HOARE LEA

Advanced Scanning & Imaging Centre Development. Manchester.
The Christie NHS Foundation Trust.

SUSTAINABILITY
ENVIRONMENTAL STANDARDS STATEMENT

REVISION 04 – 25 SEPTEMBER 2023

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
01	16/08/2023	Draft for comment	S. Hunt	V. Wall	J. Nuttall
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Executive summary.

This report presents the Environmental Standards Statement for the Advanced Scanning & Imaging Centre Development, Manchester (hereafter referred to as the Proposed Development).

Planning Policy relating to sustainability.

Key national, local and trust policy documents are summarised in section 2 and include the following:

- Health and Care Act 2022
- Approved Document L 2021
- National Planning Policy Framework
- Manchester Core Strategy
- Places for Everyone Joint Development Plan (noting that this is an emerging document that carries limited weight at the time of writing)
- Delivering a 'Net Zero' National Health Service.
- Greater Manchester NHS Green Plan.

Specific sustainability themes have been discussed against the policies outlined in Manchester's Core Strategy to provide a holistic overview of the proposals. In many cases, these themes overlap with BREEAM.

In addition to the above, the Proposed Development is targeting a BREEAM rating of "Excellent".

Approach to energy efficiency.

In line with national and local policy, the energy hierarchy has been adopted to support the project sustainability ambitions. This includes passive design measures, such as improved building fabric performance and optimised glazing, energy efficient building services and provision of low carbon and renewable energy i.e. air source heat pumps and photovoltaic panels.

Adopted sustainability measures Operational energy performance is discussed in section 4 of this report, outlining the Operational Energy Performance calculations performed for the Proposed Development and the outputs of the assessment. Understanding the importance of closing the performance gap between the simulation and reality, TM54 analysis was used to assess operational energy. The results demonstrate the differences in output between Part L and TM54 and highlight the areas to target when looking to further reduce operational energy consumption in following stages.

An assessment of embodied carbon has been completed to supplement the operational carbon (energy) assessment and inform the design with respect to selection of construction materials with lower embodied carbon where technically feasible.

Following the guidance provided on the operational energy approach and targeting key elements of the structure, the Proposed Development will aspire to take significant steps towards net zero carbon. Although, the project is not expected to achieve net zero carbon.

The above analyses secure credits in the BREEAM assessment which is being used to provide a holistic framework for the assessment of multiple sustainability themes. Ridge and Partners LLP were appointed to complete the BREEAM preassessment report for the Proposed Development on behalf of The Christie Foundation NHS Trust. The preassessment was published on the 16th December 2022 and set a target rating of "Excellent" which requires a minimum score of 70%.

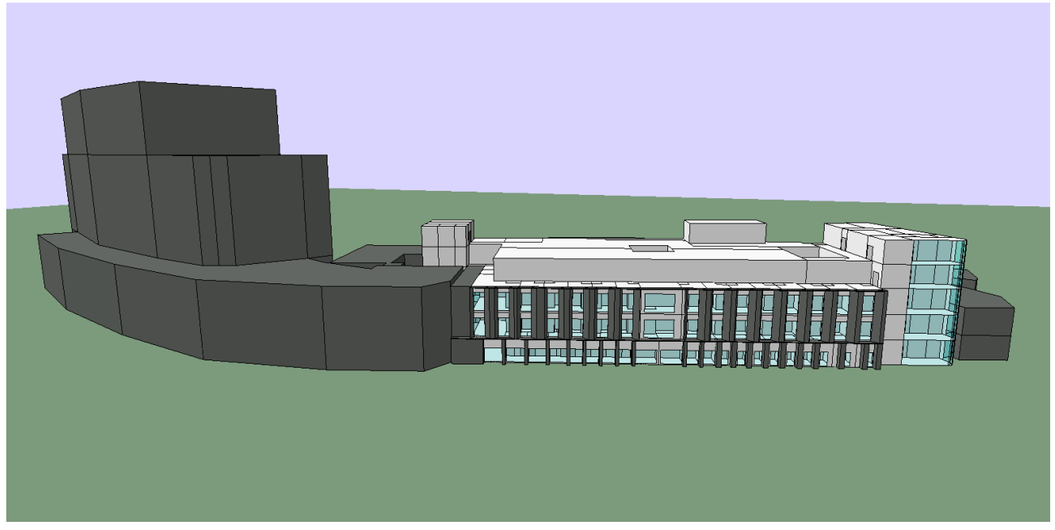
1. Introduction.

This Environmental Standards Statement has been prepared by Hoare Lea on behalf of The Christie NHS Foundation Trust and is submitted in support of an application for full planning permission of the Advanced Scanning & Imaging Centre Development on Wilmslow Road in Greater Manchester.

The Proposed Development seeks to demolish the existing two and three storey building and redevelop to provide a principally three-storey building, with a further level of enclosed plant set back from the facade edge above, and further plant equipment on the roof above this. A stair core rises to five storeys to bookend the development to the north. The development is connected to the wider hospital development on the West elevation from the basement floor up to the third storey. The Proposed development will deliver a new advanced scanning and imaging centre, with consultation, treatment rooms and 24/7 bedrooms with ancillary inpatient facilities and plantroom space. The upper floors will comprise ward accommodation to facilitate the decant of other facilities elsewhere at the Christie Hospital.

The Proposed Development is described fully in the Design and Access Statement prepared by DAY Architects and presented on the application drawings. The application proposals have been developed in consultation with Manchester City Council ("MCC") Officers and other key stakeholders.

Figure 1- Dynamic Simulation Model Image.



The development is undertaking the following assessments:

- Part L 2021 Compliance
- TM54 Operational Energy
- BREEAM with a targeted rating of "Excellent"
- Embodied Carbon
- Thermal Comfort

2. Sustainability Policy.

2.1 National Policy.

Key policy documents relating to sustainable development are summarised below.

2.1.1 Health and Care Act 2022.

Through the Health and Care Act 2022, the NHS has embedded a commitment to Net Zero within legislation. The Act places a new duty on the NHS and all trusts, foundation trusts, and integrated care boards to work towards statutory emissions and environmental targets.

Under the Act, when exercising its function, NHS England must:

1. Work to address and comply with:
   a) The UK net zero emissions targets set out in the Climate Change Act 2008, section 1.
   b) The environmental targets set out in the Environment Act 2021, section 5.
2. Adapt to any current or predicted climate change impacts that have been identified within the Climate Change Act, section 56.

The Act also permits the publication of statutory guidance by the NHS England to assist in discharging these duties and support the net zero pathway.

2.1.2 Approved Document Part L 2021: Conservation of fuel and power.

Part L of the Building Regulations is the mechanism by which government is driving reductions in the regulated CO_2 emissions from new buildings. The Proposed Development will need to comply with Part L2A of Approved Document Part L 2021 (ADL 2021) which was enforced on 15th June 2022.

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

- It is now significantly more challenging to achieve compliance with fossil fuel heating, therefore an all-electric heat pump strategy is likely to be the preferred solution;
- A varying carbon factor associated with grid electricity is 73% lower on average than ADL 2013;
- A new non-domestic building will deliver a 27% reduction in CO_2 emissions on average across the new-build non-domestic building mix relative to ADL 2013; and
- A primary energy target has been introduced and the Fabric Energy Efficiency target retained

2.1.3 Approved Document F (England), 2021: Ventilation.

Approved Document F was last fully updated in 2010, with amendments in 2013. Volume 1 applies to dwellings only, therefore the main updates for Volume 2 (non-domestic buildings) are provided below:

- New guidance on performance-based ventilation standards will allow designers to assess ventilation strategies against individual volatile organic compounds as an alternative route to using a total VOC limit;
- Air quality monitors (e.g. CO_2 monitors) are required to be installed in offices; in rooms where "singing, loud speech or aerobic exercise or other aerosol generating activities" take place; in rooms "where members of the public are likely to gather"; and in rooms that are maintained at both low temperatures and humidities;
- Occupiable rooms in offices require outdoor air to be supplied at the greater of 10 l/s per person or 1 l/s.m^2;
- Common spaces in offices (including circulation spaces) require either natural ventilation openings of at least 1/50th of the floor area, or a mechanical supply of outdoor air at a minimum rate of 0.5 l/s.m^2; and
- Amended guidance on recirculating systems states that systems should be capable of operating in a mode that prevents the recirculation of air between different spaces, rooms, or zones, unless suitable filtering or cleaning systems are in place.

2.1.4 Heat and Buildings Strategy.

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

All privately rented non-domestic buildings are required to have minimum EPC band B by 2030 in England and Wales. Further, all private non-domestic buildings >1,000 m^2 will require an operational energy assessment, completed as part of the Part L2a 2021 update. The building log book should include a forecast of the building's actual energy use (kWh/year) broken down by fuel type, including all metered energy uses and unregulated loads. The forecast may be determined using design calculations, energy benchmarks, an energy forecasting methodology such as CIBSE's TM54 or any other building modelling or spreadsheet tools.

2.1.5 National Planning Policy Framework.

The updated National Planning Policy Framework (NPPF) was published in September 2023 and has superseded all Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) documents, with the exception of PPS10 (Waste), which has since then been superseded by the national planning policy for waste published in October 2014. The NPPF sets out the Government's strategy on the delivery of sustainable development.

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

"Plans and decisions should apply a presumption in favour of sustainable development.

For plan-making this means that:

a. all plans should promote a sustainable pattern of development that seeks to: meet the development needs of their area; align growth and infrastructure; improve the environment; mitigate climate change (including by making effective use of land in urban areas) and adapt to its effects;

b. strategic policies should, as a minimum, provide for objectively assessed needs for housing and other uses, as well as any needs that cannot be met within neighbouring areas, unless:

   i. the application of policies in this Framework that protect areas or assets of particular importance provides a strong reason for restricting the overall scale, type or distribution of development in the plan area; or

   ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.

For decision-taking this means:

c. approving development proposals that accord with an up-to-date development plan without delay; or

d. where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:

   i. the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or

   ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole."

In respect of energy policy contained within the NPPF, paragraph 155 sets out that:

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

a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

b. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c. identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers."

2.2 Local Policy.

2.2.1 Manchester Core Strategy 2021-2027[1].

Manchester's Core Strategy outlines the adopted Manchester City Council policies for selected sustainability themes including:

- Energy and CO_2
- Water and flood risk
- Materials
- Waste
- Transport
- Pollution
- Ecology and biodiversity
- Community

While these topics are discussed in turn in section 3, they are expected to be replaced by the Joint Development Plan (Places for Everyone – see section 2.2.2) when it is approved later in 2023.

2.2.2 Places for Everyone.

Nine of the ten councils in Greater Manchester have submitted the Places for Everyone[2] Joint Development Plan to the Secretary of State for Levelling Up, Housing and Communities for independent review. Examination hearings were later held in November 2022 and July 2023. Following the hearings, a series of modifications for Greater Manchester's Places for Everyone plans were recommended to ensure the plan is sound and legally compliant. These modifications must now be subject to a consultation. Assuming the plan is approved, it sets out a framework for sustainable, inclusive growth across the nine districts. Of particular reference to the Proposed Development, the plan sets out the following strategic objectives:

- Objective 2: Prioritise the use of brownfield land;
- Objective 4: Focus development in the Core Growth Area (Manchester city centre) and improve sustainable and active travel access;
- Objective 6: Focus new development within 800m of sustainable transport hubs and ensure it is designed to encourage and enable active and sustainable travel;
- Objective 7: Promote carbon neutrality of new development by 2028, reduce car dependency, facilitate provision of infrastructure for cleaner vehicles and improve energy efficiency and generation of renewable and low carbon energy; and
- Objective 8: Enhance special landscapes, green infrastructure, biodiversity and geodiversity. Promote the role of green space in climate resilience and reducing flood risk.

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

Note: At the time of writing, the Places for Everyone plan carries limited weight in the decision making process.

2.2.3 5-Year Environment Plan for Greater Manchester.

The Greater Manchester Combined Authority (GMCA) set an ambitious target to be a zero-carbon city by 2038. As part of this plan, the Greater Manchester Spatial Framework sets out plans for all new development to be zero carbon by 2028.

Included in the five-year plan are a number of key items, including, but not limited to; increasing local renewable electricity generation, increasing the diversity and flexibility of energy supply and decarbonising how buildings are heated (serviced). These items encourage passive design and a shift away from fossil fuels to service buildings. The five-year plan also notes that new developments should seek to generate 20% onsite / renewable energy generation.

Additionally, the strategy includes a clean air plan to help tackle poor air quality – safeguarding Manchester residents from high levels of Nitrogen Dioxide (NO_2).

[1] https://www.manchester.gov.uk/downloads/download/4964/core_strategy_development_plan

[2] https://www.greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/places-for-everyone/

2.3 Trust Policies and Guidance.

2.3.1 Delivering a 'Net Zero' National Health Service.

In alignment with national carbon reduction goals and their own net zero commitment, the NHS have worked to develop clear and feasible net zero targets. The Delivering a 'Net Zero' National Health Service report is the current NHS statutory guidance.

An NHS Carbon Footprint target has been established which is largely underpinned by the emissions set out within the Greenhouse Gas Protocol (GHGP) scopes:

- GHGP Scope 1: Direct emissions from owned or directly controlled sources, on site.
- GHGP scope 2: Indirect emissions from the generation of purchased energy, mostly electricity.
- GHGP scope 3: All other indirect emissions that occur in producing and transporting goods and services, including the full supply chain.

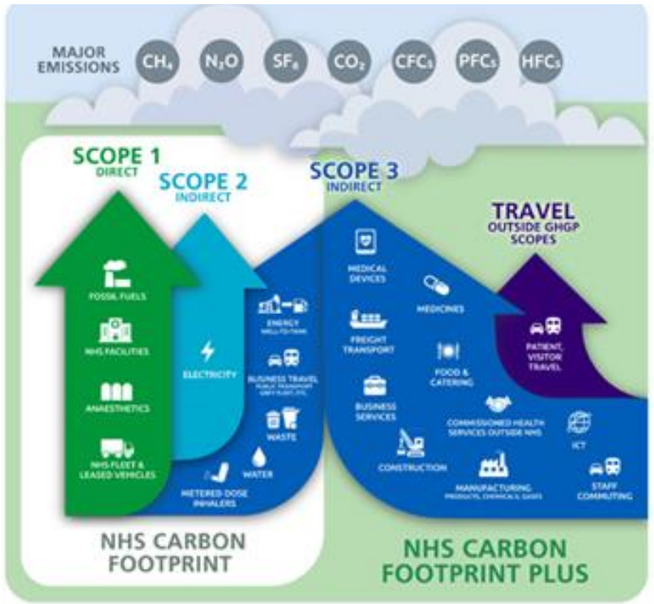
However, these scopes do not encapsulate all NHS emissions. As such, the NHS will also work towards net zero for an NHS Carbon Footprint Plus which includes the three scopes listed above but also any emissions from patient and visitor travel to and from NHS services and medicines used within the home (Figure 2).

From these findings, the NHS have set two net zero targets:

For the emissions directly control by the NHS (the NHS Carbon Footprint), the aim is to reach net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032;

For the emissions the NHS influences (the NHS Carbon Footprint Plus), the aim is to reach net zero by 2045, with an ambition to reach an 80% reduction by 2036 to 2039.

Figure 2- GHGP Scopes in the context of the NHS Carbon Footprint and NHS Carbon Footprint Plus.



This Sustainable Development Management Plan (SDMP) was developed by the Trust in response to UK Climate Change Act (2008), the NHS Long Term Plan and the Delivering a 'Net Zero' National Health Service Campaign. The SDMP outlines the Trust rationale, aims, objectives, plans and priorities for improving local, national and global sustainability.

2.3.2 Greater Manchester NHS Green Plan.

The Greater Manchester (GM) NHS Green Plan aspires to deliver a sustainable health care system which promotes the health and wellbeing of residents within Greater Manchester. The plan seeks to achieve health equity whilst also minimising environmental impacts and ensuring climate resilience.

To reach this vision, two overarching goals have been set:

- Achieve a net zero NHS GM Integrated Care Carbon Footprint by 2038 – Under this target assurance must be given by providers to confirm they are delivering against their own plans, whilst also focusing on priorities that can be delivered most effectively by working together.
- Attain a net zero NHS GM Integrated Care Carbon Footprint Plus by 2045 – this is a national NHS target to eliminate the carbon impact of the goods and services they buy. The NHS will work closely with national and regional partners to achieve this (as outlined in section 2.1.6 above).

To meet the targets set out under the GM NHS Green Plan, specific focus areas have been outlined:

- Workforce, networks and system leadership.
- Sustainable models of care
- Digital transformation
- Travel, transport and air quality
- Estates and facilities
- Medicines
- Supply chain and procurement
- Food and nutrition
- Climate change adaptation
- Green space and biodiversity
- Social value and anchors

The focus areas relevant to the Proposed Development will be discussed in section 3 alongside the Manchester Core Strategy.

3. Sustainability Proposals aligned to Manchester City Council and The Trust Policy.

In addition to specific project targets relating to ADL 2021 and BREEAM, the Proposed Development will align with the local policies that are outlined below.

3.1 Energy and CO_2 emissions.

3.1.1 MCC Adopted Policy Summary.

The following table summarises the adopted MCC policies for energy.

Table 1 MCC policies relating to energy.

Policy Reference		Target
Energy and CO_2	CS Policy EN4	All development must follow the principle of the Energy Hierarchy, being designed: – to reduce the need for energy through design features that provide passive heating, natural lighting and cooling – to reduce the need for energy through energy efficient features such as improved insulation and glazing – to meet residual energy requirements through the use of low or zero carbon energy generating technologies In addition: – Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies – Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings – Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing/potential decentralised energy schemes – The use of building materials with low embodied carbon in new development and refurbishment schemes
	CS Policy EN5	The Proposed Development is located within the Regional Centre, a strategic area indicated on the key diagram, which is expected to have a major role to play in achieving an increase in the level of decentralised, low and zero carbon energy supplies available. Where investment or development is being undertaken into or adjacent to a public building/asset or district heating network, full consideration shall be given to the potential role that these can have in providing an anchor load within a decentralised energy network or in creating opportunities for CO_2 reduction funded by contributions.
	CS Policy EN6	An Energy Statement is required to demonstrate compliance with Part L in line with the energy hierarchy and, for electricity intense buildings i.e. commercial buildings with a high proportion of emissions from electricity use (>45kgCO_2/m^2), a minimum +10% increase on Part L 2010. Where the CO_2 emissions reduction required under any future revision to Part L of the building regulations becomes greater than 10%, the reduction under building regulations would apply.
	CS Policy EN7	– Proposals must take account of potential opportunities to source heat from adjoining developments or nearby heating networks. – Heating and cooling systems will have capability of connecting to the decentralised heating network.

3.1.2 GM NHS Green Plan.

The following table summarises the actions within the GM NHS Green Plan which are relevant for energy and CO_2 emissions:

Focus area	Action
Estates and facilities	– Commission a high-level baseline assessment of the GM NHS Estate to identify priority areas (and indicative costs) for decarbonisation. – Identify and implement existing decarbonisation initiatives across the primary care estate to deliver early benefits to the sector. – Develop a Sustainable Buildings Policy for NHS GM Integrated Care to ensure that all opportunities to reduce the carbon impacts of the NHS estate are maximised – including both new build and retrofitting.

3.1.3 Approach.

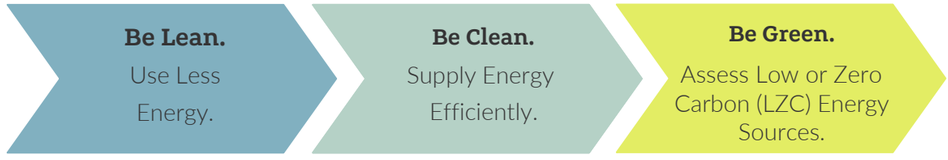
In response to the GM NHS Green Plan, the Proposed Development is following the recommended four-step approach:

1. Making every kWh count: investing in no-regrets energy saving measures
2. Preparing buildings for electricity-led heating: upgrading building fabric
3. Switching to non-fossil fuel heating: investing in innovative new energy sources
4. Increasing on-site renewables: investing in on-site generation

The Energy Strategy [REP-2324847-5A-JD-20230330-Christie's Radiology Village Energy Strategy-Rev01] details how energy and CO_2 emissions have been assessed in accordance with the policies listed above.

The Proposed Development will have a reduced impact on climate change by reducing CO_2 emissions associated with energy use. The energy and CO_2 emissions appraisal has been based on the following approach.

Figure 3 Energy Hierarchy.



Policy EN6 states that applications for commercial developments exceeding 1,000m^2 will be expected to achieve a minimum +10% increase on Part L 2010. However, the publication of the Core Strategy document, Approved Document Part L has since been updated in 2013 and again in 2021. Broadly speaking, compliance with Part L 2013 required a 9% reduction in carbon emissions compared to Part L 2010. Further, a new non-domestic building assessed under ADL 2021 standards is required to deliver a 27% reduction in CO_2 emissions on average relative to ADL 2013. Therefore, compliance with ADL 2021 will automatically achieve the required improvement under ADL 2010.

Based on an interim stage 3 compliance report, the Proposed Development is currently forecasting up to a 2.70% reduction in CO_2 emissions beyond the Building Regulations Part L 2021 'baseline' Target Emission Rate (TER). The TER baseline is a benchmark determined by the Part L notional case and is the minimum requirement set by Part L in order to gain compliance with Building Regulations. As the Proposed Development is expected to surpass the ADL 2021 requirements, the building will far exceed this policy. The decarbonisation of the grid has resulted in the carbon intensity of mains gas being higher than for electricity, and therefore strengthening the argument that building services strategies moving forward should be electric led.

3.2 Water and flood risk.

3.2.1 MCC Adopted Policy Summary.

The following table summarises the adopted MCC policies for water and flood risk.

Table 2 MCC policies relating to water and flood risk.

Policy Reference		Target
Water	CS Policy EN14	– Limit the risk and impact of flooding. – Limit increases in surface water runoff.
	CS Policy EN17	– Ensure no decreases to water quality. – Minimise surface water runoff. – Open any culverted watercourses.
Flood Risk	CS Policy EN14	– Limit the risk and impact of flooding. – Limit increases in surface water runoff
	CS Policy EN17	– Ensure no decreases to water quality. – Minimise surface water runoff. – Open any culverted watercourses.

3.2.2 GM NHS Green Plan.

The following table summarises the actions within the GM NHS Green Plan which are relevant for water and flood risk:

Focus Area	Action
Climate Change Adaptation	Work with Combined and Local Authority partners to build a more collaborative approach and improve understanding of climate change impacts encompassing supply chains, key transport infrastructure, areas vulnerable to flooding and prioritised opportunities for adaptation.

3.2.3 Approach.

The main priorities of the MCC policies do not relate to water conservation issues, but instead encourage no increase in surface water runoff and relate to preventing pollution from entering watercourses. The Proposed Development will aim to reduce the overall consumption of water within the building, in order to limit the resource requirements and ensure that any future impact of water scarcity is limited by the features within the scheme.

The proposed strategy will be water efficient, incorporating measures to reduce potable water consumption through efficient fixtures, and careful management strategies.

The following measures for water have been identified and will be implemented:



Water Efficiency Measures

Consideration has been given to water efficiency in order to meet the requirements of the Building Regulations Part G as a minimum. It is aimed that a 12.5% improvement in water consumption over the notional baseline will be achieved. The following water consumption levels should be achieved in order to reduce consumption and align with BREEAM targets:

- 4.5l single flush WCs
- Wash hand basin taps flow rate limited to 8l/min
- Shower flow rates limited to 10 l/min
- Domestic dishwashers 13 ltrs/cycl
- Kitchenette taps 8 ltrs/min



Major Leak Detection Systems (landlord)

A leak detection system capable of detecting a major water leak on the main water supply will be specified and installed on the buildings water supply.



Metering

Water meters will be installed on the mains water supply with a pulsed output to enable connection to a 'Building Management System' (BMS) for the monitoring of water consumption.

Unregulated water uses are assessed in BREEAM.

Sustainable Urban Drainage systems (SUDs) will comprise a 'blue roof' which is to be located on the roof of the proposed building and a SuDS based integrated vegetation system to drain the external hard surfaces.

The blue roof would provide approximately 230m^3 of attenuation. This would offer water treatment and significant enhancement of local biodiversity.

Further, the proposed landscaping area is to have raised planters which are to be utilised as integrated vegetation systems, collecting runoff in the central tree pit area and discharging it to the tree pit growing media and the drainage layer at the base of the tree pit. This system would provide approximately 50m^3 of attenuation.

Full details can be found in the Drainage Strategy produced by Mott MacDonald.

3.3 Materials.

3.3.1 MCC Adopted Policy Summary.

The following table summarises the adopted MCC policies for materials.

Table 3 MCC policies relating to materials.

Policy Reference		Target
Materials	CS EN19	– Require all developers to identify consistency with the waste hierarchy. – Provide a project waste management plan. – Promote innovation in order to make progress towards a closed loop waste management system. – Provide accessible facilities.
	CS EN20	– Encourage the efficient use of minerals and promote the use of secondary/recycled aggregates, wherever possible as an alternative to primary extraction and identify and safe guard sites for its storage, processing and transfer. (See also Waste Policy EN19.) – Encourage and safeguard the sustainable transport of minerals, including by use of rail, wherever possible. – Ensure that any adverse environmental impacts of storage, processing and transfer on neighbouring uses are minimised.
	CS EN19	– Require all developers to identify consistency with the waste hierarchy. – Provide a project waste management plan. – Promote innovation in order to make progress towards a closed loop waste management system. – Provide accessible facilities.

3.3.2 Approach.

During the next stage, this assessment will be further refined and consideration given to minimising material quantities and selecting materials with low embodied energy potentially through reclamation or high levels of recycled content.

All materials, where viable, will additionally be procured through sustainable sources and products will be preferred with environmental certification such as BES6001 and ISO14001 certified supply chains.

The Proposed Development will achieve the following:

– Timber to be sourced from sustainable sources accredited by the FSC

Products certified with ISO14001 and BES6001Robust materials will also be specified to enable a long life with low maintenance.

The following opportunities to improve the sustainability of material selection have been identified and will be implemented:



Material Sourcing
Where feasible, the Proposed Development will endeavour to source materials locally. This will assist in reducing the embodied carbon of the materials by limiting transportation related emissions and would support the local economy.



Maximise Recycled Content of Materials
A number of materials used commercially in the UK construction industry are manufactured using materials recycled from post-consumer waste. The design will endeavour to utilise recycled materials with low embodied impacts.



Responsibly Sourced, Certified Timber
The buildings will only use timber from a temperate, well managed source or manufactured from recycled timber waste. Timber certified by the 'Forest Stewardship Council' (FSC) contains a product-specific chain of custody number confirming that the timber used in the manufacture of the product originates from a sustainably managed source. 100% of the timber used to be FSC/PEFC certified.



Zero ODP and GWP Insulation
Preference will be given to insulation materials such as rock wool and mineral wool, which are manufactured to have an 'Ozone Depletion Potential' (ODP) of zero, and low 'Global Warming Potential' (GWP), while still giving consideration to thermal performance and fitness for purpose.



Low solvent / low VOC paints
Paints and other materials with high levels of Volatile Organic Compounds (VOCs) can emit organic compounds long after the building has been completed. These chemicals which are inhaled by the building occupants are considered to be a contributing factor in sick building syndrome, leading to nausea and headaches. The scheme will, as far as possible, use internal materials that have a low solvent / low VOC content.



Zero Formaldehyde MDF
'Medium Density Fibreboard' (MDF) is a timber panel product that can be manufactured with new or recycled timber. Typically, MDF is manufactured using Formaldehyde, which is hazardous to health. However, MDF can be manufactured without the use of Formaldehyde and the development will use zero Formaldehyde MDF as far as practically possible.

3.4 Waste.

3.4.1 MCC Adopted Policy Summary.

The following table summarises the adopted MCC policies for waste.

Table 4 MCC policies relating to waste.

	Policy Reference	Target
Waste	CS EN19	– Require all developers to identify consistency with the waste hierarchy. – Provide a project waste management plan. – Promote innovation in order to make progress towards a closed loop waste management system. – Provide accessible facilities.
	CS EN20	– Encourage the efficient use of minerals and promote the use of secondary/recycled aggregates, wherever possible as an alternative to primary extraction and identify and safe guard sites for its storage, processing and transfer. (See also Waste Policy EN19.) – Encourage and safeguard the sustainable transport of minerals, including by use of rail, wherever possible. – Ensure that any adverse environmental impacts of storage, processing and transfer on neighbouring uses are minimised.
	CS EN19	– Require all developers to identify consistency with the waste hierarchy. – Provide a project waste management plan. – Promote innovation in order to make progress towards a closed loop waste management system. – Provide accessible facilities.

3.4.2 GM NHS Green Plan.

The following table summarises the actions within the GM NHS Green Plan which are relevant for waste:

Focus Area	Action
Medicines	Ensure all provider Trusts have programmes in place to minimise wasted nitrous oxide and Entonox and share approach.
Supply chain and procurement	Establish a system-level scheme for walking aid collection and refurbishment, and ensure providers have schemes in place.
Food and nutrition	Ensure all providers have programmes in place to tackle food waste and facilitate shared learning.

3.4.3 Approach.

A Resource Management Plan (RMP) will be developed and used to identify the most appropriate way to manage non-hazardous waste. The RMP should also consider accurate data records on waste and waste management routes. The BREEAM preassessment states that non-hazardous construction waste is to be less than 13.5 m^3 or 11.5 tonnes per 100m^2 GIFA.

During demolition and construction, careful waste management procedures will be put in place during construction and on into operation to reduce the amount (volume and mass) of waste sent to landfill during the lifetime of the building. The principles of the waste hierarchy will be applied at each stage.

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

The following opportunities to reduce waste have been identified and will be implemented at the Proposed Development.



Re-Use of Materials
The material use strategy for the Proposed Development will minimise the environmental impact. A key component of this strategy is the re-use of existing materials within the foundations of the development.



Minimisation of Demolition & Construction Waste
The contractor will be required to produce a 'Site Waste Management Plan' (SWMP) to define measures for how to minimise the volume of waste arising from any demolition and all construction activities sent to landfill. Performance of the contractor waste reduction and their environmental impact in this regard will make up an element of tender process.



Off-site Construction
Off-site modular construction will be considered where possible, which would allow less waste to be produced on-site as the construction method takes on a form of an assembly of components. Features may include stair-core components or upper floor elements although further opportunities will be sought through design and construction.



Operational Waste
The Christie Trust operates under the waste hierarchy and prioritises a re-use system to reduce the volume of furniture and other hospital resources entering the waste stream.

Where waste is unavoidable, the buildings will be provided with sufficient bin storage capacity to allow for storage of recyclable and non-recyclable waste streams. The building users will manually transfer waste to central waste storage area where it will be collected and disposed of by the appropriate waste specialists required for this site.

3.5 Transport.

3.5.1 MCC Adopted Policy Summary.

The following table summarises the adopted MCC policies for transport.

Table 5 MCC policies relating to transport.

Policy Reference		Target
Transport	CS CC5	– Provide access to public transport and sustainable modes of accessing the Proposed Development. – Promote sustainable modes of transport including walking and cycling. – Provide storage and facilities for cyclists/walkers.
	CS SP1	– Encourage sustainable transport and facilitate sustainable transport.
	CS T1	– Provide suitable alternative to car transportation. – Promote regeneration and access to jobs. – Improve access to transportation services. – Improve pedestrian routes. – Improve access to cycle facilities. – Facilitate modes of transport that are low carbon.

3.5.2 GM NHS Green Plan.

The following table summarises the actions within the GM NHS Green Plan which are relevant for transport:

Focus area	Action
Travel, transport and air quality	– Support all trusts to have a healthy travel plan in place and develop a healthy travel plan for NHS GM Integrated Care. – Promote low carbon travel options to staff via: a staff / business travel portal, cycle-to-work leads embedded in every trust/primary care network, improved messaging, and a travel buddy system, tied in with the 'Live the NHS' values. – Collaborate with local authorities, providers and other partners to review staff travel behaviours and explore incentivising sustainable alternatives such as shared car use/mobility opportunities, car clubs, shorter journeys, reimbursement for grey fleet activity and public transit use. – Baseline current and planned provision of secure cycle parking at all healthcare sites (including primary care) and develop an improvement plan, including guidance on funding.

3.5.3 Approach.

It is anticipated that around half of building users will arrive on foot, by bike or via public transport given the local public transportation links close by and existing cycle facilities. Car parking is provided within the hospital campus.

The Proposed Development will facilitate the decant of other existing facilities at the Christie Hospital in Withington and so there will be no net increase in trips to the Christie Hospital in Withington as a result.

Under the Christie's commitment to sustainable development, a Green Travel Plan has been produced; this has been a live document since 2014. The measures within the Green Travel Plan, which are relevant to the Proposed Development, have been outlined in the development's Travel Statement which will be submitted in support of this application. The measures are as follows:

- Membership of the National Performance Advisory Group (NPAG) NHS Car Parking and Travel Planning Network;
- Membership of the NPAG NHS Sustainable Leads Network;
- Membership of the GM Walking Voice Steering Group;
- Appointing a travel plan co-ordinator;
- Promoting a sustainable travel policy;
- Partnership with Transport for Greater Manchester (TfGM);
- Meetings with Manchester City Council (MCC);
- Neighbourhood Engagement Forum;
- Sustainable Development Committee; and
- Travel and car parking group.

Alongside this, additional measures that would strengthen the Green Travel Plan in this location have been proposed:

- Appointing a 'Workplace Travel Champion' for the CASICD building to support the Christie Travel Plan Co-ordinator; and
- Promotion of an internal travel forum within the Proposed Development to encourage sustainable travel measures between building occupants.

It is worth acknowledging that an increase in traffic to the site is to be expected during the construction phase. This is assessed within the Transport Statement and the Construction Traffic Management Plan, and will be mitigated through appropriate traffic management and a contractor parking strategy to be provided prior to the commencement of demolition or construction works.

3.6 Pollution.

3.6.1 MCC Adopted Policy Summary.

The following table summarises the adopted MCC policies for pollution.

Table 6 MCC policies relating to pollution.

Policy Reference		Target
Pollution	CS DM1	– Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.
	CS Policy EN14	– Limit the risk and impact of flooding. – Limit increases in surface water runoff.
	CS Policy EN17	– Ensure no decreases to water quality. – Minimise surface water runoff. – Open any culverted watercourses.
	SPDPG Section 4.9 (Superseded)	– Provide SUDS to management surface water runoff. – Minimise increases in impermeable surfaces. – Prepare FRA for areas at risk of flooding.

3.6.2 Approach.

Building services plant will be selected based on efficient and ultra-low emissions of NOx SOx and COx (where applicable), and will not substantially contribute to local air pollution. Air Source Heat Pumps and Photovoltaic Cells are the proposed energy sources for the development. No gas combustion devices will be installed on site thereby contributing significantly towards the aims of the Greater Manchester Clean Air Plan.

Noise pollution from the fixed building services plant has been assessed by an acoustic consultant. Suitable acoustic insulation measures have been proposed to ensure the noise emissions from plant equipment does not exceed the noise limits set out in the Stage 2 Acoustic Sound Report produced by Sandy Brown.

The following measures to control pollution have been identified and will be implemented:



Light Pollution
Potential sources of light pollution as a result of the new build will be mitigated through measures such as aiming to install automatic lighting which switches off between 23:00 and 7:00, unless used for safety, security and clinical purposes.



NO_x Emissions & Air Quality
To minimise potential air quality effects, the scheme will utilise a strategy which mitigates the need for onsite combustion plant and will help to minimise emissions of Nitrous Oxide (NO_x) and Particulate Matter (PM). Air Source Heat Pumps and Photovoltaic Cells will act as the key energy sources in the Proposed Development. Ventilation systems will be used to manage pollutants in the indoor environment. Heat recovery will help reduce annual heating energy with no impact on the air quality of the incoming fresh air.



Waste Storage
Adequate waste storage facilities will be provided with capacity to allow storage of non-recyclable and recyclable waste, preventing odour pollution from the site. Further information is set-out within the Operational Waste Management Strategy submitted in support of the planning application.



Noise impacts
Noise impacts have been assessed. Acoustic insultation measures have been proposed to ensure the noise emissions from plant equipment does not exceed the established noise limits.

3.7 Ecology and Biodiversity.

3.7.1 MCC Adopted Policy Summary.

The following table summarises the adopted MCC policies for ecology and biodiversity.

Table 7 MCC policies relating to ecology and biodiversity.

Policy Reference		Target
Ecology & Biodiversity	CS EN9	– Encourage green infrastructure where possible.
	CS EN10 / EN11 / EN12	– Maintain levels of open, sports and recreation spaces.
	CS EN13	– No impact on the Green Belt.
	CS EN15	– Encourage features to ensure no loss of biodiversity. – Maintain or enhance sites with specific designations or value. – Justify any adverse effects on ecology. – Provide suitable mitigation and compensation.

3.7.2 GM NHS Green Plan

The following table summarises the actions within the GM NHS Green Plan which are relevant for ecology and biodiversity:

Focus area	Action
Estates and facilities	Develop a Sustainable Buildings Policy for NHS GM Integrated Care to ensure that all opportunities to reduce the carbon impacts of the NHS estate are maximised – including both new build and retrofitting. For example: - Ensure a 10% biodiversity net gain in new developments from 2019 baseline
Green space and biodiversity	Actively encourage healthcare providers to develop and enhance incidental green spaces and implement small biodiversity measures such as tree planting, pocket parks, bat/bird boxes and beekeeping programmes, identifying relevant funding pots wherever possible.

3.7.3 Approach.

The existing site is a brownfield site, principally comprising an existing building, with a small area of landscaping along Wilmslow Road, including eight trees. The appointed ecologist will provide further advice on site ecology and biodiversity including recommended planting species to encourage local wildlife.

The following measures relate to ecology and biodiversity have been included in the project:



Native Planting

Native and non-native plants and species of benefit to local biodiversity will be selected to create and restore native ecosystems.



Environmental Effects

The scheme will aim to record no environmental incidents on-site. Examples of environmental incidents include pollution or contamination of ground and water sources through paint, oil or cement powder spillage.



Tree Planting

The development will aim to plant new trees on-site, surrounding the completed development, and relocate the existing trees within the Christie Estate. Overall, the Proposed Development is currently forecasting a biodiversity net gain beyond the 10% threshold.

Further details are provided in the Arboricultural Impact Assessment and the Biodiversity Net Gain Assessment, submitted in support of the application.

3.8 Community.

3.8.1 MCC Adopted Policy Summary.

The following table summarises the adopted MCC policies for community.

Table 8 MCC policies relating to community.

Policy Reference		Target
Community	CS EN1	– Design facilities that will fit the local character of the development site.
	CS EN10 / EN11 / EN12	– Maintain levels of open, sports and recreation space.
	CS EN13	– No impact on the Green Belt.

3.8.2 Approach

The project team aims to engage with the local community throughout design, construction and operation to deliver a sustainable development, built for purpose.

The Proposed Development has engaged with communities and stakeholders in a meaningful and transparent manner. The proposal has been discussed at three Christie Neighbourhood Forum meetings, which were attended by members of the local community and the Councillors from the local and surrounding Wards. The feedback received throughout this process of consultation has been considered by the Applicant and responded to within the Statement of Consultation submitted in support of this planning application.

The following measures for community engagement and facilities have been identified for further consideration:



Local Employment
The scheme will seek to boost the local economy by using local business and suppliers wherever possible. The team has been encouraged to prepare a sustainable procurement plan for the development that will identify ways to sustainably responsibly and locally procure.



Improving Existing Sites
The development will re-vitalise the area and improve the quality of both townscape and public realm, making efficient use of land in this location.



Considerate Construction Scheme
The contractor will be required to operate under the Considerate Constructors Scheme to ensure good neighbourliness and environmental awareness during construction. The contractor will be required to achieve a best practice score under the assessment.

The Proposed Development will look to minimise construction related disruption in alignment with BREEAM Man 03. Aim to deliver 'good management' and reduce risks associated with construction, therefore protecting the community.

4. Operational Energy Performance.

4.1 TM54 modelling.

An Operational Energy Performance estimate (OEP) report has been produced at stage 2 to outline the Proposed Development's estimated annual energy performance.

The OEP calculations were performed using dynamic thermal modelling software (IESve) which allowed the impact of internal gains and external weather conditions to accurately be considered. Adopting a OEP approach looks to close the 'performance gap' between the simulation and reality.

Building Regulations Part L2A compliance outputs are largely used for energy analysis in the UK. This is supplied by the National Calculation Methodology (NCM) and involves the use of pre-determined building operations. Part L produces generic outputs for a limited number of energy consuming factors such as lighting, space heating and cooling and ventilation.

Alternatively, OEP calculations are based on actual design information and consider a wider range of profiles, including small and large power, catering equipment, external lighting, lifts and servers. These are then reviewed at various occupancy levels throughout the day to provide an accurate representation of how the building will operate.

As OEP outputs are produced from bespoke inputs, based on the individual building, the results differ across each design stage. The development is currently at Stage 2 and includes as many of the known energy consuming systems as possible and accurate hours of operation.

For further information on the TM54 modelling that was undertaken and the results of calculations refer to the TM54 Assessment Report [REP-2324847-JD-20230331-Christies-TM54-Rev01].

5. Embodied Carbon.

Embodied carbon emissions refer to the carbon contained within the building materials, through manufacture and transport. Embodied carbon typically accounts for over 50% of the total carbon emissions of a building, but this proportion is expected to increase as the national grid decarbonises resulting in reduced operational emissions. Figure 4 below details the different stages of assessment.

Figure 4 System Boundary: EN 15978:2011 Display of modular information for the different stages of the building assessment.

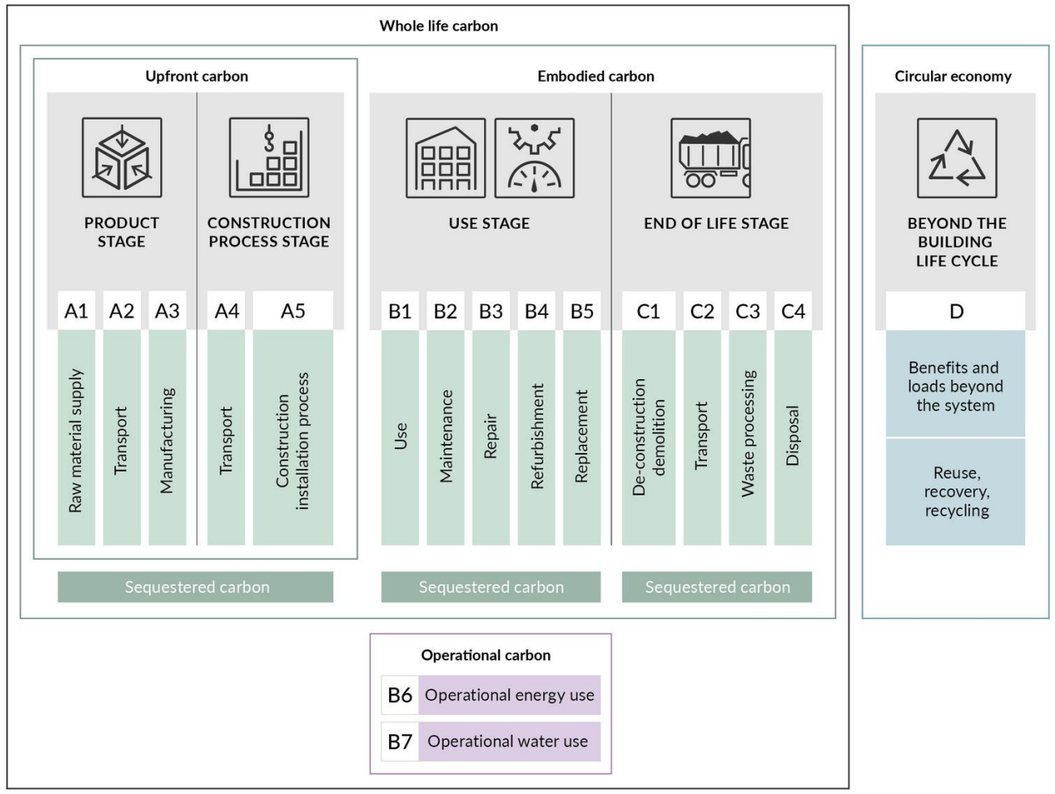
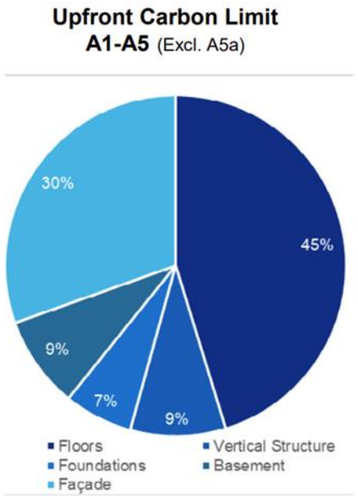


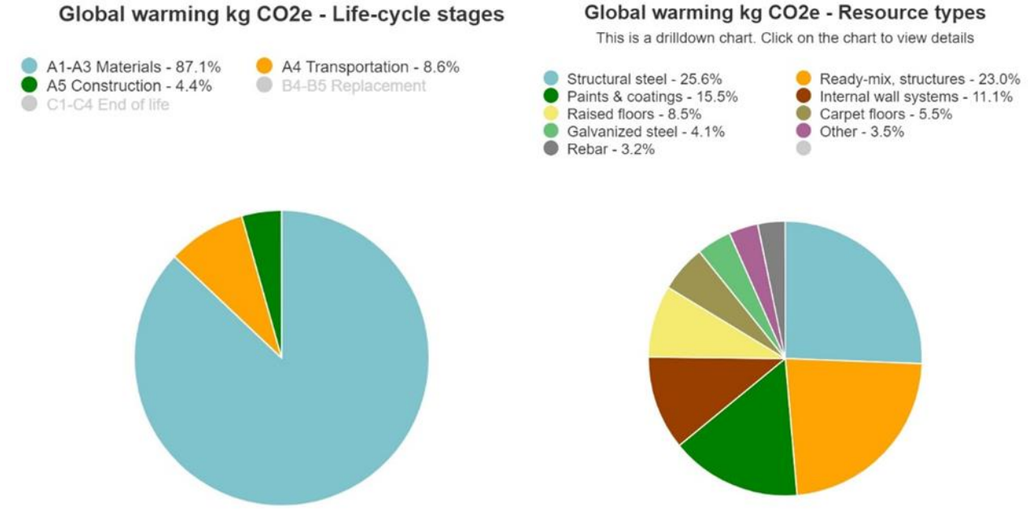
Figure 5 provides an indication as to how this might break down across the different building elements.

Figure 5: Upfront Carbon (NHS Net Zero Building standards User Guide[3]).



The pie chart on the left in Figure 6 shows the difference in importance of carbon in the upfront carbon lifecycle modules. Modules A1-A3 can clearly be seen to be the major proportion of the carbon, with modules A4 and A5 of much lower importance.

Figure 6 Embodied carbon by life cycle stages and resource types (60-year analysis).

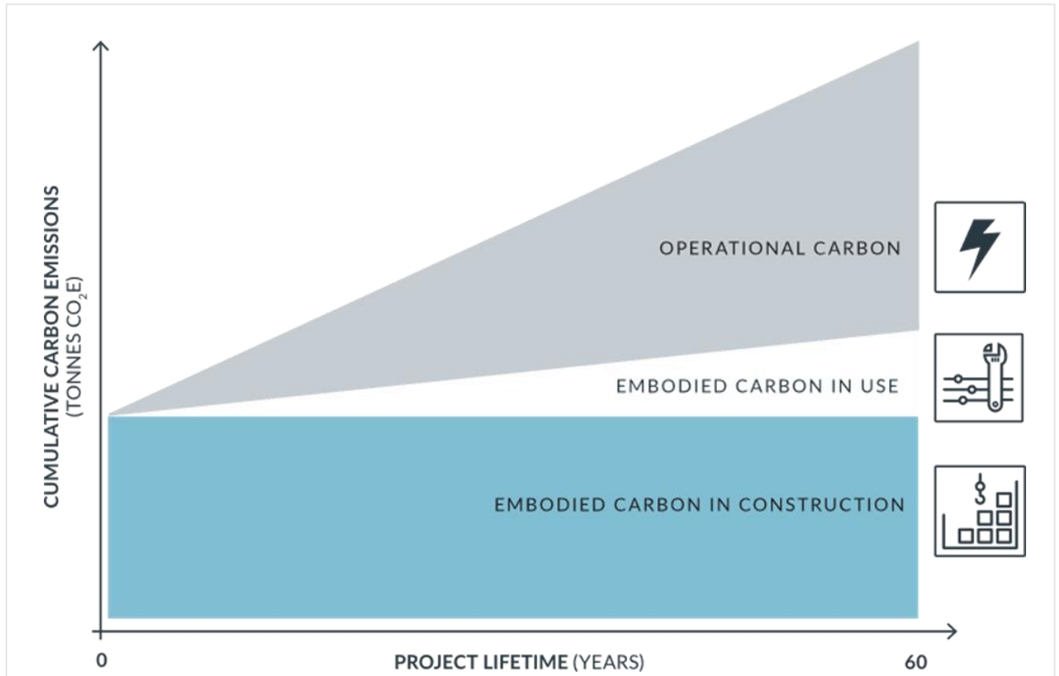


[3] https://www.england.nhs.uk/wp-content/uploads/2023/02/B1697-Net-Zero-Building-Standards-User-Guide.pdf

5.1 Whole Life Carbon.

Whole life carbon refers to the sum of the operational and embodied carbon emissions over the life of the building. With an aspiration to be net zero carbon, both operational and embodied emissions must be addressed during the concept stage and developed through design and construction. Following the guidance provided on the operational energy approach and targeting key elements of the structure, the Proposed Development will aspire to take significant steps towards net zero carbon. Although, the project is not expected to achieve net zero carbon.

Figure 7 Whole life carbon.



5.1.1 Carbon offsets

It will be difficult to achieve a totally zero whole life carbon development, therefore carbon offsets such as afforestation, creation of off-site solar/ wind farms should be considered. Reducing operational and embodied carbon will result in a lower investment in carbon offsets.

6. Conclusion.

This report presents the Environmental Standards strategy for the Proposed Development at the Advanced Scanning & Imaging Centre Development, Manchester.

The development has been designed in accordance with all relevant national and local policy and aims to achieve the following additional sustainability targets:

- BREEAM rating of “Excellent”
- Currently forecasts up to a 2.70% reduction in CO_2 emissions beyond the Building Regulations Part L 2021 and therefore far exceed requirements set out in MCC Policy EN6

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