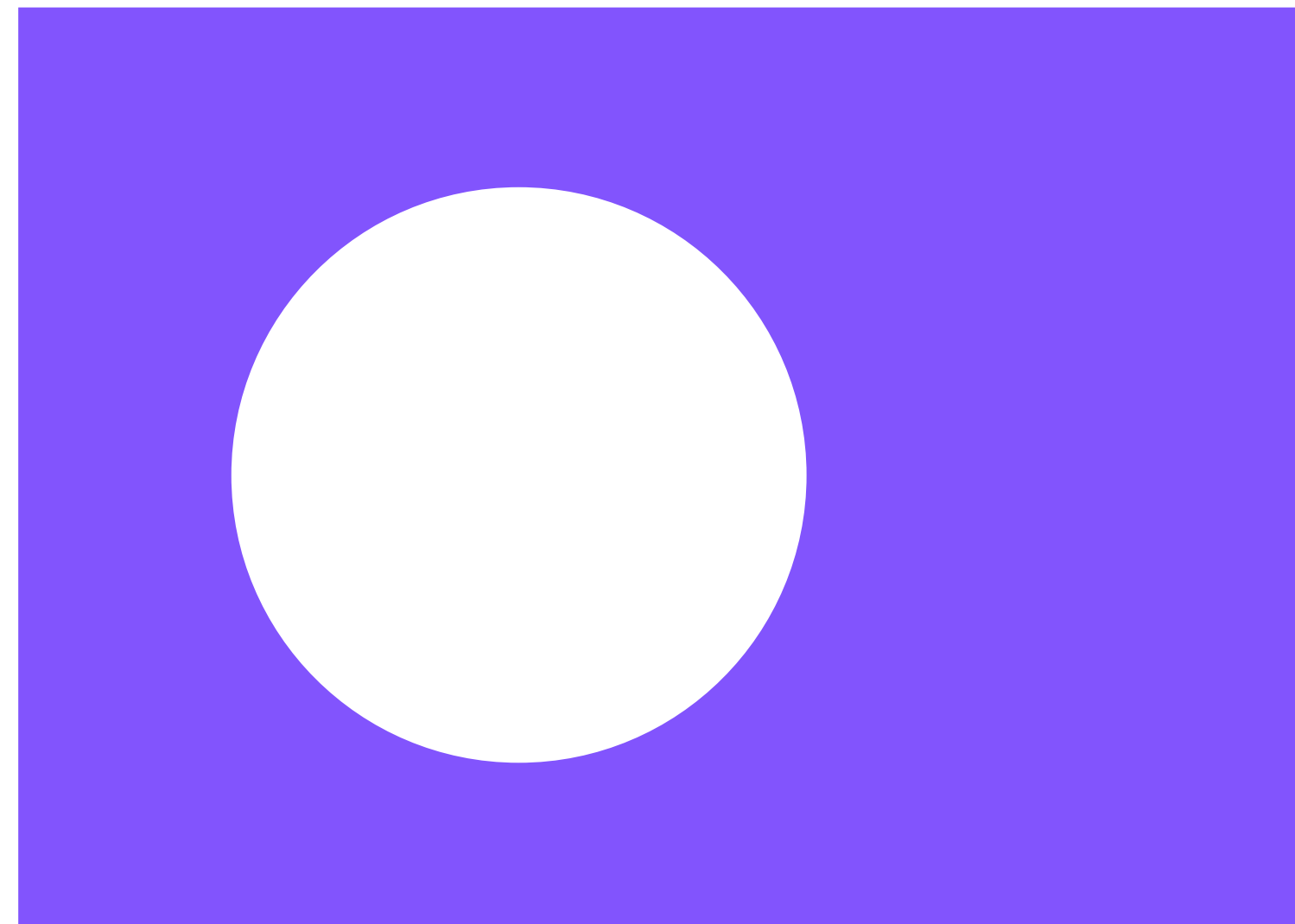




Sustainable Energy Strategy

Salisbury Diagnostic and Surgical Hub

September 2026

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Sustainable Energy Strategy

Salisbury Diagnostic and Surgical Hub

September 2026

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Executive summary

This document details proposals relating to sustainability for the design and construction of the Salisbury Diagnostic and Surgical Hub to support the development’s planning application.

Section 1 details the national and local policy context, as well as NHS requirements for new healthcare developments relating to sustainability.

Section 2 outlines the Sustainable Energy Strategy in line with Wiltshire Core Strategy’s Core Policy 41 requirements.

Section 3 provides further information on the project’s sustainability aspirations and progress towards compliance with its targeted BREEAM rating and NHS Net Zero Building Standard requirements.

1 Introduction

1.1 Purpose

This document details sustainability related proposals for the design and construction of the proposed Salisbury Diagnostic and Surgical Hub (DASH) development at the Salisbury Hospital site. The DASH development is proposed by Salisbury NHS Foundation Trust (SFT) to provide new elective surgery, endoscopy and diagnostic facilities for the local community.

1.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out planning policies for England, ensuring that projects support sustainable development across economic, social and environmental objectives.

It is noted that this development supports the NPPF aspiration to support healthy communities and ensure delivery of health facilities that meet the needs of local communities. This report details how the development will minimise climate change impacts and achieve environmental objectives in line with the NPPF.

1.3 Local policy context

1.3.1 Wiltshire Core Strategy (2015)

Core Policy 41 details requirements relating to sustainable construction and low carbon energy, including:

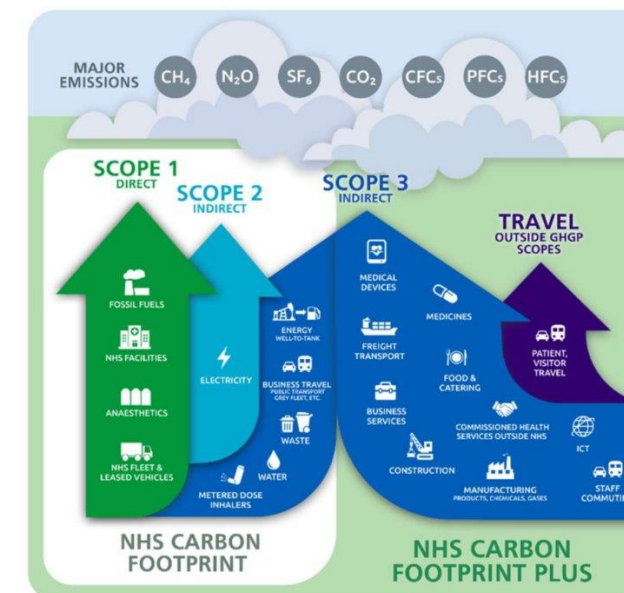
- Climate change adaptation: New developments are encouraged to incorporate measures to reduce energy demand, including insulation, natural light and natural ventilation.
- Sustainable construction: Non-residential developments from 2019 onwards are required to achieve BREEAM Excellent standard.
- Renewable and low-carbon energy: All proposals for major development will be required to submit a Sustainable Energy Strategy alongside the planning application, outlining the low carbon strategy.

1.4 NHS policy context

1.4.1 NHS net zero policy

Climate change directly impacts the population's health and providing healthcare services contributes significantly to the UK's carbon footprint; approximately 5% of the UK total. In 2020 the NHS committed to becoming a net zero carbon service decarbonising its operations including all aspects of estates, services and their supply chain. The image below shows the extent of the carbon emissions associated with the NHS and the two carbon footprints.

Figure 1.1: NHS carbon footprint



For the NHS to achieve net zero two targets have been developed:

- Net zero by 2040 for the NHS Carbon Footprint, with 80% reduction by 2028-2032
- Net zero by 2045 for the NHS Carbon Footprint Plus, with 80% reduction by 2036-2039

1.4.2 NHS Net Zero Building Standard

The NHS Net Zero Building Standard (NZBS) has been created to set out the vision for achieving whole life net zero carbon buildings in healthcare while also providing a roadmap and clear set of performance criteria for reducing operational building energy demands, embodied carbon in construction and the whole life carbon (WLC) of building elements used within them. The NZBS's three key objectives are to:

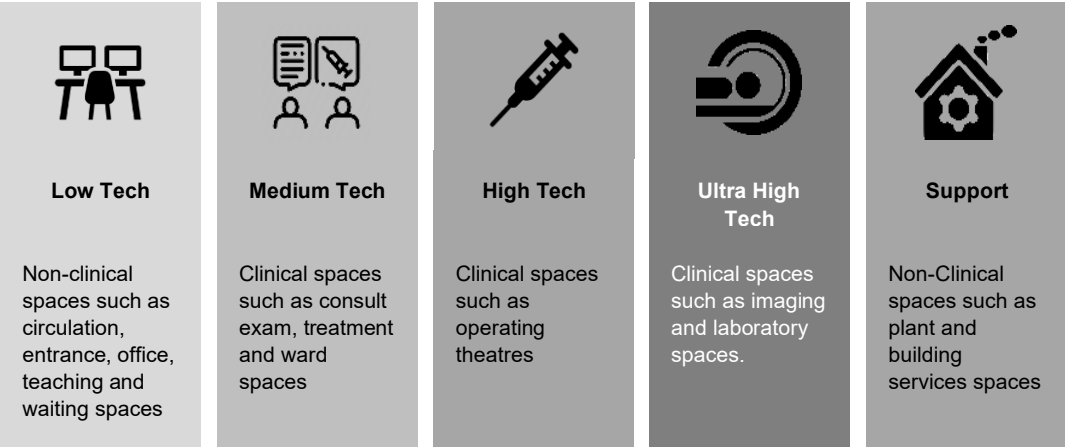
- Define the performance standards for operational energy and embodied carbon.
- Set limits for operational energy and upfront carbon.
- Establish a process for collecting data for those elements which are not currently collected. Thus, allowing the NHS to contribute to the creation of new industry benchmarks whilst ensuring the NZBS is routinely improved over time.

The NZBS will enable estate leads to use the NZBS to understand and compare operational energy use to current regulatory requirements and improve performance, while improving patient care and creating better environments for all estate users.

The NZBS, and the associated tools, user guide and compliance matrix, were released in February 2023. The NZBS applies to all investments in new buildings or upgrades to existing facilities that are subject to HM Treasury business case approval and are at pre-strategic outline case (pre-SOC) business case stage from 1st October 2023 onwards.

The NZBS uses space typologies based on technology level and associated design requirements such as ventilation rates, structural loading and vibration to derive project-specific limits for operational energy and upfront carbon. Assigning space types based on proposed schedules of accommodation and massing enables the complex nature of healthcare buildings to be considered in limit setting.

Figure 1.2: NHS NZBS space type categories



The technology level represents the increasing level of structural performance required; such as loading or vibration or complexity of the ventilation, heating or electrical services.

The Salisbury DASH building has 73% of the total building included within the operational energy limit, as ultra high tech and support space types are exempt from NZBS energy limits.

1.4.3 Health Technical Memorandum 07-07

Health Technical Memoranda (HTM) provide comprehensive guidance for the design, construction and operation of healthcare buildings and associated technologies.

HTM 07-07: Sustainable health and social care buildings details considerations relating to sustainable development within healthcare facilities, highlighting key actions and responsibilities at each lifecycle stage. HTM 07-07 requires new healthcare development projects to achieve a rating of “Excellent” under the Buildings Research Establishment Environmental Assessment Method (BREEAM), a third-party sustainability certification scheme that assesses the environmental, economic and social sustainability performance of construction projects.

1.4.4 Salisbury Hospital Green Plan

The Salisbury Hospital Green Plan (2025-2028) is a strategic initiative aimed at achieving a carbon net zero healthcare system by 2040. It sets ambitious targets for reducing both direct and indirect carbon emissions, with the goal of net zero direct emissions by 2040 and indirect emissions by 2045.

Key components of the plan include the adoption of sustainable models of care, estate and site redevelopment, and digital transformation to enhance efficiency and reduce waste. The plan also prioritises improved transport systems to promote greener transportation options for staff and patients.

Redeveloping hospital estates to be more environmentally friendly is another critical focus. This involves energy efficient designs and the use of sustainable materials to reduce the hospital's carbon footprint and create a healthier environment.

The plan addresses the environmental impact of medicines and medical gases, aiming to reduce the use of harmful substances and find sustainable alternatives. Sustainable procurement practices are emphasised, ensuring that the hospital works with suppliers committed to environmental responsibility.

Additionally, the plan promotes sustainable food practices, including sourcing food locally, reducing waste, and offering healthier meal options. Overall, the Green Plan underscores the hospital's dedication to sustainability and its role in combating climate change.

2 Sustainable energy strategy

2.1 Overview

The building services design of the Salisbury DASH development is at a RIBA stage 3 level of design, with this stage due to be completed in July 2026.

Heating and cooling will be provided to the building by air source heat pumps (ASHPs), using low temperature hot water (LTHW) and chilled water (CHW) distribution. Due to the nature of the building, the ASHP system will be a 4-pipe simultaneous heating and cooling system with heat recovery. It is anticipated that parts of the building (operating theatres) will require cooling the whole year around, while other parts of the building (stage 1 recovery, pods) will require heating.

The DASH building is to be fully mechanically ventilated by HTM compliant air handling units (AHUs), each supplying tempered air into separate areas of the building to create sufficient zones of separation between different departments. Systems will be designed to maximise heat recovery, with a minimum recovery of 76-80% targeted. AHU plant will be located strategically close to the areas they are serving where possible to minimise the length of ductwork and horizontal distribution, reducing losses and minimising embodied carbon.

No district heat network is available for the building to connect to at present. However, in future, there may be an option to connect to a geothermal heat network.

The Trust has reviewed the implications of installing solar photovoltaic (PV) panels on the roof of the new building and has made a conscious decision to mitigate fire hazards where possible, noting the building's use as a day case surgical facility, and PV panels are not proposed at this stage. The Trust is exploring alternative energy supply solutions with the intent of moving towards either a full grid supply or grid supply with private connection to a local renewable power installation. It is noted that some PV may be required to comply with Building Regulations Part L, and the project team are in discussions with Building Control to confirm a suitable solution for this building.

Emergency standby generation will be installed to provide back-up power to the DASH building under mains failure conditions. The size and number of generating sets will be confirmed as the design is developed to suit the project specific design solution for the building and resiliency requirements to ensure continuity of supply. The current allowance is for 2No prime rated 1.5MVA LV emergency standby generators provided within dedicated fire rated spaces as part of the external compound.

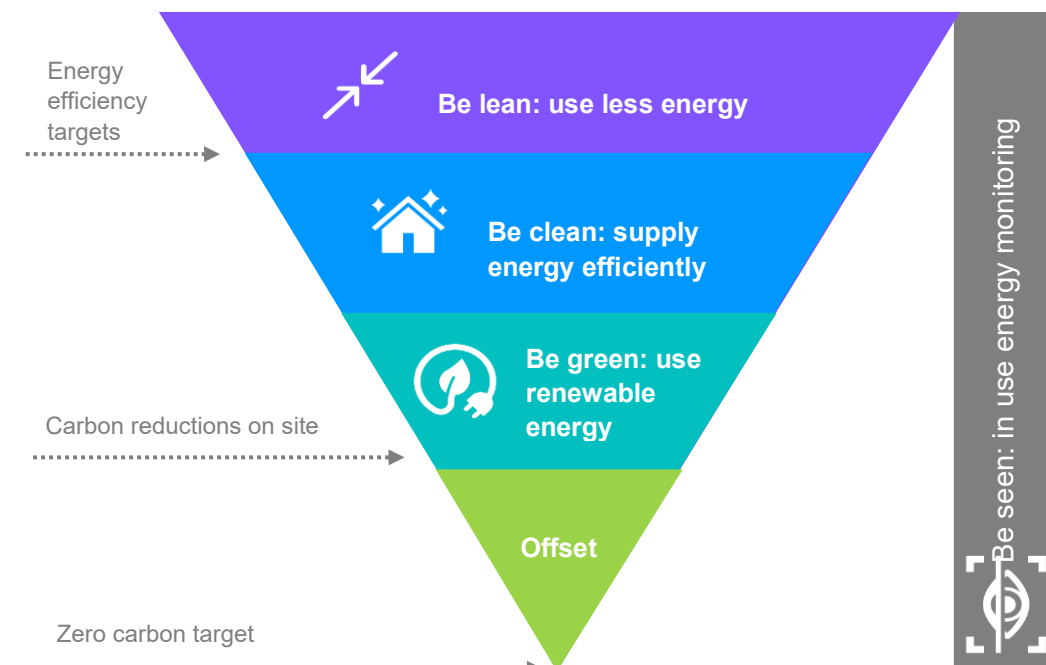
2.2 Energy hierarchy

The design has applied the energy hierarchy shown in Figure 2.2 as follows:

- Be lean:
 - The building will use efficient building fabric in line with NZBS targets.
 - Zoning of ventilation systems has been developed to minimise energy demand of the building.
- Be clean:
 - Air source heat pumps will provide heating and hot water to the building.
- Be green:
 - The development will utilise solar PV panels to generate local renewable electricity.

- Battery storage will be utilised to store excess electricity generated by solar PV panels and reduce the dependence on grid electricity.
- Be seen:
 - The metering strategy will enable effective monitoring of energy use, with metering connected to the Building Management System (BMS) and submetering in line with NZBS and BREEAM requirements.

Figure 2.2: Energy hierarchy



2.3 Technical feasibility

2.3.1 Performance of low carbon systems

Indicative energy modelling has been undertaken at RIBA 3 to confirm the building's performance against the Building Regulations Part L and BREEAM Ene 01 requirements. The building is not expected perform more efficiently than the Part L notional building and is therefore expected to require a small solar PV installation to comply. However, for BREEAM Ene 01 compliance, no PV is required.

The proposed ASHP system will have a seasonal coefficient of performance (SCOP) of 3.8 for heating and SCOP of 2.8 for cooling, while ventilation systems are designed to achieve 76-80% heat recovery. The ASHP installation is anticipated to save 506,000 kWh per year compared to a gas boiler installation, with annual carbon emissions savings of 120,000 kgCO₂ per year.

2.3.2 Plant location

MEP equipment is to be located within the external plant compound. The plant compound will be located next to the DASH building, and it will locate MEP plant such as fuel storage, medical gas manifold room(s), oxygen VIE and air source heat pumps (ASHPs). This has the benefit of increasing control of equipment, reducing the risk of infrastructure failures, increasing resilience

and allowing for storage of hazardous and noisy equipment sufficiently far away from operating theatre areas.

2.3.3 Operating hours

The building's proposed opening hours are 07:30-21:30, with operating hours of 07:00 – 22:00, and it is anticipated that plant will operate for 24 hours a day, which may result in noise impact to the surrounding area. A baseline noise survey and impact assessment has been undertaken, which identified very low existing background noise levels, and noted a recommendation for sound barriers to plant areas.

2.4 Financial viability

Analysis conducted to support BREEAM Ene 04 compliance estimated that the proposed ASHP system will cost £877,800. Due to the higher cost of electricity compared to gas, despite the high efficiency of the ASHP system, there is not expected to be a cost saving compared to a gas boiler installation, and thus there is no payback period for an AHSP installation.

The Ene 04 analysis also reviewed the impact of local generation from solar PV. An installation of 110kW is expected to have a capital cost of £112,000, with cost savings of £30,800 per year, resulting in a payback period of 6 years. Solar PV has been ruled out at this stage due to the increased fire safety risk.

2.5 Deliverability

The proposed development and associated plant compound are within land owned by SFT.

3 Sustainability performance

3.1 NHS Net Zero Building Standard

3.1.1 Approach

The scheme must comply with the requirements set out in the NHS Net Zero Building Standard (NZBS). The project proposals have been developed to a RIBA Stage 2 level of design, considering the clinical functionality, site constraints and engineering technical performance criteria. The Salisbury DASH has been will operate over three levels (lower ground, ground and first floor) and has been optimised for clinical functionality, flexibility and minimised environmental impact.

The design team have incorporated the NZBS principles where possible throughout the design, using the NZBS to drive decision making. The design strategy incorporates a ‘fabric first’ approach, high-efficiency systems and modern methods of construction (MMC) to reduce operational and embodied carbon. Opportunities to reduce embodied carbon through material efficiency in the design have been identified in a design workshop at RIBA 2. Operational energy strategies include the use of air source heat pumps (ASHPs), smart lighting, demand-controlled ventilation and potential integration of solar photovoltaic (PV) and battery storage systems.

3.1.2 Upfront carbon compliance

To enable reduction of whole life carbon, the project has applied the embodied carbon hierarchy shown in Figure 3.1 as follows:

- Build nothing:
 - Potential for reuse of existing buildings on site has been reviewed, however no suitable vacant buildings are available on site.
 - Schedule of accommodation has been optimised based on clinical and cost requirements, with key Trust stakeholders engaged in developing layouts.
- Build less/Build efficiently:
 - Low rise building to minimise embodied carbon associated with higher number of floors and associated substructure.
 - Standardised grid design, with floor plate enabling flexibility for a range of space types.
 - Options appraisal undertaken which found a concrete frame to be the lowest embodied carbon option, while meeting vibration criteria for specialist clinical services.
- Build clever:
 - Standardised grid design, with floor plate enabling flexibility for a range of space types.
 - Low carbon material options to be reviewed at subsequent design stages.
- Waste less:
 - Modern methods of construction (MMC) strategy to support modular design and offsite construction.
 - Standardised modular façade design will enable off-site manufacture to reduce waste on site and construction timelines.

Figure 3.1: Embodied carbon hierarchy



The table below details the project specific upfront carbon limits derived using the NZBS Whole Life Carbon compliance tool. An embodied carbon options appraisal was conducted at RIBA stage 2, with the lowest embodied carbon structural solution chosen. The embodied carbon assessment for in-scope elements at RIBA stage 2 found that the design did not achieve the NZBS upfront carbon limit for structural elements, meaning that the overall limit was not achieved at this stage. Design optimisation at RIBA stage 3, removal of structural steel, optimisation of concrete reinforcement and the use of ground granulated blast furnace slag (GGBS) as replacement for cement within concrete, and reduced uncertainty factors in line with RICS whole life carbon assessment guidance, has reduced upfront carbon emissions for the structural elements, bringing the design closer to the limit. Embodied carbon within the façade has increased due to the replacement of timber cladding with brickwork, and the inclusion of elements that were excluded due to lack of information at RIBA 2.

Table 3.1: Salisbury DASH upfront carbon limits and performance against limits

Upfront carbon limits	Limit	RIBA 2	RIBA 3	Units
Total upfront carbon limit	2,138	2,322	2,162	tCO ₂ e
	383	455	387	kgCO ₂ e/m ²
Structural carbon limit	286	385	328	kgCO ₂ e/m ²
Façade carbon limit	97	31	59	kgCO ₂ e/m ²

3.1.3 Operational energy compliance

To reduce operational energy demand and associated carbon emissions, the project team have applied the energy hierarchy as described in Section 2 in line with the NZBS requirements. The project is targeting compliance with the following NZBS fabric performance specifications, which apply to secondary healthcare buildings:

Table 3.2: NHS NZBS fabric performance limits

	Element	Target	Unit
Fabric performance	Wall	0.15	W/m ² /k
	Floor	0.12	W/m ² /k
	Roof	0.12	W/m ² /k
	Window	1.20	W/m ² /k
Air tightness		2.5	m ³ /hr/m ² @50Pa
Glazing performance	East / South / West façade	0.35	g-value
		0.65	VLT
	North façade	0.5	g-value
		0.65	VLT

Clause 5.29 of the NZBS states that electricity sources using fossil fuels must be minimised as far as practically possible.

The table below details the project specific energy limits derived using the NZBS Operational Energy and Carbon compliance tool. Initial dynamic simulation modelling to confirm the performance of the current design against the energy limit has been completed RIBA stage 3, with a full TM54 assessment to be conducted at RIBA stage 4. The building is currently not expected to comply with the NZBS energy limit. This is largely driven by the ventilation requirements of the clinical facilities, necessitating the use of constant air volume systems, and the specification of systems that do not achieve the NZBS targets for specific fan power.

Table 3.2: Salisbury DASH energy limits and performance at RIBA 3

Energy limits	Limit	RIBA 3	Units
Total energy limit	334,645	508,400	kWh/ yr
Total regulated energy (without DHW)	82.1	125	kWh/m ² .yr
Total unregulated energy	120.8	Not assessed at this stage	kWh/m ² .yr

3.2 BREEAM

3.2.1 Approach

In line with Wiltshire Core Strategy's Core Policy 41, Health Technical Memorandum 07-07 and NHS Net Zero Building Standard requirements, the Salisbury DASH is targeting an Excellent rating under the Buildings Research Establishment Environmental Assessment Method (BREEAM) UK New Construction Version 6.1 scheme. BREEAM is a third-party sustainability certification scheme that assesses the environmental, economic and social sustainability performance of projects within the following categories:

- Management: management throughout all stages of the project
- Health and Wellbeing: ensuring the safety and comfort of occupants
- Energy: energy efficiency and reduction of CO₂ emissions
- Transport: sustainable transport and reduction of CO₂ emissions
- Water: consumption and water efficiency
- Waste: minimisation and management of construction and operational waste
- Materials: reducing the environmental impact of building materials
- Land Use and Ecology: conserving and enhancing ecological value
- Pollution: minimising light, noise, watercourse and air pollution

Developments are awarded credits for various aspects of their design and construction within each of these categories, according to pre-defined criteria. Credits collected in each category are weighted according to their perceived importance, and the total score is then translated into a rating. By demonstrating compliance with prescribed quality and performance standards, a project achieves a score and associated rating ranging from Pass (30%) to Good (45%), Very Good (55%), Excellent (70%) and the highest-level Outstanding (85%).

The project is currently targeting a score of 77.40%, which exceeds the 70% threshold required for an Excellent rating. This section describes the activities undertaken at RIBA stages 0-3 to support the attainment of the targeted BREEAM score. A full breakdown of targeted credits is available as an appendix to this statement.

3.2.2 Management

Stakeholder engagement meetings have been held to discuss key requirements of the design with the client and relevant clinical specialists. A BREEAM Accredited Professional (AP) has been appointed to support the design team in embedding sustainability and BREEAM considerations into the Concept Design. The Contractor will be required to achieve the majority of credits associated with Responsible construction management, Commissioning and handover, and Aftercare.

Credits associated with lifecycle costing are not targeted at this stage.

3.2.3 Health and wellbeing

An indoor air quality plan is under development, and thermal comfort modelling will be conducted at the next stage. Specifications for lighting, internal finishes and HVAC systems shall be developed in line with the requirements of credits within this section.

The design team has reviewed the feasibility of targeting credits relating to daylighting and view out. Based on the current layouts, it is unlikely that these credits will be achievable.

3.2.4 Energy

Early-stage Part L compliance modelling has been undertaken for the building. It is expected that the minimum credits required for an Excellent rating will be achievable. No PV is required to achieve the minimum required credits, but PV may be required on up to 20% of the roof area for Part L compliance.

Further operational energy modelling to support BREEAM and NHS Net Zero Building Standard compliance will be undertaken at subsequent design stages, including CIBSE TM54 operational energy modelling. Should Part L modelling at subsequent stages not achieve the minimum credits required for an Excellent rating, the alternative BREEAM compliance route through completing CIBSE TM54 operational energy modelling is expected to be achievable at this stage.

A passive design analysis and low carbon technologies review have been carried out to identify measures to reduce energy demand and make use of on-site renewable energy. ASHPs will be specified to reduce carbon emissions associated with the development. It is noted that natural ventilation is not appropriate for the specialised clinical spaces within this development.

3.2.5 Transport

A travel plan has been developed to inform proposals for sustainable transport measures at the next design stage. Due to electrical capacity constraints at the site, electric car charging facilities are not proposed at this stage.

3.2.6 Water

Specification of sanitaryware will be developed at RIBA stage 4, however a minimum of one Wat 01 credit for efficient sanitaryware is targeted, equating to a 12.5% improvement in the water efficiency of sanitaryware in non-clinical areas compared to BREEAM benchmark data.

3.2.7 Materials

An embodied carbon options appraisal of superstructure, substructure and hard landscaping options has been completed at RIBA stage 2. The results of the chosen option have been used within NHS Net Zero Building Standard compliance reporting. An update to the embodied carbon assessment for RIBA stage 3 is ongoing, with structural elements found to have reduced in embodied carbon through the removal of steel elements, the optimisation of concrete slabs, and the use of GGBS as cement replacement within concrete.

A sustainable procurement plan has been developed to enable the specification of sustainably sourced construction products throughout the construction phase.

A material efficiency workshop was held with the design team to identify opportunities to reduce material use on the scheme at RIBA stage 2. This was reviewed at RIBA 3, with measures to be implemented including standardised façade design, use of cement replacement within concrete, and optimisation of the structural design to minimise slab thickness. Further opportunities will be identified and savings quantified by the design team at subsequent design stages.

3.2.8 Waste

A pre-demolition audit has been produced by the design team to identify opportunities to reuse materials from the demolition of the existing helipad.

A climate risk workshop was held during RIBA stage 2 to identify the risk associated with climate related hazards and propose adaptation measures. These will be reviewed and, where

technically and economically feasible, implemented at future design stages, with thermal comfort modelling and detailed façade specifications to be developed at RIBA stage 4.

A review has been undertaken by the design team to identify opportunities to enhance the future adaptability of the building, and to enable disassembly at end of life. These recommendations will be implemented at future design stages where technically feasible.

3.2.9 Land use and ecology

A preliminary ecological survey has been undertaken by Emins. This will inform recommendations relating to conservation of ecology and biodiversity net gain (BNG). The project is targeting four credits for ecological enhancement, aligning to a BNG target of 10%. It is anticipated at this stage that off-site enhancement will be required to achieve the target.

3.2.10 Pollution

The building will be heated by refrigerant based systems, minimising local air pollution.

The site has been identified as being in a low flood risk zone. Detailed drainage calculations will be undertaken at future design stages.

A baseline noise survey and impact assessment has been undertaken, which identified very low existing background noise levels, and noted a recommendation for sound barriers to plant areas, which will be implemented in order to meet BREEAM requirements for noise pollution.

A. BREEAM credit tracker

Refer to STECC-MMD-XX-XX-SH-EN-080001 Salisbury DASH BREEAM Tracker NC V6.1

