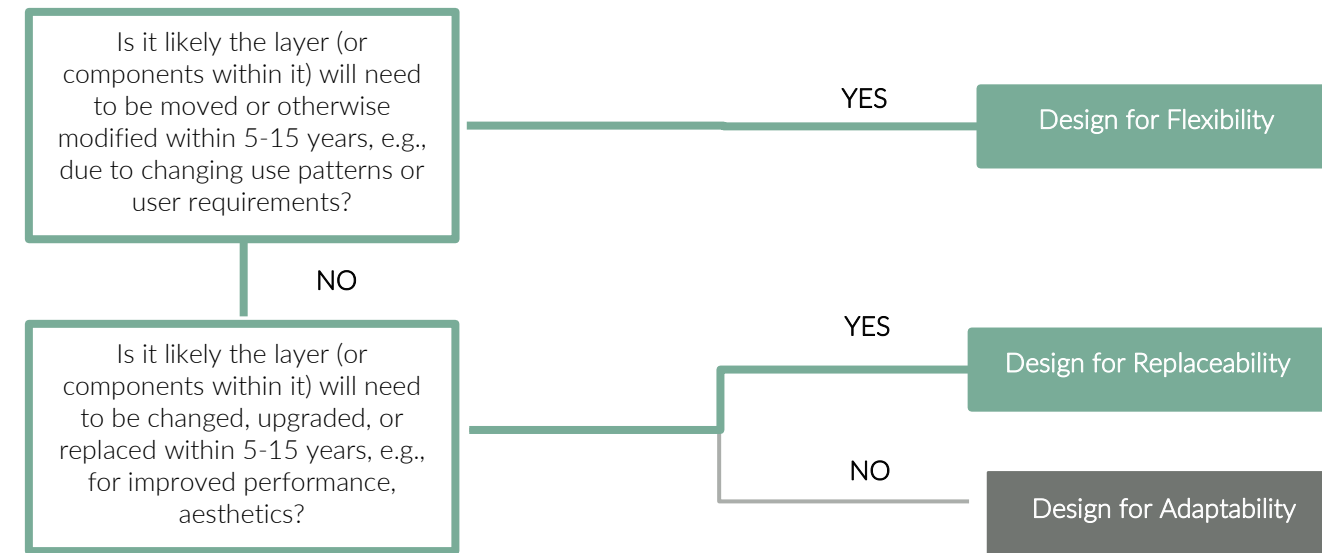


Figure 10: Decision tree to highlight the most appropriate design approach for the space plan/ interior.

The interior spaces within the Proposed Development have been designed for flexibility and replaceability allowing for future changes in building use types. The building has been designed to provide spaces which cater for a variety of needs within the town centre. Plots A and B have been designed to provide retail/ commercial spaces, offices and GP services. Designing for flexibility allows for relatively frequent changes in the interior structure and building plan as well as changes in building use.

2.2.6 Stuff/ content

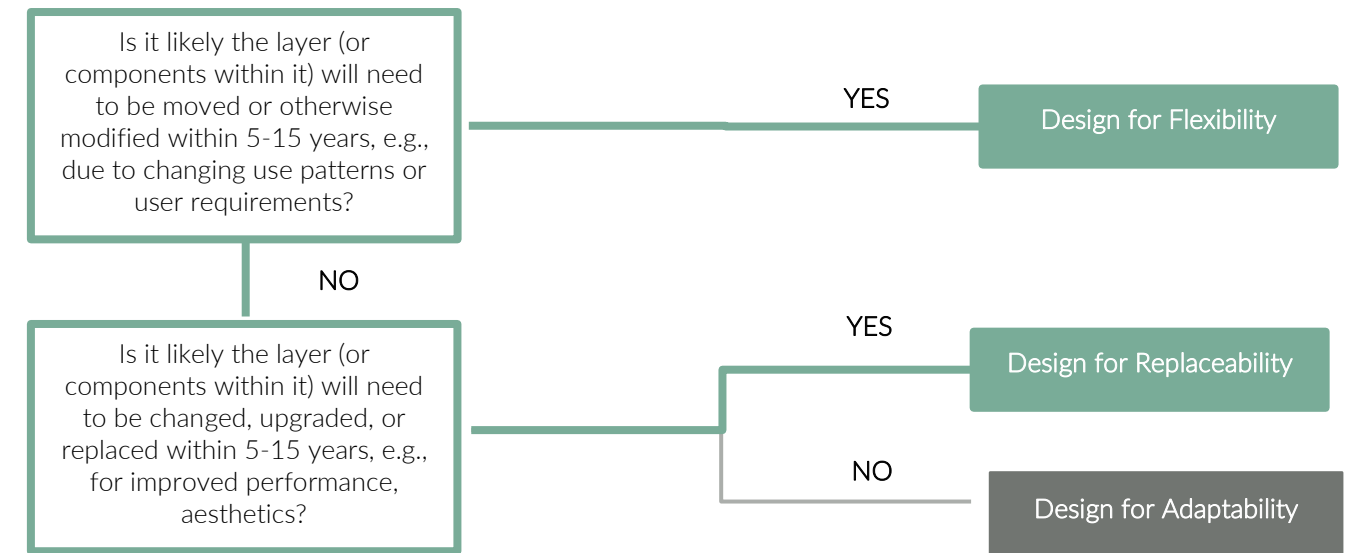


Figure 11: Decision tree to highlight the most appropriate design approach for the stuff/ content.

The content within the building has been designed to allow for flexibility in building use types and to ensure the needs of future tenants are accounted for. This will ensure the continued operation of the Proposed Development and prevent the site being demolished and rebuilt in the future. Toxic treatments and finishes have not been used, to help facilitate re-use or recycling of components at end of life. Modular solutions for street furniture such as outdoor seating areas are proposed, which are easily disassembled. Appropriate waste storage space will be provided in line with BREEAM Wst 03. This area will have opportunity for separation of general waste and recyclable waste.

2.3 Current position in relation to established circular economy targets.

The table below sets out the Proposed Development’s current position against the project’s key circular economy targets. The table outlines the expected waste and recycled content for the major structural elements of Plot A, B and C at this stage and allows for direct comparison against the established requirements and aspirations.

Table 5: The table summarises the Proposed Developments circular economy targets and the current position.

Indicator	Requirement	Aspiration	Current position
Non-hazardous construction waste	3.2 t/100m2GIA	1.9 t/100m2GIA	Assumed to be achievable. Target to be adopted by building contractor.
Non-hazardous waste diverted from landfill	97%	100%	Assumed to be achievable. Target to be adopted by building contractor.
Cement replacement – Substructure	40%	60%	40% assumed in carbon modelling.
Cement replacement – Superstructure	20%	30%	20% assumed in carbon modelling.
Cement replacement – Precast	10%	20%	None present in design.
Recycled content – Structural steel	20%	30%	20% assumed as minimum. Aspiration to incorporate a % of reused steel and/or high recycled content XCarb steel.
Recycled content – Aluminium	20%	30%	70% assumed in carbon modelling. TBC during stage 4.
Recycled content – Steel reinforcement	98%	100%	97% in carbon modelling.
Recycled content – Blockwork	50%	60%	Not yet adopted. TBC during stage 4.

cannot be discussed in detail at this early stage. At present it has been assumed within carbon modelling that cement replacement within the substructure and superstructure and the recycled content of the structural steel will meet the minimum requirements. The recycled content of aluminium has been assumed at 70% which far exceeds 30% aspiration. The recycled content of the steel reinforcement is assumed at 97% which is slightly below the 98% requirement.

The material selection and re-use/ recycled content of materials chosen will be reviewed and further refined during Stage 4.

3. Opportunities for managing and reducing waste.

3.1 Construction Environmental Management Plan.

A Framework Construction Environmental Management Plan (CEMP) has been provided with the Environmental Statement to outline environmental management during enabling and construction works at the Proposed Development. It is expected that the CEMP will be secured through the planning process. This section sets out the key strategies in relation to circular economy; the approach is detailed in full within the Construction Environmental Management Plan.

- To the extent possible, bulk earthworks will be minimised with levels carefully monitored and managed to reduce removal from the site and the need to import new resources.
- During construction, the materials will be appropriately stored to reduce environmental risks and maintain the quality of building resources. All liquids and solids of potentially hazardous nature (e.g. diesel fuels, oils and solvents) to be stored on surfaced areas with appropriate bunding to reduce the risk of spillage.
- Where practicable, materials and resources used during construction will be sourced sustainably and/or locally.
- Where feasible, materials arising from the breaking out of hard surfaced areas will be recycled and reused on-site or transferred to an appropriately licensed recycling facility.
- Throughout demolition and construction, the Site is likely to produce a range of waste, whether this be packaging or waste materials generated from inaccurate ordering, poor usage and storage, poor handling and spillages. Clear instruction and additional care and attention will be taken in attempt to control and reduce this as much as possible.
- All contractors will be required to investigate opportunities to minimise waste arisings at source and, where such waste generation is unavoidable, to maximise the recycling and reuse potential of demolition and construction materials. A Site Waste Management Plan (SWMP) will be prepared to set out the procedures to sort, reuse and recycle construction waste. Adherence to the SWMP would support better control over materials handling and waste, compliance with relevant waste legislation for the handling, transport and disposal of wastes, compliance with environmental management systems and management of waste-related costs

3.2 Operational waste management plan.

No specific policies could be found in the UDP or emerging Local Plan for Bury in relation to operational waste management, therefore relevant policy applicable to the adjacent borough of Manchester City Council has been noted here as a proxy to demonstrate standard good practice.

The Manchester City Council GD04 Waste Storage and Collection Guidance for New Developments¹ document sets out the waste management requirements for all new developments. The document includes the specific requirements for each different building type and establishes the criteria to be included within the waste management strategy sent alongside planning applications. The strategy must include:

- Estimated volumes and types of waste produced by the development;
- Details of internal and external stores for both waste and recycling, including any plans and designs,
- Location of the proposed collection point and details of the route the collection vehicle will take,
- Details of how waste will be transferred between stores and to the collection location,
- Details of number and capacity of bins proposed and collection frequency.

The Site Waste Management Strategy provided within the Design and Access Statement (DAS) outlines the Proposed Development's operational waste management plan. Within the Proposed Development it is expected that 6 mixed use buildings will generate a range of municipal waste types.

- It is estimated that Plot A, B and C could generate a total of 141,985 litres of waste per week, consisting of 28,940 litres of general waste, 30,315 litres of organic waste, 46,758 litres of paper/ card waste, 14,385 litres of plastic/ metal waste and 16,445 litres of glass waste.
- The Proposed Development has been designed to allow sufficient space for waste separation both internally and externally, and collection of the appropriate waste streams.
- Waste will be transferred to refuse storage areas by the tenants with different waste bins provide to promote recycling and correct waste management.
- A mixture of 1,100 litre and 240 litre bins will be provided within each plot.

The sustainable management of operational waste has been given a high priority within the design of the development, allowing for easy segregations of materials to enable a high rate of recycling.

¹ https://www.manchester.gov.uk/downloads/download/6048/waste_management_strategy

4. Conclusion.

The Proposed Development has adopted circular economy principles within its core design, by considering opportunities for material reuse and recycling during the demolition of the existing buildings. Further, through the design of the Proposed Development, circular design strategies have been incorporated for all building aspects. By designing for adaptability, flexibility, replaceability, longevity and disassembly the Proposed Development will reduce future embodied carbon emissions and prevent materials and resources entering the waste stream.

The Proposed Development has been designed to withstand its 60-year lifespan through the incorporation of durable and resilient structural components. Equally the Proposed Development has been designed for to allow for material modifications, technological advancements and changes in building use types. Adopting these measures extends the Proposed Development's operational lifespan.

For both the enabling and construction stage and the operational stage Management Plans have been produced to outline the Proposed Development's approach to effective waste management. The Construction Environmental Management Plan establishes various strategies to monitor and reduce waste produced during construction. The Operational Waste Management Plans sets out the estimated volume and types of waste the Proposed Development is likely to produce and uses this to ensure there are sufficient waste disposal areas. These refuse areas must be easily accessible and allow for waste separation to encourage correct waste management and recycling at the source.



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