



Pilsworth Lake Café

Sustainability Statement

16 April 2024



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Executive Summary

Expedition Engineering have produced the Sustainability Statement to support the planning application for a café and shop at the north-eastern end of Pilsworth Lake, in Heywood, Greater Manchester. The proposals also include the rebuild of an existing boathouse to create a storage area on a mezzanine above open access for boat and pontoon storage, improving access, car parking and landscape works.

The Pilsworth Lake site covers an area of 13.3ha and includes two angling lakes and smaller ponds, used for recreational angling all year round and overnight. The proposal is for the construction of a Class E building comprising café and shop as well as for on-site enhancements and provision of welfare facilities for anglers, including a picnic site, nature-led play areas and other analogous uses. An existing boathouse will also be rebuilt.

A holistic sustainability strategy has been developed for the proposed development drawing upon the relevant national, regional and local policies. The strategy follows the principles of sustainable development set out by Bury’s Local Plan and Climate Action Plan, as well as Greater Manchester’s Places for Everyone Plan.

This Statement describes the strategies adopted to achieve climate resilience, safeguard and enhance the natural environment, mitigate operational and embodied carbon emissions in operation and manage resources efficiently and sustainably, and positively contribute to the life of the community.

	Natural environment
	Carbon and resources
	Climate resilience
	Value for the community

Sustainability Strategy themes and key performance indicators

Executive Summary

Summary of proposed strategies

Natural environment	Carbon and resources	Climate resilience	Value for the community
Landscape-led approach that strengthens wildlife links and enhances biodiversity through: • A biodiversity net gain of >10% • Significant areas of native species woodland planting; • Sections of native species of hedgerow and wildflower meadow; • A number of larger stock, individual native species trees planted in the access 'hub' area, the plaza of the proposed building and the main car park; • An area of sedum roof for the bait shop • Other appropriate habitat enhancements & restoration elements proposed by the project ecologist; • A biodiversity management plan during construction, and • A biodiversity management and monitoring programme that spans at least the first five years of operation.	A building that is built to best practice environmental design standards: • Passive design that responds to the local microclimate, and delivers healthy and comfortable indoors with minimum energy input • Passivhaus-level building envelope performance, mixed-mode ventilation with heat recovery and daylight spaces • All-electric energy strategy with water source heat pump and roof mounted PVs to contribute to operational energy use • Circularity embedded in the building design for efficient use of material resources (lean design), durability, low maintenance requirements and end-of-life reuse • Timber-frame building structure to reduce embodied carbon • Waste prevention and sustainable waste management strategy in operation • Low flow water fittings and submetering to reduce water use by 40%	Proposals that enhance the resilience of both the built and natural environment: • Cross-ventilation utilising prevailing wind direction and building-integrated retractable shading elements to reduce overheating risks in the café and shop through passive means • Retractable structures to provide shade and shelter from wind and rain in outdoor deck areas • Potential for water source heat pump to provide cooling during extreme hot weather and heatwaves • The biodiversity restoration programme and biodiversity management plan will incorporate measures that increase the resilience of the landscape to warmer, wetter weather • The sustainable drainage strategy will effectively protect both building, the proposed landscape and wider catchment from flood risk	A proposal that delivers value for the community: • The site is made more inviting and accessible to anglers, families and other visitors through provision of new and improved amenities (café and shop, new car parking, picnic site and nature-led play areas amongst others) • Leisure activity within the site and the biophilic design of the building supports healthy lifestyles and the wellbeing of visitors • The site aspires to become an asset for the community: a hub for social activity and interaction that safeguard its future • The building will create employment as well as capacity building opportunities for locals • It will support the local economy by prioritizing local supply chains for produce and services

1 / Introduction

1.1. Purpose of this document

Expedition Engineering have produced the Sustainability Statement to support the planning application for a café and shop at the north-eastern end of Pilsworth Lake, in Heywood, Greater Manchester (OL10 2RF). The proposals also include the rebuild of an existing boathouse to create a storage area on a mezzanine above open access for boat and pontoon storage, improving access, car parking and landscape works. The Local Planning Authority is Bury Borough Council.

Sustainability Strategy

A holistic sustainability strategy has been developed for the proposed development drawing upon the relevant national, regional and local policies. The strategy follows the principles of sustainable development set out by Bury's Local Plan and Climate Action Plan, as well as Greater Manchester's Places for Everyone Plan (PFE 2024).

This Statement describes the strategies adopted to achieve climate resilience, safeguard and enhance the natural environment, mitigate operational and embodied carbon emissions in operation and manage resources efficiently and sustainably, and positively contribute to the life of the community.

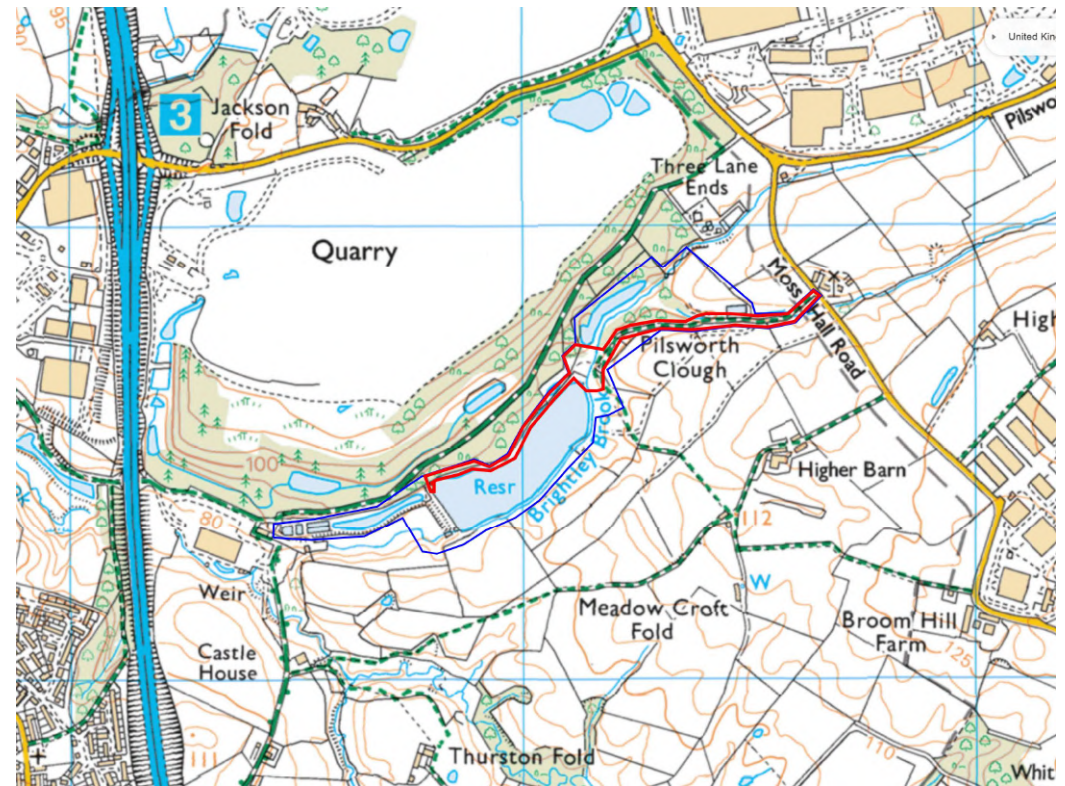


Figure 1 – Location map. Land in ownership (blue), application site (red)

1.2. Existing site

The Pilsworth Lake site covers an area of 13.3ha and includes two angling lakes and smaller ponds, used for recreational angling all year round and overnight. It includes a demolished former cotton mill at the north of the site, an unsurfaced car park area and various stations for angling, with access paths. Access from Moss Hale Road to the car park is through a narrow track.

The Brightley Brook, designated as a Main River, runs across the northern part of the site and along the south-eastern edge of the main lake.

The site is part of the Greater Manchester Green Belt and is designated as a Special Landscape Area and wildlife corridor by Bury Council, comprising woodland and grassed banked areas and home to populations of water birds.

Planning permission was granted in 2011 (Planning Ref 54304) for the erection of a single-storey building with a pitched roof for café, bait shop and accommodation, deemed necessary to support the use of the site for recreational activity on a 24hr basis.

Redevelopment works will be limited to creating a new access road, new car parking areas, the proposed new café and shop building, the rebuild of the boat house and proposed biodiversity enhancements.



Figure 2 – Site Plan

1.3. Development proposals

The proposal is for the construction of a 150m² building comprising café and shop as well as for on-site enhancements and provision of a shop and welfare facilities for anglers. External works include a picnic area, improved access and car parking facilities.

The proposed building is of a similar footprint to the one previously granted consent in 2011, however of a contemporary design and in a different location to be better integrated within the landscape and maximising the amenity value of the lake.

Placemaking, biodiversity and access enhancements will be sought through:

- A biodiversity restoration and enhancement programme including planting of native species;
- Clearly defined routes that frame a plaza and landscaped gardens;
- A deck extending from the building into the lake with demountable cover structure for year-round usability;
- Upgrades to the main access track, a drop-off / meeting 'hub' in the position of the existing car park, relocation of primary car parking and new overflow car park.

In addition, the development proposals include the rebuild of an existing 50 m² boathouse near the lake embankment, to create a storage area on a mezzanine above open access for boat and pontoon storage.



Figure 3 – Landscape plan (Source: Barnes Walker)

1.3. Development proposals



Figure 4 – Proposed café and shop building

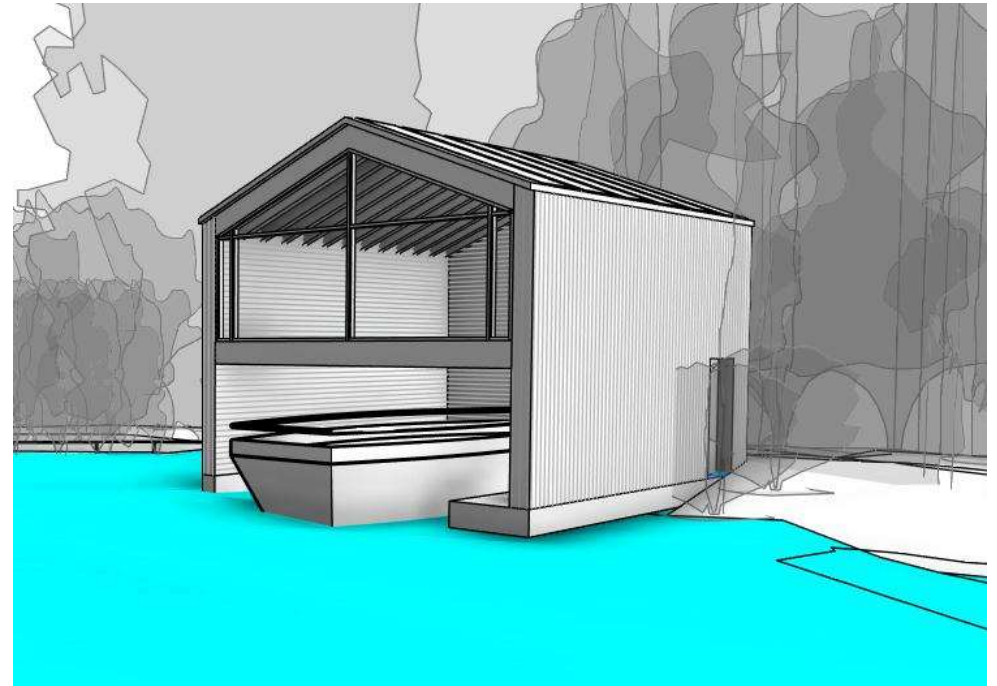


Figure 5 – Rebuilt boathouse

1.4 Report structure

The structure of the report is illustrated opposite. A review of the national and local policy context is included in Section 2. Section 3 sets out the vision and themes for sustainable development. The sustainability strategy is presented within Sections 4 to 7 that correspond to the four themes of the sustainability vision chosen for the project. Each section includes:

- High level context, vision and objectives for sustainable development
- Statement of approach taken to achieve a sustainable and low carbon development in line with the proposed objectives.

	Section 1/	Introduction
	Section 2/	Policy context
	Section 3/	Sustainability vision and themes
	Section 4/	Natural environment
	Section 5/	Carbon and resources
	Section 6/	Climate resilience
	Section 7/	Value for the community
	Section 8/	Conclusion

Figure 6 – Report structure

2 / Policy context

2.1. National policy

The National Planning Policy Framework and National Practice Guidance form the main national policy framework.

National Planning Policy Framework (NPPF), 2023

The National Planning Policy Framework sets out the Government's planning policies for England. It defines the overarching objective of sustainable development, places a strong emphasis on delivering well designed, inclusive places and draws attention to the importance of considering social, economic and environmental aspects of sustainability, referencing the UN Sustainable Development Goals as objectives for all developments.

National Planning Practice Guidance (PPG)

The National PPG supports the NPPF across several categories including town centres and retail, waste, water supply, wastewater and water quality, healthy and safe communities, making a planning application, and several more.

In 2019, the United Kingdom signed a climate declaration to achieve Net Zero Carbon by 2050. Following this declaration, a 10-point action plan and white paper were published, which have led to new energy and carbon targets being set across the UK.

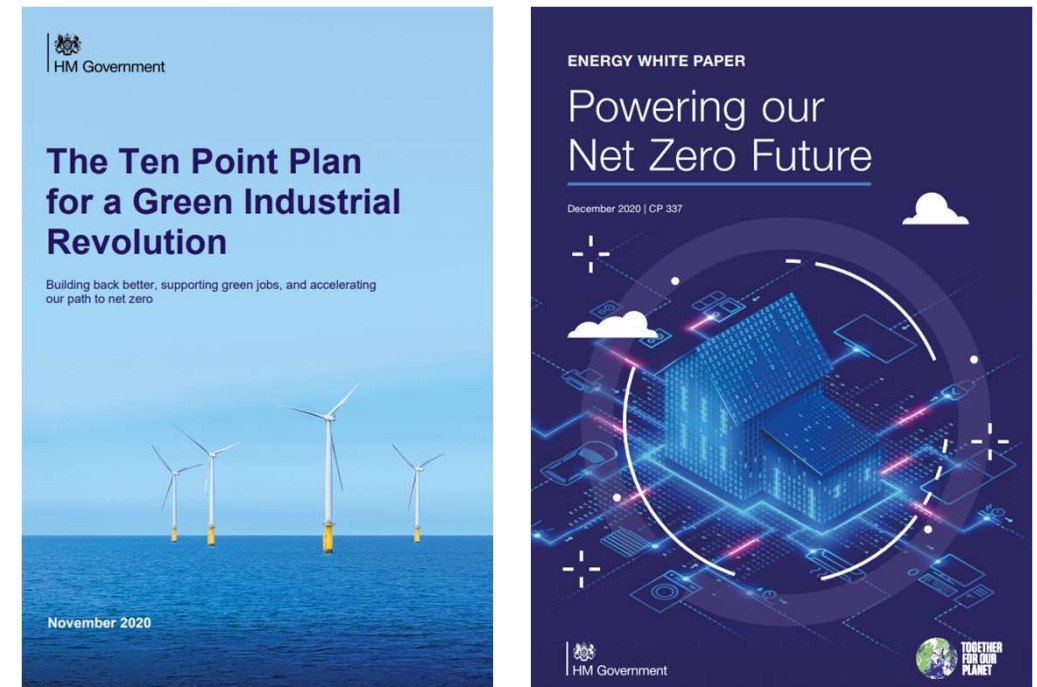


Figure 7: National Policy documents

2.2. Regional policy

Places for Everyone Joint Development Plan Greater Manchester Spatial Framework (PfE)

The Places for Everyone Plan is the long-term plan for jobs, new homes and sustainable growth in Greater Manchester. The vision for the area is that of sustainable and inclusive growth and making Greater Manchester one of the ‘best places in the world to grow up, get on and grow old’.

The principles of sustainable development are embedded in the Plan’s strategic objectives (Figure 8) and its policies. The policies most relevant to the proposed development are identified as:

Sustainable and resilient places

- Sustainable Development (JP-S 1); Carbon and Energy (JP-S2); Resilience (JP-S4); Flood Risk and the Water Environment (JP-S5); Resource Efficiency (JP-S7).

Greener places

- Valuing important landscapes (JP-G 1); Green infrastructure network (JP-G 2); River Valleys and Waterways (JP-G 3); Trees and Woodland (JP-G 7); A Net Enhancement of Biodiversity and Geodiversity (JP-G 9); Green Belt (JP-G 10).

Places for People

- Sustainable Places (JP-P 1); Health (JP-P 6); Sport and Recreation (JP-P 7).



Figure 8 – The 10 strategic objectives of Places for Everyone Joint Development Plan Greater Manchester Spatial Framework

2.3. Local policy

New Local Plan (emerging)

Bury Council is in the process of preparing a new Local Plan to guide future development in the borough. Once adopted, this will be used as the basis for determining proposals together with the Places for Everyone (PfE). The vision (outlined in Local Plan Policy Directions, 2018) of the Local Plan is that by 2037 the Borough 'will have embraced sustainable growth' and have become a place with strong, vibrant and healthy communities and a high quality natural and built environment that is resilient to the effects of climate change.

Adopted Bury Unitary Development Plan (UDP, 1997)

The Bury Unitary Development Plan (UDP) was adopted in 1997 and will continue to be used to determining planning applications until superseded by the New Local Plan.

The new Local Plan's topic papers on 'Natural Environment', 'Built Environment', 'Flood Risk', 'Open Land', and 'Health and Wellbeing' as well as the policies within the 'Environment', 'Open Land', and 'Recreation and Tourism' chapters of the UDP have been reviewed to ensure the strategy for the proposal responds to existing policies and aligns with the principles and direction of emerging policies. No specific performance targets have been identified that are applicable to the development.

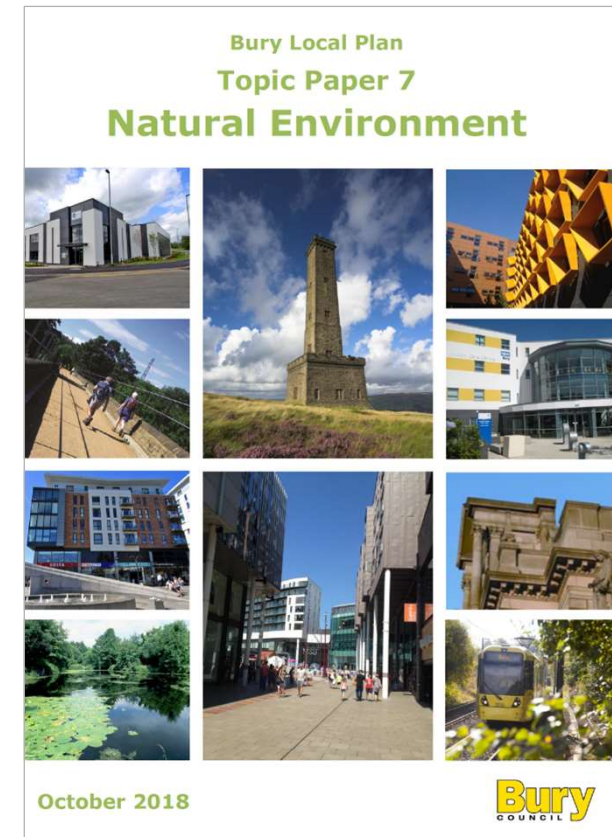


Figure 9 – Bury Council's emerging new Local Plan (Natural Environment topic papers, cover).

2.3. Local Policy

Bury Council Climate Action Plan (2023 update)

In 2019, Bury Council declared a Climate Emergency, and has since set a target to achieve carbon neutrality by 2038 (or sooner) and produced a Climate Action Strategy and Action Plan.

The Strategy identifies nine priority action areas reflecting key objectives. The development proposals are deemed to be most relevant to the following:

- **Homes, Workplaces and Public Buildings:** objective is for all buildings to be carbon neutral by 2038;
- **Consumption & Waste:** objective is to reduce consumption-based emissions by adopting sustainable, circular and resource-efficient models across all consumption activity.
- **Natural Environments:** objective is to increase woodland cover, protect and enhance soil environments and natural habitats, support carbon neutrality goal.
- **Climate Resilience and Adaptation:** objective is to adapt and build climate resilience across the built environment, natural environment, residents and organisations.

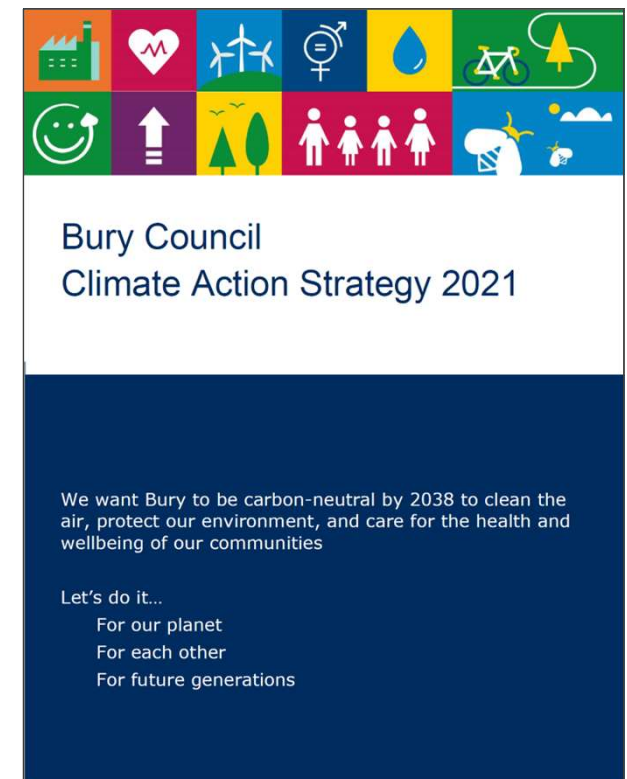


Figure 10 – Bury Council's Climate Action Strategy (cover page).

2.3. Regional and Local Policy - Summary

Sustainability Theme	Places for Everyone Joint Development Plan Greater Manchester Spatial Framework	Adopted Bury Unitary Development Plan (UDP, 1997)	Sustainability Requirements
Natural Environment	JP-G 1 / Valuing important landscapes JP-G 2 / Green infrastructure network JP-G 3 / River Valleys and Waterways JP-G 7 / Trees and Woodland JP-G 9 / A Net Enhancement of Biodiversity and Geodiversity JP-G 10 / Green Belt	EN6 / Conservation of the natural environment EN8 / Woodland and trees EN9 / Landscape EN10 / Environmental improvement	• Protect, conserve and improve the landscape quality of the site and its natural environment • Implement natural regeneration and new tree planting • Proposals to reflect and respond to the special qualities and sensitivities of the landscape • Protect, conserve, manage and expand woodland habitats • Achieve a net gain in biodiversity • Make positive and beneficial use of the Green Belt without harm to its openness, permanence or ability to serve its five purposes
Carbon and resources	JP-S2 / Carbon and Energy JP-S7 / Resource Efficiency JP-P 1 / Sustainable Places	EN4 - ENERGY CONSERVATION EN4/1 - Renewable Energy EN4/2 - Energy Efficiency	• Deliver a renewable and low carbon energy scheme that meets the needs of the local community • Keep fossil fuels in the ground • Incorporate electric vehicle charging points to future proof for the likely long-term demand • Incorporate PV installations where feasible • Use sustainable design and construction techniques to reduce carbon emissions, reduce and recycle waste and minimise water use • Support circular economy • Deliver a resource efficient site with low carbon footprint that makes efficient use of land, minimum use of materials and supports high levels of recycling

2.3. Regional and Local Policy - Summary

Sustainability Theme	Places for Everyone Joint Development Plan Greater Manchester Spatial Framework	Adopted Bury Unitary Development Plan (UDP, 1997)	Sustainability Requirements
Climate resilience	JP-S4 / Resilience JP-S5 / Flood Risk and the Water Environment	EN5/1 - New Development and Flood Risk	• Provide an adaptable building and place that can easily respond to changing needs, and future climate impacts • Design the indoor and outdoor environment to provide a reduction and respite from more extreme temperatures and winds • Take an integrated catchment-based approach to managing flood risk • Ensure appropriate provision for response and evacuation in the case of an emergency or disaster
Value for the community	JP-S4 / Resilience JP-P 1 / Sustainable Places JP-P 6 / Health JP-P 7 / Sport and Recreation		• Support healthier lifestyles and minimise potential negative impacts on health • Create interesting and imaginative environments which raise the human spirit through the use of green space, public art and quality design • Deliver socially inclusive places that respond to the needs of the community, enable all to participate equally • Provide opportunity for social contact and promote a sense of community

3 / Sustainability vision and themes

3. Vision and themes for sustainable development

The development proposals aim to safeguard and enhance the site’s natural environment and recreational value, and deliver a sustainably constructed and managed, resource efficient, carbon neutral and climate resilient place of leisure for the community of locals and visitors to enjoy in years to come.

The sustainability strategy draws upon the adopted and emerging local and regional plans and policies and aligns with the principles of sustainable development embedded in the vision and objectives for Bury and Greater Manchester.

Inspired by Bury’s *New Local Plan* and Greater Manchester *Places for Everyone Joint Development Plan*, as well as the priority areas of Bury’s *Climate Action Strategy*, this strategy is structured around four themes, each with their associated vision and objectives (see Table 1).

The next sections show how the Proposed Development addresses each of these themes and objectives.

	Natural Environment	Carbon and resources	Climate resilience	Value for the community
Vision	A proposal that restores the landscape, enhances biodiversity, strengthens habitat connections and wildlife corridors.	A visitor centre built to best practice environmental design standards, makes efficient use of resources and has a low operational and embodied carbon footprint.	A site that underpins the long-term resilience to climate change for both the built and natural environment.	A proposal that enhances the site’s value for the community, is inclusive and inviting, supports social interactions and the wellbeing of visitors.
Objectives	• Safeguarding the value of the landscape • Rebuild ecological integrity • Strengthen wildlife links and corridors • Enhance biodiversity and achieve Biodiversity Net Gain >10% • Mitigate impacts on environment from potential pollution sources.	• Energy efficient and low operational carbon footprint • Material efficient and low embodied carbon footprint, following circular design principles • Efficient use & sustainable management of water and waste • Promote low carbon and active transport options.	• A climate-resilient visitor centre • A climate-resilient landscape • Sustainable drainage and flood risk mitigation using nature-based solutions	• Improved, multi-purpose amenities for visitors • Re-connecting people with nature • Employment opportunities & support for the local economy • Community engagement & capacity building

Table 1 – Vision and objectives for proposed sustainability themes

4 / Natural environment





4.1. Vision objectives and context

Vision

A proposal that restores the landscape, enhances biodiversity, strengthens habitat connections and wildlife corridors.

Objectives

- Safeguard the value of the landscape
- Rebuild ecological integrity
- Strengthen wildlife links and corridors
- Enhance biodiversity and achieve Biodiversity Net Gain >10%
- Mitigate impacts on environment from potential pollution sources.

Context

The site falls within the Green Belt and covers an area of 13.3ha including two angling lakes and smaller ponds. It lies within Pilsworth Site of Biological Interest (SBI) and is designated as a Special Landscape Area.

The Phase 1 Habitat Survey undertaken identifies broadleaved woodland around the northwest of the site and the Main Lake as habitats of principal importance for conservation. All habitats present are common throughout the UK and no nationally or locally rare plant species have been identified. Protected sites are found in the vicinity of the site: the statutory designated site of Hollins Vale Local Nature Reserve (LNR) at 700m to the west of the site, and four non-statutory designated sites within 1.5km radius, two of which are also Sites of Biological Interest.

According to the Bury Landscape Character Assessment, the site is predominantly located within the Fringe Industrial Brooks LCA and due consideration should be given, amongst others to:

- Strengthening wildlife links and corridors
- Landscape enhancement of broadleaved woodland through planting and management
- Management and restoration of unimproved grassland.



4.2. Design requirements

Sustainability requirements

Table 2 summarises the design requirements for the Pilsworth Lake Café and the natural environment sustainability theme, following regional and local policies as well as best practice guidance.

Natural Environment
• Protect, conserve and improve the landscape quality of the site and its natural environment • Implement natural regeneration and new tree planting • Proposals to reflect and respond to the special qualities and sensitivities of the landscape
• Protect, conserve, manage and expand woodland habitats • Achieve a net gain in biodiversity above the 10% minimum set out by the Environment Act (2021) • Make positive and beneficial use of the Green Belt without harm to its openness, permanence or ability to serve its five purposes • Compliance with best practice SUDS Manual on policy control
• Mitigate and manage potential watercourse or groundwater contamination, as well as light, air and noise pollution

Table 2– Natural environment requirements



Figure 11 - View looking south-west across the larger of the two main lakes (top), View looking east over the smaller fishing lake from elevated ground to the north of the existing car park (bottom). Source: Pre-application Landscape Statement, Barnes Walker



4.3 Enhancing biodiversity and landscape character

The proposals seek to restore and enhance the ecological value of the landscape, deliver a biodiversity net gain and strengthen wildlife links.

A landscape-led approach has been adopted in developing the proposals. Biodiversity enhancement proposals include:

- Significant areas of native species woodland planting
- Sections of native species of hedgerow and wildflower meadow
- A number of larger stock, individual native species trees planted in the access 'hub' area, the plaza of the proposed building and the main car park
- An area of sedum roof for the visitor café
- Other appropriate habitat enhancements & restoration elements proposed by the project ecologist.
- Creation of new habitats along raingardens and bio-swales proposed as part of the sustainable drainage strategy (Section 6).

The above points aim to rebuild ecological integrity, strengthen connections between landscape elements, restore and enhance biodiversity in line with the principles set out in Bury's Landscape Character Assessment and UDP environmental policies. Further details can be found in the landscape section of the Design and Access Statement submitted as part of the application.



Figure 12 - Landscape plan (Source: Barnes Walker)



4.4. Protecting the environment

During construction, impacts will be limited due to the small overall footprint of construction works and appropriate management of risks in line with best practice and the ecologist's precautionary measures.

As per the Phase 1 Habitat Survey undertaken, the proposed development is deemed unlikely to result in any significant impacts to habitats.

A robust pollution control strategy will be put in place as part of the sustainable drainage strategy (Section 6), following established best practice from the SUDS Manual (CIRIA C753). This will effectively protect the lake, the Brightley Brook and groundwater from pollution.

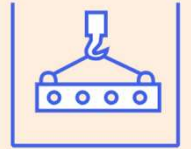
Given the absence of foul sewers in the proximity to the site, foul drainage flows will be treated on site, by a proprietary in-ground packaged treatment plant. This will be designed to comply with water quality discharge requirements into the lake, will include built-in resilience and will be designed for peak occupancy.

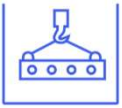
A biodiversity management and monitoring programme that spans at least the first five years of operation is proposed to be developed to ensure the long-term resilience of the restoration programme.



Figure 13 - Landscape plan (Source: Barnes Walker)

5 / Carbon and resources





5.1. Vision objectives and context

Vision

A café and shop built to best practice environmental design standards, makes efficient use of resources and has a low operational and embodied carbon footprint.

Objectives

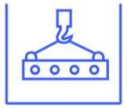
- Energy efficient and low operational carbon footprint
- Material efficient and low embodied carbon footprint, following circular design principles
- Efficient use & sustainable management of water and waste
- Promote low carbon and active transport options.

Context

The UK is committed to bringing all greenhouse gas emissions to Net Zero by 2050. Bury Council declared a climate emergency in 2019 and has set an ambition to be carbon neutral by 2038, as the rest of the Greater Manchester region. Places for Everyone Plan for Greater Manchester stipulates that all new buildings will need to achieve net zero in operation by 2028.

Reducing embodied carbon emissions from construction will also be targeted as embodied carbon emissions make a substantial part of new developments' lifecycle emissions. The construction sector generates 60% of waste in Europe and represents 50% of the global demand for materials, and as such, is a priority area for a circular approach. Materials choices in new developments must ensure they are low carbon, have a low environmental footprint overall, are durable and can be reused or recycled at the development's end of life. Moreover, waste in both construction and operation should be minimised and managed sustainably.

As a precious resource, water conservation is essential. The likelihood of more severe summer droughts is predicted to increase, which could lead to potential water shortages. A water efficiency approach is required to minimise the water footprint of the proposed building as well as carbon emissions associated with potable water supply and wastewater treatment.



5.2. Design requirements

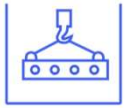
Sustainability requirements

Table 3 summarises the design requirements for the Pilsworth Lake Café under carbon and resources following regional and local policies as well as best practice guidance from LETI and RIBA. This section of the report presents the strategies to achieve:

- A low carbon development;
- Embedding circularity from the outset;
- With exemplar waste management, and
- Exemplary water conservation.

Carbon and resources
High fabric performance targeting Passivhaus levels of insulation and air tightness
Energy Use Intensity (EUI) of space heating no more than: 15kWh/m ²
Highly efficient all-electric energy strategy with a water source heat pump harvesting heat from the lake for space heating and hot water
PV installation on all available south facing roof space (approximately 58% of south facing roof, 38 m ² of collector)
Achieve <535 kgCO ₂ /m ² in whole life embodied carbon (RIBA 2030 target for retail and education buildings) and a >19% betterment of Part L of the 2013 Building Regulations.
Potable water consumption of at least 40% reduction from BREEAM baseline
Embed circularity on the design from the outset minimising waste at all stages
Adopt best practice waste management in operation, focusing on waste prevention

Table 3 – Carbon and resources requirements.



5.3 Passive design approach

The development is designed to have a low operational carbon footprint and achieve best practice standards for space heating demand and energy use intensity overall. To this end, the energy hierarchy has been adopted in developing the building and services' design, as follows:

Passive design

Reducing energy demand through effective **passive design** measures has been a key first step. The massing of the building, its orientation and façade treatment have been optimised to minimise energy use, respond to the local microclimate, achieve excellent levels of natural light and thermal comfort. Specifically:

- The building's main occupied space (café) is oriented towards the southwest, benefiting from passive heating through solar gains in the winter;
- The longest axis of the building is also perpendicular to the main wind direction (south-southwest). This will allow the building to be predominantly naturally ventilated through controlled openings and cross-ventilation year-round.

The Energy Hierarchy

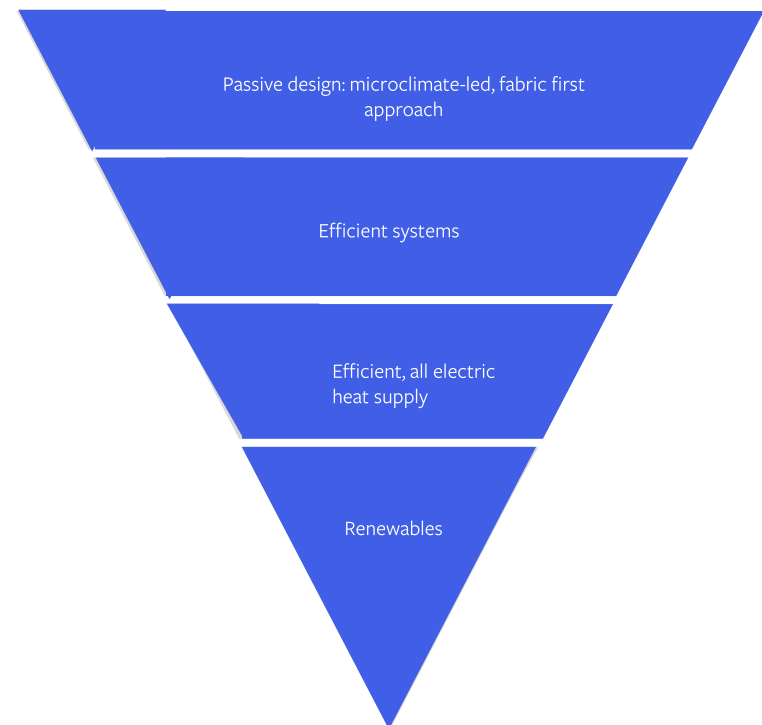
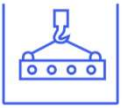


Figure 14 - Low operational carbon design hierarchy



5.3 Passive design approach (cont'd)

- The orientation and size of openings along the main façade allow abundant natural light in the café.
- The full-height openable glazing of the main façade will help merge indoors and outdoors in the summer, reducing the risk of overheating indoors.
- Retractable structures are proposed for shading and wind protection of both the building and outdoor deck; these design features will also contribute to thermal comfort indoors and outdoors year-round.

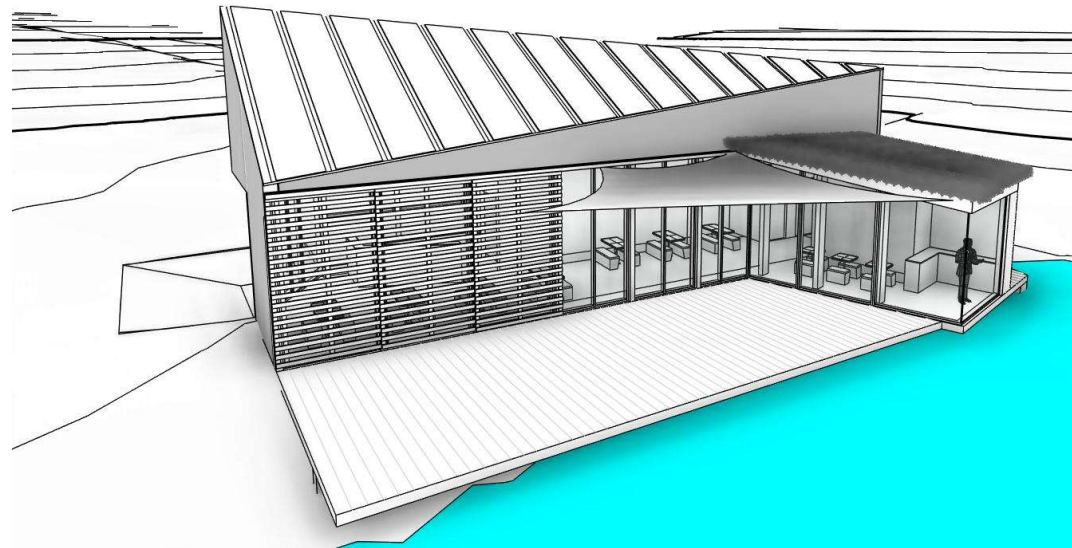
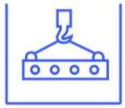


Figure 15 - View of the visitor centre from the southwest (bottom). Source: Atelier Architects



5.3 Passive design approach (cont'd)

Envelope performance

A fabric first approach, targeting Passivhaus levels of insulation and air tightness is proposed to achieve the targets for Energy Use Intensity (EUI). The proposed performance parameters are summarised in Table 4.

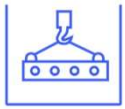
Energy efficient systems (lighting, mechanical ventilation and equipment)

Highly-efficient lighting system with automated controls is proposed to minimise the energy used for lighting. In the main café area, illuminance levels sensors can be installed to control artificial lighting in conjunction with natural light in the space. Class A rated efficient electrical appliances and catering equipment will be installed in the building.

A mechanical ventilation system with heat recovery (MVHR, HR>85%) will be installed to minimise space heating demand in winter.

Component		Part L 2021	Passivhaus	Proposed
Floor	W/m2.K	0.13	0.10	0.10
External Wall	W/m2.K	0.18	0.15	0.15
Roof	W/m2.K	0.11	0.10	0.10
Window	W/m2.K	1.2	0.8	0.8
Glazed door	W/m2.K	1.6	0.8	1.6
Air Permeability	m3/(h.m2)	5	0.6 (ach)	1
MVHR		No	Yes	Yes
Heating Appliance		As per actual	-	WSHP
Photovoltaic (PV)		Yes	Yes	Yes

Table 4 - Overview of proposals: fabric performance, mechanical ventilation, heating and renewables.



5.4 Environmental strategy

The following environmental design strategy is proposed:

Winter

- Mechanical Ventilation with Heat Recovery (MVHR) will achieve baseline ventilation requirements for indoor air quality.
- Passive solar gains are maximised through South, and South-West facing windows, to minimise space heating requirements.
- Water Source Heat Pumps and individual fan coil units for space heating.

Mid season

- Natural ventilation to achieve fresh air requirements and thermal comfort.

Summer

- External shading to control solar gains.
- Natural ventilation with all front glazing open to achieve fresh air requirements and thermal comfort.
- Opportunity for comfort cooling from Water Source Heat Pumps (26° C setpoint) and MVHR could be considered during very hot days with high occupancy.

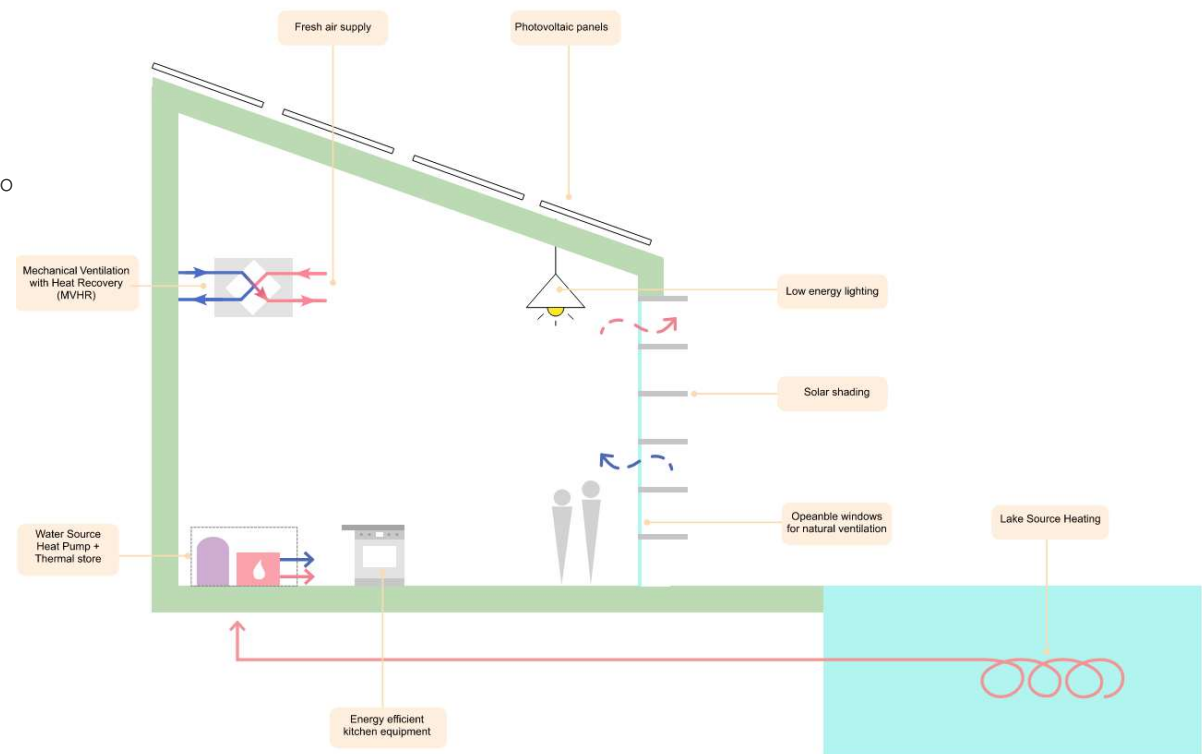
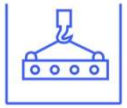


Figure 16 - Environmental strategy diagram



5.5 Efficient systems and renewables

Efficient, all electric heat supply

Heat for space heating and hot water is proposed to be provided via a water source heat pump (WSHP) exchanging heat with the main lake, privately owned by the developer of the proposed café and building.

The efficiency of this system for space heating is very high (Coefficient of Performance of approximately 4.0), making this the most sustainable, low carbon source for heat.

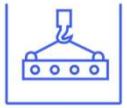
A closed-loop system is proposed, consisting a heat exchanger coil pipe at the base of the lake, and a heat exchanger unit in a plant room feeding fan coil units within the different spaces.

Renewables

PV panels are proposed on the southern face of the main roof of the building. This will cover an area of approximately 58% of the south facing roof.



Figure 17 – Indicative PV panels. Source: BiiPVco



5.6. Low embodied carbon & Circular design

Once operational carbon has been reduced through the measures described in the previous section, embodied carbon will be reduced through the following measures:

Need less

The café and shop is designed to be multi-functional meaning demand for space and footprint is optimised;

Use less

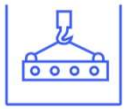
Ongoing optimisation to reduce material use, pared back durable finishes with exposed services, use of recycled/reused materials, and use of offsite manufacturing, where possible;

Use better

Use of timber structure, specifying low-carbon materials and products.. The structural grid has been guided by typical spans achievable with timber systems.



Figure 18 – Timber construction case study: Brent Cross Pavilion, London. Designed by Expedition, a similar timber construction has been used. This has achieved embodied carbon emissions associated with the building structure of 250 kgCO₂/m², meeting best-practice LETI embodied carbon targets.



5.6. Low embodied carbon & Circular design

The visitor centre will be embedded into the local and national circular economy, to reduce the carbon and environmental footprint of its lifetime. This section outlines the circular economy strategy, considering design, construction, operation and end of life. The ‘building in layers’ approach has been adopted to bring circularity in the design of the building, where each component is seen as its own entity with circular economy principles embedded into it. The key elements of circular design are outlined below for the structure, skin, services, space and ‘stuff’.

Site:

- Minimise hard surfaces, maximise reuse of recycled materials, keep footprint of proposed works tight.
- Cut and fill will be balanced, and excess spoil retained around the site.
- Design for climate resilience and minimum impact on receiving environment.

Structure:

- FSC-certified timber will be used as the main structural component, minimising the need to source carbon and resource intensive steel. Optimised foundation systems.
- A Design for Manufacture and Assembly (DfMA) approach will be adopted, with a preference for off-site and prefabricated components which will minimise waste and error made on site.
- Mechanical fixings will be used throughout, enabling disassembly and reuse of components at end of life.

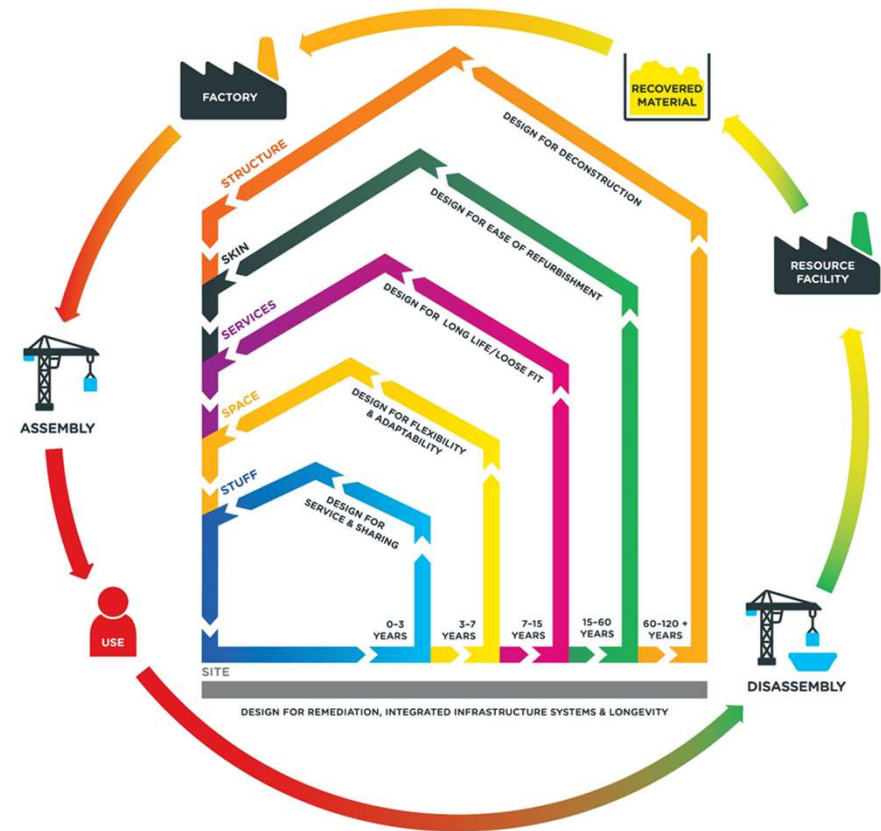
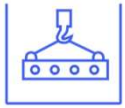


Figure 17 Circular economy principles and building layers



5.6. Low embodied carbon & Circular design

Skin:

- Adaptable and resilient building envelope to the effects of climate change – cladding materials selected to withstand temperature fluctuations, resist high wind loads, and snow.
- The use of pre-fabricated components will enable these elements to be reused at end of life.

Services

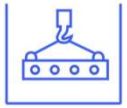
- Reduced energy loads and use of mixed mode ventilation.
- Minimum water use.
- Water source heat pumps for space heating.
- Accessible plant location for ease of servicing and replacement.

Space:

- Flexible spatial arrangement, café area can cater for a variety of occupancy and functions.
- A pared back material palette has been chosen that is low waste and requires low maintenance.
- Gender-neutral toilets provided for efficiency and social inclusion.

Stuff:

- Unnecessary finishes will be avoided throughout.
- Single use plastics will be avoided during operations, wherever possible.



5.7. Waste management

Construction waste generated during construction will be limited. A Construction Waste Management Plan will be developed, targeting minimum waste generation and sustainable waste management in line with best practice.

In operation, the Waste Hierarchy will be adopted to first and foremost prevent waste and maximise the reuse of products. An operational waste management plan will be developed and implemented.

Due to the intended site uses, priority areas for waste prevention and sustainable waste management will be:

- Organic food waste;
- Food and drinks packaging and containers;
- Fishing equipment, other consumables and dry mixed recyclables.

A 'zero single-use plastics' policy and 'zero single use items' policy will be adopted, complemented by other waste prevention strategies for the key waste streams. On-site composting of organic food waste will be implemented.

Separate bins within the building and the landscape, clearly labelled will be provided for easy separation of waste arisings. Waste segregation, collection arrangements and off-site management options will be agreed with Bury Council.

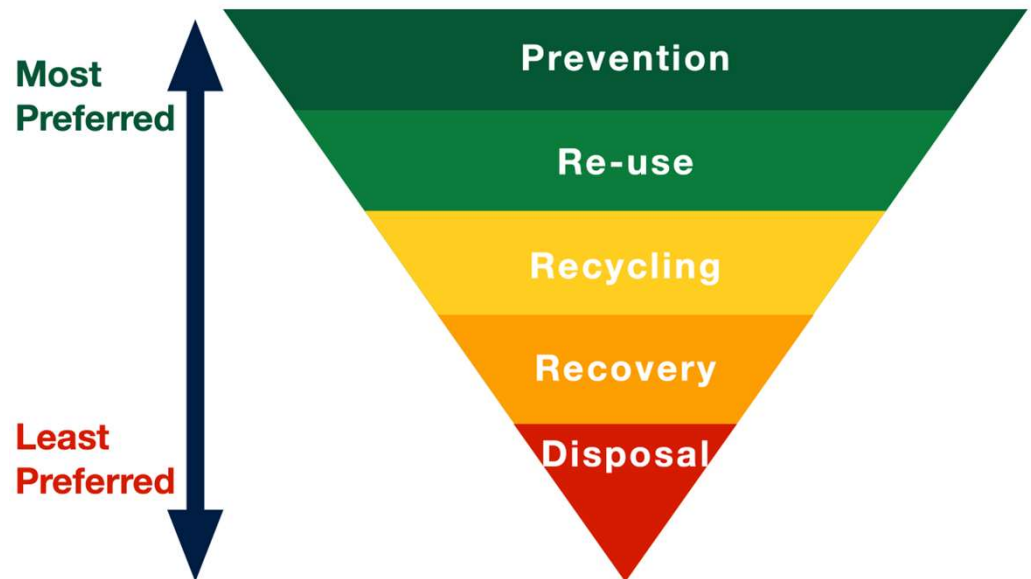
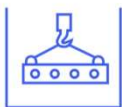


Figure 18 - Waste hierarchy



5.8. Water conservation

Water demand will be reduced through the specification of efficient water fittings (Table 5), the use of drought resistant planting and water metering.

The specifications proposed will deliver a 40% saving against baseline water consumption.

Rainwater butts collecting roof runoff will be considered, for watering planters and newly introduced vegetation in the vicinity of the building.

Components & capacity/flow rate		Proposed
Wash-hand basin taps	l/min	3
Kitchen Sink	l/min	6
Dual flush WCs	Effective flush volume (l)	2.6/4.0
Commercial dishwasher	l/rack	3
Waste disposal unit	l/min	0

Table 5 Water efficient fittings specification

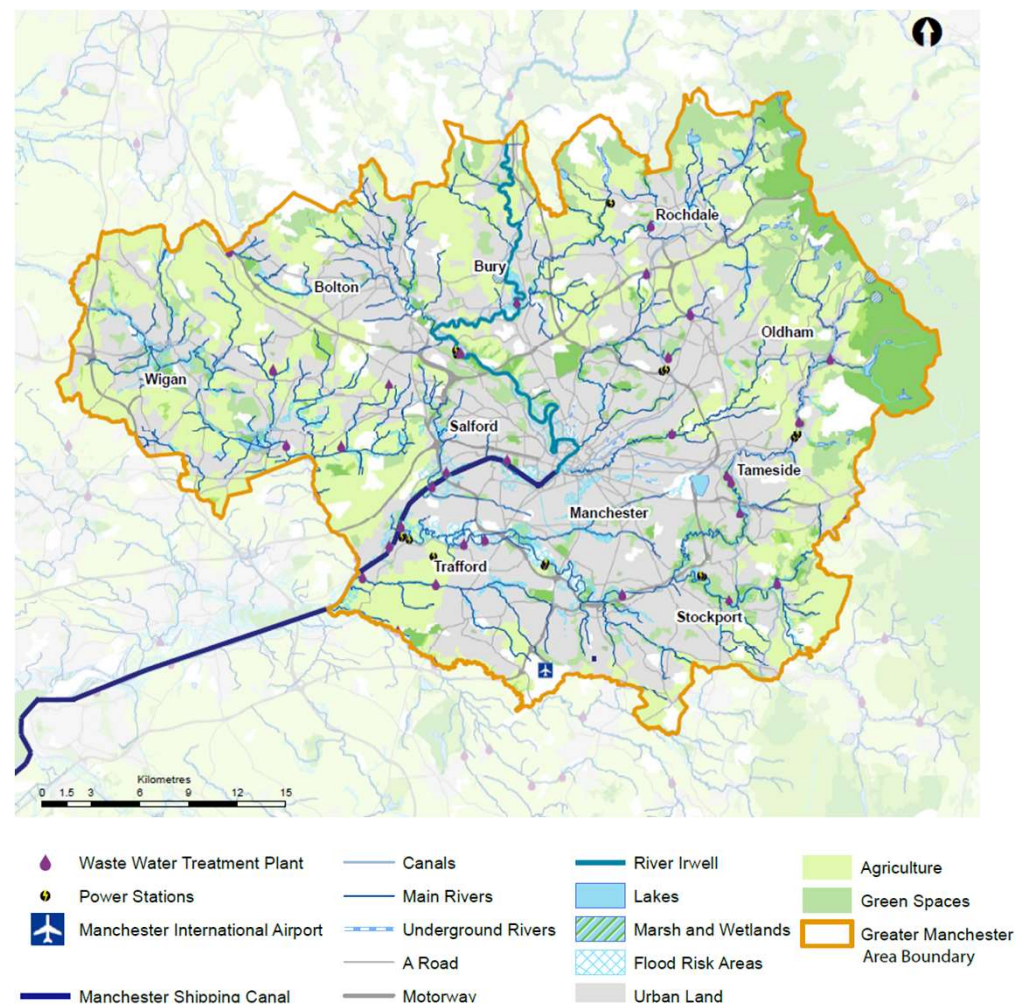


Figure 19 – Greater Manchester water basin. Image taken from *The city water resilience approach. City Characterisation report – Greater Manchester, April 2019*

6 / Climate resilience





6.1 Vision objectives and context

Vision

A site that underpins the long-term resilience to climate change for both the built and natural environment.

Objectives

- A climate-resilient visitor centre
- A climate-resilient landscape
- Sustainable drainage and flood risk mitigation using nature-based solutions

Context

The climate is changing and impacts are already experienced around the world, with vulnerable populations being the most severely affected.

Climate change projections for Bury point towards warmer and wetter winters, hotter, drier summers and more periods of extreme heat and heavy rainfall. Extreme storms like Ciara and Christoph in the most recent years, that were devastating for local communities, are expected to become more frequent. Research for the Greater Manchester area identified floods and storms as being the higher risks and thus priorities for adaptation and resilience in the area.

New development will need to be designed and operate so that it limits the exposure of and risks for communities, built infrastructure and the natural environment resulting from climate change, and increases their resilience to withstand impacts.

The proposals for the Pilsworth Lake café and shop aim to enhance the climate resilience of both the built environment and landscape. This includes a sustainable drainage strategy that mitigates the risks of flooding through nature-based solutions. The pages that follow provide further details on the drainage strategy and other climate resilience measures incorporated in the proposals.



6.2 Design requirements

Sustainability requirements

Table 6 summarises the design requirements for the Pilsworth Lake Café under environment and climate resilience following regional and local policies as well as best practice guidance.

This section presents the strategies to achieve:

- Resilience of the building and landscape to climate change, covering flooding, extreme weather and overheating
- Flood risk management through sustainable, nature-based solutions.

Climate resilience

Integrate measures to enable adaptation to climate risks including flooding and overheating

No increase in off-site flood risk, management of stormwater peak discharge within wider masterplan

Integrated approach to water management using SuDS to manage water at source and on the surface using features with multiple benefits, enhancing biodiversity and amenity

A sustainable drainage strategy which protects the proposed buildings to a 1 in 100 year +45% climate change flood event

Pollution controlled and discharge water quality managed to minimise any impact on the receiving water environment in line with SUDS Manual (CIRIA C753)

Table 6 – Climate resilience requirements



6.3 Built environment and landscape

Resilience of the built environment

- Situated in a natural setting, the building will benefit from the microclimate of the site and will be less exposed to overheating risks and the urban heat island effect impacting urban locations.
- Indoor overheating risks will be limited through passive means: effective cross-ventilation in a relatively narrow flood plan utilising prevailing wind direction and building-integrated retractable shading elements;
- Retractable structures will also be used in the outdoor areas and deck extending into the lake; these will offer shade in the summer and protection from wind and rain in the winter, improving visitors' comfort outdoors year-round;
- During extreme hot weather, the water source heat pump can operate in reverse mode providing low carbon cooling to the visitor centre, as and when needed for comfort;
- Windows and full height glazing are placed in a recess to the external wall, better protected from rainfall and moisture ingress;
- The site is in a low flood risk zone and the building will be adequately protected against flood risk through the proposed sustainable drainage strategy for the site (see next pages for further details).

Resilience of the landscape

- The resilience of the landscape and the wider site will be enhanced as a result of the landscape improvement, implementation of the sustainable drainage strategy and biodiversity enhancements.
- The creation of new habitats will make use of drought resistant native planting.
- A Biodiversity Management Plan will be developed for the first five years of operation and will be periodically reviewed.
- The sustainable drainage strategy proposed will mitigate the risk of flooding, control diffuse pollution and contribute to enhancing the landscape and existing ecological habitats.



6.4 Hydrology and flood risk

The site includes two angling lakes and a number of smaller ponds. The Brightley Brook, designated as a Main River by the Environment Agency (EA), runs through the site from the north-east to the south-west and in places is confined within retaining walls.

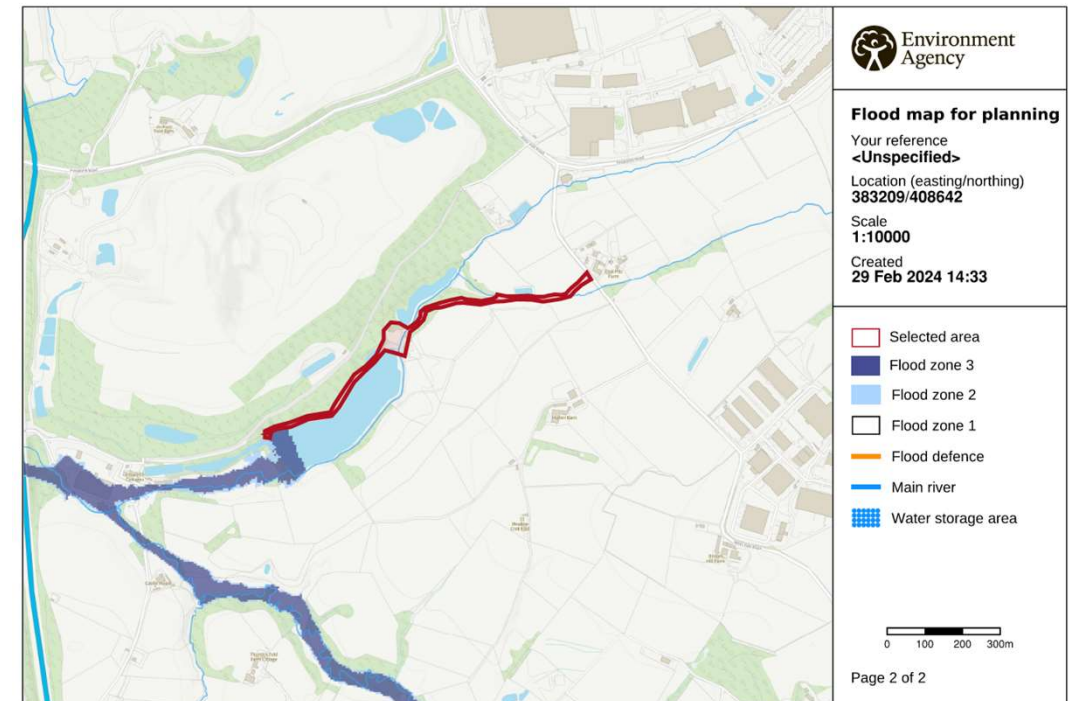
The EA flood map (Figure 20) shows that the majority of the site is located within Flood Zone 1. The proposed café and shop building is located at the northern end of the main lake, in Flood Zone 1. The annual probability fluvial flooding is therefore less than 1 in 1,000 (<0.1%).

An area in the south-west of the main lake, where it is proposed to rebuild the existing boathouse is shown to be in Flood Zone 3, with a 1 in 100 (1%) or greater chance of flooding each year from rivers. It is noted that the EA mapping in this location is likely inaccurate, and the boathouse is actually in Flood Zone 1. Refer to section 2.3 of the Flood Risk Assessment (FRA) for more detail.

Surface water flood risk will be managed by implementing a sustainable drainage strategy which protects the proposed buildings to a 1 in 100 year +45% climate change flood event. This is summarised in Section 6.5 and described in greater details in Section 7 of the FRA.

The risk of groundwater flooding is low. Refer to section 6.1.4 of the FRA for more detail.

The main lake has been formed with an embankment retaining water at its south-western end. The proposed buildings are all upstream of the existing embankment and are therefore not at risk of flooding from a breach of the structure. No changes are proposed to the embankment, and the risk of flooding to downstream buildings and communities will not be increased from current.



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Figure 20 -Environment Agency flood map



6.5 Sustainable drainage strategy

The following principles have been adopted in the development of a sustainable drainage strategy, in line with best practice, local policy requirements, and requirements from Bury Council (BC), the Lead Local Flood Authority (LLFA):

- Maximising infiltration to ground: most new hardstanding surfaces will be permeable, except the upgraded access road.
- Discharge to the main lake utilising the large storage volume of the lake to control discharge to the wider catchment downstream.
- Limiting discharge from the access road to the Brightley Brook to achieve a betterment of approximately 24% from existing. Runoff will be controlled at source with linear filter drains and bio-swales.
- The sustainable drainage system will be designed for no surface flooding for the 1:30 year +40% and no flooding of building and containment of surface water flows for the 1:100 year +45% rainfall event.
- Pollution will be controlled and water quality will be managed to minimise any impact on the receiving water environment in line with SUDS Manual (CIRIA C753). In addition to the filter drains along the access road, this includes green roofs and raingardens to treat roof runoff.
- Biodiversity will be enhanced and the sustainable drainage strategy has been integrated within the landscape and integration in line with the SUDS Manual (CIRIA C753)

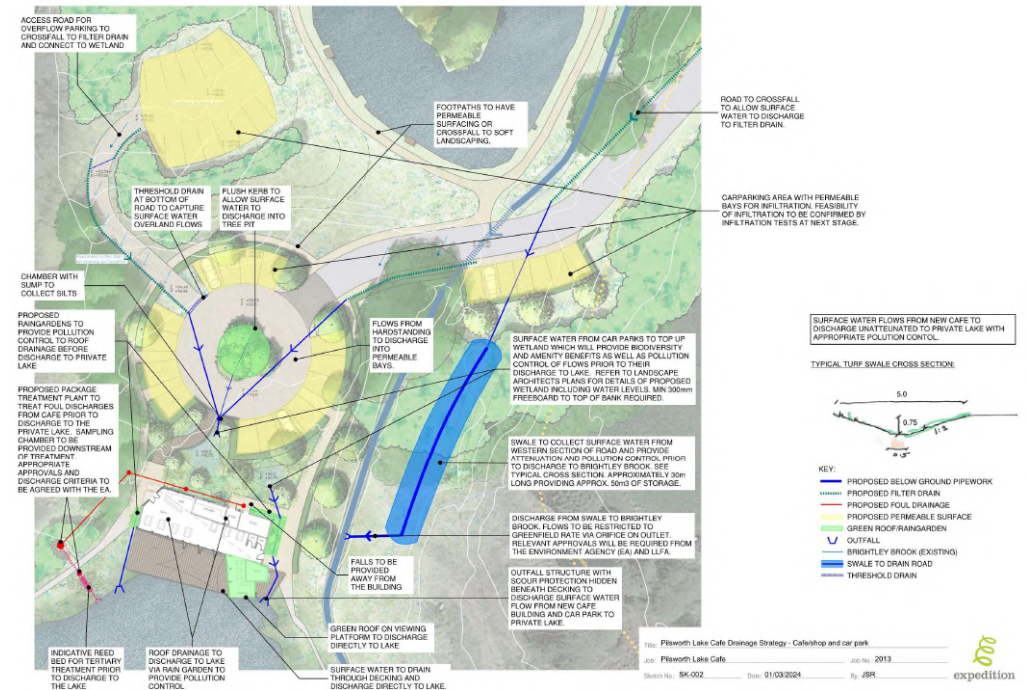
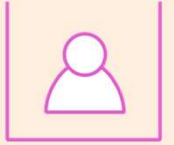


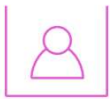
Figure 21: Café/shop and car park drainage strategy



Figure 22: Typical source control SuDS measures

7 / Value for the community





7.1 Vision objectives and context

Vision

A proposal that enhances the site's value for the community, is inclusive and inviting, supports social interactions and the wellbeing of visitors.

Objectives

- Improved, multi-purpose amenities for visitors
- Re-connecting people with nature
- Employment opportunities & support for the local economy
- Community engagement & capacity building

Context

The site is currently enjoyed by the local community as an ideal spot for both beginner and more seasoned anglers. It offers a variety of fishing features for guests and several pegs, some accessible for elders and disabled anglers. The vision for the site places the community of visitors at its heart and aspires to make the site better connected and inviting for the wider community and people from further afield. In doing so, it will benefit the community in multiple ways.

Ensuring that people are connected to nature and their community has well-documented health benefits and is fundamental for physical and mental wellbeing. Access to high-quality outdoor spaces, combined with the opportunity to co-create and co-decide how these are and operate, strengthen community ties and create a sense of pride, place and ownership. This has long-standing rippling effects and helps secure the sustained use and care for the site.

The ways in which the proposals will benefit the community are outlined in the next section.



7.2 Healthy lifestyles

Health & wellbeing

Research has shown that exposure to natural elements is linked with health and helps relieve stress and mental fatigue. By building a multi-functional, modern visitor centre and make improved amenity and car parking provisions the site will become more inviting and accessible to anglers, families and other visitors to enjoy year-round. Beyond the centre, additional welfare facilities will include a picnic site and nature-led play areas.

The café and shop's indoor spaces will incorporate biophilic design principles, merging indoors and outdoors. Moreover, the timber frames bring a natural feel to the interior environment. The approach to the design of external spaces will aim at creating sheltered spaces, enjoying the sun, light and views to the lakes.





7.3 Community connections

Inclusive design & social interactions

The café and shop building and landscaping has been designed with people of all ages, gender and levels of mobility in mind, improving the site's accessibility.

Flexible gathering and activity will be accommodated in the café area, whilst the outdoor deck extending into the lake will provide space for outdoor social activities to spill out of the building.

The community could also be invited to take an active role in the landscape restoration and co-develop the building's community events' programme.

Through this community-centered approach, the site aspires to become a lively hub for social interaction, empowering the community and fostering a sense of pride and collective responsibility upon its future.





7.3 Employment & local economy

Employment opportunities & local economy

The operation of the site will create employment, volunteering and apprenticeship opportunities associated with the operation of the café and shop, the restoration and maintenance of the landscape.

The choice of food, drinks and service providers will prioritise local farms, businesses and SMEs, supporting the local economy.



8 / Conclusion

8. Conclusion

This Sustainability Statement has presented the vision and approach taken for the Pilsworth Lake café and shop to deliver benefits and added value for the community of visitors and the site's natural environment.

The proposals place people and nature at their heart and deliver a high-quality, inclusive, multi-functional café and shop and outdoor amenities, together with a landscape restoration programme that enhances biodiversity.

The building will tread lightly on the planet with low carbon and resource efficient construction, and climate resilience at its heart.

Overall, the proposals are in line with national, regional and local policies and employ best practices in environmental and regenerative design.

The next page summarises the sustainability strategy for the site against the vision's four themes.

8. Conclusion

Summary of proposed strategies

Natural environment	Carbon and resources	Climate resilience	Value for the community
Landscape-led approach that strengthens wildlife links and enhances biodiversity through: • >10% biodiversity net gain • Significant areas of native species woodland planting; • Sections of native species of hedgerow and wildflower meadow; • A number of larger stock, individual native species trees planted in the access 'hub' area, the plaza of the proposed building and the main car park; • An area of sedum roof for the visitor bait shop • Other appropriate habitat enhancements & restoration elements proposed by the project ecologist; • A biodiversity management plan during construction, and • A biodiversity management and monitoring programme that spans at least the first five years of operation.	A building that is built to best practice environmental design standards: • Passive design that responds to the local microclimate, and delivers healthy and comfortable indoors with minimum energy input • Passivhaus-level building envelope performance, mixed-mode ventilation with heat recovery and daylight spaces • All-electric energy strategy with water source heat pump and roof mounted PVs to cover approximately 58% of the south facing roof and EUI of space heating no more than 15kW/m² • Circularity embedded in the building design for efficient use of material resources (lean design), durability, low maintenance requirements and end-of-life reuse • Timber-frame building structure to reduce embodied carbon • Waste prevention and sustainable waste management strategy in operation • Low flow water fittings and submetering to reduce water use by 40%	Proposals that enhance the resilience of both the built and natural environment: • Cross-ventilation utilising prevailing wind direction and building-integrated retractable shading elements to reduce overheating risks in the café and shop through passive means • Retractable structures to provide shade and shelter from wind and rain in outdoor deck areas • Potential for water source heat pump to provide cooling during extreme hot weather and heatwaves • The biodiversity restoration programme and biodiversity management plan will incorporate measures that increase the resilience of the landscape to warmer, wetter weather • The sustainable drainage strategy will effectively protect both building, the proposed landscape and wider catchment from flood risk	A proposal that delivers value for the community: • The site is made more inviting and accessible to anglers, families and other visitors through provision of new and improved amenities (café and shop, new car parking, picnic site and nature-led play areas amongst others) • Leisure activity within the site and the biophilic design of the building supports healthy lifestyles and the wellbeing of visitors • The site aspires to become an asset for the community: a hub for social activity and interaction that safeguard its future • The building will create employment as well as capacity building opportunities for locals • It will support the local economy by prioritizing local supply chains for produce and services