

# Huddersfield Open Market Regeneration

**Energy Statement**  
**RIBA Stage 3**

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# Introduction

This Statement has been compiled by a CIBSE accredited Low Carbon Consultant and Energy Assessor (LCEA120647) to provide a summary of the energy strategy for the Huddersfield Market redevelopment at RIBA Stage 3.

Further to recent scheme changes, it is intended that this statement builds upon previous energy reporting by AECOM. Through omission of the Market Yard buildings, it is understood that no part of the development is now required to demonstrate compliance with Approved Document Part L2a. All works are therefore categorised as refurbishment or material change of use.

The all-electric energy strategy has been developed against the established energy hierarchy and comprises the following:

- Provision of insulation to existing elements within the Annex building to provide thermal separation from the adjacent market hall and the external environment. Overall U-values will achieve the current regulatory Part L targets, where viable.
- Junction detailing within conditioned spaces to mitigate the risk of uncontrolled air infiltration.
- Demand-controlled natural ventilation to Annex 01 and mechanical ventilation with heat recovery to Annexes 02 & 03.
- LED lighting with automatic control.
- VRF systems providing highly efficient heating and cooling in the Community Café/Warm Hub to maintain thermal comfort throughout the year.
- Air source heat pumps generating space and water heating within the public facilities area.

# The Development Site

Huddersfield Open Market, Brook Street, HD1.

The proposed redevelopment of the Grade 2 listed, 19<sup>th</sup> century building is part of the wider Huddersfield Blueprint masterplan. Through restoring this heritage asset, the council aims to create a “better, more vibrant traditional market for Huddersfield [and] also a place the local community can come together” (former council leader Cathy Scott to the BBC).



Figure 1. Google satellite image of the site

# Design Proposal

The appointed Architects (Greig Stephenson) have re-visited the original Stage 3 scheme in response to budgetary pressures. In addition to several material changes, the proposed Market Yard Buildings have been omitted in place of a 'Market Yard' for flexible stalls and a 'Container Pavillion' serving as a focal point for the new outdoor facility.

It is understood that the converted ISO containers do not trigger the requirement to comply with the new-build requirements of Building Regulations Part L and therefore, are exempt from the new-build energy regulations. All remaining building areas are existing, undergoing changes to layout and fabric improvement, where viable.

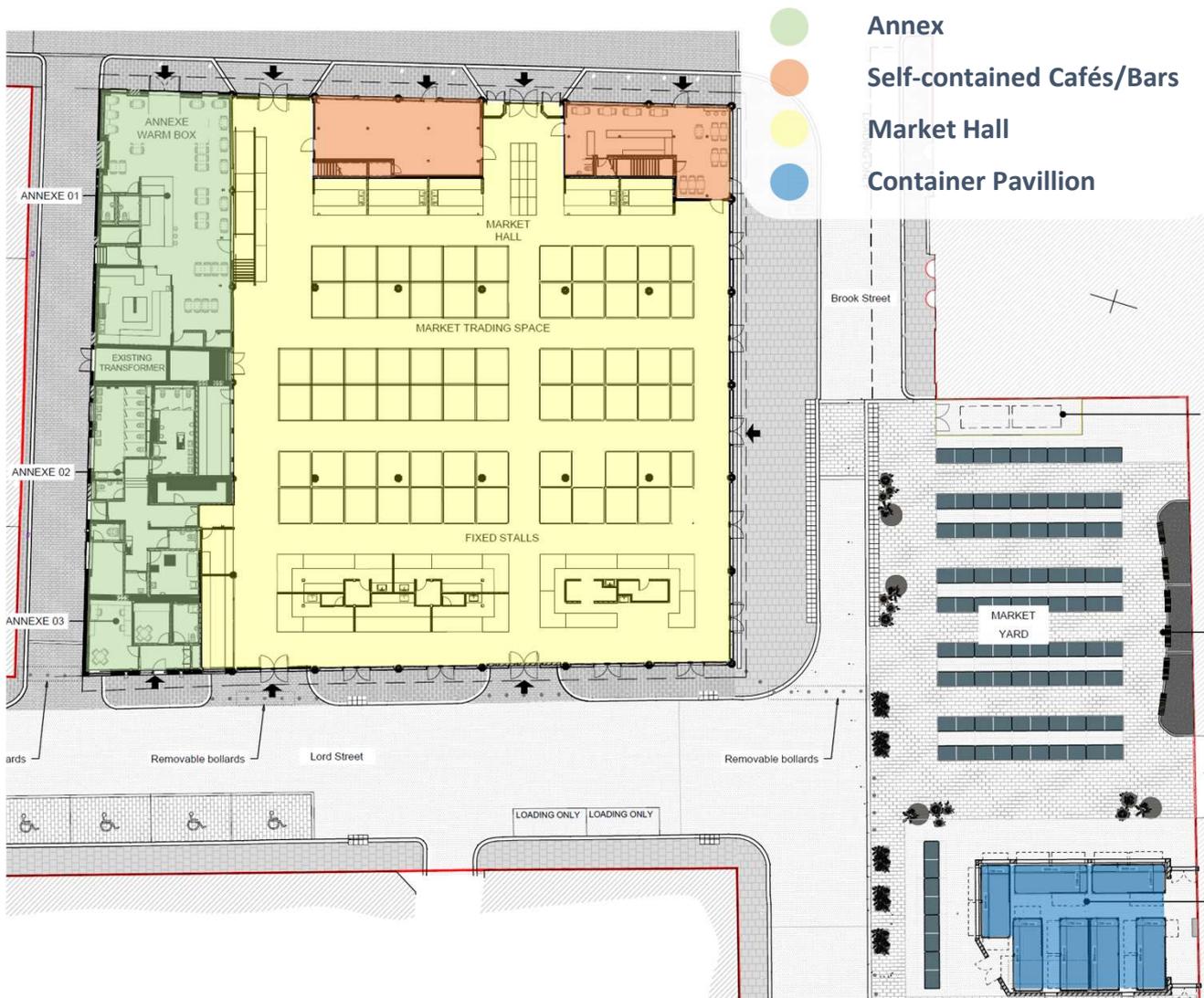


Figure 2. Proposed site arrangement

# National Policy

The previous Energy Strategy report by AECOM includes an overview of energy related national policy, pertinent to this development. This includes:

**The UK Climate Change Act (2008)** sets a legally binding goal to reduce CO<sub>2</sub> emissions by 80% by 2050 (from 1990 levels), with interim targets of 34% by 2020 and 60% by 2030. On 27 June 2019, this target was strengthened to a legally binding commitment to achieve net-zero emissions by 2050.

**The UK Heat Strategy (2013)** outlines plans to transition to low-carbon heat, with the Government (then DECC, now BEIS) supporting local authorities through the Heat Networks Delivery Unit (HNDU). Support included funding for feasibility studies, promoting innovation, exploring financial incentives, and introducing consumer protection for heat networks.

**The CIBSE Heat Networks Code of Practice (2015)** developed with industry partners, sets minimum standards for the design, construction, and operation of efficient, cost-effective district heating systems.

**The Clean Growth Strategy (2017)** sets out plans to decarbonise all sectors of the UK economy through the 2020s, aiming to meet climate commitments while capitalising on low-carbon opportunities. It includes expanding low-carbon heating via heat networks, supported by public funding until 2021, and commits the UK to sourcing 15% of its energy from renewables by 2020.

**The National Planning Policy Framework (NPPF)** outlines government planning policy for England, requiring local authorities to promote low carbon energy. This includes supporting renewable and community-led energy initiatives and identifying suitable areas for low carbon energy development.

Additionally, **Approved Document Part L: Conservation of Fuel and Power (England)** includes several criteria aimed to reduce energy loss, promote efficient use of energy, provide greater control and feedback to the building user. This includes recommended limits to thermal U-values, air permeability and building service efficiencies.

# Local Policy

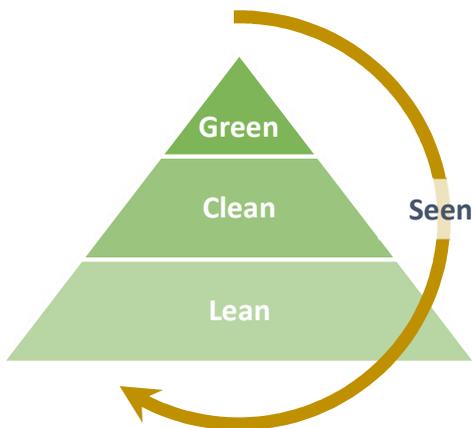
Further to declaration of *Climate Emergency*, Kirklees Council aims to achieve net zero carbon by 2038. The following policies have been previously identified within the adopted Local Plan as relevant to this development:

**LP1: Presumption in favour of sustainable development.** Kirklees Council adopts a positive, proactive approach to development, aiming to approve proposals that support sustainable development in line with the National Planning Policy Framework. Applications that align with the Kirklees Local Plan or relevant neighbourhood plans will be approved without delay, unless material considerations suggest otherwise. If policies are absent or outdated, permission will generally be granted unless the adverse impacts clearly outweigh the benefits or national policies specifically restrict development.

**LP24: Design.** This policy supports good design by promoting high levels of sustainability, where appropriate. It encourages minimising resource use through passive solar building orientation, incorporating vegetation and tree planting for natural heating and cooling, and considering the use of renewable energy.

**Policy LP26: Renewable and low carbon energy.** Renewable and low carbon energy proposals (excluding wind) will be supported if they meet criteria protecting landscape, biodiversity, heritage, and local amenity, and if any negative impacts are mitigated by wider benefits. The council encourages community-led energy schemes and supports the development of district heat networks, urging all new developments (especially those requiring master plans) to assess opportunities to create or connect to such networks.

# Energy Strategy



The energy strategy has been developed against the established hierarchy. In the context of a listed historic building, improvements in energy performance must fit the character of the building and mitigate the risk of causing detriment to original fabric.

This statement sets out the approach to energy through each stage of the energy hierarchy.

## **Be Lean: reduce energy demand, avoid waste**

### **Internal Arrangement**

Limited changes are permissible through listed building consent. Proposals include the formation of two self-contained café/bar units on the northern perimeter, a position benefiting from natural light and minimal risk of overheating from solar gain in summertime.

Demountable and fixed pitches within the open market hall will receive large quantities of daylight from high level glazing and northlights. The more transient spaces will provide a degree of shelter for stall holders and permeability for visitors.

Spaces within the Annexes are clustered with respect to occupancy regimes and environmental conditioning requirements. Façade openings will be subtly modified or adapted to locate pedestrian access routes and windows most suited to the new building function.

### **Thermal Envelope**

The main market hall will undergo a process of restoration. Energy use is limited to artificial lighting in low daylight conditions, localised heating and hot water generation at point of use.

New self-contained Café/Bar units will be thermally separated from the ambient Market Hall via insulated wall partitions and lid. Floors will be insulated and new external elements, compliant with current Part L2 standards.

# Energy Strategy

Annexes will be insulated and thermally separated from the Market Hall. Working within the limitations of existing construction build-ups, the recommended U-values within Approved Document Part L2 will be targeted. Reasonable measures will be taken to ensure that insulation is continuous across new-build elements, thermal bridging is limited and air movement within thermal elements avoided.

Element	Maximum U-value (W/m <sup>2</sup> .K)		
	New or, Replacement	Existing Elements	
		(a) Threshold	(b) Improved
Roof (flat)	0.18	0.35	0.18
Roof (pitched)	0.16	0.35	0.16 (insulation at ceiling level) 0.18 (insulation at rafter level)
Wall	0.26	0.70	0.55 (cavity insulation) 0.30 (internal/external insulation)
Floor	0.18	0.70	0.25
Windows	1.60	-	-
Rooflights	2.20	-	-
Pedestrian doors	1.60	-	-
Vehicle access doors	1.30	-	-

**Table 1. Recommended U-values from Part L2: 2021 (Tables 4.1 and 4.2)**

Although the requirement for air tightness testing is not mandated for existing buildings, care will be taken during works to reduce unwanted heat loss through uncontrolled air infiltration.

# Energy Strategy

## Ventilation

The Market Hall will be naturally ventilated via large doorways and background infiltration.

Self-contained units and fixed pitches will be provided with individual mechanical supply and extract units to ensure that operation is directly linked and limited to the exact requirements of each area.

Existing openings through the Annex 01 roof will be modified for the fitment of wind turrets to provide natural ventilation to the Community Café/Warm Hub. Automatic dampers will control the provision of air based upon indoor CO<sub>2</sub> concentration levels to maintain good air quality.

Mechanical Ventilation with Heat Recovery (MVHR) units will serve the public facilities and staff office areas where greater air volumes are required. These units will ensure adequate airflow to each space incorporating energy-efficient fans and integral heat exchangers to recover >70% of thermal energy from the exhaust air stream.

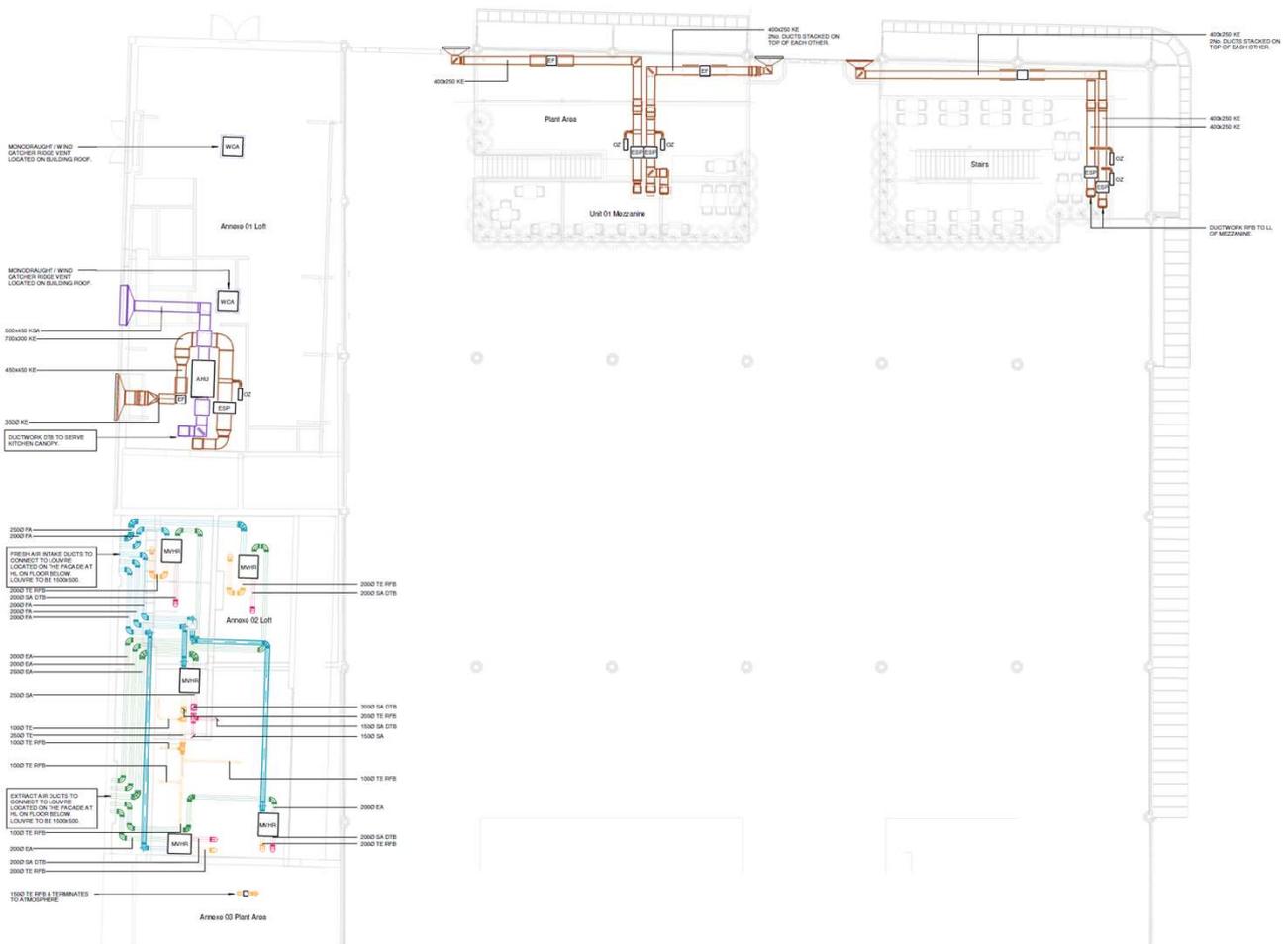


Figure 3. Proposed ventilation layout

# Energy Strategy

## Heating and Cooling

The development is zoned with respect to occupancy periods to avoid the use of heating systems in areas when they are not required.

Self-contained units will be fitted out by the incoming occupiers to suit their specific needs.

Variable refrigerant Flow (VRF) units will serve the Community Café/Warm Hub (Annex 01) and the office (Annex 03). These energy-efficient systems will provide both heating and cooling to ensure thermal comfort can be achieved throughout the year.

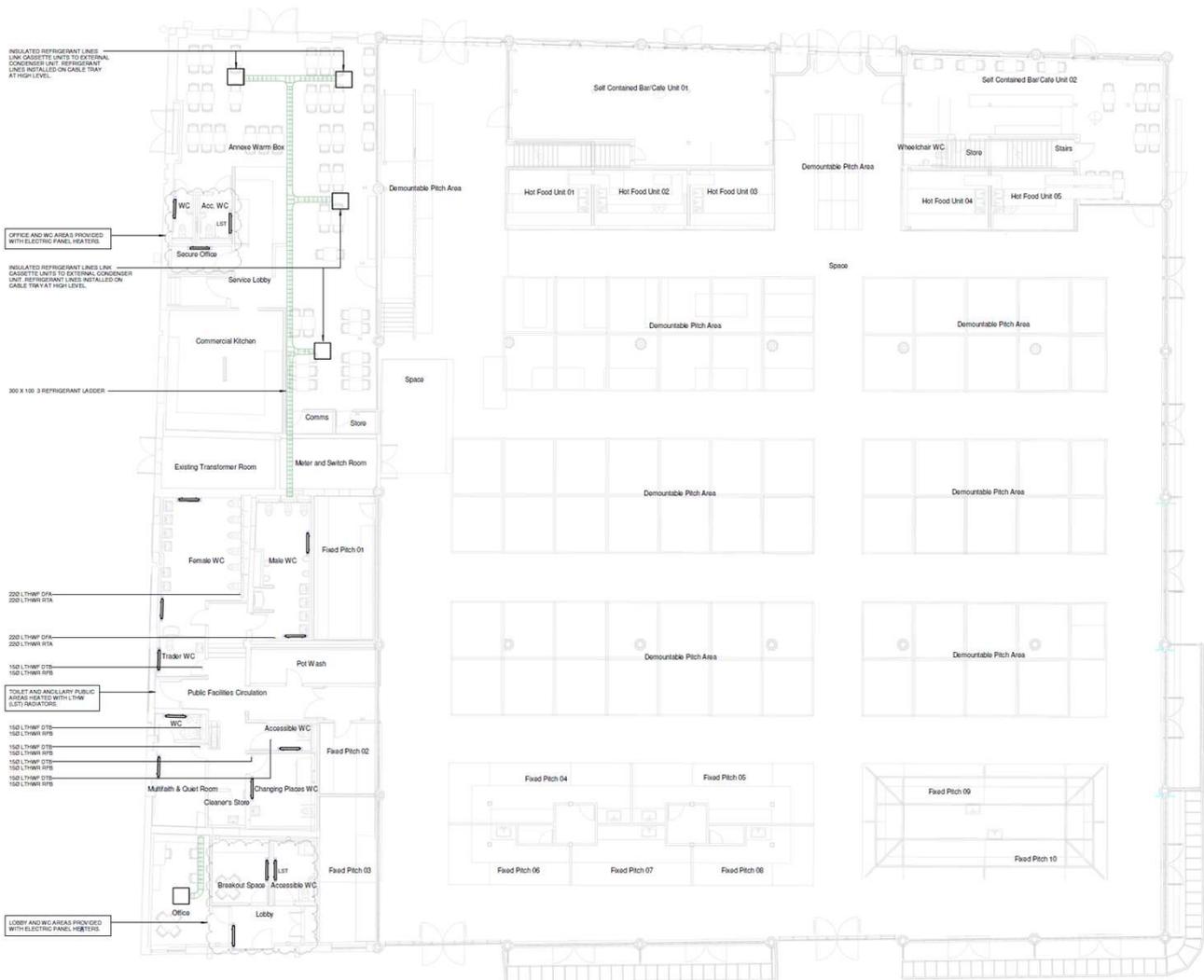


Figure 4. Proposed heating and layout

# Energy Strategy

## Hot Water

System types are specified to suit to varying needs of the building areas and to avoid storage and distribution inefficiency. Electric point of use heaters will be installed to areas with more sporadic use. Conversely, in the public facility areas where hot water demand is much greater, a centralised, storage system is proposed.

## Lighting

All replacement lighting will comprise high-efficacy, LED luminaires. The design and control will avoid unnecessary use and over-illumination with automatic control.

## Be Clean: supply energy efficiently

### Connected Heat

Kirkless Council are engaged in a procurement process to develop the Huddersfield District Energy Network (HDEN). The proposed energy centre will distribute low-carbon heat to buildings over the region as part of the commitment to reach net zero.

The heat demand of this development is relatively low and as referenced within the Stage 2 energy report by AECOM, a collective decision was made to utilise the existing energy infrastructure and not to form a connection to a district network.

The electric-only energy strategy will avoid onsite use of fossil-fuels and benefit from the ongoing decarbonisation of the National Grid.

## Be Green: use renewable energy

### Technical feasibility

A desktop feasibility was previously undertaken by AECOM covering a broad range of Low and Zero Carbon (LZC) technologies. This concluded that the following technologies were viable for further consideration:

- Solar PhotoVoltaic (PV)
- Air Source Heat Pump

# Energy Strategy

## Solar Photovoltaic

Installation of panels is not considered viable to the main market hall building or annexes due to the structure, risk of fabric damage and overshadowing from the adjacent building on Northumberland Street.

A relatively small capacity of PV was specified to the original Market Yard buildings to provide a contribution towards electricity demand and to achieve compliance with Approved Document Part L2. The alternative scheme comprising ISO containers does not include a similar area where panels can be installed. Therefore, a technically and economically viable opportunity for solar PV no longer exists in the scheme.

## Heat Pumps

Air source heat pumps are proposed within the Annex building to provide both space heating and domestic hot water to the customer facilities. This building area has the greatest demand for heat and will benefit from a high Coefficient of Performance (CoP).

# Conclusion

This statement sets out the approach to energy for the proposed Huddersfield Market redevelopment. The energy strategy has been developed against the established hierarchy to minimise demand and ensure efficient energy use, comprising the following components:

- Provision of insulation to existing elements within the Annex building to provide thermal separation from the adjacent market hall and the external environment. Overall U-values will achieve the current regulatory Part L targets, where viable.
- Junction detailing within conditioned spaces to mitigate the risk of uncontrolled air infiltration.
- Demand-controlled natural ventilation to Annex 01 and mechanical ventilation with heat recovery to Annexes 02 & 03.
- All electric building services to avoid onsite fossil fuel combustion and benefit from the ongoing decarbonisation of the National Grid.
- LED lighting with automatic control.
- VRF systems providing highly efficient heating and cooling in the Community Café/Warm Hub to maintain thermal comfort throughout the year.
- Air source heat pumps generating space and water heating within the public facilities area.

Further to changes to the Market Yard, it is understood that no part of the development will need to demonstrate compliance with Approved Document Part L2a. However, Energy Performance Certificates may be required for the Annex areas and self-contained units.



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