

An architectural rendering of modern buildings under a blue sky with clouds. The image is overlaid with a semi-transparent blue filter. On the left is a multi-story building with a grid of windows and balconies. On the right is a taller, more uniform building. In the foreground, there are trees, a sidewalk with people walking, and a street with cars. The text is overlaid on the left side of the image.

June 2023

Energy and Sustainability Report

Upper Brook Street Masterplan

(McLaren / Kadans)

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Issue / Revision Record

Issue	Date	By	Checked	Comment
P01	04.05.23	AS	DY/IG	Planning Issue
P02	01.06.23	AS	CH	Updated with in line with client and planning consultant comments

1.0 Introduction

1.1 Role of the Energy and Sustainability Report

This report has been prepared by Wallace Whittle on behalf of McLaren Property Ltd. and Kadans Science Partner, to support a full planning application for a Sci-Tech and purpose-built student accommodation scheme (PBSA) scheme (hereafter referred to as the 'Proposed Development') on the Upper Brook Street Masterplan (hereafter referred to as the 'Site'). This scheme would bring forward development on a Previously Developed site which is earmarked for commercial and PBSA uses in the Oxford Road Corridor SRFG 2019.

This report outlines the following:

- Energy Strategy
- BREEAM Assessment
- WELL-enabled strategy

1.2 Description of the Site

The Site extends to 1.084 hectares (ha) and is partially in use as a temporary paid car park. The paid car park is located on a section of the Site which was formerly in use as a Citroën car dealership and is accessed from both Upper Brook Street (UBS) to the west and Kincardine Road to the east. The remainder of the Site comprises the former Elizabeth Yarwood Court residential complex, which is accessed from Kincardine Road to the east of the Site.

The Site is identified for redevelopment within the Oxford Road Corridor SRF with mixed commercial uses in-line with the SRF being a priority for the UBS site.

The Proposed Development forms one element of the wider Upper Brook Street Illustrative Masterplan which can be seen within the submitted Supporting Planning Statement.

The masterplan proposals are being brought forward by Kadans Science Partner, McLaren Property, Property Alliance Group and Moda Living. The masterplan intends to transform the currently vacant sites, re-establishing their important role in the area by re-introducing permeability, public realm, and active community-facing uses at ground floor. The emerging masterplan includes almost 3 acres of new public realm and green spaces, a new public square, as well as a series of high-quality new buildings of varying heights to provide for approximately 700,000ft² of sci-tech accommodation, 1,800 purpose-built student accommodation beds, and 25,000ft² of active ground floor uses.

The existing land uses surrounding the site are as follows:

- To the north of the Site is a vacant single-storey commercial building (also identified for redevelopment within the Oxford Road Corridor SRF) and the Grade II* listed 'Former Unitarian Chapel' which now functions as student accommodation.
- To the east of the Site is Kincardine Road; beyond which is a 4 to 6-storey student accommodation building and 2-storey residential dwellings that form a part of the wider Brunswick Estate. The Brunswick Estate is an area currently undergoing extensive urban regeneration (see Cumulative Scheme 1 (Brunswick Neighbourhood)).
- To the south of the Site is Cottenham Street; beyond which is the Tai Wu restaurant and W.H. Lung Supermarket.
- To the west of the Site is UBS, on the opposite side of which is the University of Manchester's Main Campus, which includes the National Graphene Institute, the Manchester Engineering Campus and the Sir Henry Royce Institute, with buildings ranging from 4-storeys to 10-storeys in height.

1.3 Proposed Development

The site is located on Upper Brook Street in Manchester on a parcel of land currently occupied by Elizabeth Yarwood Court, a former sheltered housing scheme that ceased operations in June 2021, and a display area for the former Citroen car dealership. The extent of the site is identified as the boundary to 'OPTION A' below.

The site is referenced as a key part of the Oxford Road Corridor Strategic Regeneration Framework Guidance and is sited adjacent to now-defunct car showrooms which are also due to be developed as part of an overall scheme.

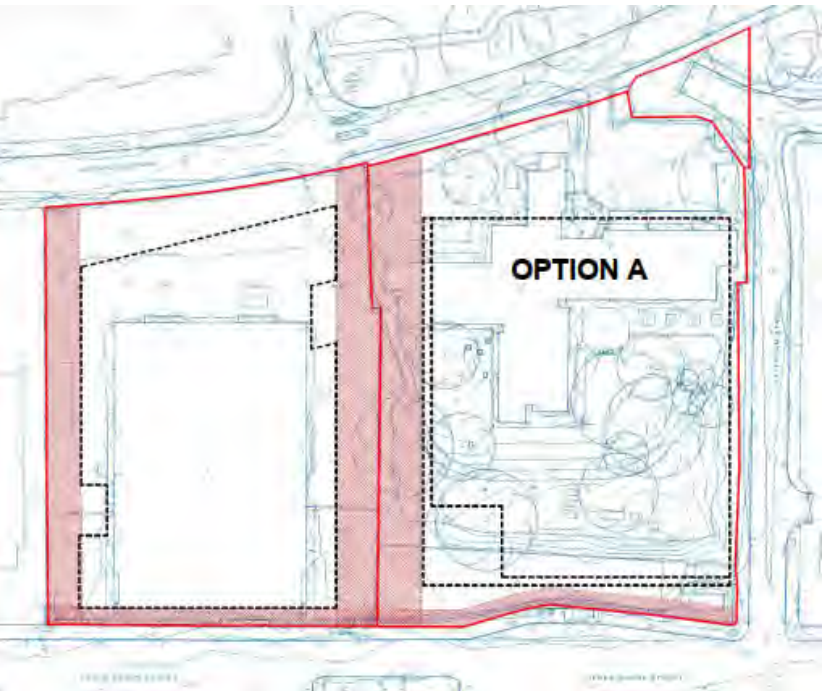


Figure 1.1 - Sheppard Robson Provisional Site Boundary

The proposed building provides 13,723 m² of combined laboratory and office space along with a ground floor publicly accessible café, meeting room suites throughout the building, and a secure cycle store and cycle changing. The building massing is split into a low level 6 storey block (inc. plant) to Kincardine Road, rising to 9 storeys (inc. plant) at Upper Brook Street, with an atrium to the centre of the floorplates that houses informal breakout spaces and forum seating at ground floor.

2.0 Energy Strategy

2.1 Introduction

This section presents the Energy Strategy for the proposed building, it sets out all preliminary design considerations and key drivers to develop a low carbon / Net Zero Carbon (NZC) enabled energy strategy for the proposed building.

The key drivers are as follows:

- BREEAM Excellent (with a BREEAM Outstanding aspiration)
- Energy Performance Certificate; A-Rating
- Manchester City Council's Core Strategy (July 2012)
- Greater Manchester Spatial Framework (Revised Draft Jan 2019)
- Building Regulations Part L2A 2021

2.2 Energy Strategy Framework

The “Energy Hierarchy” framework was used to develop the low-carbon energy strategy for the proposed Upper Brook Street development in Manchester. The approach described by this methodology provides a stage process, BE LEAN, BE CLEAN and BE GREEN (Illustrated below in Figure 3.2) to develop the low carbon and energy efficiency design measures to be applied to this project with the following aims:

- BE LEAN: to reduce the building's energy demand.
- BE CLEAN: to meet the reduced energy demand in the most energy-efficient way.
- BE GREEN: to apply the most viable Low and Zero Carbon generating technologies to further reduce energy consumption and CO₂ emissions.

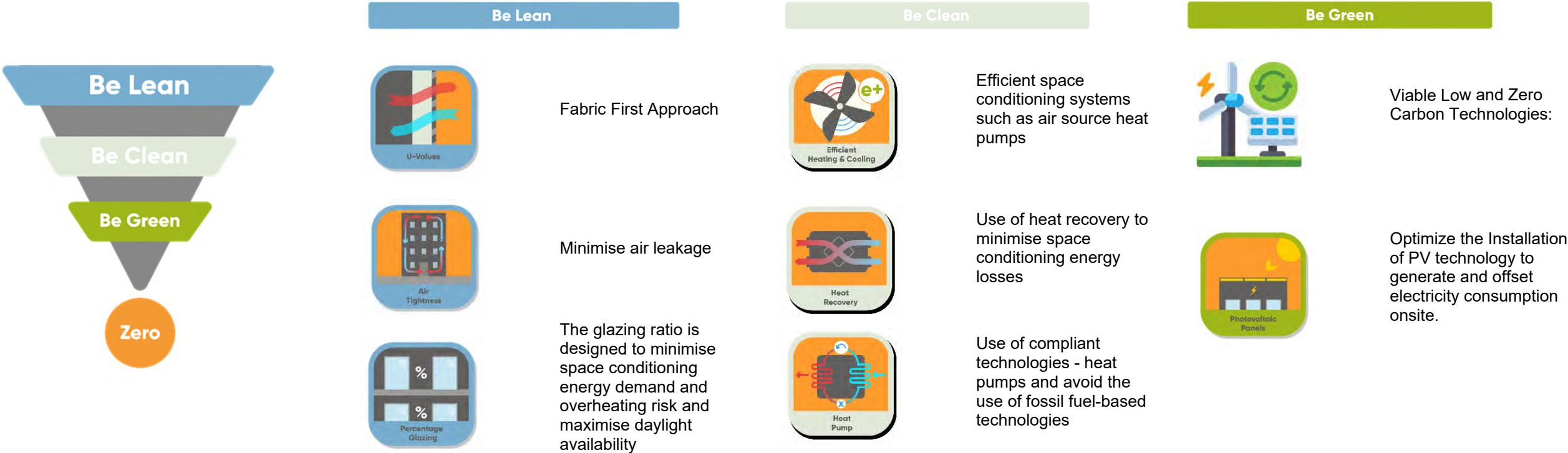


Figure 2.1 - Energy Hierarchy Framework

2.3 Outline Energy Strategy

This section presents the early design stage development of the energy strategy proposed for the building. It sets out design principles to deliver a low-carbon and NZC-enabled strategy aimed to comply with the requirements set out by the local planning policy, Building Regulations, and the targeted BREEAM Rating.

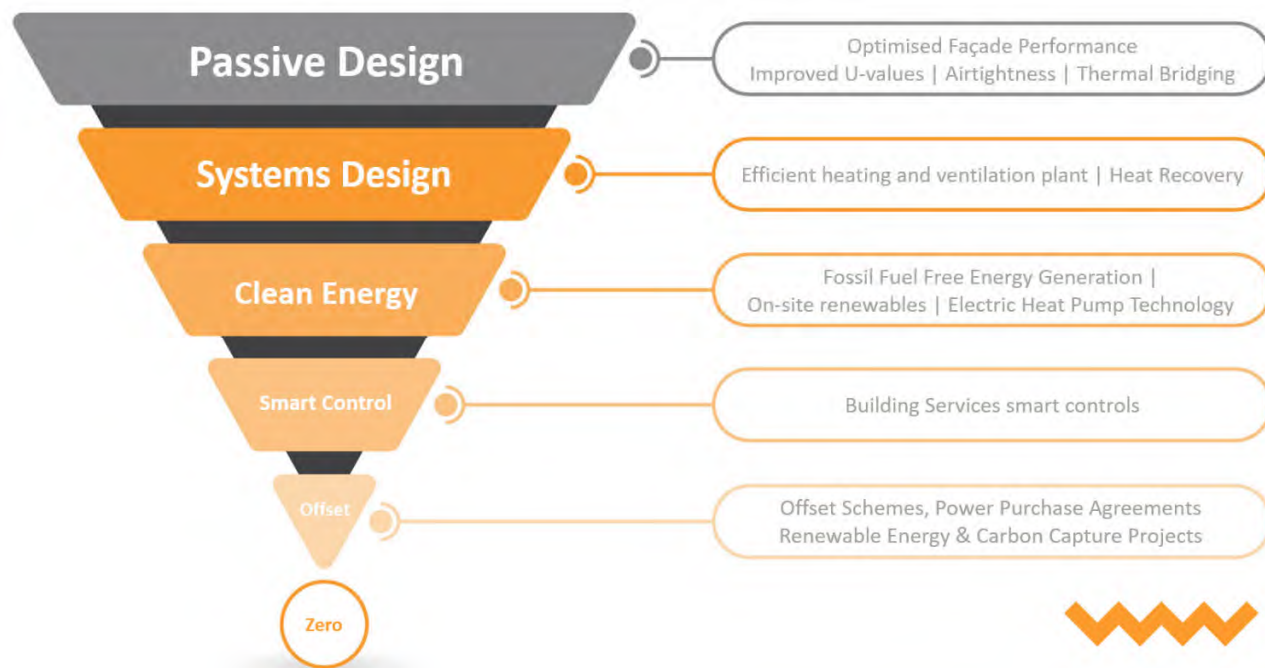


Figure 2.3 - Approach to Carbon Emission Savings

Passive design: This will include high levels of passive design measures to reduce energy consumption and associated CO₂ emissions. Design considerations are to include the following:

- Glazing areas optimised for daylight and thermal performance.
- Enhanced U-values for both opaque and transparent elements. (Recommended values are shown in table 3.4.2 below)
- Very good air tightness where feasible (target $< 3\text{m}^3/\text{h.m}^2@50\text{ Pa}$).
- High light transmittance glazing in the façade ($> 60\%$ LT).
- Solar shading devices and solar control glazing within the office façade, balancing passive solar control and controlling thermal comfort on the floors.

Systems Design: After minimising the energy demand through passive (or Be Lean) elements, carbon emissions will be reduced further by selecting efficient mechanical and electrical systems, and efficient controls to manage the energy used during operation.

- Energy efficient lighting systems.
- Heat recovery integrated into the ventilation system.
- Variable speed drives on the AHUs.
- Presence detection on lighting controls in most areas and photocell control dimming in office perimeter areas.
- Building Management System to monitor mechanical systems.

Clean Energy: Avoidance of all fossil fuels. All-electric servicing.

- Flexibility for connection to any future District Heating/Cooling Network.
- Integration of air source heat pump (and chillers, where necessary).
- Roof-mounted photovoltaic (PV) arrays, providing renewable electricity.

Smart Control: Demand-side Response Strategy.

- Application of smart energy management to optimise energy use.
- Consider energy storage (Battery) to manage power demands onsite.
- Visualise and educate building energy managers, building users and visitors to drive energy consumption down.

2.4

Passive Design

To align with the BREEAM ENE04: Low Carbon Design credit, the following table presents the passive design measures to be considered as the design develops

Passive Design Measure	Consideration
Site Location	The proposed building is to be set out in an urban setting at Upper Brook Street, Greater Manchester in England. The proposed site is affected by moderated prevailing southerly winds. The location of the building has been previously defined, and the aim is to optimize the use of land and provide adequate accommodation for the proposed Office/Lab building. It has been recommended that provision for adequate roof area to be provided to accommodate solar technologies
Site Weather Microclimate	The proposed building is in the northwest of England. Typically, the weather in this region experiences mild winters, cool summers, and heavy rain all year round. Upper Brook Street is not classed to be an urban heat island.
Building Layouts Building Orientation	The building's layout, orientation and form are currently under development. The recommended consideration highlights the following: ▪ optimize the building footprint ▪ provide adequate daylight and limit excessive solar gains using external shading. This process evaluated the interaction between daylight access, glare and view out.
Building Form and Layout	Developing a compact form will reduce the energy demand of the building. At this stage, the massing and form of the building are being developed and it is recommended to provide a compact design which aims to reduce heat demand. External shading to all south, southwest, and west elevations is recommended to reduce additional solar gains in the building. In addition to the above internal layouts are to be designed to reduce distances in M&E services, this can be achieved by placing toilet and wet areas in close proximity to avoid excessive pipe lengths, which will result in lower heat loss from pipework.
Building Occupancy type	Due to the speculative nature of the development, an extended period of operation when compared to a typical office building has been assumed. The energy and building services strategies are being developed with this issue in mind.
Daylight strategy	Adequate access to natural light not only benefits the visual comfort of building users but can also reduce the energy used to artificially light spaces. The proposed development aims to carefully consider the development of translucent surfaces that will aim to allow useful

Passive Design Measure	Consideration
	daylight into a space without affecting the internal visual and thermal environment. Further design development, and supporting assessments, are required to assess the daylight ingress, glare risks and thermal comfort in all occupied rooms.
Ventilation Strategy	At this stage, the strategy for the proposed building is mechanical ventilation.
Adaptation to Climate Change	Climate projections indicate that the northwest of England is likely to have warmer, wetter winters and hotter, drier summers in the future. Adaptation to these conditions is a crucial consideration for the development of energy and building services strategies. Measures to mitigate climate change such as enhanced ventilation to occupied areas and material selection to withstand increased rainfall, among others, should be considered further as the design of the proposed building progresses.

Table 2.4.1 - Passive Design Considerations

In line with the passive design consideration highlighted above, the following table presents the fabric thermal performance targets recommended for this development. The targeted reduced U-values and air permeability ranges are proposed to exceed the minimum requirements of Part L2A:2021 and are summarized below. This measure aims to reduce the heat demand by reducing fabric and uncontrolled ventilation heat losses.

External Element	Recommended Range of Performance
Roof (Flat / Pitched) U-value	0.10 (W/m ² K)
External Solid Wall. U-value	0.15 (W/m ² K)
Exposed floors or ground contact floors. U-value	0.10 (W/m ² K)
Windows (including frame)	1.20 (W/m ² K) (g-value < 0.33)
Air permeability target	3.00 m ³ /h.m ² @ 50Pa

Table 2.4.2 - Proposed Fabric Thermal Performance

2.5 System Design

After the passive measures discussed above the next step is to define the system design principles. This section presents the energy efficiency design considerations proposed for the Upper Brook Street development:

- Efficient Internal and external lighting: All lighting to be Light Emitting Diodes (LED) to minimize energy consumption.
- Lighting Controls: all lighting designs to include daylight linking with either switching or dimming to be included where applicable for offices and lab areas, Passive Infrared Sensors (PIR), Absence detection and manual switches.
- Pumps and fans with variable speed drives and sensors.
- Heat recovery, all supply and extract ventilation systems with high-efficiency heat recovery technology.
- Energy monitoring: an adequate energy sub-metering strategy should be used to monitor energy use in the building. This system will allow for an understanding of out-of-range values and any abnormality that could identify faults which may cause the building to use more energy.

2.6 Clean Energy

A preliminary Low and Zero Carbon generating technology has been carried out and have identified the following technologies for development:

2.6.1 Heating and Cooling Low Carbon Space Conditioning (to serve the office and lab areas)

RECOMMENDED OPTION: Reverse Cycle Chillers

This technology provides low-carbon space heating and efficient comfort cooling.



Figure 2.6.1 - Airdale Air Cooled (Heat Pump Variant)

Advantages	Disadvantages
Future-proof option – NZC ready.	The system is less efficient than VRF/HVRF
Allow the system to be fully designed as per the client's brief (including bespoke elements)	No simultaneous cooling and heating unless a polyvalent heat pump is specified (although it is a lot more expensive)
The system does not require a cooling tower, meaning less maintenance	The design is not packaged, which means to design for the system hydraulics, controls, internal units etc will need to be designed individually
Common in larger development	Freeze protection is required (i.e., glycol or trace heating) which will reduce the overall efficiency of the system
Higher delivery capacity when compared to than VRF/HVRF system	Expensive system to design and install

Table 2.6.1 - Reverse Cycle Chillers Advantages and Disadvantages

2.6.2 Low Carbon DHW Generation

Dedicated DHW Air Source Heat Pumps

This technology provides low carbon DHW generation recommended at this stage to serve the GF Café and changing room areas

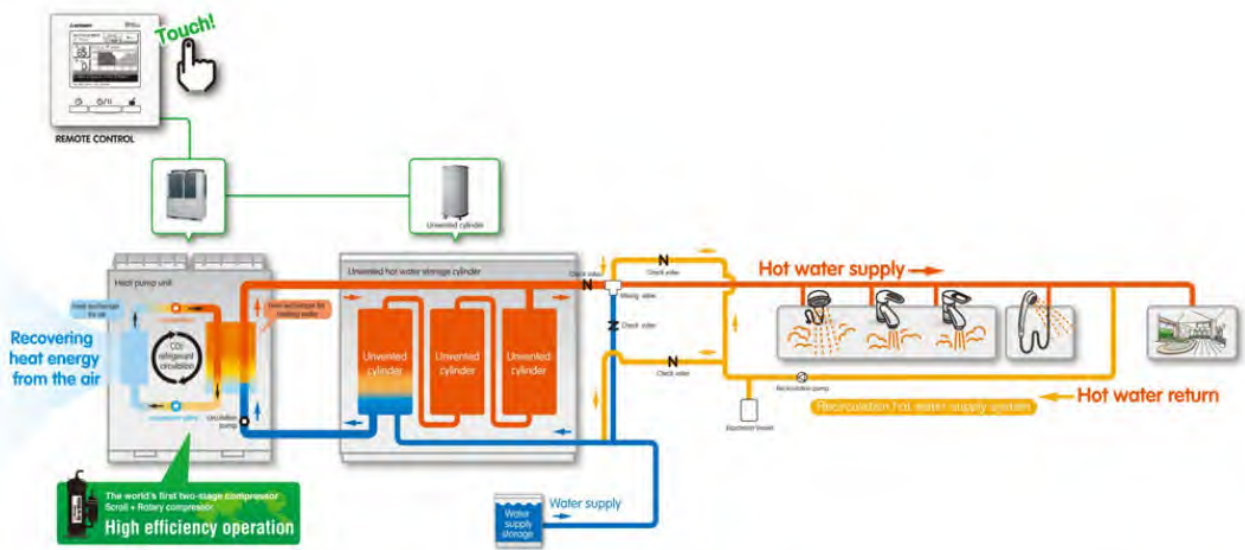


Figure 2.6.2 - Air to Water Commercial Heat Pump Example.

Advantages	Disadvantages
Future-proof option - NZC ready.	System is inflexible and is limited to DHW production only
CO ₂ as a refrigerant has the lowest GWP	It is the most effective when working at maximum capacity
High efficiency for producing water up to 90°C	
System comes in full package	
Easy to control	

Table 2.6.2 - DHW Dedicated ASHP Advantages and Disadvantages

2.6.3 Renewable Energy

At this early stage, it is recommended that all PV areas be optimised. This technology will be placed on all available roof space. With ideally 30-40% of this roof space to be active area of PV. The RIBA Stage 2 compliance calculation require an active PV area of 400m₂.

Given the current services allowances, at this stage the figure below illustrates the preliminary roof area identified to place this technology on the roof. Please note that this should be reviewed once the massing of the building and plant allocation is finalised. Additional areas may be feasible, such the inclusion of a gantry above core and plant, with the intent to increase and optimise the area of PV on this building to ensure the building achieves the energy and CO₂ emissions targets sought.

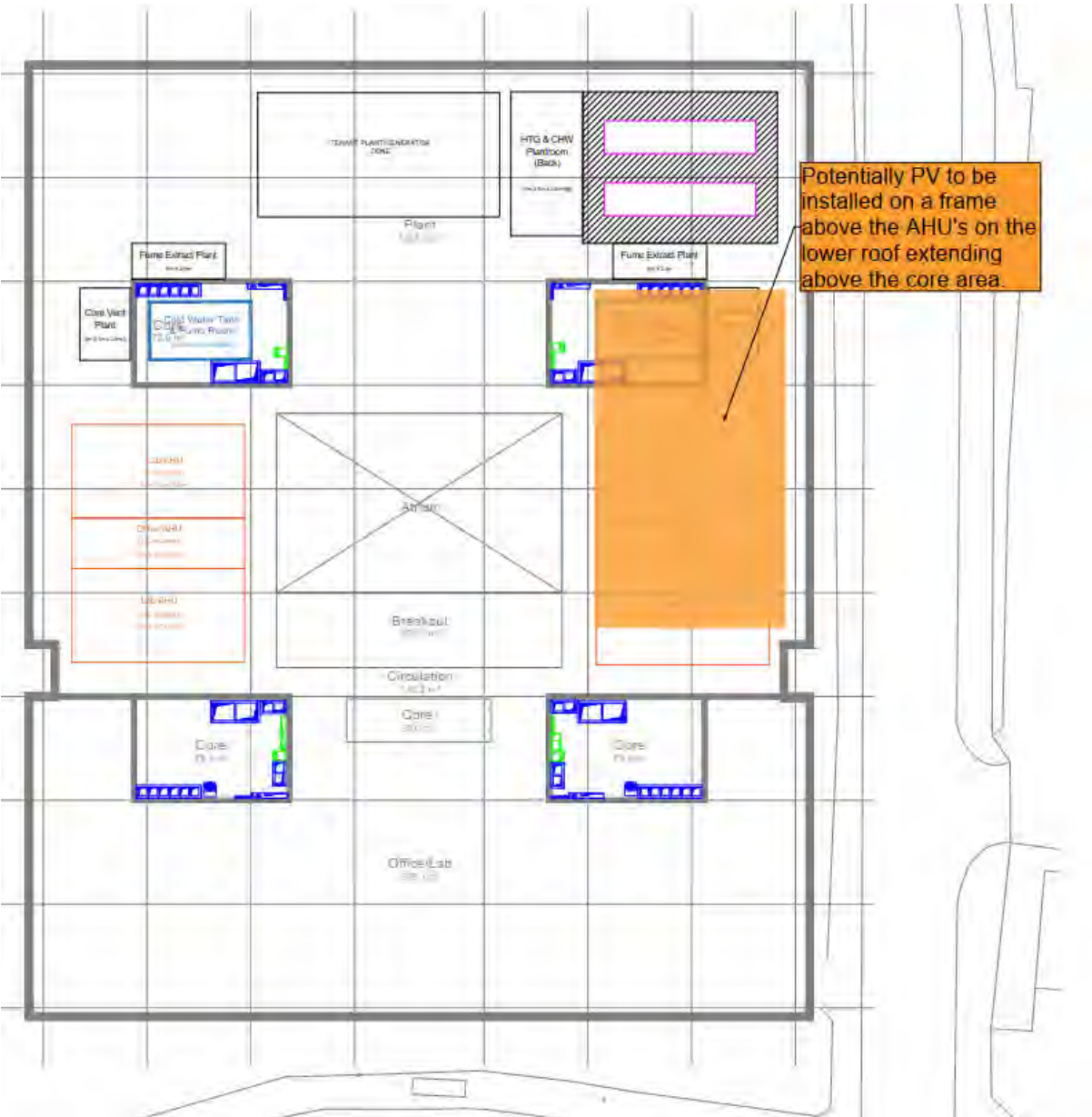


Figure 2.6.3 - Initial indicative Roof Area allocated for PV Technology

2.7 Compliance Results

A series of compliance calculations were carried out at stage 2. This section presents the compliant results and BREEAM ENE 01 checks for the Stage 2 energy strategy proposals set out below.

The table below presents the information used to assess compliance against Part L2a 2021.

Item	Stage 2 Proposals
Target Fabric Thermal Performance	
Roof (Flat / Pitched) U-value	0.10 (W/m²K)
External Solid Wall. U-value	0.15 (W/m²K)
Exposed floors or ground contact floors. U-value	0.10 (W/m²K)
Windows (including frame)	1.20 (W/m²K) (g-value < 0.33)
Air permeability target	3.00 m³/h.m² @ 50Pa
HVAC and Systems	
Space Heating	Office/Lab, Café, Reception and breakout spaces: LTHW – ASHP Chiller SCOP = 3.12 Fan Coil Units (SFP: 0.2 W/l/s). WCs, Corridors: Electric Panel Heaters.
Comfort Cooling	Office/Lab, Café, Reception and breakout spaces: Chilled Water – ASHP Chiller. SEER = 4.67 Fan Coil Units (SFP: 0.2 W/l/s). WCs, Corridors: Electric Panel Heaters
Mechanical Ventilation	Mechanical Ventilation with Heat Recovery. AHU SFP = 2.06 W/l/s (average). HR Eff =73%. With Demand Control Ventilation. WCs/ Showers / Changing Rooms. Dedicated extract ventilation system. SFP 0.4 W/l/s.
Lighting	LED Throughout. Office/Lab Area – Luminaire efficacy 120 lm/CW. Daylight-sensing + automated controls. Other Areas Corridors/Stairs/Stores/WCs. Luminaire efficacy 100 lm/CW. Daylight-sensing + automated controls.
DHW	GF – Level Dedicated ASHP Serving, Café, Café Kitchen and Changing Rooms. All other levels. Point of Use Electric.
Renewable Energy	Active 400m² Photovoltaic System

Table 2.7.1 - Energy and CO2 Compliance Results Summary

The tables below show the compliance results of these two options:

	Part L2a Compliance (BER/TER)	Part L2a Compliance (BPER/TPER)	BREEAM NC V6 ENE 01 Credits.	Stage2 Draft Energy Performance Certificate (EPC) Rating.
UBS Office Block	(2.89(kgCO ₂ /m²)/3.39 (kgCO ₂ /m²)). 14.7% Improvement. Compliant (PASS).	(30.41kWh/m²/34.83 kWh ₂ /m²). 12.7% Improvement. Compliant (PASS).	4.0 (BREEAM Excellent minimum performance achieved)	Stage 2 Draft EPC Rating: A 15

Table 2.7.2 - Energy and CO₂ Compliance Results Summary

The table above shows that the proposed building achieve the following:

- Building Regulations Part L2A 2021 : The building achieves compliance with Part L.
- BREEAM Excellent : 4 Credits achieved under ENE01 Credit.
- EPC Draft Rating : The building achieves an EPC Rating A – 15.

Limitations

The energy assessment was completed using the RIBA Stage 2 Revit model and drawings provided by Sheppard Robson and design information with assumptions based on industry standards and experience. Whilst the information used is provided as an illustration, the final performance will be dependent on the final commissioning results and actual operation of the building.

The Notional and Actual Building calculations use standard NCM operational parameters as required by the NCM rules. These do not match the intended 'Real' building usage exactly but allow a 'like for like' analysis under the Building Regulations. The results presented in this section are therefore not valid for 'Real' building operation

3.0 BREEAM & WELL

3.1 Introduction to BREEAM NC V6

This section presents a BREEAM New Construction V6 (Shell and Core) pre-assessment summary for the proposed Kadans development in Upper Brook Street, Manchester.

Following a BREEAM pre-assessment workshop, the targeted scores were calculated and presented in the tables and figure below.

Target Performance	
Target Rating	BREEAM NC (Shell and Core) (V6) Excellent (≥70%)
Targeted Score	75.56%
Aspirational Rating	BREEAM NC (Shell and Core) (V6) Outstanding (≥85%)
Aspirational Score	89.88%

Table 3.1.1 - Upper Brook Street targeted BREEAM NC Rating

	Available	Weighting	Credits Targeted for Excellent	Credits Targeted for Outstanding
Management	18	11	18	18
Health & Wellbeing	11	8	10	10
Energy	21	14	15	18
Transport	12	11.5	6	8
Water	9	7	7	9
Materials	14	17.5	11	12
Waste	11	7	10	11
Land Use & Ecology	13	15	8	11
Pollution	12	9	9	11
Exemplary/Innovation	10	-	0	2
Total	131	-	94	110
Credits Targeted for Excellent:			75.56%	
Credits Targeted for Outstanding:				89.88%

Table 431.2 - BREEAM Summary Table



Figure 3.1 - Upper Brook Street BREEAM Rating Summary

With a final target score of 75.56%, a BREEAM “Excellent” rating will be achieved with a buffer of 5.56% over the 70% minimum score required for a BREEAM “Excellent” rating.

Several risk credits were identified by the BREEAM Assessor at this stage. A list of these credits is given below.

- Man 04 Commissioning and Handover – Testing and inspecting building fabric (1 Credit)
- Hea 01 Visual Comfort – Daylighting (1 Credit)
- Hea 01 Visual Comfort – View Out (1 Credit)
- Hea 02 Indoor Air Quality Plan – Ventilation (1 Credit)
- Hea 07 Safe and healthy surroundings – Safe Access (1 Credit)
- Hea 07 Safe and healthy surroundings – Outside Space (1 Credit)
- Wat 04 Water Efficient Equipment (1 Credit)
- Mat 02 Hard Landscaping and Boundary Protection (1 Credit)
- Wst 02 Recycled Aggregates – Project Sustainable Aggregate Points (1 Credit)
- Le 01 Site Selection – Previously Occupied Land (1 Credit)
- Pol 01 Impact of Refrigerants (1 Credit)

The aspirational target of BREEAM “Outstanding” can be achieved through the targeting of additional credits to improve the score to 89.88% which will give result BREEAM “Outstanding” rating. This score provides a buffer of 4.88% over the 85% minimum score for a BREEAM “Outstanding” Rating.

It must be noted that the project is targeting a BREEAM NC Excellent as a minimum performance.

The following table shows the key RIBA Stage 2 BREEAM actions. These credits are currently being targeted and should be addressed at before the end of RIBA Stage 2.

RIBA Stage 2 BREEAM actions Key	
Information Outstanding	
Ongoing	
Achieved	

Credit	Information required	Responsibility	Progress
Man 01 Project Brief and Design	1. Consultation plan setting out the process and scope of the consultation. 2. Communication records – demonstrating consultation feedback. Independent third-party consultation reports e.g Design Quality Indicator Reports	Client / Client Rep / Planners / Design Team.	
Man 01 Project Brief and Design	The appointment of a BREEAM AP (Achieved)	Client Rep / BREEAM AP. (WW)	
Man 02 Life Cycle & Service Life Planning	1. Elemental LCC Plan.	Quantity Surveyor/Cost Manager	
Hea 02 Indoor Air Quality - Prerequisite	Completion of an indoor air quality plan.	M&E Engineer (WW)	
Hea 06 Security - Security of site and building	A Suitably Qualified Security Specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA).	Architects / ALO Consultant.	
Ene 01 Reduction of energy use & carbon emissions – Pre-requisite	Preliminary design team workshop focussing on Operational Energy.	Energy Engineer (WW)	
Ene 04 Low Carbon Design – Passive Design Analysis	Develop a passive design and analysis report.	Energy Engineer (WW)	
Ene 04 Low Carbon Design – LZCT	A LZCT feasibility study.	Energy Engineer (WW)	
Mat 01 Environmental Impacts from construction products - Building life cycle assessment (LCA)	Completion of a Building LCA options appraisal for superstructure, substructure, and hard landscaping. Evidence that the LCA options appraisal summary document has been received by the design team and client (meeting minutes, letter of acknowledgement). Evidence of how the LCA design options have informed the design decision-making process (e.g. meeting minutes, documented design development showing how the LCA options have affected the design).	LCA Assessor Architect Structural Engineer Civil Engineer Landscape Architect	
Mat 06 Material Efficiency	Material efficiency report reviewing the chosen material choices at concept design stage	Architect Structural Engineer Civil Engineer M&E Engineer	

Credit	Information required	Responsibility	Progress
Wst 01 Construction waste management - Pre-demolition Audit	Completion of a Pre-Demolition Audit.	Client Agent / Main Contractor Demolition Contractor	
Wst 01 Construction waste management - Diversion of resources from landfill	Completion of a compliant Resource Management Plan.	Main Contractor	
Wst 05 Adaptation to Climate change – Structural and fabric resilience	Completion of a Climate Change Adaptation Strategy Appraisal.	Architect M&E Engineer Structural Engineer	
Wst 06 Design for disassembly and adaptability	Disassembly and functional adaptability study, implementation plan report, building adaptability and disassembly guide.	Architect M&E Engineer	
Le 05 Long term ecology management and maintenance	Completion of a Landscape and Ecology Management Plan.	Ecologist	
Pol 05 Noise Attenuation	Completion of a Noise Impact Assessment.	Acoustician	

Table 3.1.3 - RIBA Stage 2 Credit Summary

3.2

Introduction WELL Building Standard

Wallace Whittle was appointed to carry out a WELL v2 Pre-assessment for the proposed Block B office on Upper Brook Street, Manchester. This section outlines the WELL Building Standard features as discussed with the client and the design team as discussed during the WELL workshop. At this workshop, it was agreed that formal WELL Core certification would not be sought. Instead, the WELL Pre-assessment outlined the route to a “WELL Enabled” building, incorporating all necessary health and wellbeing measures such that a tenant would not be prevented from pursuing formal WELL certification as part of their fit-out to allow a tenant to achieve as high a score as possible and, in theory, a Platinum rating.

The Pre-assessment is subject to a review of the individual requirements by the responsible members of the project team.

In terms of certification, it should be noted that:

Any level of WELL certification requires that all preconditions be met.

- Silver-level certification is awarded when 50 points have been achieved with a minimum of 1 point per concept.
- Gold level certification is awarded when 60 points have been achieved with a minimum of 2 points per concept.
- Platinum-level certification is awarded when 80 points have been achieved with a minimum of 3 points per concept.

3.2.1 WELL Building Standard

The WELL Building Standard v2 is an assessment methodology for buildings and organisations that delivers more thoughtful and intentional spaces that enhance human health and well-being. It is backed up by a review of the latest scientific research and draws upon expertise from practitioners, public health professionals and building scientists. The methodology is divided into ten concepts, with each concept consisting of features with distinct health intents. These features are either preconditions or optional optimisations. Preconditions are considered fundamental parts of a WELL-certified space and therefore preconditions and all parts within them are mandatory for certification.

The WELL v2 methodology operates on a points-based system with 110 points available. Optimisations are weighted with varying point values with the maximum point values being determined by the sum of a building's parts. A primary difference between WELL and other assessment methodologies is that WELL is performance-based. As such, on-site assessments and third-party testing are required for verification of a WELL-certified building. Therefore, objectives determined at the design stage must be implemented and demonstrated in practice once the building becomes operational.

Please refer to the table below for the CAT A Fit-out Requirements for the proposed building.

ID	Feature	Part	Comments
A01.1	Air Quality	Meet Thresholds for Particulate Matter	AHU Filter grades to be reviewed
A01.4	Air Quality	Meet Thresholds for Radon	Comply with A03 Part 1 Option 1
A02.2	Smoke-Free Environment	Prohibit Outdoor Smoking	
A03.1	Ventilation Design	Ensure Adequate Ventilation	AHUs provided by landlord
A05.2	Enhanced Air Quality	Meet Enhanced Thresholds for Organic Gases	AHUs provided by landlord
A05.3	Enhanced Air Quality	Meet Enhanced Thresholds for Inorganic Gases	AHUs provided by landlord
A06.1	Enhanced Ventilation Design	Increase Outdoor Air Supply	AHUs provided by landlord
A06.2	Enhanced Ventilation Design	Improve Ventilation Effectiveness	
A07.1	Operable Windows	Provide Operable Windows	Not achieved.
A09.1	Pollution Infiltration Management	Design Healthy Entryways	Interiors projects may count exterior building entrances that meet the feature requirements, even if they are outside of the project boundary.
A09.2	Pollution Infiltration Management	Perform Envelope Commissioning	Interiors projects may count commissioning performed on the building envelope, even if outside of the project boundary.
A12.1	Air Filtration	Implement Particle Filtration	Specify correct grade of filter AHUs
W01.1	Water Quality Indicators	Verify Water Quality Indicators	Water quality targets to be included in contractors requirements
W02.1	Drinking Water Quality	Meet Chemical Thresholds	Water quality targets to be included in contractors requirements

ID	Feature	Part	Comments
W02.2	Drinking Water Quality	Meet Thresholds for Organics and Pesticides	Water quality targets to be included in contractors requirements
W03.1	Basic Water Management	Monitor Chemical and Biological Water Quality	Water quality targets to be included in contractors requirements
W03.2	Basic Water Management	Implement Legionella Management Plan	Water quality targets to be included in contractors requirements
W04.1	Enhanced Water Quality	Meet Thresholds for Drinking Water Taste	Water quality targets to be included in contractors requirements
W05.1	Drinking Water Quality Management	Assess and Maintain Drinking Water Quality	Water quality targets to be included in contractors requirements
L05.1	Daylight Design Strategies	Implement Daylight Plan	"Basebuild - Visible Light Transmittance of glass must be 40% or more.
V03.1	Circulation Network	Design Aesthetic Staircases	Tenant may use the landlord stair as part of their own WELL certification for the fit-out.
V03.2	Circulation Network	Integrate Point-of-Decision Signage	
V03.3	Circulation Network	Promote Visible Stairs	
V04.1	Facilities for Active Occupants	Provide Cycling Infrastructure	
V04.2	Facilities for Active Occupants	Provide Showers, Lockers and Changing Facilities	
T01.1	Thermal Performance	Provide Acceptable Thermal Environment	Dependant on landlord / tenant scope
T01.2	Thermal Performance	Measure Thermal Parameters	Dependant on landlord / tenant scope
S02.1	Maximum Noise Levels	Limit Background Noise Levels	Acoustician to be appointed to ensure feature requirements are met
S03.1	Sound Barriers	Design for Sound Isolation at Walls and Doors	Acoustician to be appointed to ensure feature requirements are met
S03.2	Sound Barriers	Achieve Sound Isolation at Walls	Acoustician to be appointed to ensure feature requirements are met
X02.1	Interior Hazardous Materials Management	Manage Asbestos Hazards	To be included within contractors requirements
X02.2	Interior Hazardous Materials Management	Manage Lead Paint Hazards	To be included within contractors requirements
X02.3	Interior Hazardous Materials Management	Manage Polychlorinated Biphenyl (PCB) Hazards	To be included within contractors requirements
X03.2	CCA and Lead Management	Manage Lead Hazards	To be addressed in specifications
X06.1	VOC Restrictions	Limit VOCs from Wet-Applied Products	To be addressed in specifications

Table 3.2.1 - WELL Building Standard Target Summary



Aberdeen Office
Marischal Square
Broad Street
Aberdeen, AB10 1BL

Belfast Office
Suite 3, Bamford House
91-93 Saintfield Road
Belfast, BT8 7HN

Edinburgh Office
38 Thistle Street
Edinburgh
EH2 1EN

Glasgow Office
The Garment Factory
10 Montrose Street
Glasgow, G1 1RE

London Office
2-6 Boundary Row
London
SE1 8HP

General
Tel: +44(0)330 460 5200
Email: contact@wallacewhittle.com
www.wallacewhittle.com

Warrington Office
Suite 516, Chadwick House
Birchwood Park
Warrington, WA3 6AE

