RIDGE

SYMMETRY PARK OXFORD NORTH
SUSTAINABILITY STATEMENT-
03/03/2022

5015947 – SYMMETRY PARK OXFORD NORTH

3rd March 2022

Prepared for

Tritax Symmetry Oxford North Ltd
Junction 9
M40
Wendlebury

Prepared by

Ridge and Partners LLP
Belvedere House, 5th Floor
12 Booth Street
Manchester
M2 4AW
Tel: 0161 833 9579

Contact

Susie Sidley
Associate
ssidley@ridge.co.uk

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1.0	19.11.21	Draft For Comment	SS	WB
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3.0	03.03.22	Updated to reflect current BREEAM target	SS	

CONTENTS

1. EXECUTIVE SUMMARY

At Symmetry Park Oxford North the following measures have been incorporated into the design of the development:

- Net Zero Carbon in Construction
- 18% available roof coverage PV installation plus infrastructure for 100%
- 25% Electric Vehicle Charging for car parking provided with infrastructure for 100% provision
- 25% improvement on potable water usage.
- Improvements to public transport provision, local cycling and pedestrian network
- Onsite cycle storage facilities
- BREEAM Excellent Shell & Core certificate
- Biodiversity Net Gain

The development meets the local emerging policies as summarised in the table below:

Policy Ref	Policy Objective	Development Response
ESD 1: Mitigating and adapting to climate change	• Mitigate the impact of developments within the district on climate change. • Designing developments to reduce carbon emissions and use resources more efficiently. • Promoting the use of decentralised and renewable or low carbon energy.	• Met - BREEAM Wst 05 Climate Change Adaptation credit targeted • Met- energy hierarchy used • Met – BREEAM Ene04 Low Carbon Design credits targeted
ESD 2: Energy hierarchy and allowable solutions	• Promote an energy hierarchy. • Reduce energy use through sustainable design and construction measures. • Efficient and decentralised energy supply. • Make use of renewable energy and allowable solutions.	• Met – BREEAM Ene04 Low Carbon Design credits targeted • 18% available roof coverage PV installation
ESD 3: Sustainable Construction	• Achieve through a combination of fabric energy efficiency, carbon compliance and allowable solutions. • All new non-residential development expected to BREEAM Very Good certification. • The demonstration of the achievement of this standard should be set out in the energy statement. • All development proposals will be encouraged to reflect high quality design and high environmental standards demonstrating sustainable construction.	• Met – BREEAM Ene04 Low Carbon Design credits targeted • Exceeded – overall BREEAM Excellent targeted

Policy Ref	Policy Objective	Development Response
Policy ESD 4 – Decentralised Energy Systems	• The use of decentralised energy systems providing heating or heating and power will be encouraged in all new developments. • A feasibility assessment for DH/CHP including consideration of biomass fuelled CHP will be required for all applications for non-domestic developments above 1000m2 floorspace.	• Met – BREEAM Ene04 Low Carbon Design credits targeted • Dunwoody Low Zero Carbon Technologies Options Report includes assessment of feasibility of decentralised systems
ESD 5: Renewable Energy	• Planning applications involving renewable energy development will be encouraged. • Feasibility assessment for the potential for significant on-site renewable energy provision is required for applications for non-domestic development above 1000m2 floorspace.	• Met – BREEAM Ene04 Low Carbon Design credits targeted • 18% available roof coverage PV installation
ESD 6: Sustainable Flood Risk Management	• Development will only be permitted in areas of flood risk when there are no reasonably available sites in areas of lower flood risk and the benefits of the development outweigh the risk of flooding. • Opportunities sought to restore natural river flows and floodplains. • Buildings over or culverting of watercourses should be avoided and the removal of existing culverts will be encouraged.	• Met – BREEAM credit Pol 03 Flood and Surface Water Management credits targeted.
ESD 7: Sustainable Drainage Systems	• All developments will be required to use sustainable drainage systems for the management of surface water run-off.	• Met – BREEAM credit Pol 03 Flood and Surface Water Management credits targeted.
ESD 8: Water Resources	• The Council will seek to maintain water quality and ensure adequate water resources and promote sustainable water use.	• Met- the building fit out will include low water using sanitaryware, water meters and water leak detection to minimise water use wherever possible
ESD 10: Protection and enhancement of biodiversity and the natural environment	• A net gain in biodiversity will be sought in proposals by protecting, managing, enhancing and extending existing resources and by creating new resources.	• Met – biodiversity net gain demonstrated in Appendix 8.2 of the Environmental Statement

2. INTRODUCTION

This Sustainability Statement has been prepared by Ridge & Partners LLP on behalf of Tritax Symmetry LLP and Siemens Healthineers (the Applicants) in support of a full planning application for Siemens Healthineers new combined production, research and development facility on land known as Symmetry Park Oxford North.

The application description is as follows:

"Full planning application for the erection of a new high quality combined research, development and production facility comprising of Class B2 floorspace and ancillary office floorspace with associated infrastructure including: formation of signal-controlled vehicular access to the A41 and repositioning of existing bus stops; ancillary workshops; staff gym and canteen; security gate house; a building for use as an energy centre (details of the energy generation reserved for future approval); loading bays; service yard; waste management area; external plant; vehicle parking; landscaping including permanent landscaped mounds; sustainable drainage details; together with the demolition of existing agricultural buildings within the red line boundary; and the realignment of an existing watercourse".

This report seeks to demonstrate how the proposals minimise carbon emissions and support other environmental objectives and as a minimum meets with the relevant development plan policy objectives for new build developments. The report is the culmination of an iterative design process to develop the most sustainable development possible, it has been produced in collaboration with the design team for the project. Ridge and Partners has helped develop the Tritax Symmetry Base Build Specification and Sustainability Policies. The Base Build Specification provides an outline summary of the specification and standards associated with a Tritax Symmetry development and demonstrates the added value, at no extra cost to the end user, which will be provided as standard. The specification also provides details on energy efficiency and carbon reduction targets which are detailed below.

Tritax Symmetry's objective in every sphere of its business is to be at the forefront of best practice and to be ahead of the curve in innovation. In response to enquiries from investors and some forward-thinking occupiers regarding environmental and sustainability policies and their desire to lead Tritax Symmetry continually review current policies relating to BREEAM, EPC ratings, low energy use and carbon reduction in the construction of new logistics buildings.

In April 2019 Tritax Symmetry decided to align with the UK World Green Building Council (UKGBC) definition of 'zero carbon'. Whereas previous policies focused only on operational energy and modelled performance in new buildings, the UKWBG definition expands the scope to in-use performance and to encompass the whole life carbon impacts of both new and, crucially, existing homes and buildings. Tritax Big Box REIT is a Gold Leaf Member of UKGBC recognising its aspiration to sustainability leadership and is now committed to delivering all new developments to meet UKGBC's definition for net zero carbon in construction.

Tritax Symmetry also has a strong aspiration to move towards net zero carbon in operational use – as defined by the UKGBC Framework Definition. To do this they are working with end users to help them understand and drive down their energy demands, and they are providing low carbon energy supply to end users utilising on site renewables, battery storage and low carbon energy suppliers and generation.

Tritax Symmetry recognise the essential role of the built environment in delivering sustainable development, they understand and embrace the need to have a positive impact on the environment. They therefore adopt a holistic approach to creating energy efficient buildings, sensitive to the climate and environment. They believe that the approach to sustainable development must be tailored for every project to meet the needs of the client and the requirements of the project stakeholders.

BREEAM: Tritax Symmetry support and use BREEAM as a guideline for sustainable building practices and to embrace local authorities' environmental requirements and objectives. BREEAM is the Building Research Establishment Environmental Assessment Method. It is the most widely used and robust method available for measuring and demonstrating the environmental performance of buildings. The scheme will be delivered with a BREEAM Excellent Shell & Core certification.

Energy in buildings: Tritax Symmetry are committed to delivering energy efficient, low carbon and cost effective buildings, which is assessed through building operation energy usage modelling. This is vital because buildings are responsible for about half of all carbon dioxide emissions in the UK.

Healthy and productive buildings: Tritax Symmetry deliver workspaces designed to provide the most comfortable working conditions by optimising daylight, ventilation, heating and cooling systems and provide outdoor recreation and relaxation.

Renewable energy: Tritax Symmetry fully investigates the use of integrated renewable energy systems on all projects, in order to minimise the erosion of exhaustible materials e.g. fossil fuels.

Sustainable design: Tritax Symmetry consider the following strategies in all new projects:

- Reduce CO_2 emissions and decrease the use of fossil fuels by employing renewable energy sources wherever possible
- Reducing transport during construction by sourcing materials and components locally
- Implementing facilities to minimise car travel for future employers and clients
- Avoiding/minimising mechanical cooling and investing into natural cooling and natural ventilation
- Designing for a maximum use of daylight
- Designing automatic lighting controls and fit low energy and LED lighting throughout the site
- Minimise the use of finite sources and use renewable sustainable elements instead
- Develop a green transport plan in collaboration with local councils
- Reduce water usage by installing water efficient fittings, such as low flow taps, low flow showers, automated controls on urinals and dual flush, low flow WCs
- Fitting water meters and installing water leak detection systems and monitoring water consumption
- Reduce waste by providing recycling facilities during and after construction
- Use recycled components and recycled aggregates wherever possible
- Considering the possibility of creating energy from waste
- Considering off-site manufacture
- Increase biodiversity by investigating the ecological value of the site
- Employing an ecologist to assure maintaining or increasing the ecology on the site
- Employing flood risk minimisation measures
- Reduce pollutants by using non-hazardous healthy building materials with low embodied energy and a good life cycle analysis
- Avoiding toxic materials such as formaldehyde as much as possible
- Installing low NOx heating systems
- Fitting oil interceptors in car parks
- Designing external lighting to minimise light pollution
- Create health and well-being by improving the indoor air quality through ventilation and healthy breathable building materials
- Providing thermal comfort by creating temperature controlled environments
- Providing open spaces and green recreational areas for occupants/users
- Providing views out

3. CARBON REDUCTION STRATEGY

3.1. Introduction

Carbon reduction is key to tackling climate change. When discussing carbon in relation to climate change, this is a term used to cover all greenhouse gas emissions and is measured in terms of CO_2 equivalent. The carbon emissions associated with the development include;

- embodied carbon,
- construction related carbon, and
- operational carbon.

Carbon Reduction Targets are set by;

1. Cherwell District Council declared a Climate Emergency in July 2019, committing it to ensuring its own operations and activities are zero carbon by 2030 and committing to achieving a net zero carbon district by 2030 by leading through example.

2. Local Plan policy **ESD 1 Mitigating and Adapting to Climate Change** sets out how development in the District will be expected to contribute towards tackling climate change. Policy **ESD 2 Energy Hierarchy and Allowable Solutions** requires developments to demonstrate how the 'energy hierarchy' has ben applied. Policy **ESD 3 Sustainable Construction**, requires that all new development in Cherwell District meet a minimum of BREEAM 'Very Good' and all development proposals should demonstrate sustainable construction methods.

3. The **UK Climate Change Act** targets a 100% reduction in greenhouse gas emissions by 2050 relative to 1990 levels.

4. **Approved Building Regulations Part L 2013**, requires buildings to exceed appropriate target emission rates for regulated carbon emissions.

3.2. Embodied Carbon & Construction Related Carbon Emissions

While operational carbon occurs gradually over the life of a building, embodied carbon emissions occur predominantly in the building materials and their construction, and therefore are emitted immediately. Once the building is constructed, they cannot be reduced further, reduction of embodied carbon emissions therefore plays an essential part in achieving the net zero targets.

Whole life embodied carbon and construction related emissions are generated by equipment used during construction, material extraction, transportation, manufacturing, installation and also dismantling and disposal. This can be modelled using sophisticated software to help identify where the carbon sits to enable options to be implemented to minimise as far as possible the embodied carbon emissions of the development.

At Group level, Tritax Symmetry has in place a commitment that all new commercial buildings delivered by Tritax Symmetry will be Net Zero Carbon in Construction. A feasibility study was carried out in 2018 to 2019

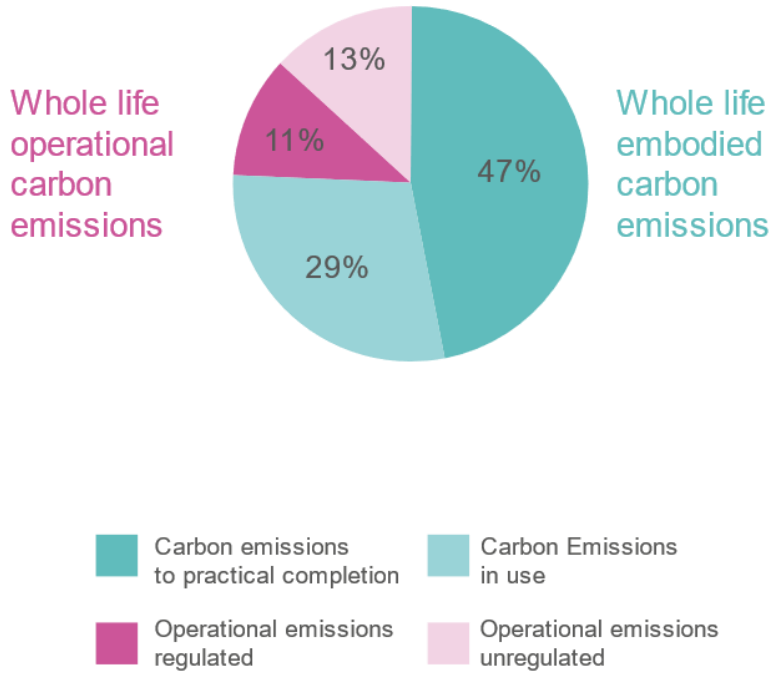
to quantify the embodied carbon present in a typical logistics warehouse facility based on a Tritax Symmetry unit being constructed in Biggleswade.

All units moving to site nationwide since January 2020 are now being modelled and refined throughout their design and construction phases. The modelling uses a whole life carbon assessment to inform material selection to reduce carbon footprint. Alternative solutions identified as a result of this include:

- introducing cement replacements to foundations, delivery yards and ground floor slab concrete,
- optimising steel frame solutions to minimise required steel, and
- the optimisation of construction equipment use and fuel to reduce emissions.

For every Tritax Symmetry development, a project specific Whole Life Carbon Assessment is undertaken of the final design to calculate the embodied carbon footprint ($kgCO_2eq$) of the development.

Below is an example of carbon emissions for a typical warehouse showing how important the embodied carbon emissions are.



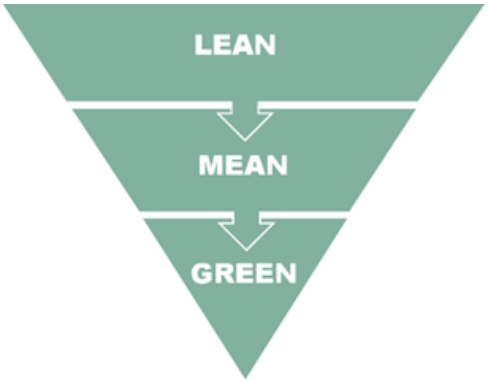
Typical warehouse shed with office space (15% by area); London perimeter, UK

Examples of total whole life carbon emissions breakdown for new buildings
© RICS; Sturgis Carbon Profiling

3.3. Operational Carbon and Energy

3.3.1. Energy Reduction Strategy

The strategy for reducing energy consumption and carbon emissions within the development will follow the energy hierarchy below, which aligns with ESD 2: Energy Hierarchy and Allowable Solution.



Lean - Use advanced building modelling and passive construction techniques as far as is cost effective.

Mean - Incorporate high efficiency systems and effective controls throughout the design.

Green - Incorporate renewable energy sources where necessary and economically viable to achieve targets or provide desirable benefits.

3.3.2. Passive Design Measures

Passive measures included within the design of the development to reduce energy use and the associated CO_2 emissions include:

- Enhanced insulation to the building envelope which exceeds Building Regulation requirements,
- Engineered facade design, and
- Reduced air permeability standard.

3.3.2.1. Enhanced insulation to the building envelope

Limiting heat losses across the entire building envelope will maximise energy efficiency of the development over its whole life. To achieve this, the fabric thermal U-Value (which is a measure of how thermally efficient the element is) requirements as detailed within Building Regulations will be improved upon. The table below shows the limiting U-values required to meet Building Regulations compared to the targeted values which exceed the Building Regulations requirements.

Building Element	Part L2A limiting U-Value (W/m^2 K)	Target U-Value (W/m^2 K)
Roof	0.25	0.18
Wall	0.35	0.23
Floor	0.25	0.22
Windows	2.2	0.16
Rooflights	2.2	1.8

The targeted values as noted will be confirmed during the detailed design stage of the buildings in conjunction with finalisation of the energy efficiency measures included.

3.3.2.2. Engineered Facade Design

The glazed proportion of the building façades and the location of glazing is designed to maximise the use of natural daylight to offset demand for artificial lighting. At the same time as being designed to maximise passive solar gains, the façade will be designed to minimise thermal losses through the use of high-performance glazing, optimising the glazed to opaque proportion of the façade and enhanced insulation levels above the minimum set down by Building Regulations. This will ensure that there is a balance between providing high levels of daylighting negating the need for artificial lighting, whilst controlling the amount of heat ingress from direct sunshine which would require more cooling. This strategy will minimise the carbon emissions.

Building Element	AD L2A Solar G Value	Target Solar G Value
Windows	0.68	0.44
Rooflights	0.68	0.44

The table shows the glazing solar g value used within the Part L2A 2013 solar heat gain calculations compared to the targeted values which exceed the Building Regulations requirements. This demonstrates that the buildings have been designed to exceed building regulation requirements.

3.3.2.3. Reduced Air Permeability

A significant percentage of heat loss from buildings is due to air infiltration associated with poor air tightness. By improving on the air tightness of the building it is possible to reduce infiltrations rates and thus reduce the heat losses, energy use and the associated CO_2 emissions.

The development will be constructed to improved building air tightness criteria significantly beyond the level required to comply with the Building Regulations. The table below shows the comparison of the targeted air permeability for the building against the allowable maximum limit set within Building Regulations. This shows the building will be significantly more efficient.

Building Regulation Document	Maximum Allowable Air Permeability	Targeted Allowable Air Permeability
Approved Document L2A	10.0 $m^3/h/m^2$ @ 50 Pa	2 $m^3/h/m^2$ @ 50 Pa

3.3.3. High Efficiency Systems, Plant and Controls

High efficiency systems, plant, controls and equipment will be incorporated follows: -

3.3.3.1. Energy efficient LED lighting

Internal lighting within the process and office areas will incorporate energy efficient LED lighting where practicable.

3.3.3.2. Enhanced lighting controls

Automatic presence detection will be included in appropriate areas of the building. This form of control will ensure lights are automatically switched off during periods of non-occupancy. External lighting will be designed to incorporate energy efficient luminaires and an automatic lighting control system utilising daylight sensors and time clock control to ensure energy-efficient operation of the lighting.

3.3.3.3. Optimised plant controls

Control of heating plant will be optimised, and weather compensated to ensure plant operates as close to demand as possible and not a full capacity.

3.3.3.4. Variable speed drives

Variable speed drives will be installed on circulation pumps and ventilation fans to allow the speed of the respective motors to be amended by the automatic controls to suit changing load of the building. This will ensure energy usage matches demand requirements thus reducing the carbon emissions to a minimum based on end user occupation.

3.3.3.5. Inclusion of heat recovery on ventilation systems

The ventilation systems installed within the development will incorporate heat recovery within the air handling plant to recover heat from the air exhausted to heat the incoming fresh air and therefore reduce energy usage. The air handling plant will have a low specific fan power to minimise the energy used by the fans.

3.3.4. Low Carbon and Renewable Technologies

To complement the energy savings previously detailed and to meet the requirements of Local Plan policies, the following renewable and low carbon technologies have been considered for use within the scheme design:

- Solar Thermal Water Heating
- Biomass
- Photovoltaic Panels
- Ground and Air Source Heat Pumps
- Wind Power
- Combined Heat and Power

The Dunwoody Low Zero Carbon Technologies Options Report (see Appendix A) provides further details on the feasibility of each technology.

3.3.4.1. Feasible Technologies

Photovoltaics (PVs)

Planning permission is sought for a PV array extending to 100% of the useable roof area (i.e. the omission of space taken by roof lights; man-safe working and the roof signage). The level of PVs installed will be subject to individual occupier requirements or a technical ability and viability in the exportation of electricity generated by the PV array into the National Grid. This is to prevent installation and manufacture of unused PV panels and allows the most up to date technology to be fitted when required.

A minimum of 18% of PV of the array will be installed prior to the use commencing. This will provide the normal base load of electricity to the unit prior to occupier specific requirements.

Air source heat pumps

These technologies provide the most suitable renewable technology for use to heat and cool the office areas. They are highly energy efficient, do not use fossil fuel and are low carbon emission.

4. SUSTAINABILITY STRATEGY

4.1. Climate Change Resilience

Flexibility is inherent in the design of the development's spaces to provide maximum flexibility for all potential occupiers.

The development will also be designed to adapt to the climate changes expected in the future. This will minimise the need for carrying out works to adapt the building in future (and therefore reducing wastage). Climate change adaptation measures include:

- The building will be designed to limit thermal overheating under climate change conditions by sizing the air source heat pumps to cope with predicted increases in temperature based on TRYs future climate change scenarios.
- The building fabric has been reviewed against the effects of Climate Change (Wst 05 credit targeted for BREEAM 2018NC), and found to be resilient and able to withstand with predicted increases in flood level, solar radiation, wind gusting, rainfall intensity and snow loading.
- Implementation of measures recommended by the drainage consultant will ensure that the site is not at significant risk of flooding. Surface water drainage strategy accounts for climate change
- Measures to reduce water consumption by 25% to account for decreased amounts of water available in the future (for details see Section 4.5).

These measures allow the development to reach Tritax Symmetry's own ambitions and requirements within the BREEAM targeted credits and exceeds the requirements included in Cherwell District council policy ESD 1.

4.2. Transport

A Transport Assessment has been prepared for the planning application by Vectos, which includes a review of the existing situation with regards to transport to and from the site, including by car, public transport, walking and cycling.

The site is located within bus corridors, cycle routes and will provide good quality, lit footways providing safe and convenient routes to the existing local network.

A Framework Travel Plan has also been prepared for the development by Vectos which includes measures proposed to further encourage the use of sustainable modes of transport. This includes relocated and enhanced bus stops, with lighting, shelters and real time passenger information (RTPI) provided. As a result of the proposed signalised access junction on the A41, the bus stops will be served by high quality pedestrian crossing points.

The development will provide secure cycle parking and cyclist facilities (showers and changing) in compliance with BREEAM Tra 01 requirements. The site will provide Electric Vehicle charging for 25% of car parking, with infrastructure to allow this to be extended to 100% of spaces.

Additional measures proposed in the Travel Plan include provision of information of employees on sustainable transport options, implementation of a car share scheme,

4.3. Ecology

EDP have produced an Ecological Baseline Report which identifies that the majority of the Site comprises improved grassland fields, with smaller areas of bare ground, tall ruderal vegetation, buildings and hardstanding that are of negligible intrinsic ecological importance. However, the Site also includes a semi-improved grassland field, a pond, broad-leaved semi-natural woodland (part of which comprises ancient semi-natural woodland), hedgerows and trees, and a wet ditch that are of Local ecological importance.

Mitigation measures have been proposed which will ensure no significant effects upon ecological features. New planting of greenspace areas will enhance the connectivity between existing important habitats, in particular the woodland habitats on the western edge of the Site, thereby strengthening the integrity of the local ecological network. The establishment, maintenance and long-term management of the retained and created habitats will be delivered via a Landscape and Ecological Management Plan, which is provided as part of the planning application. A Biodiversity Net Gain calculation has been undertaken using the DEFRA 2.0 metric, which demonstrates a 4.10% improvement in the habitat score and a 6.71% improvement in the hedgerow score.

4.4. Waste

4.4.1. Construction waste

The proposed development will seek to minimise waste as much as possible in line with the BREEAM efficiency benchmarks and will ensure that at least 70% of waste volume is diverted from landfill. This will be delivered through the creation of a project specific Resource Management Plan that covers on-site construction waste, off-site manufacturing waste and accurately records waste arisings and waste management practices.

4.4.2. Operational waste

A Waste Management Strategy has been developed by Tier for the planning application. Waste will be separated by the operator into recyclable waste streams for collection by a local licensed company. The development will have a dedicated waste storage area which includes sufficient provision for storage of recyclable waste streams. This area will be accessible to both building occupants and waste collection vehicles.

Cherwell District Council policy, ESD 3 Sustainable Construction, requires sustainable construction principles. This development's requirement to achieve BREEAM waste and recycling targets will exceed the policy objectives.

4.5. Water

The development will target a minimum 40% improvement in water consumption over the notional baseline, as prescribed by BRE which is based on industry research and is included as part of the BREEAM 2018 New Construction Methodology. To achieve this, low flush volume WCs and low flow rate taps / showers will be specified as part of the fitted-out scheme. Pulsed output water meters will also be installed to each building to enable occupiers to monitor their water consumption. By being able to easily monitor water usage, end users can target improvements and thereby are encouraged to reduce usage.

To reduce water wastage, major leak detection systems will be installed, and flow control devices will prevent minor leaks in WC areas and the development will minimise unregulated water consumption by specifying planting which does not rely on a permanent, mains fed irrigation system.

Improvement of water efficiency exceeds measures defined in the Cherwell District Council policies ESD 7 Sustainable Drainage Systems (SuDS) and ESD 8 Water Resources.

4.6. Materials

4.6.1. Sustainable Procurement

A Sustainable Procurement Plan (SSP) is in place to guide specification towards sustainable construction products. This document has been produced by Tritax Symmetry to guide and unify and embed Sustainable procurement across all of its developments. The plan is used by the design team to inform the planning proposals and is embedded in the Contractors requirements to ensure implementation. It is also audited as part of the BREEAM targeted credits.

All timber will be responsibly sourced. In addition, Contractors shall also source other materials responsibly (i.e. from suppliers with BES6001/ ISO14001 / CARES certification) and from local and recycled sources wherever possible to meet BREEAM Mat 04 targets.

The inclusion of an SSP plus audit and monitoring of the installed material's sourcing certifications as part of the BREEAM targets exceeds Cherwell District Council policy ESD 3 Sustainable Construction.

4.6.2. Durability

The development will be designed to be durable and resilient. This will help to reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape. Additional protection has been added to areas of the building envelope that could be subject to vehicle collision and walls

within the units subject to high pedestrian movements or internal vehicles or trolleys have additional protection added during end user fit out. This is monitored and audited through the BREEAM credit Mat 05.

Monitoring the procurement and specification of products through construction and the whole building life exceeds the requirements of policy ESD 3 Sustainable Construction.

4.7. Pollution

The issues associated with pollution category addresses the prevention and control of pollution and surface water run-off associated with the building's location and use. Issues in this section aim to reduce the building's impact on surrounding communities and environments arising from light pollution, noise, flooding and emissions to air, land and water. In line with Tritax Symmetry's commitment to achieve BREEAM certification various credits have been targeted which address reduction in various aspects of pollution. The targeted credits restrict construction ground, air and water pollution (Man 03) to the PPG3 requirements and the in-operation air (Pol 01 & 02), water (Pol03), noise (Pol 05) and light pollution (Pol 04).

4.7.1. Air quality

An air quality assessment has been undertaken as part of the EIA (Chapter 6) which assesses both the impacts of the construction and operational phases upon air quality. The assessment concludes that with the mitigation measures proposed, there will be no significant effects of the development upon air quality.

4.7.2. Flood risk and Sustainable Drainage Systems

Implementation of measures recommended in the Flood Risk Assessment provided by Tier will ensure that the site is not at significant risk of flooding. Damage from flooding causes significant environment damage with loss or damage to habitat and health. This development will reduce the residual area of soft landscaping that is able to soak up water during a storm. Systems can therefore be designed to hold the water onsite and safely release it into the surrounding watercourses without causing flooding offsite.

The Flood Risk Assessment outlines how this development incorporates prevention by using underground storage tanks with integrated flow control and associated attenuation holding ponds & swales. These systems will capture the rainwater run off and hold it on site, limiting the rate of discharge to local watercourses to avoid flooding adjacent land or properties.

4.7.3. Light pollution

Light pollution will be minimised through the use of timeclocks to switch off lighting when not needed and through ensuring external lighting is designed in compliance with the ILP Guidance notes for the reduction of obtrusive light (2011). This will reduce light pollution allowing benefits to nocturnal animals such as bats and will reduce unnecessary energy usage and the resulting carbon emissions.

4.7.4. Noise pollution

An assessment of noise has been undertaken as part of the EIA (Chapter 7). During construction, the Contractor will implement a Construction Environmental Management Plan (CEMP). This will include

measures to reduce noise disturbance to nearby residents from construction activities by limiting operating times and acoustic outputs of construction plant.

To mitigate against operational noise, the proposals will include specification of a sound reduction for both the façades of the development, and the setting of a noise limit from all fixed plant at the site. The noise assessment concludes that there will be no significant effects of the scheme in relation to noise.

4.8. BREEAM

Tritax Symmetry are committed to deliver the development with a minimum of a BREEAM 'Very Good' rating and has therefore committed to various sustainability measures across the BREEAM categories.

In addition to meeting Tritax Symmetry's own sustainability aims, the achievement of various credits targeted will exceed a significant number of the sustainable goals in the Cherwell District Local Plan Review as detailed below (see Ridge and Partners BREEAM Pre-Assessment document for further details).

Policy Objective	How this is met
ESD 1 Mitigating and adapting to climate change • Mitigate the impact of development within the district on climate change	• BREEAM Ene 01, Ene 04 & Wst 05 targets included
ESD 2 Energy hierarchy and allowable solutions • Reduce energy use through sustainable design and construction measures.	• BREEAM Ene 04 target included
ESD 3 Sustainable Construction • All new developments to achieve BREEAM 'Very Good'	• Exceeded - BREEAM Excellent targeted
ESD 5 Renewable Energy • Feasibility for significant on site renewable energy provision.	• BREEAM Ene 04 target included
ESD 6 Sustainable Flood Risk • Location should be in area of low flood risk and opportunities to restore natural river flows and floodplains should be sought.	• BREEAM Pol 03 report included
ESD 7 Sustainable Drainage Systems • Use of sustainable drainage systems for the management of surface water run-off.	• BREEAM Pol 03 report included
ESD 8 Water Resources • Maintenance of water quality and adequate water resources to promote sustainable water use.	• BREEAM Wat01 target included

5. CONCLUSION

This Sustainability Statement demonstrates how the proposed design of the development will address and exceed national and local planning policies, guidance and regulations and the low carbon agenda. The table below summarises the compliance with various policies:

Policy Ref	Policy Objective	Development Response
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Policy ESD 4 – Decentralised Energy Systems	• The use of decentralised energy systems providing heating or heating and power will be encouraged in all new developments. • A feasibility assessment for DH/CHP including consideration of biomass fuelled CHP will be required for all applications for non-domestic developments above 1000m2 floorspace.	• Met – BREEAM Ene04 Low Carbon Design credits targeted • Dunwoody Low Zero Carbon Technologies Options Report includes assessment of feasibility of decentralised systems
ESD 5: Renewable Energy	• Planning applications involving renewable energy development will be encouraged. • Feasibility assessment for the potential for significant on site renewable energy provision is required for applications for non-domestic development above 1000m2 floorspace.	• Met – BREEAM Ene04 Low Carbon Design credits targeted • 18% available roof coverage PV installation

Policy Ref	Policy Objective	Development Response
ESD 6: Sustainable Flood Risk Management	• Development will only be permitted in areas of flood risk when there are no reasonably available sites in areas of lower flood risk and the benefits of the development outweigh the risk of flooding. • Opportunities sought to restore natural river flows and floodplains. • Buildings over or culverting of watercourses should be avoided and the removal of existing culverts will be encouraged.	• Met – BREEAM credit Pol 03 Flood and Surface Water Management credits targeted.
ESD 7: Sustainable Drainage Systems	• All developments will be required to use sustainable drainage systems for the management of surface water run-off.	• Met – BREEAM credit Pol 03 Flood and Surface Water Management credits targeted.
ESD 8: Water Resources	• The Council will seek to maintain water quality and ensure adequate water resources and promote sustainable water use.	• Met- the building fit out will include low water using sanitaryware, water meters and water leak detection to minimise water use wherever possible
ESD 10: Protection and enhancement of biodiversity and the natural environment	• A net gain in biodiversity will be sought in proposals by protecting, managing, enhancing and extending existing resources and by creating new resources.	• Met – biodiversity net gain demonstrated in Appendix 8.2 of the Environmental Statement

APPENDIX A – APPLICABLE SUSTAINABILITY POLICIES

A. National Planning Policy Framework

A revised National Planning Policy Framework (NPPF) was updated and published in July 2021 which sets out the government's planning policies for England and how they are expected to be applied. This framework replaces that published in February 2019. This framework confirms in section 2. Achieving Sustainable Development that:

'*the purpose of the planning system is to contribute to the achievement of sustainable development*.'

This highlights sustainability as a critical issue that runs throughout all of the planning policies. The National Planning Policy Framework (NPPF) defines sustainable development in agreement with the U.N. definition of "meeting the needs of the present without compromising the ability of future generations to meet their own needs". The NPPF outlines how three overarching objectives need to be pursued in mutually supportive ways in order to achieve sustainable development. These objectives are outlined below:

- An **economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.

- A **social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being.

- An **environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

At the heart of the Framework is a 'presumption in favour of sustainable development' ,

B. The Cherwell Local Plan 2011-2031

The Cherwell Local Plan is the adopted development plan for Cherwell District. The following policies from the current adopted plan are relevant:

Cherwell District Council's Strategic Objective
Objective SO II: To incorporate the principles of sustainable development in mitigating and adapting to climate change impacts including increasing local resource efficiency, minimising carbon emissions, promoting decentralised and renewable or low carbon energy and ensuring that the risk of flooding is not increased.

Cherwell District will become Carbon Neutral by 2030 ahead of the Government target of Net Zero Carbon 2050. To support this target the council will:

- Ensure their own operations and activities are net zero by 2030.
- Do their part to achieve a net zero carbon district by 2030 and lead through example.

Policy PSD 1 – Presumption in favour of Sustainable Development.

- The National Planning Policy Framework (NPPF) requires Local Plans to be based upon and reflect the presumption in favour of sustainable development, with clear policies that will guide how the presumption should be applied locally.
- When considering development proposals, the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework. It will always work proactively with applicants jointly to find solutions which mean that proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in the area.

Policy ESD 1 – Mitigating and Adapting to Climate Change

- Measures will be taken to mitigate the impact of development within the District on climate change.
- The incorporation of suitable adaptation measures in new development to ensure that development is more resilient to climate change impacts will be taken into account.
- Adaptation through design approaches will be considered in more locally specific detail in the Sustainable Buildings in Cherwell Supplementary Planning Document.

Policy ESD 2 – Energy Hierarch and Allowable Solutions

- In seeking to achieve carbon emission reductions, the council will promote an energy hierarchy as follows:
    - Reducing energy use, in particular by the use of sustainable design and construction measures.
    - Supplying energy efficiently and giving priority to decentralised energy supply.
    - Making use of renewable energy
    - Making use of allowable solutions.

Policy ESD 3 – Sustainable Construction

- All new non-residential development will be expected to meet at least BREEAM 'Very Good' certification with immediate effect. The demonstration of the achievement of this standard should be set out in the Energy Statement.
- The strategic site allocations identified in the Local Plan are expected to provide contributions to carbon emissions reductions and to wider sustainability.
- All development proposals will be encouraged to reflect high quality design and high environmental standards, demonstrating sustainable construction methods.

Policy ESD 4 – Decentralised Energy Systems

- The use of decentralised energy systems providing heating or heating and power will be encouraged in all new developments.
- A feasibility assessment for DH/CHP including consideration of biomass fuelled CHP will be required for all applications for non-domestic developments above 1000m2 floorspace.

Policy ESD 5 – Renewable Energy

- The Council supports renewable and low carbon energy provision and the benefits of renewable energy schemes will be a material consideration in determining planning applications.
- A feasibility assessment of the potential for significant on-site renewable energy provision will be required for all applications for non-domestic developments above 1000m2 floorspace.
- Where feasibility assessments demonstration that on-site renewable energy provision is deliverable and viable this will be required as part of the development unless an alternative solution would deliver the same increased benefit.

Policy ESD 6 – Sustainable Flood Risk Management

- The Council will manage and reduce flood risk in the District through using a sequential approach to development; locating vulnerable developments in areas at lower risk of flooding.
- Safeguarding floodplains from development, opportunities will be sought to restore natural river flows and floodplains, increasing their amenity and biodiversity value.
- Building over or culverting of watercourses should be avoided and the removal of existing culverts will be encouraged.
- Existing flood defences will be protected from damaging development and where development is considered appropriate in areas protected by such defences it must allow for the maintenance and management of the defences to be designed to be resilient to flooding.

Policy ESD 7 – Sustainable Drainage Systems (SuDS)

- All developments will be required to use sustainable drainage systems (SuDS) for the management of surface water run-off.
- When considering SuDS the need to protect ground water quality must be taken into account, especially where infiltration techniques are proposed.

Policy ESD 8 – Water Resources

- The Council seeks to maintain water quality, ensure adequate water resources and promote sustainability in water use.
- Water quality will be maintained and enhanced by avoiding adverse effects of development on the water environment.
- Development will only be permitted where adequate water resources exist or can be provided without detriment to existing uses.

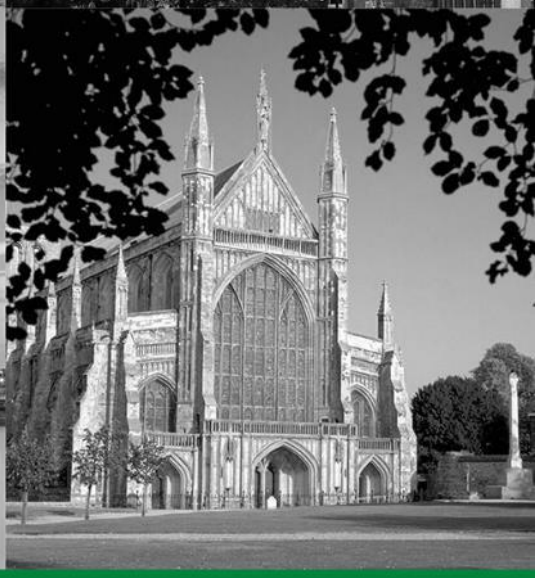
Policy ESD 10 – Protection and Enhancement of Biodiversity and the Natural Environment

- Protection and enhancement of biodiversity and the natural environment will be achieved by the following measures; net gain in biodiversity, protection of trees, reuse of soil, habitat and air quality assessments and refusal to applications which will result in adverse impacts to the natural environment.

APPENDIX B – LOW ZERO CARBON TECHNOLOGY OPTIONS REPORT





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LOW AND ZERO CARBON TECHNOLOGIES

OPTIONS REPORT

FOR

SYMMETRY PARK, OXFORD NORTH

LOW AND ZERO CARBON TECHNOLOGIES

OPTIONS REPORT

FOR

SYMMETRY PARK, OXFORD NORTH

Client

Tritax Symmetry
Grange Park Court
Roman Way
Northampton
NN4 5EA

Consulting Engineers

Dunwoody LLP
Dunwoody House
396 Kenton Road
Harrow
Middlesex
HA3 9DH

CONTENTS

ISSUE	AUTHOR	REVIEW STATUS	QA REVIEW	DATE
01	RES	First Issue		12/10/21

1.00 EXECUTIVE SUMMARY

After consideration of the various options available on site the following installations have been recommended for the inclusion within the design of the building.

- Photovoltaic Panel installation of approximately 800kWp.
- Reverse cycle air source heat pump for office area of approximately 350kW.
- Solar water heating panel system of approximately 40m^2

These alternative technology options have reasonable pay back periods and offer significant carbon savings when compared to conventional technologies.

2.00 INTRODUCTION

The B2 Production Area and office building is being constructed on a green field site in a basically rural agricultural area and this report intends to recommend which low or zero carbon technologies are suitable in terms of financial performance and carbon reduction for inclusion in the design.

In considering the alternative options available it is noted that the local Planning Policy documents include no specific requirement for carbon reduction for on or near site renewable energy services although they do acknowledge the aspiration that Developers should actively adopt these Climate beneficial concepts.

The location and configuration of the site limit the potential for some of the following technologies have been considered.

Wind power (turbines)
Photovoltaics
Combined heat and power
Air source heat pumps
Solar water heating
Biomass

3.00 BASE LINE INFORMATION

To be able to assess the loadings and potential for utilisation an SBEM calculation has been carried out using BR Point L2A National Figures to establish likely building energy requirements based on an assessment of potential installations to be included in building design.

Energy costs used in the financial assessment are based on 14.6p/kWhr for on-site usage and 5.0p/kWh for export. Carbon equivalents for imported energy used in this report are electricity - 0.233kg CO_2/kWhr, gas - 0.184kg CO_2/kWhr although it should be noted that at present the site is not provided with a gas supply

4.00 WIND GENERATION

The site has a high development percentage and a maximum building height of approximately 15m making the siting of large turbines very difficult. The analysis has therefore been based on a relatively small turbine of 100kW to establish the viability of this option.

Bicester has average wind velocity of approximately 5.5m/sec during winter months falling to approximately 4.4m/sec in summer. Overall wind velocity of 5.0m/sec have been used for this evaluation.

A typical 100kW turbine can produce an average annual energy output of 176,000kWhr at 5.0m/sec wind speed. As turbines can operate at 24 hours a day, 365 days a year the financial performance is impacted by the beneficial use of the energy on site with the potential for excess energy being exported to the electrical grid. The assumed direct energy escape, site utilisation is assessed as 66% with 34% being exported to the grid.

The financial benefit of the selected wind turbine is therefore calculated as:

176,000 x 0.66 x £0.146	=	£16,959
plus 176,000 x 0.34 x £0.05	=	£ 2,992
Total Saving		**£19,951**

The estimated cost of the installed 100kW wind turbine is £385,000 giving a financial payback record of 19.3 years.

Once maintenance and associated costs are included the simple payback period would likely exceed 20 years.

Carbon saving based 176,000kWhr production is

176,000kWhr x 0.184kg CO_2/kWhr **= 32,384kg CO_2/annum**.

Overall the limited scope to install this technology and the extended payback period make it unsuitable for this development.

5.00 PHOTOVOLTAIC CELLS

With a large flat roof a PV installation is considered an obvious choice for consideration. Previous similar projects of similar size and energy consumption profiles have been considered and an analysis based on an 18 – 20% of available roof area has been considered which gives a total power output of 760kWp. Based on the use of high output Monocrystalline Solar Panels an array of 760kW peak times has a predicted energy output of 682,000kWhr/annum.

There is a potential that government provided Feed In Tariff payment may be available but have presently been ignored as will probably not be available for this type of installation at the time of connection.

Again energy utilisation on site must be considered but with wind turbine a greater percentage of useful power is generated during periods when it can be utilised on site. It is expected that 75% of the available energy achieved on site and the remainder exported to the grid. The cost of energy saved is therefore:

511,500kWhr @ 14.6p/kWhr	=	74,674
170,500kWhr @ 5.0p/kWhr	=	8,825
Total Saving		**£83,504**

Cost of installation is estimated at £370,700 productivity a capital cost payback period of 4.5 years with maintenance and associated cost the simple financial payback period is approximately **5 years.**

Carbon saving based on:

682,000kWhr/annum x 0.233kg CO_2/kWhr = **158,906kg CO_2.**

6.00 REVERSE CYCLE AIR SOURCE HEAT PUMPS

Reverse cycle heat pumps have been considered for the office areas. They have the potential to also provide cooling but for this assessment only the heating operation has been considered. Peak office heating demand has been assessed on 350kW The SBEM calculation indicates a potential heating energy when corrected for areas at 757,530Whr/annum.

Based on an average heating seasonal efficiency of 3.6 the electrical input to the system is 210,425Whr/annum which has a carbon equivalent of:

210,425kWhr/annum x 0.233 kg CO_2/kWhr = 49,029kg CO_2/annum

Using mains gas and with a system efficiency of 0.9 the carbon equivalent is:

757,530kWhr/annum/0.9 x 0.184kg CO_2/kWhr = 154,872kg CO_2/annum

Total carbon saving is therefore:

154,872kgCO_2/annum – 49,029872kgCO_2/annum = **105,843kgCO_2/annum**

Cost of a Heat pump solution of this size of this size is estimated at £680,000 compared to a similar installation based on gas fired boiler at £604,000 giving a cost increase of £76,000.

Annual energy cost of the electric heat pump solution is calculated as

210,425kWhr/annum x £0.146/kWhr = £ 30,722/annum

Annual energy cost of a similar gas fired system as

757,530kWhr/annum/0.9 x £0.048/kWhr = £40,402/annum

Installation cost payback period is calculated as

£76,000 / (£40,402 -£30,722) = **7.85 years**

7.00 SOLAR WATER HEATING

A solar water heating installation provides a part of the total water demand and would be used to offset the cost of electric water heating.

Hot water demand for the development is assessed to be 17,000L/day consumed over a 10 hour working day. A solar collection could be expected to save approximately 600kW/hr/m² over a year to cater for maximum flow conditions and variable solar radiation levels.

A total HWS annual energy demand is assessed at 121,780kWhr/annum so 20% utilisation requirement produces a collection area of 40m².with an annual energy saving of 24,000kWhr.

The potential energy saving is the electrical offset at:

$40m^2$ x 600kWhr/annum x £0.146 = £3,504/annum

Cost of an array and system of this size of this size is estimated at £36,000 so the payback period for installation cost is

£36,000 / £3,504/annum = 10.28 years.

Once maintenance and associated costs are included the simple payback period would likely exceed **11 years.**

Carbon saving based 24,000kWhr Solar water heating production compared to an electric only building the Carbon saving would be

24,000kWhr/annum x 0.233kg CO_2/kWhr = **5,592kg CO_2/annum.**

8.00 COMBINED HEAT AND POWER

The site does not have a main gas connection which has been assessed as having a considerable cost to provide so gas fired CHP plant is not viable.

Alternative fuels are available but the use of diesel as an energy source does not provide a LZC solution.

The concept is also hampered by the lack of any local receptors for waste heat the only assumption would be the development itself. As the carbon benefit of Air Source Heat Pumps for general heating is so much greater this technology has been discounted.

9.00 BIOMASS

Biomass would potentially provide a low carbon solution in two ways. Either as a fuel source for a biomass boiler to replace the electric powered Air Source heat pumps. However the site constraints and the need for significant fuel storage make that approach to integrate into the development.

The other way that a biomass solution could be incorporated is in the form of an aerobic digestion. This would require a significant and constant source of organic matter such as animal or food waste all of which would need to be imported on to the site which is considered not to be carbon beneficial. Quantities of sewage waste are limited on site so the use of a small capacity plant producing bio gas is not considered viable.

10.00 RECOMMENDATIONS

From the information above it is recommended that the following low carbon technologies are considered for inclusion in the design.

i) An 800kVA Photovoltaic energy system providing a CO_2 saving of 158,906kgCO_2/annum and with a payback period of approximately 5 years.

ii) A 350 kW Air Source heat pump solution for the offices providing a CO_2 saving of 105,843kg CO_2/annum and with a payback period of 7.85years

iii) A solar water heating system of 40m² providing a Co2 saving of 5,592kgCO_2/annum and with a payback period of 11years