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# BAM Construction | Our Cultural Heart Phase 1

## Climate Change and Sustainability

#Mainer5861 | Revision #C | 03 July 2025


library

# VERSION CONTROL

| Quality Information | | | |
|---|---|---|---|
| Project Title: | OCH Phase 1 – Climate Change and Sustainability | | |
| Version: | C | | |
| Date: | 03/07/2025 | | |
| Author: | Ben Sidebottom | Review: | Ben Wells |
| Job Title: | Associate Director | Job Title: | Director |

| Distribution List | |
|---|---|
| Name | Association / Company Name |
| Chris Benbow | BAM Construction |
| Matthew Sunman | Pegasus Group |
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| | |
| | |

| Version History | | | |
|---|---|---|---|
| Version | Version Details | Issued Date | Issued By |
| A | Initial report issued for client comment. | 02/06/2025 | BS |
| B | Minor revisions, updated drainage section | 26/06/2025 | BS |
| C | Revised per comments received | 03/07/2025 | BS |

# EXECUTIVE SUMMARY

A Climate Change and Sustainability Report has been undertaken in response to the Kirklees Council Climate Change Guidance for Planning Applications for Phase 1 of the Our Cultural Heart development. This, with specific reference to the applicable Local Policies noted in the aforementioned guidance, drawn from Kirklees Local Plan, February 2019. The report provides specific information regarding how the design and construction process has addressed the relevant aspects of Climate Change and Sustainability applicable for the Food Hall and Library Refurbishment, New Build Elements of the Library, and the new Public Square to the frontage of the two buildings.

Phase 1 of Our Cultural Heart is an ambitious, sustainable-development-focused project, which is maximising its potential across the full range of disciplines considered – going above and beyond regulatory requirements in all respects. The project provides a significant improvement over the existing buildings in terms of energy efficiency, aesthetics, as well as vitally, fitness-for-purpose.

Building specific measures which go above and beyond the requirements of Building Regulations are discussed in all of the following areas:

- Reducing Energy Demand
- Minimising Carbon Emissions and Waste During Construction
- Renewable and Low Carbon Energy
- Building Design and Layout for Carbon Reduction
- Considering Flooding and Minimising Impacts
- Minimising Water Usage
- Landscaping and Biodiversity
- Air Pollution

As noted in each section, Appendix A of this report contains a detailed, evidence-based review of specific Key Performance Indicators set for the project as part of the Masterplan Sustainability Strategy previously approved. Supporting evidence as referred in Appendix A will also be provided along with this report.

# Contents



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# Introduction

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# INTRODUCTION

A Climate Change and Sustainability Report has been undertaken in response to the Kirklees Council Climate Change Guidance for Planning Applications, June 2021 for Phase 1 of the Our Cultural Heart development. The report provides specific information regarding how the design and construction process has addressed the relevant aspects of Climate Change and Sustainability applicable for the Food Hall and Library Refurbishment, New Build Elements of the Library, and the new Public Square in the public realm to the frontage of the two buildings.

## The Development

Phase 1 of the Our Cultural Heart Masterplan includes the following elements:

- Refurbishment of the existing indoor market to provide a Food Hall space.
- Refurbishment of the existing indoor market to provide a public library.
- A new build extension to the existing building to further enhance public library service offerings.
- A public realm area which will provide an outdoor public square.

Much of the refurbishment is applied to areas of local historical value, indicated by listed building status. The majority of design, procurement and construction measures are common across all areas. Where a measure is unique to one element, or a selection of elements, this will be noted in the sections below.

## Kirklees Council Climate Change Guidance for Planning Applications

In June 2021, Kirklees Council released guidance on how best to respond to the various policies withing the Kirklees Local Plan – Feb 2019, relating to climate change and sustainability. The suites of policies are broken down into the following core areas:

- Reducing Energy Demand
- Minimising Carbon Emissions and Waste During Construction
- Renewable and Low Carbon Energy

- Building Design and Layout for Carbon Reduction
- Considering Flooding and Minimising its Impacts
- Minimising Water Usage
- Landscaping and Biodiversity
- Air Pollution

The specific Local Plan Policies addressed within each section will be reviewed, drawing out measures taken as part of the design and construction methodologies pursuant to the Refurbishment of the Food Hall and Library Buildings, as well as the New Build area of the Library, and the Public Square.

## Building Research Establishment Environment Assessment Method (BREEAM)

The Refurbishment of the Food Hall and Library, as well as the New Build areas of the Library are all subject to separate BREEAM Assessments, using the Refurbishment and Fit-Out and New Construction Schemes, as appropriate. The external Public Square is also covered by these assessments. BREEAM includes a range of requirements to push building design and delivery beyond regulatory minimum standards in the following key areas:

- Management: of the design process, construction and handover
- Health & Wellbeing: of building and site users
- Energy Efficiency: of building design practices and systems
- Sustainable Transport: impacts on the local area and behaviours of site user
- Water Efficiency: of building systems
- Materials: efficiency, carbon emissions, procurement
- Waste: efficiency in construction and operation
- Land Use and Ecology: impacts of the project on the site and locality, plus ongoing maintenance
- Pollution: impacts on global warming, local air quality, flood risk and drainage, light and noise pollution

All areas of the project are currently on course to achieve a BREEAM Rating of Excellent.

# Reducing Energy Demand

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# 1.0 REDUCING ENERGY DEMAND

## 1.1 LP26/LP5 – Combined Heat and Power / Air Source Heat Pumps

The strategy for servicing the OCH project, which has been actioned across all elements of the Phase 1 works – the applicable elements being the Refurbishment and New Build works to form the Library and Food Hall – has been formed around the decarbonisation agenda. The decarbonisation agenda seeks to specify building service installations for which carbon efficiency is able to step-up along with improvements to the National Grid, as part of the UK drive to reduce carbon emissions. Decarbonised systems design prohibits the combustion of fossil fuels on site, which also leads to improvements in local air quality. Hence, the design for OCH employs only electricity on-site for all servicing requirements, heating, cooling, lighting.

In preparation for any future local heat network, Heat Intake rooms have been provided within the new designs, such that all elements of Phase 1 can be added to any future network via retrofit. In the meantime, per the decarbonisation agenda, air source heat pumps have been specified to serve heating demand, an LZC technology. Air Source Heat Pumps are a low carbon technology, using refrigeration-based technology to emit significantly more kWh of heat / coolth energy into building spaces, than kWh of electricity drawn from the national grid to power the technology.

## 1.2 LP24/LP47 – Energy Efficient Technology, Metering and Controls

### Energy Metering

As part of the BREEAM Strategy for the project, a BREEAM ENE02 compliant Energy Sub-Metering system will be installed, covering all elements of the Phase – New Build and Refurbishment works, as well as energy use in the Public Square. This system goes beyond basic Building Regulations compliance, being based on CIBSE TM39 and hence, ensuring that at least 90% of the end energy use of any fuel type employed on site – in the case of OCH, this is electricity only – is sub-metered. Separate metering will therefore be provided for all of the following systems, where served by separate and hence sub-meter-capable systems and where of significant load, such that they fall within the 90% required for compliance with TM39 / BREEAM, these are:

1) Space Heating
2) Hot Water Heating

3) Cooling
4) Ventilation
5) Major Pumps
6) Lighting
7) Small Power
8) Lifts
9) Building Controls
10) Any LZC technology installed

The above sub-metering will, as far as is practicable, also be by functional area within the development, to give occupants the ability to hone-in on unusual uses and apply targeted mitigation measures based on that insight. All meters will report back to the project Building / Energy Management System, which will provide clear labelling and displays of the energy uses metered, and the building function to which those apply.

## Controls and Management Systems

The control strategy for the project is based on the provision of flexible, local controls, which are understandable and accessible to the facilities management team and staff, while remaining resilient against inappropriate modification by the members of the public that will be accessing the spaces. The ability for each space to be individually controlled for servicing – including lighting, heating, cooling and ventilation – is also an essential element of the energy efficient design of the project, which has been based on CIBSE TM50 compliant Operational Energy Assessments carried out separately for the Library and Food Hall. The project has set strict targets for energy efficiency in operation – this goes far beyond standard building regulations compliance.

Controls will be local to each space, whilst being linked back to the central Building Management System, with digital thermostats, automatic and manual light switching (based on both presence and daylight,) and automatic sensors where appropriate for the function of each individual area all provided, working in a coordinated manner via the BMS interface. This allows flexibility in settings applied by the building users, as well as a backstop to ensure energy efficient operation, avoiding control and service conflicts between systems.

## The Operational Phase

At handover, BREEAM MAN04 compliant Building User Guides will be provided for all facilities as part of Phase 1. These provide both technical and non-technical instructions on all aspects of building use, covering metering and control systems for building services, access arrangements, building fabric design, behaviours which should be embraced / avoided to ensure efficient operation, sustainable transport, maintenance, and key considerations for furniture layouts, future alterations etc.

The welcome pack for future service providers in the Food Hall will include guidelines relating to the use of energy efficient white goods, as well as water efficient sanitary ware and white goods. All equipment provided as part of the base-build works will either be legacy equipment, managed according to an energy efficiency replacement plan, or new equipment procured to the highest affordable standards of energy efficiency via the EU Energy Labelling Scheme, or other appropriate guidelines for the equipment in question.

*SUPPORTING TECHNICAL EVIDENCE: See the 'Net Zero Operational Carbon' section of Appendix A on Page 14*

# Minimising Carbon Emissions and Waste During Construction

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# 2.0 MINIMISING CARBON EMISSIONS AND WASTE DURING CONSTRUCTION

## 2.1 LP24 – Design for Efficiency and Low-Embodied Carbon

The Food Hall element of the project is primarily a refurbishment project, with as much of the existing building being retained as possible. Surveys of the condition of the existing structure did lead to significant demolitions / structural works, however, this has been carried out as sensitively as possible, with heritage elements of the building retained and refurbished wherever possible. The refurbishment works of the former market to form the Library have followed a similar approach, with as much of the existing building retained as possible, where dilapidation surveys and the need to comply with current Building Control and Regulations are allowed for. The New Build element to the Library is a New Build Extension providing functional areas and features that were not present in the existing buildings. The Outdoor Public Square is also a new construction, providing a valuable community facility that was not present previously.

In terms of embodied carbon, it is worthy of note that all works have been subject to strict targets, based on best-practice industry guidance. These targets have evolved over time, as further survey work gradually extended the scope of works, however, have all-the-while been subject to RICS-compliant Whole Life Carbon Calculations, with improvements sought where possible, and strict control of supply chain selection, including target setting and reporting via a bespoke Whole Life Carbon Management Application – Carbon Centric. This approach has ensured that embodied carbon has remained a primary driver for the project design and procurement process.

In combination, the survey driven approach, favouring refurbishment over new-build, all informed by best-practice Whole Life Carbon Assessment has ensured that the project represents both optimal value for money, as well as the minimum embodied carbon practically achievable.

The Whole Life Carbon Assessment methodology, which includes consideration of operational maintenance and end-of-life performance, requires target setting, optimisation and reporting of the following key parameters, all of which contribute to the project's compliance with Local PIanning Policy:

- Efficient use of materials – bolstered by Circular Economy Studies under the BREEAM MAT06 – Materials Efficiency and WST06 – Functional Adaptability requirements

- Low embodied energy in manufacture – a target is also set for 50% of materials to obtain EPDs.
- Longevity and robustness of materials – bolstered by the Robustness and Resilience studies under the BREEAM MAT05 credit.
- Transport distances for both materials deliveries and waste collections, bolstering localism – also monitored strictly under the BREEAM MAN03 – Responsible Construction Practices credit.
- Life cycle of all materials from cradle to cradle.

In addition, the following aspects of the policy have been addressed in the following manner:

- The drive for energy efficiency, enforced via the target BREEAM Rating of Excellent, as well as specific KPIs on operational energy use has been administered by fully dynamic thermal and energy model, using industry leading software.
- Passive Design Studies which ensure optimum building fabric performance (e.g. low U-values) obviously allowing for heritage considerations and the desire to retain the existing buildings where possible.
- Prefabricated and offsite manufactured elements are employed where possible e.g. cladding panels, raised access flooring, proprietary ceiling systems and glazing etc.
- 100% of timber used temporarily for on-site uses, such as site cabins, fencing and concrete formwork, as well as 100% of timber to be used in the construction of the buildings themselves is sourced from FSC or PEFC certified sources.
- Total avoidance of any new materials from endangered habitats such as limestone for landscaping or buildings, or peat for soft landscaping.

## 2.2 Policy LP43 – Waste Management

Waste minimisation activities for the project were driven by Waste Minimisation Workshops, which began at the outset of the project and are documented as part of the assessment of BREEAM credit MAT06 – Materials Efficiency.

The initial approach involved the compilation of extensive Dilapidation, Pre-Demolition and Cut-and-Fill Surveys for the site and refurbishment areas, which identified the waste types and volumes likely to be produced as part of the preparation works, with routes for re-use and recycling identified as part of that. This has led to a significant volume of demolition material being stockpiled and retained on site for use in the construction phase – reported on as part of the Main Contractor Site Management procedures.

The Building Designers were asked to ensure that waste minimisation was a core design consideration, and to document and evidence this as part of the BREEAM assessment. The measures instigated have been carried through and will also be reported on as part of the Main Contractor Responsibilities.

Functional Adaptation and End-of Life Studies have also been undertaken, ensuring that the potential for change of use, and alterations to meet future changes in usage patterns, are promoted in designs, layouts and construction methods. This also promotes ease of deconstruction and recycling at end of life.

Further to the above, as part of the BREEAM Assessment and separately within the project Key Performance Indicators set by the client, waste performance targets have been established – in terms of generation of demolition, excavation and construction waste, as well as diversion of these same waste types from landfill, for reuse on site or off-site recycling. These are being monitored via the Main Contractors ISO14001 certified Environmental Management System, which includes Construction Environment Management Planning and Site Waste Management Planning to best practice standards. Reporting for the site is also via the BRE's SmartWaste System, with certified waste contractors providing offsite recycling, as well as onsite segregation of major waste streams.

*SUPPORTING TECHNICAL EVIDENCE: See the 'Circular Economy & Embodied Carbon' section of Appendix A on Page 11*

# Renewable and Low Carbon Energy

# 3.0 RENEWABLE AND LOW CARBON ENERGY

## 3.1 LP 24/26 – Design and Renewable and Low Carbon Technology

As described in Section 1.1, heat intake rooms have been included within the design, to allow connection of the buildings to any future heat network, via retrofit. In the meantime, the Building Service Design Philosophy for the project is to prepare for the decarbonisation of the national grid, via the specification of electric-only powered building services, with no combustion on site. The combustion of Biomass for heat / power on site was therefore precluded by the air quality improvement priorities of the project design – with this being a specific KPI set by the approved Masterplan Application.

The potential for the inclusion of Solar Panels for the generation of local, low-carbon hot-water / electricity was extensively investigated as part of the proposals for the Public Square, Food Hall and Library Refurbishment / New Build. Due to the listed nature of building features specific to the roof of the Food Hall, it was not possible to install PV cells in this area. The area available for PV to the roof of the Library was not extensive – furthermore any installation was ruled out due to a lack of space to otherwise also provide safe maintenance access and routes.

Wind turbines were not considered suitable for the project for similar reasons to solar panels – clashes with conservation requirements and a lack of space for installation and maintenance were key factors which precluded the use of this technology.

The project makes extensive use of Air Source Heat Pumps to provide for heating and cooling to all areas of the Food Hall and Library – Refurbishment and New Build. This is the primary source of low and zero carbon technology provided for the development.

*SUPPORTING TECHNICAL EVIDENCE: See the 'Net Zero Operational Carbon' section of Appendix A on Page 14*

# Building Design and Layout for Carbon Reduction

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# 4.0 BUILDING DESIGN AND LAYOUT FOR CARBON REDUCTION

## 4.1 LP24/47 – Energy Efficiency through Building Design

The development footprint and layout are largely dictated for both the Library and Food Hall by the existing building layouts and the functions proposed. As part of the early design works, Passive Design Studies were carried out for all areas of Phase 1 in accordance with the BREEAM criteria, with all areas of the projects, through this in combination with extensive Operational Energy Assessments, achieving the Excellent Mandatory Standard for Energy efficiency.

The potential for energy improvement in all of the following respects was maximised through these Passive Design Studies:

- Orientation – this is largely fixed due to the existing building layouts.
- The use of passive heating (via glazing gains), ventilation and cooling. Much of the development is naturally cooled, with air conditioning via ASHP only provided where found to be essential, following coordinated CIBSE TM54 (Operational Energy) and CIBSE TM53 (Thermal Comfort) assessments. These assessments looked at the potential methods for maximise passive heating and cooling under various usage scenarios of external weather and occupancy level, and employed current weather models, as well as potential future climate change models, in accordance with BREEAM requirements.
- Location and specification of windows and low emissivity glass – this particularly for the large, glazed frontage to the Food Hall.
- Better than Building Control requirements in respect of thermal insulation for both new and refurbished walls, roofs and floors.
- The use of ASHP to provide for heating and cooling demands.
- Achieving all mandatory Energy Efficiency Standards applicable to a BREEAM Rating of Excellent for all areas of the Phase 1 works.
- The inclusion of windows and roof lights, particularly to the main Food Hall space, to harness natural day lighting and heat gains.
- LED only lighting installations to best-practice CIBSE standards.
- Lighting controlled according to a hierarchy which favoured automatic controls (in terms of presence and daylight) as far as possible, whilst also allowing for occupant control via manual switching and timeclock, to provide building users with the flexibility required to make best use of the spaces.
- Energy efficient external lighting systems, with presence, day light and timeclock control as appropriate for the function. All event lighting specified is also energy efficient, utilising LED technology to full potential.
- The construction methods utilise materials with high thermal mass, with concrete employed extensively in the structure.

## 4.2 LP24/47 – Energy Efficiency through Site Layout

The development footprint and layout are largely dictated for both the Library and Food Hall by the existing building layouts and the functions proposed, as well as heritage requirements. Passive Design measures based on site and building layout were considered as part of the BREEAM Excellent Energy Efficient Design to all areas of the Phase 1 works.

*SUPPORTING TECHNICAL EVIDENCE: See the 'Net Zero Operational Carbon' section of Appendix A on Page 14*

# Considering Flooding and Minimising Impacts

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# 5.0 CONSIDERING FLOODING AND MINIMISING IMPACTS

## 5.1 LP 27 – Flood Risk

The development has been subject to Flood Risk Assessment covering the entire Phase 1 area, with the site being found to be of LOW Flood risk with respect to all of the following sources of flooding:

- Fluvial (Rivers)
- Tidal
- Surface water: sheet run-off from adjacent land (urban or rural)
- Groundwater
- Sewers: combined, foul or surface water sewers
- Reservoirs, canals and other artificial sources

All appropriate research and testing has been carried out as part of this, including sequential and exception testing.

## 5.2 LP28/30 – Drainage and Biodiversity

### Design

The drainage design for the Master Plan development achieves a 40% improvement over Greenfield rates. For Phase 1 specifically:

- Surface water runoff from the external areas discharges to the existing public sewers restricted in line with the drainage strategy prepared by ARUP. Attenuation tank is provided to attenuate flows up to and including 100 year-storm-event with the allowance for climate change of 40%.
- Surface water from the existing building discharges to the public sewers unrestricted in line with the drainage strategy prepared by ARUP. As such no attenuation is provided for this part of the site.
- A Flood Exceedance plan has been prepared for storm events above the 1 in 100 year-storm event plus climate change allowance.

The design was carried out in accordance with the SUDS Hierarchy, resulting in attenuation being provided by underground attenuation tanks with controlled outflows prior to discharge to the municipal system, as well as via areas of soft landscaping and tree planting wherever possible on site. The use of SUDS recommended measures, such as permeable paving, ponds and swales was not appropriate for the site due to poor soil infiltration rates, which mean that the ability of water to soak-away into the ground was very limited. There is also a lack of natural watercourses into which the development is able to discharge. That said, the design does include filter drains, along with the below ground attenuation and soft landscaping, as mentioned above.

## Operation

In accordance with BREEAM requirements, the drainage design for the site shows a clear improvement over the existing brownfield site, including a best-practice allowance for Climate Change.

Again, according to BREEAM requirements, maintenance requirements and responsibilities are predefined, with appropriate agreements planned for this. Handover documentation will include details of the installation and ongoing maintenance requirements as part of this.

*SUPPORTING TECHNICAL EVIDENCE: See the 'Climate Risk' section of Appendix A on Page 22*

# Minimising Water Usage

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# 6.0 MINIMISING WATER USAGE

## 6.1 LP34 – Conserving and Enhancing the Water Environment

The overarching project KPI with respect to water use is to strive to achieve 13 litres per person per day, via compliance with project BREEAM targets, as well as via specification in accordance with the 'Good Practice' requirements of the AECB standard. Water metering will be in accordance with BREEAM standards.

### Sanitary Ware

Sanitary Ware is present in various areas within the Food Hall and Library Refurbishment, as well as the Library New Build – all areas have followed a similar specification approach. Sanitary Ware specified for all areas has been in accordance with the following:

- Showers – 6-8 litres per minute: This has been complied with generally, although may be subject to review for limited specialist areas, for which, a higher flow rate may be required to ensure fitness for purpose / functionality.
- Wash Hand Basin Taps – 4 to 6 litres per minute: The specification for Phase 1 of OCH is generally towards the lower end of the AECB range.
- Toilets – Less than 6 litre flush: The specification for Phase 1 of OCH is closer to the 'Best-Practice' standard of a 4.5 litres effective flush, via the use of dual flush technology.

No other water using equipment is specified within the base-build works, with further kitchen-related sanitary ware and white goods to be installed by the occupiers of the food retail units within the Food Hall. These tenant installations will be governed by a set of water standards that must be complied with has part of the leasing agreement for the space, which will require installations in accordance with the AECB / BREEAM standard for items such as kitchen taps, waste disposal, pre-rinse nozzles and dishwashers.

### Metering and Installation

Water metering to allow targeted analysis of demand, along with leak prevention measures will be provided as follows:

- Each building AND major functional area representing over 10% total usage within each building to be sub-metered, where this would of benefit to justify the infrastructure cost / carbon expenditure.
- Digital outputs for Building Management System Connection.
- Alarmed leak detection systems both between the utility meter at the site boundary AND within the buildings – this via BMS monitored differential metering
- Leak prevention systems to inhibit water flow to fittings when WC areas are not in use.

## Water Recycling / Harvesting

Rainwater harvesting and greywater recycling systems require additional infrastructure installations including both water circulation and drainage pipework runs, treatment / filtration systems, and pumps, that are not required for standard water installations. Hence, these kinds of systems lend themselves better to buildings with large areas of accessible roof, served by a drainage system coordinated to have as few collection points as possible – from which to collect rainwater; and centralised building cores containing the WC areas and shower rooms – both for collection of greywater and distribution of any harvested / recycled water for use in WC flushing.

In the Library and Food Hall development, both new and refurbished areas, it was not possible to locate all WCs in a single dedicated core area, both due to existing building layouts and proposed functions. Furthermore, the project has a number of distinct roof areas, all with separate drainage points and systems. For example, rainwater drainage in the Food Hall, serving the listed roof, is a very unusual system with a number of separate drainage points to allow the listed parabolic structure to drain. These features of the buildings do not lend themselves to recycling or harvesting systems. The use of groundwater was similarly not considered viable for the project due to a lack of an easily accessible source.

*SUPPORTING TECHNICAL EVIDENCE: See the 'Water Use & Sustainable Urban Drainage' section of Appendix A on Page 30*

# Landscaping and Biodiversity

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# 7.0 LANDSCAPING AND BIODIVERSITY

## 7.1 LP30 Biodiversity and Geodiversity

A number of KPIs have been set for the OCH Masterplan, based on cumulative contributions of each phase to an overarching biodiversity improvement plan. The overarching KPIs covering the Masterplan are as follows:

- Protection of existing features of high importance: 100%
- Biodiversity Net Gain: 50%+ (10% minimum required by LPA)
- Kirklees Council's Biodiversity Action Plan – Planting: 100%
- Urban Greening Factor: >0.4
- Tree canopy cover: 10%

In order to ensure that the Phase 1 works were contributing sufficiently to this overall strategy, ARUP – the original Masterplan Ecological Consultant – were appointed to review the design of the Phase 1 works. They confirmed via their report that whilst not achieving all of the above requirements as a standalone development, the Phase 1 landscape design was contributing at its potential, towards all of the above KPIs.

Specifically, the report confirmed that the Phase 1 design delivers 0.53 habitat units. This leaves 2.02 units to be delivered by subsequent phases in order to achieve the 10% BNG improvement required. No valuable habitats have been lost, with only areas of urban tree planting and modified grassland impacted by works.

The Phase 1 planting scheme includes both native and non-native species, selected as types that will provide habitats and foraging for local wildlife – contributing to local wildlife networks in accordance with local Biodiversity Action Plans. This is reviewed within the Ecological Design Strategy and Habitat Management Plan (EDS & HMP) produced based on the Phase 1 design, by the project Ecologist. Management in operation will be guided by this Habitat Management Plan compiled in accordance with relevant, best-practice British Standards as well as the BREEAM criteria. The installation of Swift boxes to provide living space for the Common Swift, a locally important species, have been fully considered however are not suitable for Phase 1. These were ruled by the Ecologist to be

unsuitable for the Library and Food Hall buildings due to insufficient height, the potential for window collision and potential disturbance levels from human traffic. Swift boxes will however be installed to appropriate areas of the Phase 2 and any subsequent developments on the OCH Masterplan site, where such issues are less of a concern.

## 7.2 LP27/28 – Flood Risk and Drainage

Areas of soft landscaping and tree planting on site will contribute to the overall drainage strategy, however, to a limited extent due to poor soil infiltration, which means that water cannot soak deeply into the strata and hence, be attenuated to a significant degree in that manner.

## 7.3 LP34 – Conserving and Enhancing the Water Environment

All landscaping works to Phase 1 will be in accordance with the dedicated Ecological Design Statement & Habitat Management Plan and includes measures relating to good horticultural practices including:

- Appropriate timings for maintenance activities to protect landscaping and enhance biodiversity value.
- The use of mulches to minimum 50mm depth.
- Maintenance of ground cover and grass length to ensure appropriate water retention.
- Pruning, cutting back and weeding as appropriate.
- Monitoring and reporting of the success of measures.

*SUPPORTING TECHNICAL EVIDENCE: See the 'Biodiversity, Ecology & SUDS' section of Appendix A on Page 20*

# Air Pollution

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# 8.0 AIR POLLUTION

## 8.1 LP51 – Air Quality

### Sustainable Transport

The Phase 1 development does not include car parking and is served entirely by existing town centre car parks, infrastructure and local public transport links. Cyclist parking and staff changing facilities are included – for use of both Library and Food Hall staff – as well as cycle parking in external areas for public use. A Transport Assessment and Travel Plan was compiled for the Masterplan and includes Phase 1, which encourages a suite of measures to reduce reliance on private car journeys such as cycle parking, public transport information, staff car sharing schemes. EV charging points are not proposed for Phase 1, as no car parking is provided, however, will be considered for future phases where car parking may be proposed.

### Materials Selection and Procurement

As part of the BREEAM compliant Sustainable Procurement Policies in place for the Phase 1 project, as well as via the Whole Life Carbon Assessment, materials and supplier selection gives weight to and actively monitors local procurement priorities, thereby minimising associated transport emissions. This is bolstered by the Supply Chain Procurement practices of the Main Contractor who actively promote and monitor their use of local supply chains. All major materials deliveries to, and waste collections from the site are recorded and monitored based on the type of vehicles used and distance travelled – all of which is included within final Whole Life Carbon Reporting and BREEAM Assessment.

### Local Air Quality - Building and Landscape Design

Tree planting is proposed to frame the public realm areas of Phase 1, as well as softening the edges of the buildings. This will provide a positive influence on local air quality, however, the key design proposal for Phase 1, which will ensure the development has a positive impact on local air quality will be the replacement of any existing, combustion-based building services with electrically powered systems only. There will no NOx, CO, $CO_2$ or particulate emitting systems included in the building service design.

*SUPPORTING TECHNICAL EVIDENCE: See the 'Transport' and 'Health & Wellbeing' sections of Appendix A on Page 25*

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# Conclusion

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# 9.0 CONCLUSION

Phase 1 of Our Cultural Heart is an ambitious, sustainable-development-focused project, which is maximising its potential across the full range of disciplines considered – going above and beyond regulatory requirements in all respects. The project provides a significant improvement over the existing buildings in terms of energy efficiency, aesthetics, as well as vitally, fitness-for-purpose.

The embodied carbon associated with the construction and operational phases has been fully interrogated and analysed to ensure optimum performance in the current context, as well as resilience against the future impacts of climate change. Operation energy efficiency, as well as the ability of the project carbon emissions to improve along with the National Grid, has similarly been maximised via a series of studies.

Via continual reporting of progress against specific project KPIs set by the approved Masterplan, and in accordance with the BREEAM Excellent Rating currently sought for all elements of the project, the design has considered and embraced circular economy principles, ecological protection and mitigation, water efficiency, flood risk and drainage, waste efficiency in construction and operation, passive design, energy efficient building services, low and zero carbon technologies, sustainable transport and the minimisation of local polluting impacts. Regulatory minimums are exceeded in all respects.

While it is the case that a small number of policies can only be fully addressed with reference to the overall OCH Masterplan – such elements are mainly limited to specific elements in area of Biodiversity / Ecology. In all other respects, the Phase 1 works stand alone in exceeding regulatory minimums across all areas of Sustainable Development.

# Appendices

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# APPENDIX A: STAGE 4 KPI UPDATE