
Project:	Queen Victoria Hospital East Grinstead		
Our reference:	100120806-MM-ZZ-EG-RP-BM-0002.		
Prepared by:	SD	Date:	20/01/2025
	KW		
Approved by:	KWo	Checked by:	LA
Subject:	Energy and Sustainability Statement		

Executive Summary

This technical note has been prepared for the planning application and comprises the sustainability strategies proposed by Mott MacDonald Ltd for the new Community Diagnostic Centre (CDC) at the East Grinstead site by Queen Victoria Hospital NHS. It covers:

- BREEAM UK New Construction Version 6.1 Assessment Tracker,
- Low carbon design solutions in line with BREEAM New Construction (UK) Version 6.1 Mat 01 Environmental impacts from construction products – Building life cycle assessment (LCA),
- The building performance targets in line with NHS Net Zero Building Standard (NZBS),
- The energy assessment under Approved Document Part L 2021 (with 2023 amendments) Volume 2 (ADL2) of the Building Regulations.

The project aims to achieve a sustainable building rating through certification from Building Research Establishment Environmental Assessment Method (BREEAM). The building design aims to achieve “Excellent” rating (70% is the threshold) against BREEAM UK New Construction V6.1. The rating is set as per the CDC Short Form Business Case brief and NHS Net Zero Building Standard (NZBS). Following RIBA Stage 3 updates; the projected score stands at 74.13%. A number of credits have also been identified as possible, which could be investigated in further detail to potentially increase the score where needed. Detailed BREEAM report can be found in Appendix 1.

The building is designed to meet the NZBS to support the QVH Trust Green Plan towards the Net Zero Carbon goal by 2040. It should be noted that even though the building is aspired to meet the NZBS, the project is not required to comply with it, due to falling under HM Treasury approval limit¹.

Upon Whole Life Carbon calculations, the total upfront carbon limit (A1-A5 modules) is approximately 350 tCO₂e equivalent to 443 kgCO₂e/m². The SCORS benchmark Rating for structural limit is “E”.

The detailed analysis can be found in Appendix 2.

¹ The NZBS, and the associated tools, user guide and compliance matrix, were released in February 2023. 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.

Primary metrics	Preferred option Embodied Carbon (kg CO ₂ e/m ²)	NHS Net Zero Building Standard Target (kgCO ₂ e/m ²)	UK Net Zero Building Standard Target (kgCO ₂ e/m ²)
Total Embodied Carbon (A-C exc B6/B7)	570	-	-
Upfront Carbon (A1-A5)	500	-	790
Upfront Carbon Tier 1 Materials (A1-A5, Superstructure and Substructure Only)	500	443	-

Table 1.0 Embodied carbon results

The energy assessment results are based on the output from the software in line with the actual National Calculation Methodology (NCM). The results indicated that the strategy incorporating the measures outlined in the East Grinstead RIBA 3 Part L Assessment , in Appendix 3, inclusive of 192 m² of PV panels, would enable the project to achieve the Part L 2021 Target Emission Rate (TER) and Target Primary Energy Rate (TPER). The results reflect the predicted regulated energy consumption and carbon emissions, not the operational energy consumption of the building.

Model	Required PV area m ²	Target CO ₂ Emissions Rate (TER), (kgCO ₂ /m ²)	Building CO ₂ Emissions Rate (BER), (kgCO ₂ /m ²)	Target Primary Energy Rate (TPER) (kWh/m ²)	Building Primary Energy Rate (BPER) (kWh/m ²)
qvh_east grinstead_pl_riba3_ m01_v02	192	7.54	5.25	82.09	54.45

Table 2.0 Building regulations model results

1 BREEAM

BREEAM is the world's first and leading sustainability assessment and certification scheme for the built environment. It is an international standard that is locally adapted, operated and applied through a network of scheme operators, assessors and industry professionals. BREEAM assesses, encourages and rewards environmental, social and economic sustainability throughout the built environment.

Queen Victoria Hospital NHS Trust is targeting the achievement of a sustainable building certification for the new Community Diagnostic Centre at the East Grinstead site.. The project is being assessed under the BREEAM UK New Construction V6.1 scheme.

The CDC Short Form Business Case brief sets the BREEAM target rating as "Excellent", which is a minimum score of 70%. The NHS Net Zero Building Standards Document Section 6.148 states that achieving BREEAM Excellent is a mandatory requirement for all major new buildings alongside this Standard; major developments being above 1000m². The Gross Internal Floor Area (GIFA) of the project is 787 m², therefore there it is not a mandatory requirement for this project to achieve Excellent rating under the Net Zero Building Standards requirements. However, to comply with the Business Case as well as to support the NHS Net Zero Policies, the target rating is confirmed as "Excellent", stands at 74.13% after the RIBA Stage 3 Review.

A number of credits have been identified as possible, which could increase the score from "Excellent" to "Outstanding". However, this would uplift the project capital cost by 5-10%, compared to up to 2% for Excellent rating².

These items were discussed as part of the RIBA Stage 3 update, the result of which was further credits being added to the projected score, increasing it from 71.01% to 74.13%, providing a larger buffer to the 70% threshold.

While identifying the credits achievable in the project, the following strategic objectives have been taken into account, including but not limited to:

- The project brief,
- Mid Sussex District Plan Policy,
- NHS Net Zero Building Standard,
- QVH Trust Green Plan.

The following Mid Sussex District Plan Policies directly reflect on the BREEAM Issues targeted in this project:

District Plan Policies	BREEAM Issues
DP1: Sustainable economic development	Man 02 – Life cycle cost and service life planning Tra 01 – Transport assessment and travel plan Tra 02 – Sustainable transport measures
DP3: Village and Neighbourhood Centre Development	Tra 01 – Transport assessment and travel plan Tra 02 – Sustainable transport measures
DP12: Protection and Enhancement of Countryside	LE 02 Ecological risks and opportunities

² BRE, "The value of BREEAM: A review of latest thinking in the commercial building sector" (2016).

District Plan Policies	BREEAM Issues
DP16: High Weald Area of Outstanding Natural Beauty	LE 03 Managing impacts on ecology LE 04 Ecological change and enhancement
DP20 Securing Infrastructure	Tra 01 – Transport assessment and travel plan Tra 02 – Sustainable transport measures
DP21: Transport	Tra 01 – Transport assessment and travel plan Tra 02 – Sustainable transport measures
DP24: Leisure and cultural facilities and activities	Hea 07 – Safe and healthy surroundings Tra 02 – Sustainable transport measures
DP25 Community facilities and local services	Tra 01 – Transport assessment and travel plan Tra 02 – Sustainable transport measures
DP28: Accessibility	Hea 07 – Safe and healthy surroundings Tra 01 – Transport assessment and travel plan Tra 02 – Sustainable transport measures
DP29: Noise, air and light pollution	Hea 02 Indoor Air Quality Pol 04 Reduction of night time light pollution Pol 05 Reduction of noise pollution
DP37 Trees, woodland and hedgerows	LE 02 Ecological risks and opportunities LE 03 Managing impacts on ecology LE 04 Ecological change and enhancement
DP38 Biodiversity	LE 03 Managing impacts on ecology LE 04 Ecological change and enhancement
DP39: Sustainable design and construction	Man 03 – Responsible construction practices Man 05 Aftercare Ene 01 Reduction of energy use and carbon Ene 04 – Low carbon design Mat 01 Environmental impacts from construction products – Building life cycle assessment (LCA) Mat 03 Responsible sourcing of construction Wst 01 Construction waste management Wst 05 Adaptation to climate change
DP40: Renewable energy schemes	Ene 01 Reduction of energy use and carbon emissions Ene 04 – Low carbon design
DP41: Flood Risk and Drainage	Pol 03 Flood and surface water management
DP42: Water Infrastructure and the Water Environment	Wat 01 Water consumption Wat 02 Water monitoring

Table 3.0 Mid Sussex District Plan Policy and matching BREAM Issues

As part of the RIBA Stage 2 and 3 activities, Mott MacDonald Ltd have been collating documentation to demonstrate compliance with the early-stage credits. These credits are as follows:

- Man 01 Project Brief and Design – Project delivery and stakeholder consultation
- Ene 01 Reduction of energy use and carbon emissions - Energy Performance
- Tra 01 Transport assessment and travel plan
- Mat 01 Environmental impacts from construction products – Building life cycle assessment (LCA)
- Mat 03 Responsible sourcing of construction products – Enabling sustainable procurement
- Wst 05 Adaptation to Climate Change
- Wst 06 Design for Disassembly and Adaptability - Recommendations
- Mat 06 Material Efficiency
- Pol 05 Reduction of noise pollution

The latest BREEAM score chart can be found below:

Categories	Credits available	Available Score	Individual credit weighting	Credits Likely	Credits Possible	Likely Score	Possible score	Credits secured
Management	21	11.00%	0.52%	20	0	10.48%	0.00%	1.05%
Health and Wellbeing	18	14.00%	0.78%	14	2	10.89%	1.56%	1.56%
Energy	24	16.00%	0.67%	9	5	6.00%	3.33%	4.00%
Transport	12	10.00%	0.83%	10	2	8.33%	1.67%	1.67%
Water	8	7.00%	0.88%	5	1	4.38%	0.88%	0.00%
Material	14	15.00%	1.07%	11	6	11.79%	6.43%	4.29%
Waste	10	6.00%	0.60%	6	2	3.60%	1.20%	0.60%
Land Use & Ecology	13	13.00%	1.00%	11	3	11.00%	3.00%	1.00%
Pollution	12	8.00%	0.67%	10	2	6.67%	1.33%	2.67%
Innovation	10	10.00%	1.00%	1	0	1.00%	0.00%	0.00%
Total	142	110%		97	23	74.13%	93.52%	16.82%

Table 4.0 BREEAM score summary sheet

In summary, the project is currently well on track for achieving an “Excellent” rating. Full details of the BREEAM status and progress are set out in the BREEAM Report included in Appendix 1 of this statement.

The Mott MacDonald Ltd team will support the project team for the remaining targeted credits to be addressed within the design at RIBA Stage 4.

2 Net Zero Carbon

2.1 Overview

The NHS recognises the significant risk that climate change poses to human health, and the impact that the provision of healthcare has on the UK's carbon emissions.

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.

For the NHS to achieve **net zero**, two targets have been developed as shown in Figure 2.1:

- Net zero by 2040 for direct emissions (**NHS Carbon Footprint**)
- Net zero by 2045 for indirect emissions (**NHS Carbon Footprint Plus**)

These targets will be key to informing design decisions in order to reduce embodied and operational carbon impacts of East Grinstead CDC. Although the East Grinstead CDC is not required to comply with the NHS Net Zero Building Standard (NZBS), to reduce the project's impact and support the NHS in achieving its decarbonisation targets, bespoke project targets have been for operational energy and upfront carbon set using the NZBS.

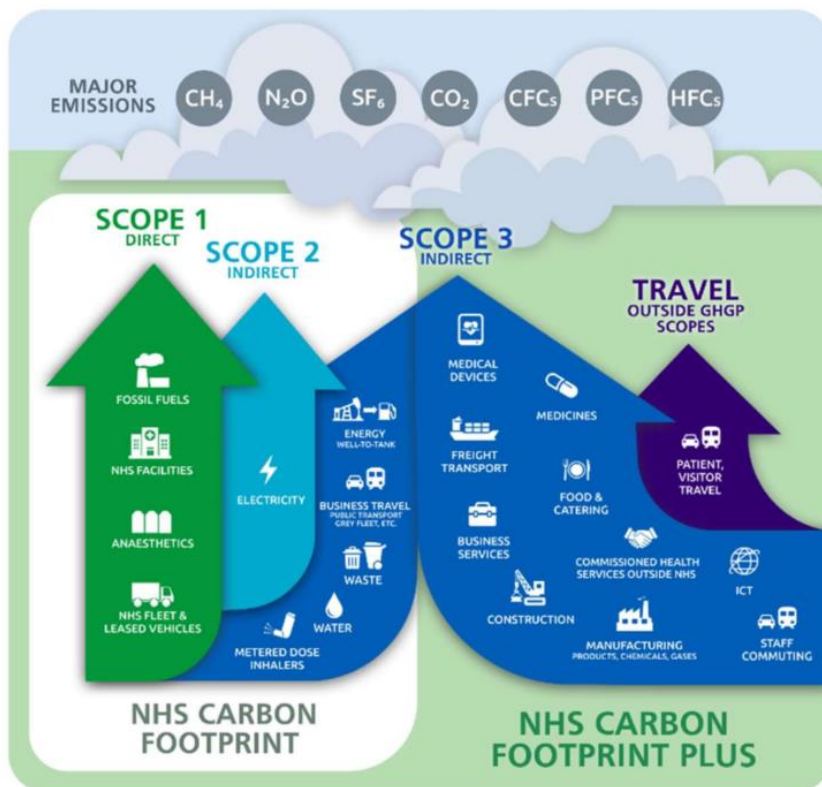


Figure 2.1 NHS Carbon Footprint

2.2 Upfront carbon

During RIBA stage 2, the NZBS Whole Life Carbon Tool was used to derive an upfront carbon limit for the East Grinstead CDC building. This target applies to the following superstructure and substructure elements only: floors, roofs, vertical structure, foundations, façade. An embodied carbon assessment was conducted at RIBA stage 2 to determine the performance against this target. The upfront carbon target and embodied carbon assessment results are detailed in the table and figure below.

Building Element	NZBS Upfront Carbon Limit		RIBA 2 Upfront Carbon Assessment Results	
	kgCO ₂ e	tCO ₂ e	kgCO ₂ e	tCO ₂ e
Total	443	350	500	390
Structural	331	261	420	330
Floors (incl. roof)	259	205	330	260
Vertical Structure	42	33	28	22
Foundations	30	24	57	45
Façade	112	88	79	62

Table 5: Upfront carbon target and results at RIBA 2

The current upfront carbon of the project exceeds the NZBS target; this is due to the current design of the floors and foundations exceeding the specified targets. The total embodied carbon of the proposed CDC will exceed the values shown here, as elements including building services, hard landscaping and finishes have not been assessed. The following is recommended to improve the embodied carbon performance at the next design stage:

- Optimisation of the steel frame to minimise structural material quantities.
- Consideration of recycled steel and brickwork.
- Local sourcing of materials to minimise transport emissions.

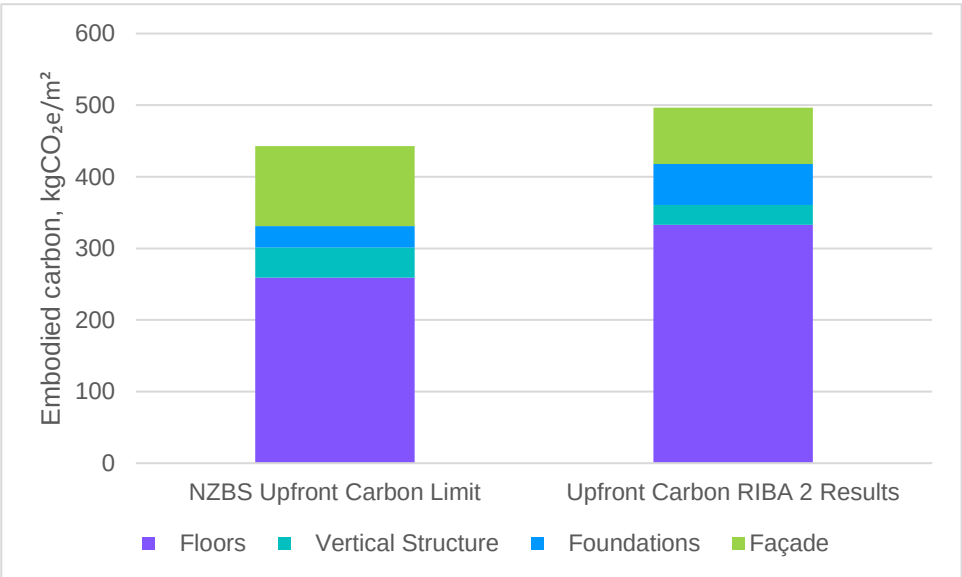


Figure 2.2 Upfront carbon results split by building element.

2.3 Operational carbon

The NZBS Operational Energy and Carbon Tool has been used to define an energy limit for the East Grinstead CDC building as shown in **Error! Reference source not found.** of the report in Appendix 2, Table 6 below. The regulated and unregulated operational energy limit is **44.0 and 45.0 kWh/m²/year** respectively with a total energy usage limit of **28,324 kWh/year**. The table below also presents the proposed limits for fabric U-values, air tightness and glazing parameters in accordance with the NZBS. For further details, please refer to Appendix 2.

TM54 energy modelling to estimate the building's operational energy performance against these targets has not been conducted at this stage; this should be conducted at RIBA stage 4.

Item	Performance Target Value	Unit
Energy Use	Total Energy Limit	28,324 kWh/year
	Total Regulated Energy (without DHW)	44.0 kWh/m ² /year
	Total Un-regulated Energy	45.0 kWh/m ² /year
Fabric U-Values	Wall	0.15 W/m ² K
	Floor	0.12 W/m ² K
	Roof	0.12 W/m ² K
	Window	1.2 W/m ² K
Air Tightness	2.5 m ³ /hr/m ² @50Pa	
Glazing Parameters	E/S/W Facades G-Value	0.35 -
	E/S/W Façade VLT	0.65 -
	N Facades G-Value	0.5 -
	N Façade VLT	0.65 -

Table 6: Operational Energy Limits

3 Building Regulations

Mott MacDonald Ltd has been appointed to carry out the energy assessment for the new Community Diagnostic Centre (CDC) at the East Grinstead regulated under Approved Document Part L 2021 (with 2023 amendments) Volume 2 (ADL2) of the Building Regulations. The purpose of this energy assessment is to demonstrate how compliance with Building Regulations Part L 2021 can be achieved, by producing dynamic simulation modelling (DSM) calculations to show that the building has the potential to meet both of the following as a minimum, as required in line with Regulation 26 and 26C of the Building Regulations Part L:

- Target Primary Energy Rate (TPER); and
- Target Emission Rate (TER).

The National Calculation Methodology (NCM) 2021 is used to calculate the CO₂ emission rates (BER and TER) and the primary energy rate (PBER and PTER) for the assessed spaces of the proposed building.

The external plantroom where the Air Source Heat Pumps (ASHP) will be located has been excluded from the assessment as it is an external space. Surrounding buildings have not been modelled but nonetheless, it is expected that the presence of any structures located to the north of the assessed building would not have any significant impact to the assessment. Building elements and fabric performance, lighting specification and controls, HVAC and DHW systems assumptions can be found in the East Grinstead RIBA 3 Part L Assessment in Appendix 3.

A photovoltaic (PV) technology has been selected as appropriate for the proposed development, see in the below table the properties for the panel selected for the assessment.

Properties	PV System value
Inclination of PV Panels (o)	30o
Module Type	Mono crystalline silicon
Panel Area (m2)	1.931
Nominal Power	425
Orientation of PV panels	180o
Level of overshadowing	None or very little < 20%
Ventilation strategy	Strong Ventilated modules

Table 7: PV Systems Characteristic

Results indicate that the strategy incorporating the measures outlined above, inclusive of renewables, would enable the proposed building to achieve the Part L 2021 Target Emission Rate (TER) and Target Primary Energy Rate (TPER). Table 8 shows the area of PV required the model to pass.

Model	Required PV area m ²	Target CO ₂ Emissions Rate (TER), (kgCO ₂ /m ²)	Building CO ₂ Emissions Rate (BER), (kgCO ₂ /m ²)	Target Primary Energy Rate (TPER) (kWh/m ²)	Building Primary Energy Rate (BPER) (kWh/m ²)
qvh_east grinstead_pl_riba3 _m01_v02	192	7.54	5.25	82.09	54.45

Table 8: BRUKL result summary.

Appendix 1

QVH CDC East Grinstead

East Grinstead BREEAM RIBA Stage 3 Report
Document Number: 100120806-MM-ZZ-EG-RP-BM-0001
Rev 02a

BREEAM Minimum Standards Summary

BREEAM Issue	Pass	Good	Very Good	Excellent	Outstanding
Man 03 - Responsible Construction Practices	None	None	None	One credit (Responsible Construction)	Two credits (Responsible Construction)
Man 04 - Commissioning and Handover	None	None	One credit (Commissioning test schedule and responsibilities)	One credit (Commissioning test schedule and responsibilities)	One credit (Commissioning test schedule and responsibilities)
Man 04 - Commissioning and Handover	None	None	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
Man 05 - Aftercare	None	None	None	One credit (Commissioning implementation)	One credit (Commissioning implementation)
Ene 01 - Reduction of Energy Use and Carbon Emissions	None	None	None	Four credits (Energy Performance or Prediction of operational energy consumption*)	Six credits (Energy Performance or Prediction of operational energy consumption*)
Ene 02 - Energy Monitoring	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Wat 01 - Water Consumption	None	One credit	One credit	One credit	Two credits
Wat 02 - Water Monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Mat 03 - Responsible Sourcing of Construction Products	Criterion 1 only (Timber Sourcing)	Criterion 1 only (Timber Sourcing)	Criterion 1 only (Timber Sourcing)	Criterion 1 only (Timber Sourcing)	Criterion 1 only (Timber Sourcing)
Wst 01 - Construction Waste Management	None	None	None	None	One credit
Wst 03 - Operational Waste	None	None	None	One credit	One credit

*For the 'Prediction of operational energy consumption', it must be demonstrated that the operational energy performance has been substantially improved

BREEAM Project Summary

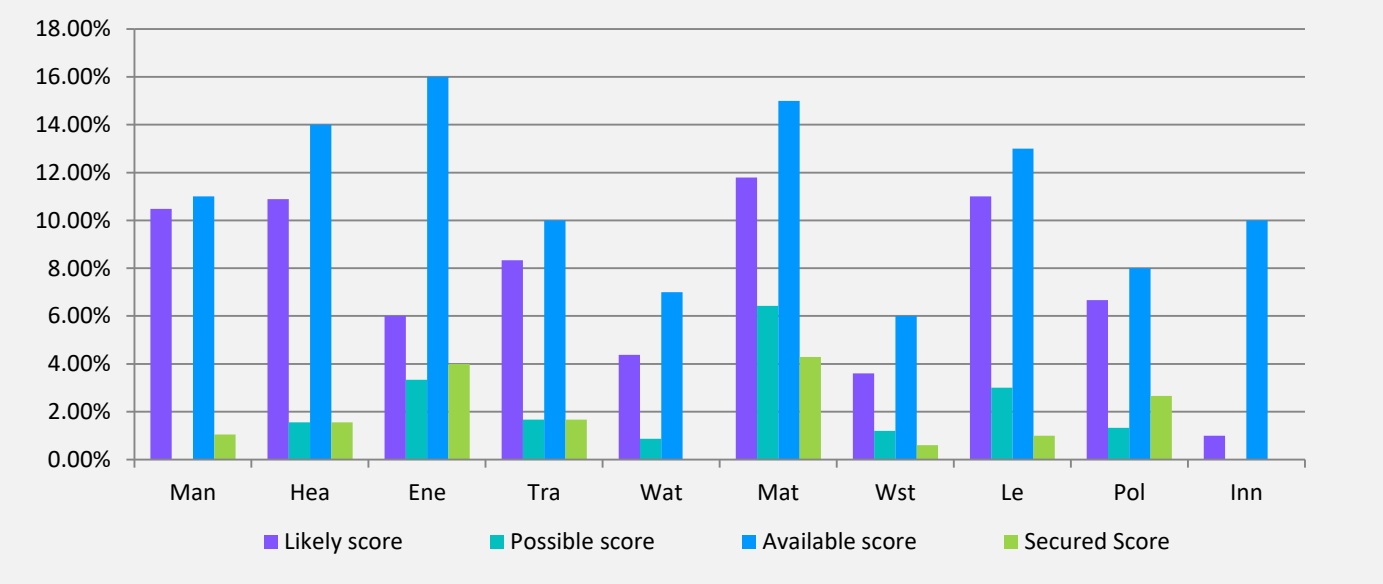
Project Name:	QVH CDC East Grinstead
Project description :	BREEAM Certification
Rating system used :	BREEAM v6 for New Construction
Date of latest issue :	17/01/2024

Current predicted BREEAM score: 74.13%
 Current secured BREEAM score: 16.82%
 Potential BREEAM score: 93.52%
 Current predicted BREEAM rating: BREEAM Excellent
 Current secured BREEAM rating: Unclassified
 Potential BREEAM rating: BREEAM Outstanding

This report presents the current status of the project in terms of likely BREEAM rating and is expected to be updated on a regular basis, as the submission process progresses.

Summary of BREEAM credits

Category	Credits available	Available score	Individual credit weighting	Credits likely	Credits possible	Likely score	Possible score	Credits secured
Man	21	11.00%	0.52%	20	0	10.48%	0.00%	1.05%
Hea	18	14.00%	0.78%	14	2	10.89%	1.56%	1.56%
Ene	24	16.00%	0.67%	9	5	6.00%	3.33%	4.00%
Tra	12	10.00%	0.83%	10	2	8.33%	1.67%	1.67%
Wat	8	7.00%	0.88%	5	1	4.38%	0.88%	0.00%
Mat	14	15.00%	1.07%	11	6	11.79%	6.43%	4.29%
Wst	10	6.00%	0.60%	6	2	3.60%	1.20%	0.60%
Le	13	13.00%	1.00%	11	3	11.00%	3.00%	1.00%
Pol	12	8.00%	0.67%	10	2	6.67%	1.33%	2.67%
Inn	10	10.00%	1.00%	1	0	1.00%	0.00%	0.00%
Total	142	110%		97	23	74.13%	93.52%	16.82%



Summary of BREEAM requirements: Management

Management														
Issue ref.	Credit title	RIBA Stage	Resp. Party	Minimum Mandatory Requirements	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments	
MAN 01	Project Brief and Design	RIBA Stage 2	PM	N/A	One Credit - Project Delivery Planning - LIKELY Prior to completion of the Concept Design (RIBA Stage 2 or equivalent), the project delivery stakeholders have met to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery.	1. Project Delivery plan setting out the process and scope of the project, and the roles of the project team. 2. Minutes from early stage meetings, demonstrating early stage contribution of project team.	1	0.52%	0	0.00%	1	0.52%	Business case is received. Meeting minutes are received.	
		RIBA Stage 2	PM /Design Team	N/A	One Credit - Stakeholder Consultation (Interested Parties) - LIKELY 1. Prior to completion of the Concept Design stage, all relevant third party stakeholders have been consulted by the design team and this covers the minimum consultation content. 2. The project must demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design. 3. Prior to completion of the detailed design (RIBA Stage 4, Technical Design or equivalent), consultation feedback has been given to, and received by, all relevant parties.	1. A list of the stakeholders consulted. 2. A consultation plan setting out the process and the scope of the consultation. 3. Agenda/minutes from consultation meetings. 4. Documentation demonstrating consultation feedback and subsequent actions.	1	0.52%	0	0.00%	0	0.00%	MM will be engaging with the Trust and University Of Chichester, but not any community groups, the Trust will be leading on this. Stakeholder Consultation document needs to be finalised.	
		RIBA Stage 1	Design Team/BREEAM AP	N/A	Pre-requisite for BREEAM AP - LIKELY Strategic sustainability performance targets should be agreed upon design stage.	The BREEAM AP appointment letter, as well as documentation confirming that the defined BREEAM performance target(s) has been formally agreed between the client and design/project team at an appropriate time.	Y						BREEAM AP has been appointed as Selin Demirci. SD has attended regularly occurring DTMs and provided regular updates to the team.	
		RIBA Stage 2-4	-	N/A	One Credit - BREEAM AP (Concept Design) - LIKELY A BREEAM AP has been appointed to facilitate the setting and achievement of BREEAM performance target(s) for the project. The design stage Sustainability Champion is appointed to perform this role during the feasibility stage (Stage 1, Preparation and Brief stage, as defined by the RIBA Plan of Work 2013 or equivalent).	Documentation confirming that the BREEAM AP is monitoring progress. This could be demonstrated by: 1. Meeting Minutes 2. Recorded Correspondence 3. BREEAM AP Reports 4. Relevant sections/clauses in the building specification	1	0.52%	0	0.00%	1	0.52%		
			BREEAM AP	N/A	One Credit - BREEAM AP (Developed Design) - LIKELY A BREEAM AP is appointed to monitor progress against the agreed BREEAM performance target(s) throughout the design process and formally report progress to the client and design team.	Same as above for Concept Design.	1	0.52%	0	0.00%	0	0.00%		
							4	2.10%	0	0.00%	2	1.05%		
MAN 02	Life Cycle Cost and Service Life Planning	RIBA Stage 2	Cost Consultant	N/A	Two Credits - Elemental Life Cycle Cost (LCC) - LIKELY An elemental life cycle cost (LCC) analysis has been carried out, at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2) together with any design option appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008.	Elemental life cycle cost plan	1	0.52%	0	0.00%	0	0.00%	MM BREEAM team has been informed that the Stage 2 LCC has been produced. Once received, the updated report to be reviewed.	
		RIBA Stage 4	Cost Consultant	N/A	One Credit - Component Level LCC Plan - LIKELY A component level LCC plan has been developed by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008 and includes the following component types (where present): a. Envelope, e.g. cladding, windows, and/or roofing b. Services, e.g. heat source cooling source, and/or controls c. Finishes, e.g. walls, floors and/or ceilings d. External spaces, e.g. alternative hard landscaping, boundary protection.	Component level life cycle cost plan	1	0.52%	0	0.00%	0	0.00%	Component Level LCC Plan will be provided in Stage 4.	
		N/A	Cost Consultant	N/A	One Credit - Capital Cost Reporting - LIKELY Report the capital cost for the building in pounds per square metre (£k/m2), via the BREEAM Assessment Scoring and Reporting tool, Assessment Issue Scoring tab, Management section.	BREEAM Assessment Scoring and Reporting tool reporting the capital cost for the building in pounds per square metre (£k/m2).	1	0.52%	0	0.00%	0	0.00%	Capital cost report will be provided in Stage 4.	
							3	1.57%	0	0.00%	0	0.00%		

MAN 03	Responsible Construction Practices	N/A	Principal Contractor	N/A	Pre-requisite - Legally harvested and traded timber - LIKELY All timber and timber based products used on the project is 'Legally harvested and traded timber'	A signed and dated letter or relevant section/clauses of the building specification confirming a commitment to meet the relevant criteria.	Y								The Principal Contractor is to make a clear commitment to implement these requirements during the Construction Stage.
			Principal Contractor	N/A	Pre-requisite - Healthcare NHS Buildings only To award any of the available credits for this issue, any party who at an stage manages the construction site (e.g. principal contractor, demolition contractor) operates and EMS	Contractors EMS certificate									
			Principal Contractor	Outstanding - Two credits (Responsible Sourcing)	One Credit - Environmental Management - LIKELY The principal contractor operates an environmental management system (EMS) and implement best practice pollution prevention policies on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG6.	Contractor EMS certificate Contractor pollution prevention policy document and signed template letter confirming that they shall implement the best practice pollution prevention policies on-site	1	0.52%	0	0.00%	0	0.00%			
		RIBA Stage 5 and 6	Principal Contractor	Excellent - One credit (Responsible Sourcing)	One Credit - BREEAM AP (Site) - LIKELY 1. The client and the contractor formally agree performance targets. 2. A BREEAM AP is appointed to monitor the project and BREEAM target(s), during the Construction, Handover and Close Out stages (as defined by the RIBA Plan of Works 2013, stages 5 and 6).	A signed and dated letter or relevant section/clauses of the building specification confirming a commitment to meet the relevant criteria.	1	0.52%	0	0.00%	0	0.00%			
			Principal Contractor	Very Good - None	Up to Two Credits - Responsible Construction Management - TWO CREDITS LIKELY The principal contractor evaluates the risks (on site and off site), plans and implements actions to minimise the identified risks. They shall also be responsible for on-site training, awareness and feedback and all site monitoring and report.	A signed and dated letter or relevant section/clauses of the building specification confirming a commitment to meet the relevant criteria.	2	1.05%	0	0.00%	0	0.00%			
			Principal Contractor	Good - None	Up to Two Credits - Monitoring of Construction, Site Impacts - TWO CREDITS LIKELY 1. Responsibility has been assigned to an individual(s) for monitoring, recording and reporting energy use, water consumption and transport data resulting from all on-site construction processes throughout the build programme. 2. To ensure the robust collection of information, this individual(s) must have the appropriate authority and responsibility to request and access the data required. Where assigned, the Sustainability Champion could perform this role.	A signed and dated letter or relevant section/clauses of the building specification confirming a commitment to meet the relevant criteria.	2	1.05%	0	0.00%	0	0.00%			
			Principal Contractor	Pass - None											
							6	3.14%	0	0.00%	0	0.00%			
MAN 04	Commissioning and Handover	N/A	Principal Contractor	Outstanding - One credit (Commissioning test schedule and responsibilities) & Criterion 11 (Building User Guide)	One Credit - Commissioning - Testing Schedule and Responsibilities - LIKELY 1. A schedule of commissioning and testing that identifies a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems, testing and inspecting building fabric. 2. All commissioning activities are carried out in accordance with current Building Regulations, BSRIA and CIBSE guidelines.	A Commissioning Schedule which provides details of responsibility.	1	0.52%	0	0.00%	0	0.00%		The Principal Contractor is to make a clear commitment to implement these requirements during the Construction Stage.	
			Principal Contractor	Excellent - One credit (Commissioning test schedule and responsibilities) & Criterion 11 (Building User Guide)	One Credit - Commissioning - Design and Preparation - LIKELY For buildings with complex building services and systems, a project team member is appointed during the design stage with responsibility for: a. Undertaking design reviews and giving advice on suitability for ease of commissioning. b. Providing commissioning management input to construction programming and during installation stages. c. Management of commissioning, performance testing and handover/post-handover stages.	A specialist commissioning manager letter of appointment during the design stage confirming role and responsibilities.	1	0.52%	0	0.00%	0	0.00%			
			Principal Contractor	Very Good - One credit (Commissioning test schedule and responsibilities) & Criterion 11 (Building User Guide)	One Credit - Testing and Inspecting Building Fabric - LIKELY The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of post construction testing and inspection.	Letter of commitment to carry out a thermographic survey and an airtightness test and inspection.	1	0.52%	0	0.00%	0	0.00%			
			Principal Contractor	Good - None	One Credit - Handover - LIKELY A Building User Guide (BUG) is developed prior to handover for distribution to the building occupiers and premises managers.	Signed and dated commitment by the client/developer or future building occupier to produce the following: a. A non-technical user guide for distribution to the building occupier. b. A technical user guide for the premises facilities managers. c. A non-technical training schedule for the building occupiers. d. A technical training schedule for the premises facilities managers.	1	0.52%	0	0.00%	0	0.00%			
			Principal Contractor	Pass - None											
							4	2.10%	0	0.00%	0	0.00%			
MAN 05	Aftercare	N/A	Principal Contractor	Outstanding - One credit (Commissioning Implementation)	One Credit - Aftercare Support - LIKELY There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupier(s). These should include: 1. Introduction Meeting 2. Training 3. Weekly on site attendance from support team 3. Helpline There is (or will be) operational infrastructure and resources in place to co-ordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is occupied.	Relevant section/clause of the building contract or a signed and dated commitment to provide the required aftercare support services. Evidence of a commitment to collect and monitor energy and water consumption data for a minimum of 12 months after occupation.	1	0.52%	0	0.00%	0	0.00%		The Principal Contractor is to make a clear commitment to implement these requirements during the Construction Stage.	
			Principal Contractor	Excellent - One credit (Commissioning Implementation)											
			Principal Contractor	Very Good - None	One Credit - Commissioning - Implementation - LIKELY Commissioning activities will be completed over a minimum 12-month period, once the building becomes substantially occupied.	Appointment letter(s) and/or commissioning responsibilities schedule.	1	0.52%	0	0.00%	0	0.00%	The Principal Contractor is to make a clear commitment to implement these requirements during the Construction Stage.		
			Client	Good - None	One Credit - Post-Occupancy Evaluation - LIKELY The client or building occupier makes a commitment to carry out a post-occupancy evaluation (POE) exercise one year after initial building occupation.	A signed and dated commitment by the client/developer to ensure a POE will be carried out.	1	0.52%	0	0.00%	0	0.00%			
							3	1.57%	0	0.00%	0	0.00%			
Total Section Score:							20	10.48%	0	0.00%	2	1.05%			

The Principal Contractor is to make a clear commitment to implement these requirements during the Construction Stage.

The Principal Contractor is to make a clear commitment to implement these requirements during the Construction Stage.

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The FINAL QVH CDC Short Form Business Case 5m o 15m 260922 - FINAL document pg 28 confirms that WVH is committed to improving the experience of the building users and clearly states to engage with the communities so that their views contribute to the design.

The commitment should be confirmed by the Trust.

Summary of BREEAM requirements: Health and Wellbeing

Health and Wellbeing												
Issue ref.	Credit title	RIBA Stage	Resp. Party	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
HEA 01	Visual Comfort	N/A	Architect	One Credit - Control of glare from sunlight - LIKELY Identify areas at risk of glare using a glare control assessment. The glare control strategy must not increase energy consumption used for lighting.	Glare control assessment. Design drawings / specifications detailing the control strategy.	1	0.78%	0	0.00%	0	0.00%	The glare control measures and impacts have been discussed with the architectural team during the Stage 3 BREEAM kick-off workshop on 19/11/2024. Glare control measures have been included in 100120806-MM-A1-EG-SP-AR-0001_P01-East Grinstead Architectural Specification under Section 1.12.23. The Contractor's team to demonstrate the glare control strategy in their Stage 4 design.
			Building Physics Team	Two credits - Daylighting - NOT TARGETED The relevant building areas meet the following good practice daylight factor(s): 1. Average Daylight Factor of 2% for at least 80% of the regular floor area AND 2. A uniformity ratio of at least 0.3 or a minimum point daylight factor of at least 0.3 times the relevant average daylight factor. OR 3. At least 80% of the room has a view of sky from desk or table top height and the room depth criterion d/w +d/HW < 2/(1-RB) is satisfied. 4. At least 80% of the room has 300 lux for 2000 hours per year or more	1. Design drawings. 2. Daylight calculations.	0	0.00%	0	0.00%	0	0.00%	
			Architect	One credit - Views out - LIKELY 1. 95% of the floor area in relevant building areas is within 8m of a wall with a permanent opening that provides an adequate view out. 2. The window/opening must be ≥ 20% of the surrounding wall area. Where the room depth is greater than 8m, refer to credit link for further detailed explanation. 3. The view out must be a view of a landscape or buildings (rather than just the sky) at seated eye level (1.2–1.3m) within the relevant building areas and should ideally be through an external window.	1. Design drawings and calculations 2. Daylighting 3. Design drawings. 4. Daylight calculations.	1	0.78%	0	0.00%	0	0.00%	The team has confirmed during the Stage 3 BREEAM kick-off workshop on 19/11/2024 that this can be achievable with the current design. The Contractor's team to demonstrate the adequate view out in their Stage 4 design.
			MEP (Electrical)	One Credit - Internal and External Lighting Levels, Zoning and Control Internal - LIKELY Internal lighting in all relevant areas of the building is designed to provide illuminance (lux) levels and colouring rendering index in accordance with the SLL Code for Lighting 2012. For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 72 sections 2.4, 2.13 to 2.15, 2.20, and 6.10 to 6.20 External All external lighting located within the construction zone is specified in accordance with BS 5489-1:2013 Code for the practice for the design of road lighting. Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places. Zoning Internal lighting is zoned to allow for occupant control	1. Relevant section/clauses of the building specification or contract OR a letter of formal confirmation of compliance from the relevant design team member. 2. Design drawings	1	0.78%	0	0.00%	0	0.00%	A statement is included referenced to a lighting controls company to develop the controls at Stage 4. The only external lighting is the perimeter building lighting. BREEAM team will review and confirm the compliance. that is subject to Stage 4 updates.
									3	2.33%	0	0.00%

HEA 02	Indoor Air Quality	N/A	MEP (Mechanical) or Sustainability Team	Prerequisite - IAQ Plan - LIKELY A site-specific indoor air quality plan has been produced and implemented in accordance with the guidance in Guidance Note GN06. The plan must be produced no later than the end of Concept Design.	Completed IAQ Plan	Y						An IAQ plan has been received. It should be signed off.
			MEP (Mechanical)	One credit - Ventilation - LIKELY 1. Provide fresh air into the building in accordance with the relevant standard for ventilation. 2. Ventilation pathways are designed to minimise the ingress and build-up of air pollutants inside the building 3. Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 16798-3:2017. The specified filters should achieve supply air classification of at least SUP 2. 4. Occupied spaces have carbon dioxide (CO ₂) or air quality sensors specified in accordance with Building Regulations ADF2 and: - In mechanically ventilated buildings or spaces, sensors are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space. - In naturally ventilated buildings or spaces, sensors either have the ability to alert the building owner or manager when CO2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, e.g. automatic opening windows or roof vents. - The total number of sensors, and the net internal area of relevant areas covered by the sensors, is reported 5. The ventilation strategy provides adequate ventilation rates throughout the year, including sufficient airflow rates in summer to prevent overheating and maintain required thermal comfort conditions, in accordance with: - CIBSE AM10 (for naturally ventilated buildings) - CIBSE AM12 (for mixed-mode buildings).	1. Mechanical Ventilation Relevant section/clauses of the building specification or contract, design drawings detailing the location of the building air intakes and external sources of pollution. 2. Natural ventilation: a) Relevant section/clauses of the building specification or contract b) Formal letter from the design team with details of the ventilation strategy and calculations/results from appropriate software modelling tool(s)	1	0.78%	0	0.00%	0	0.00%	MM Mechanical Team confirmed in email on 27/11/2024 that the ventilation design complies with HTM 03-01. There will be circa 11m horizontal distance between intake and exhaust louvre, facing to opposite direction. CO2 sensors will be provided in non-clinical areas, such as waiting area, office area, reception, and some general consultation rooms. The ventilation design complies with HTM 03-01 and relevant CIBSE standards. The relevant information is provided as part of RIBA Stage 3 submission. BREEAM team will review and confirm the compliance. that is subject to Stage 4 updates.
			Architect	Up to two credits: Emission from Construction Products - ONE CREDIT LIKELY, ONE CREDIT POSSIBLE 1. Only products that are installed or applied in parts of the building where their VOC emissions are likely to affect indoor air quality need to be assessed. 2. Products specified for specialist applications may be exempted from meeting the emission limits, where it can be demonstrated that there are no alternative products available that can perform the function and meet the emission limits in Table 5.11 (see credit link). 3. Testing must follow ISO 11890-226 or ISO 1789527 or calculation based on the ingredients and raw materials. One Credit: 1. Three out of the five product types meet the emission limits, testing requirements in Table 5.11 (See credit link). 2. Where wood-based products are not one of three selected product types, all wood-based products used for internal fixtures and fittings must be tested and classified as formaldehyde E1 class as a minimum. Two credits: All of the product types listed meet the emission limits and testing requirements.	1. Evidence must be provided to show that the paints protect against mould growth: EN 15457 and EN 1545. 2. Evidence could include appropriate test results, or manufacturer's product information or declaration. 3. Manufacturers' self-declaration of emission levels from construction products is acceptable in the form of technical specification sheets or manufacturers' literature provided the testing has been performed by an accredited laboratory in accordance with ISO 11890-226, ISO 1789527 or calculation based on the ingredients and raw materials. OR, where the manufacturer declares that the product contains no formaldehyde or VOCs. 4. Inherently non-VOC emitting products do not need to be assessed and can be deemed fully compliant with the criteria. 4. All organisations used for sampling and analysis of indoor air or for analysis of emissions from construction products must be accredited to ISO/IEC 17025 covering sampling (formaldehyde and VOCs in air) and chemical analysis (determination of formaldehyde and VOCs).	1	0.78%	1	0.78%	0	0.00%	One credit has been included as an indicative target. The listed requirements should be included in the specification as the design develops in Stage 4.
			Principal Contractor TBD	One Credit - Post-Construction Indoor Air Quality Measurement - LIKELY 1. The formaldehyde concentration in indoor air is measured post construction (but pre-occupancy) and does not exceed 100µg/m³ averaged. Formaldehyde sampling and analysis is performed in accordance with ISO 16000-2 and ISO 16000-3 2. The total volatile organic compound (TVOC) concentration in indoor air is measured post construction (but pre-occupancy) and does not exceed 300µg/m³ over 8 hours and TVOC sampling and analysis is performed in accordance with ISO 16000-5 and ISO 16000-6 or ISO 16017-1	A written commitment to undertake the relevant testing and remediation if necessary.	1	0.78%	0	0.00%	0	0.00%	The Principal Contractor is to make a clear commitment to implement these requirements during the Construction Stage.
						3	2.33%	1	0.78%	0	0.00%	

HEA 04	Thermal Comfort	RIBA Stage 3	Building Physics Team	One credit - Thermal model - LIKELY 1. Thermal modelling to be carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling. The software used to carry out the simulation at the detailed design stage provides full dynamic thermal analysis. 2. The thermal modelling demonstrates that the relevant requirements are achieved in accordance to the criteria set out in CIBSE Guide A Environmental design. Dynamic thermal simulation software packages currently provide the facility for building designs to be assessed under external climatic conditions specific to geographic location. 3. Overheating limits: CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings or CIBSE TM59: Design methodology for the assessment of overheating risk in homes. 4. HSE considers 80% of occupants as a reasonable limit for the minimum number of people who should be thermally comfortable in an environment.	1. A copy of the results from the modelling demonstrating the internal temperatures are in compliance with the relevant standards including a projected climate change environment. 2. Formal written confirmation from the design team confirming the name of the modelling software and that it has been selected and applied in accordance with AM11. 3. Completed BREEAM assessment scoring and reporting tool	1	0.78%	0	0.00%	0	0.00%	The building physics team has produced a Stage 3 Technical Note on 19/12/2024 showing they have built the thermal modelling. There is no information on thermal comfort yet. As the Stage 3 will be concluded in January 2025, we highly advise the Building Physics team to look into the thermal comfort. If there will be certain design changes to be made to meet the BREEAM requirements as a result of the thermal comfort analysis, there may not be enough budget/time to implement these in Stage 4.
		N/A	Building Physics Team	One credit - Design for Future Thermal Comfort - LIKELY The thermal modelling demonstrates that the relevant requirements are achieved for a projected climate change environment (Test Reference Years (TRYs) and Design Summer Years (DSYs) provided by CIBSE (2016) (Thermal modelling credit must be achieved)	1. Naturally ventilated buildings Time period: 2050s Emissions scenario: Medium (A1B) 50th percentile DSY 2 and DSY 3 2. Mechanically ventilated or mixed mode buildings Time period: 2020s Emissions scenario: High (A1F1) 50th percentile DSY 2 and DSY 3	1	0.78%	0	0.00%	0	0.00%	
		N/A	MEP (Mechanical)	One credit - Thermal Zoning and Controls - LIKELY 1. The strategy for proposed heating or cooling systems demonstrates that it has addressed different zones within the building, and how the building services could efficiently and appropriately heat or cool these areas and the degree of occupant control required for these zones. 2. How the proposed systems will interact with each other 3. The need or otherwise for an accessible building user actuated manual override for any automatic systems. (Thermal modelling credit must be achieved)	The temperature control strategy for the building.	1	0.78%	0	0.00%	0	0.00%	MM Mechanical Team confirmed in email on 27/11/2024 that 4-pipe ASHP will be employed to provide simultaneous cooling and heating. VAV boxes with terminal heater will be provided for rooms. The occupant control strategy complies with HTM 03-01 requirements. The temperature control will be controlled by the BMS automatically. The relevant drawings and MEP report are provided as part of RIBA Stage 3 submission. The contractor to provide Stage 4 drawings and specs.
							3	2.33%	0	0.00%	0	0.00%
HEA 05	Acoustic Performance	N/A	Acoustician	Up to three credits - Acoustic Performance - THREE CREDITS LIKELY The building meets the appropriate acoustic performance standards and testing requirements defined in the checklists and tables section which defines criteria for the acoustic principles of: 1. Sound insulation 2. Indoor ambient noise level 3. Room acoustics. OR A suitably qualified acoustician (SQA) is appointed to define a bespoke set of performance requirements for all function areas in the building using the same three principles as above. Please view Tables 5.14-5.18 for specific requirements. (see credit link) 1. Measurements of sound insulation (airborne and impact) should be made in accordance with the relevant part of BS EN ISO 16283 series. 2. Measurements of reverberation time should be made in accordance with the engineering grade (or better) requirements of BS EN ISO 3382-2:20087 and conducted within one in four rooms (or teaching spaces) of each room type of performance requirement category and construction type.	1. Professional report/study and calculations from the acoustician. 2. Letter of appointment / confirmation demonstrating when the acoustician was appointed. 3. Acoustician CV 4. Relevant section / clauses of the building specification or contract and / or formal letter from the project team regarding commitments and confirmation that the relevant performance standards. 5. Written confirmation from the third party verifier that they comply with the definition of an SQA is required 6. Compliance test body: accredited by a member of the International Accreditation Forum OR ANC Registration Scheme OR can provide evidence that they follow the relevant principles of BS EN ISO/IEC 17024	3	2.33%	0	0.00%	0	0.00%	MM Acoustic team has confirmed that HTM08-01 compliance allows for three of the credits.
						3	2.33%	0	0.00%	0	0.00%	
HEA 06	Security	RIBA Stage 2	Security Consultant	One credit - Security of Site and Building - LIKELY 1. A Suitably Qualified Security Specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent). 2. The SQSS develops a set of security controls and recommendations for incorporation into the proposals. 3. The controls and recommendations shall be incorporated into proposals and implemented in the as-built development. The scope of the recommended security controls: - Design and layout (e.g. crime prevention through environmental design) - Physical security (e.g. tested and certified security products) - Technological security (e.g. Tested and certified alarms, automatic access control systems, CCTV)	1. A copy of the SNA from the SQSS confirming the scope of their advice /involvement, the stage of design at which their advice was sought and a summary of their recommendations. 2. A marked up copy of the site/design plans highlighting examples of conformity with SQSS recommendations; OR a copy of the specification clause confirming that the development will conform with SQSS recommendations.	0	0.00%	1	0.78%	0	0.00%	Trust has appointed TIAA for further security proposals. The MM BREEAM team is in contact with the BRE regarding the compliance criteria. Provided the appropriate security specialist confirms that the implementation of security measures has not been restricted due to the later stage at which their involvement was sought, i.e. everything that would have been recommended can be still be implemented, then the credits can still be awarded.
						0	0.00%	1	0.78%	0	0.00%	

HEA 07	Safe and Healthy Surroundings	N/A	Architect / Landscape Architect	One credit - Safe access - LIKELY 1. Dedicated cycle paths and footpaths: direct access from the site entrance(s) to the building entrance(s) or cycle storage 2. Dedicated pedestrian crossings: pedestrian routes cross vehicle access routes 3. Pedestrian drop-off areas: access to roads and direct access to other footpaths. 4. Delivery areas: not accessed through general parking areas and do not cross pedestrian and cyclist paths. They also must not share outside amenity areas accessible to building users and general public. 5. Dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking. 6. Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site.	1. Marked up site plans	1	0.78%	0	0.00%	1	0.78%	It is confirmed that the existing external layout is not changing much. Two access points are proposed. The school will be only adding a few more car parking spaces due to increased staff numbers.
			Landscape Architect	One Credit - Outside Space - LIKELY There is an outside space providing building users with an external amenity area. Appropriate size of the outside space, the building type, function, shift patterns and occupancy numbers should be considered. 1. Outdoor landscaped area: for example a garden, balcony or terrace; the majority of the space should be open to the sky. 2. Appropriate seating areas and be non-smoking. 3. Location to ensure accessibility to all building users and avoid areas with disturbances from sources of noise (e.g. building services, car parks, busy roads, delivery areas etc.).	1. Marked up site plans 2. Calculations for outside space area.	1	0.78%	0	0.00%	1	0.78%	The project is planned to achieve 10% BNG across the site as per the national guidance. There will be soft natural play area, willow tunnel, and other green areas on the site. 100120806-MM-A1-EG-GA-LA-0001 P01 shows sufficient outdoor landscaped area including seating spaces.
								2	1.56%	0	0.00%	2
Total Section Score:						14	10.89%	2	1.56%	2	1.56%	

Summary of BREEAM requirements: Energy

Energy													
Issue ref.	Credit title	RIBA Stage	Resp. Party	Minimum Mandatory Requirements	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
ENE 01	Reduction of Energy Use and CO2 Emissions		Building Physics Team	Outstanding - Six credits (Energy Performance or Prediction of operational energy consumption)	Up to Nine Credits - Energy performance - FOUR CREDITS LIKELY Calculate the Energy Performance Ratio for New Construction (EPR _{NC}). To achieve any rating, a EPRnc of at least 0.1 would be required. To achieve 'Excellent', a EPRnc of at least 0.4 would be required. To achieve 'Outstanding', a EPRnc of at least 0.60 would be required.	1. A copy of the Building Regulations Output Document from the approved software. The output documents must be based on the design stage of analysis. 2. A copy of the Building Regulations Output 3. Completed Ene01 calculator	6	4.00%	0	0.00%	6	4.00%	Four credits is the minimum performance level required for an Excellent rating. The latest RIBA Stage 3 .inp file with 192 m2 PV achieves 6 credits. RIBA Stage 4 design BRUKL should be checked to ensure the final design achieves the targeted credits.
		RIBA Stage 2	TBC	Excellent - Four credits (Energy Performance or Prediction of operational energy consumption) Very Good - None Good - None Pass - None		Four Credits - Prediction of Operational Energy Consumption - POSSIBLE 1. Workshop minutes, agreed outcomes. 2. The project team analyses the proposed building design and development during Concept Design to identify opportunities for the implementation of passive design measures. 2. Estimate the occupancy, energy use for unregulated energy loads and management practices. 3. Undertake detailed energy modelling to predict the building energy consumption. 4. Undertake sensitivity analysis to determine the factors that can significantly impact building energy consumption. 5. Based on the results of the sensitivity analysis, and in discussion with the project team, the client and the prospective occupier devise scenarios to explore how high impact factors might influence the building energy consumption. 6. Undertake scenario modelling and use these findings to inform improvements to design of the building and to operational, maintenance, and handover strategies. 7. Determine an energy target for the building based on the results of the scenario modelling. 8. At the post-construction stage, the scenario modelling should be repeated to reflect the post construction building specification and, if necessary, adjust the energy target.	1. The project team analyses the proposed building design and development during Concept Design to identify opportunities for the implementation of passive design measures. 2. Estimate the occupancy, energy use for unregulated energy loads and management practices. 3. Confirmation of suitably qualified energy modeller's qualifications and experience. 4. The total carbon neutral energy generation (kWh/yr) 5. The source of the carbon neutral energy 6. Calculated estimate of energy consumption from unregulated systems or process (kWh/yr) (only required if confirming zero regulated carbon or carbon negative exemplary credits) 7. Calculated estimate of exported energy surplus (only required if confirming carbon negative status). 8. The client's commitment to proceed to the post occupancy stage and report the energy consumption. 9. Drawings	0	0.00%	4	2.67%	0	0.00%
							6	4.00%	5	3.33%	6	4.00%	
ENE 02	Energy Monitoring		MEP (Electrical)	Outstanding - One credit (First sub-metering credit) Excellent - One credit (First sub-metering credit) Very Good - One credit (First sub-metering credit) Good - None	One Credit - Sub-metering of end-use categories - LIKELY 1. Install energy metering systems so that at least 90% of the estimated annual energy consumption of each fuel is assigned to the end-use categories. 2. The end energy use is identifiable to the building user. 3. Meter the energy consumption in buildings according to the total useful floor area: - If the area is greater than 1,000m², by end-use category with an appropriate energy monitoring and management system. - If the area is less than 1,000m² use an energy monitoring and management system OR Separate accessible energy sub-meters with pulsed or other open protocol communication outputs, for future connection to an energy monitoring and management system.	1. Specification document or technical drawing confirming energy-consuming systems and their rated outputs; metering arrangements for each system, type and location of meter specified. 2. Confirmation the metering provisions have been designed to facilitate the benchmarking of energy performance as set out in CIBSE TM46 Energy benchmarks.	1	0.67%	0	0.00%	0	0.00%	MM Electrical Team confirmed on 28/11/2024 in email that: -There will be a comprehensive metering strategy - the submain circuits from the panel will be metered, which should be 90%. - Main components such as the MRI and XRay will be metered, lighting and small power across the building will be metered.
			MEP (Electrical)	Pass - None			One Credit - Sub-metering of high energy load and tenancy areas - LIKELY 1. Monitor a significant majority of the energy supply with an accessible energy monitoring and management system for tenanted areas or relevant function areas. OR Separate accessible energy sub-meters with pulsed or other open protocol communication outputs for future connection to an energy monitoring and management system for tenanted areas or relevant function areas. 2. Sub-meter per floor plate in large single occupancy or single-tenancy buildings with one homogeneous function	1	0.67%	0	0.00%	0	0.00%
									2	1.33%	0	0.00%	0

ENE 03	External Lighting		MEP (Electrical)	N/A	One Credit - LIKELY No external lighting (which includes lighting on the building, at entrances and signs) OR External light fittings within the construction zone with: - Initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt - Automatic control to prevent operation during daylight hours - Presence detection in areas of intermittent pedestrian traffic.	1. Marked up site plan and building elevations showing the location and purpose of all external light fittings. 2. Lighting specification or lighting designer's calculations confirming the lamp lumens/circuit watt for each type of fitting as well as the colour rendering index (where appropriate) 3. The external lighting control strategy	1	0.67%	0	0.00%	0	0.00%	MM Electrical Team confirmed on 28/11/2024 in email that all external fittings will have average initial luminous efficacy of >70 lm/w. Photocells will be provided to hold lights off. Presence detection in areas of intermittent pedestrian traffic is not applicable. Stage 4 drawings and specs to be provided by the Contractor to close out the credit.	
							1	0.67%	0	0.00%	0	0.00%		
ENE 04	Low Carbon Design	RIBA Stage 2	-	N/A	Two Credits - Passive Design - NOT TARGETED One Credit: Passive Design Analysis 1. Achieve the first credit Hea 04 Thermal comfort: One credit - Thermal modelling. 2. Identify opportunities for the implementation of passive design measures during Concept Design and implement measures to reduce the total heating, cooling, mechanical ventilation, lighting loads and energy consumption. 4. Quantify the reduced total energy demand and carbon dioxide (CO ₂ -eq). One Credit: Free Cooling 1. Include a free cooling analysis to the passive design analysis. 2. Identify opportunities for the implementation of free cooling solutions. 3. The building is naturally ventilated or uses a combination of the free cooling strategies. One Credit - Low Zero Carbon Feasibility Study - NOT TARGETED 1. A feasibility study has been carried out by the completion of the Concept Design stage (RIBA Stage 2 or equivalent) by an energy specialist (see credit link) to establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy source(s) for the building/development. 2. A local LZC technology/technologies has/have been specified for the building/development in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated carbon dioxide (CO2) emissions.	Results from the passive design analysis including the analysis of free cooling and identified opportunities for the implementation of passive design solutions. The team demonstrate a meaningful reduction in the total energy demand through the use of passive design solutions.	0	0.00%	0	0.00%	0	0.00%	The building physics team confirmed that the passive design analysis and LZC Feasibility Study are not part of their scope.	
			-			Copy of the specification/design documentation showing the use of free cooling in the development.	0	0.00%	0	0.00%	0	0.00%		
			RIBA Stage 2			TBC	A copy of the feasibility study report Marked up design plans or specifications confirming the proposed installation of LZC technology and manufacturers technical data (details or calculations) stating the carbon savings as a result.	0	0.00%	0	0.00%	0	0.00%	The building physics team confirmed that the passive design analysis and LZC Feasibility Study are not part of their scope.
							0	0.00%	0	0.00%	0	0.00%		
Total Section Score:							9	6.00%	5	3.33%	6	4.00%		

Summary of BREEAM requirements: Transport

Transport												
Issue ref.	Credit title	RIBA Stage	Resp. Party	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
TRA 01	Transport Assessment and Travel Plan	RIBA Stage 1-2	Client / Transport Consultant	Two Credits - Transport Assessment and Travel Plan - LIKELY 1. During the feasibility and design stages, develop a travel plan based on a site-specific travel assessment or statement. 2. The site-specific travel assessment or statement covers: - Travel patterns, - Transport impact of building users, - Current local environment for walkers and cyclists, - Facilities for cyclists - Disabled access - Calculation of the existing public transport Accessibility Index (AI). 3. The travel plan includes proposals to increase or improve sustainable modes of transport and movement of people and goods. 4. If the occupier is known, involve them in the development of the travel plan. 5. Demonstrate that the travel plan will be implemented post construction and be supported by the building's management in operation.	A copy of the travel assessment and travel plan.	2	1.67%	0	0.00%	2	1.67%	Travel Plan had not been discussed with the authorities in RIBA Stage 2. There is an Active Travel Plan for QVH dated February 2017. Transport scoping report has been received and covers the existing travel information as well as predicted transport environment. AI is calculated with bus timetables online: 1.54
						2	1.67%	0	0.00%	2	1.67%	
TRA 02	Sustainable Transport Measures		Project Team	Prerequisite - LIKELY A BREEAM compliant Travel Plan is produced in line with criteria 3-5 per Tra 01 - Transport Assessment and Travel Plan.	Provide appropriate documentation demonstrating that the proposed sustainable transport measures are in place.	Y						8 credits have been set as an indicative target based on the proposed options: Option 2 (3rd or 4th option) 3 points Option 3 1 point Option 5 1 point Option 7 1 point Option 10(17) 2 points Potential: Option 6 (Subject to discussions with the LA) Option 8 (Subject to compliant cyclists facilities) Option 9 (The lodge Coffee shop, Spitfire cafe. Client to confirm if there are any other existing amenities within 500m of the site) Option 10(18) The amount of cycling storage shall be confirmed.
				10 credits - Transport Options Implementation - EIGHT CREDITS LIKELY, TWO CREDITS POSSIBLE 1. Identify the sustainable transport measures. See credit link for Table 7.4 2. Award credits according to the existing Accessible Index (AI) of the project, and the total number of points achieved for the options implemented. See credit link for Table 7.3. 3. Refer to credit link for Table 7.5 for requirements on cyclists facilities. 4. Refer to credit link for Table 7.6 for requirements on amenities for different building types.		8	6.67%	2	1.67%	0	0.00%	
						8	6.67%	2	1.67%	0	0.00%	
Total Section Score:						10	8.33%	2	1.67%	2	1.67%	

Summary of BREEAM requirements: Water

Water												
Issue ref.	Credit title	Resp. Party	Minimum Mandatory Requirements	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
WAT 01	Water Consumption	Architect	Outstanding - Two credits	Up to Five Credits - Water Consumption - TWO CREDITS LIKELY, ONE CREDIT POSSIBLE Please specify the performance of the building's domestic water-consuming components so the data can be inputted into the Wat 01 Calculator.	1. A copy of relevant sections of the sanitary ware specification and/or manufacturer's details confirming the type and amount of fittings and controls installed. Effective flow volumes and the number of fittings required to fill in the calculator. 2. Copy of the Wat 01 Calculator	2	1.75%	1	0.88%	0	0.00%	The water-consuming components to be selected in Stage 4.
			Excellent - One credit									
			Very Good - One credit									
			Good - One credit									
			Pass - None									
						2	1.75%	1	0.88%	0	0.00%	
WAT 02	Water Monitoring	MEP (Mechanical)	Outstanding - Criterion 1 only (Water meter specified)	One Credit - Water Monitoring - LIKELY 1. The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source. 2. Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area. 3. Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption. 4. If the construction zone is within a site that has an existing BMS, the pulsed/digital water meter(s) for the construction zone must be connected to the existing BMS	A copy of the specification clause confirming the specification and type of water meter(s) and the connection to the BMS.	1	0.88%	0	0.00%	0	0.00%	MM Mechanical Team confirmed in email on 27/11/2024 that toilet blocks and treatment rooms will use more than 10% of the building's total water demand. No sub-metering is required. RIBA Stage 4 drawings and specs to be provided to meet the criteria.
			Excellent - Criterion 1 only (Water meter specified)									
			Very Good - Criterion 1 only (Water meter specified)									
			Good - Criterion 1 only (Water meter specified)									
			Pass - None									
						1	0.88%	0	0.00%	0	0.00%	
WAT 03	Water Leak Detection and Prevention	MEP (Mechanical)	N/A	One Credit - Leak Detection System - LIKELY A permanent, automated leak detection to be fitted on the mains water supply. The system must be able to alert building occupants of a leak, identify different flow and therefore leakage rates, be programmable to suit the owner/occupiers' water consumption criteria, designed to avoid false alarms caused by normal operation of large water-consuming plant.	1. A copy of relevant specification clauses confirming the scope and performance of leak detection systems; 2. Design drawings; 3. Manufacturer's details confirming the technical specification of the specified systems.	1	0.88%	0	0.00%	0	0.00%	MM Stage 3 MEP Specs include the relevant statement. RIBA Stage 4 drawings and specs to be provided to meet the criteria.
		MEP (Mechanical)		One Credit - Flow Control Devices - LIKELY Flow control devices on each WC area/facility to be included in the design.		1	0.88%	0	0.00%	0	0.00%	
								2	1.75%	0	0.00%	
Total Section Score:						5	4.38%	1	0.88%	0	0.00%	

Summary of BREEAM requirements: Materials

Issue ref.	Credit title	RIBA Stage	Resp. Party	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
MAT 01	Life Cycle Impacts	RIBA Stage 2	LCA Consultant	Up to Six Credits - Superstructure - SIX CREDITS LIKELY Path for Office, Industrial and Retail buildings only 1. During Concept Design and Technical Design, carry out a building LCA on of the superstructure design using either the BREEAM Simplified Building LCA tool or an IMPACT Compliant LCA tool. Those tools are recognised by BREEAM. 2. Submit the Concept Design Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for. 3. Submit the Technical Design Mat 01/02 Results Submission Tool to BRE at the end of Technical Design. Path for all other building types 1. During Concept Design, carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options (recognised by BREEAM). 2. For each design option, fulfil the same functional requirements specified by the client and all statutory requirements. 3. Integrate the LCA options appraisal activity within the wider design decision-making process. 3. Record the differences between the design options in the Mat 01/02 Results Submission Tool. Mark the option selected by the client and explain the reasons for selecting it and not selecting other options. 4. Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for. 5. The same is to be done for the Technical Design LCA tool and Submit the Mat 01/02 Results Submission Tool to BRE at the end of Technical Design.	1. A copy of the completed Mat 01/02 Results Submission Tool 2. Specifications confirming a detailed description of each applicable element and its constituent materials; 3. Design drawings or specification detailing location and area (m2) of each applicable element. 4. The options appraisal summary document 5. Evidence that the LCA options appraisal summary document has been received by the design team and client (meeting minutes, letter of acknowledgement) 6. Evidence of how the LCA design options have informed the design decision-making process (e.g. meeting minutes, documented design development showing how the LCA options have affected the design).	6	6.43%	0	0.00%	4	4.29%	Stage 2 LCA report has been produced. The project achieves the respective Stage 2 credits. Stage 4 option appraisal is needed to close out the credits.
		RIBA Stage 2	LCA Consultant	One Credit - Substructure and hard landscaping options appraisal during Concept Design - POTENTIAL 1. During Concept Design identify opportunities for reducing environmental impacts: Carry out building LCA options (recognised by BREEAM) appraisal of a combined total of at least six significantly different substructure or hard landscaping design options. 2. Follow the paths 2-4 of Path for all other building types	The LCA options appraisal summary document includes substructure and hard landscaping according to the criteria.	0	0.00%	0	0.00%	0	0.00%	
		RIBA Stage 2		Up to Three Credits - Exemplary Level One Credit - Core Building Services Options Appraisal during Concept Design 1. During Concept Design, carry out building LCA options (recognised by BREEAM) appraisal of at least 3 significantly different core building services design options. 2. Follow the paths 2-4 of Path for all other building types	The LCA options appraisal summary document includes core building services according to the criteria.	0	0.00%	3	3.21%	0	0.00%	
		RIBA Stage 2		One Credit - LCA and LCC alignment 1. Achieve Elemental LCC plan and Component Level LCC options appraisal credits. 2. Include design options appraised for paths 2-5 of Path for all other building types (and paths of Substructure and hard landscaping options appraisal during Concept Design, if pursued) during Concept Design in Man 02 Life cycle cost and service life planning: 2 The elemental LCC plan 3. Integrate the aligned LCA and LCC options appraisal activity within the wider design decision-making process.	The 'elemental LCC plan' and 'Component level LCC option appraisal; in issue Man 02 Life cycle cost and service life planning	0	0.00%	1	1.07%	0	0.00%	
				One Credit - Third Party Verification 1. A suitably qualified third party either carries out the building LCA work or verifies the building LCA work. 2. For each LCA option, itemise in the report the checks made by the suitably qualified third party including, as a minimum, the quality requirements shown in Table 9.4. (see credit link) 3. Include details of the suitably qualified third party's relevant skills and experience and a declaration of their third party independence from the project client and design team in the report.	Verifying that building LCAs accurately represent the designs under consideration. Itemising the findings of their verification checks. Evidence that the requirements of a Suitably qualified third party are fulfilled.	1	1.07%	0	0.00%	0	0.00%	The report has been checked by a third party defined by BREEAM. It meets the Stage 2 criteria. The credit will be awarded after Technical Design checks are finalised.
						7	7.50%	4	4.29%	4	4.29%	
MAT 02	Environmental Impacts from Construction Products – Environmental Product Declarations (EPD)	N/A	Architect / MEP	One credit - Specification of Products with a Recognised Environmental Product Declaration (EPD) - POSSIBLE Specify construction products with EPD that achieve a total EPD points score of at least 20 points. Please refer to credit link for Tables 9.8 and 9.9 to learn show to score EPD points.	1. A completed copy of Mat 01/02 Results Submission Tool, including the material category classification. 2. Copies of EPD certificates OR specifications detailing the products to be procured with EPDs.	0	0.00%	1	1.07%	0	0.00%	This EPD requirement is to be reviewed as the specification developed.
						0	0.00%	1	1.07%	0	0.00%	

MAT 03	Responsible Sourcing of Construction Products		Principal Contractor TBD	Pre-Requisite - LIKELY All timber used on the project to be sourced in accordance with the UK Government's Timber Procurement Policy.	A letter of intent confirming that timber shall be sourced from suppliers capable of providing certification to the level required for the particular tier.	Y						The Principal Contractor is to make a clear commitment to implement these requirements during the Construction Stage.
		RIBA Stage 2	-	One Credit - Sustainable procurement plan - LIKELY A sustainable procurement plan must be used by the design team to guide specification towards sustainable construction products. The plan must be in place prior to the end of Concept Design	Copy of the BREEAM compliant sustainable procurement plan.	1	1.07%	0	0.00%	0	0.00%	Sustainable Procurement Plan has been produced by the team as part of Stage 2 deliverables. The Contractor's team to confirm that this will be used to guide specification towards sustainable construction products.
			Architect / Principal Contractor	Up to 3 credits - Responsible Sourcing of Materials - ONE CREDIT LIKELY, ONE CREDIT POSSIBLE Credits available where specified materials comprising the main building elements are responsibly sourced in accordance with at least one BREEAM approved responsible sourcing scheme.	1. Design plan or specification confirming the location of elements and materials specified and details of the materials specified. 2. Documentary evidence detailing how the calculator tool has been completed e.g. specifications, certificates. 3. Completed copy of the Mat 03 Calculator tool.	1	1.07%	1	1.07%	0	0.00%	These responsible sourcing requirements are to be reviewed as the specification developed.
						2	2.14%	1	1.07%	0	0.00%	
MAT 05	Designing for Durability and Resilience	N/A	Architect	One Credit - LIKELY 1. Identification of areas, both internally and externally, where vehicular, trolley and pedestrian movement occur. Environmental damage must also be accounted for. 2. Suitable durability and protection measures to be specified to prevent damage to vulnerable parts of the building. 3. The relevant building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors. 4. Please refer to credit link for Table 9.14.	1. Marked up design drawings illustrating vulnerable areas/parts of the building and the durability measures specified to protect those areas. 2. Evidence of discussions and design measures implemented to prevent degradation of materials from environmental factors.	1	1.07%	0	0.00%	0	0.00%	The relevant information is to be provided as part of RIBA Stage 4 submission.
						1	1.07%	0	0.00%	0	0.00%	
MAT 06	Material Efficiency	RIBA Stage 2-5	Architect / MEP / Principal Contractor	One Credit - LIKELY Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life. The above is carried out by the design/construction team in consultation with the relevant parties at each of the following RIBA stages: a. Preparation and Brief b. Concept Design c. Developed Design d. Technical Design e. Construction Develop and record the implementation of material efficiency during: a. Developed Design b. Technical Design c. Construction. Report the targets and actual material efficiencies achieved	Written confirmation that opportunities will be identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life at the relevant RIBA stages.	1	1.07%	0	0.00%	0	0.00%	The FINAL QVH CDC Short Form Business Case 5m o 15m 260922 - FINAL document pg 1 describes that there is an aspiration to expand imaging and physiological measurements. It is stated on the Page 19 of the document that the modular type building is preferred. Material Efficiency discussions have taken place during design meetings. Material Efficiency report has been provided for Stage 1 and Stage 2. Stage 3&4 report should be produced as part of Technical Design stage deliverables.
						1	1.07%	0	0.00%	0	0.00%	
Total Section Score:						11	11.79%	6	6.43%	4	4.29%	

Summary of BREEAM requirements: Waste

Issue ref.	Credit title	RIBA Stage	Resp. Party	Minimum Mandatory Requirements	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
WST 01	Construction Waste Management		Principal Contractor	Outstanding - One credit	Up to Three Credits - Construction Resource Efficiency - ONE CREDIT LIKELY, ONE CREDIT POSSIBLE 1. Produce a Resource Management Plan RMP, reduce and record construction waste. 2. Principal Contractor to specify waste generation and diversion targets in line with the team's BREEAM expectations.	1. A copy of the compliant Resource Management Plan containing the appropriate bench marks, commitments and procedures and, where relevant a copy of the pre-demolition OR 2. A copy of relevant specification clauses that require the principal contractor to produce a RMP in line with requirements; contains the detailed requirements with respect to resource efficiency benchmarks and targets and procedures to be included in the RMP. 3. A consistent record of all demolition and construction waste generated, along with diversion / recycling rates. Include details of waste management and recycling facility.	1	0.60%	1	0.60%	0	0.00%	Contractor to provide a RMP in Stage 4.
		TBD	Excellent - None Very Good - None										
			Principal Contractor	Good - None Pass - None	One credit - Diversion of resources from landfill - LIKELY Divert demolition and construction waste from landfill to meet the team's BREEAM targets. Refer to credit link for Table 10.2.	1	0.60%	0	0.00%	0	0.00%	Contractor to provide a written commitment towards BREEAM waste targets.	
							2	1.20%	1	0.60%	0	0.00%	
WST 02	Use of Recycled and Sustainably Sourced Aggregates		Principal Contractor	N/A	Pre-Requisite - LIKELY If demolition occurs on site, to encourage the reuse of site-won material on site, complete a pre-demolition audit of any existing buildings, structures or hard surfaces in accordance with Wst 01 Construction waste management: Criterion 1 and Wst 01 Construction waste management: Criterion 2 .	1. Completed copy of BREEAM Wst02 Calculator 2. Documentary evidence supporting the data used to complete the Calculator tool. 3. Formal written confirmation from the design team or main contractor of the source of recycled/secondary aggregates and that the required amount and quality can be obtained from this source.	Y						To be reviewed as the project progresses.
		TBD											
			-	One Credit - Recycled Aggregates - NOT TARGETED 1. Identify all aggregate uses and types on the project. Refer to credit link for Tables 10.5 and 10.6. 2. Determine the quantity in tonnes for each identified use, aggregate type and source region. Calculate distance by transport type. 3. Complete BREEAM Wst02 Calculator to calculate the Project Sustainable Aggregate points.	4. A copy of the relevant specification or contract clause confirming recycled and secondary aggregate use requirements for the project OR Calculation confirming the amount of recycled or secondary aggregate to be used.	0	0.00%	0	0.00%	0	0.00%		
							0	0.00%	1	0.60%	0	0.00%	
WST 03	Operational Waste		Architect / Client	Outstanding - One credit	One Credit - Operational Waste - LIKELY 1. Centralised waste storage area should be present on site for the segregation and storage of recyclables. 2. The space must be clearly labelled to assist with segregation, accessible to building occupants or facilities operators, and of a capacity appropriate to the building's size and number of occupants. 3. Total area (m2) of the storage area should be an appropriate size to meet BREEAM criteria.	1. Marked up building site plan confirming the location and size of the dedicated recyclable storage area and the storage area for general waste, as well as other waste facilities present. 2. Project team meeting minutes / letter confirming likely building waste streams and indicative volumes.							At least 2m2. The drawings to be provided in Stage 3/4.
			Excellent - One credit Very Good - None	1			0.60%	0	0.00%	0	0.00%		
			Good - None										
							1	0.60%	0	0.00%	0	0.00%	

WST 05	Adaptation to Climate Change	RIBA Stage 2 and 4	Architect / MEP / Structural	N/A	One Credit - Resilience of Structure, Fabric, Building Services and Renewables Installation - LIKELY 1. Conduct a climate change adaptation strategy appraisal using a systematic risk assessment. 2. Develop recommendations or solutions based on the climate change adaptation strategy appraisal, before or during Concept Design. 3. Provide an update during Technical Design demonstrating how the recommendations or solutions proposed at Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing by the assessor.	Provide a copy of the climate change adaptation strategy appraisal. Design drawings / specifications showing specific measures in place at Technical Design.	1	0.60%	0	0.00%	0	0.00%	Wst 05 report has been shared as part of Stage 2 deliverables. A Stage 4 update is needed to award the credit.
							1	0.60%	0	0.00%	0	0.00%	
WST 06	Design for Disassembly and Adaptability	RIBA Stage 2	Architect / MEP / Structural	N/A	One Credit - Design for Disassembly and Functional Adaptability, Recommendation - LIKELY 1. Conduct a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of Concept Design. 2. Develop recommendations or solutions during or prior to Concept Design.	Disassembly and functional adaptability study, implementation plan report, building adaptability and disassembly guide.	1	0.60%	0	0.00%	1	0.60%	Wst 06 report has been shared as part of Stage 2 deliverables.
		RIBA Stage 4	Architect / MEP / Structural		One Credit - Disassembly and Functional Adaptability, Implementation - LIKELY 1. During Technical Design, show how recommendations or solutions proposed by Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing to the assessor. 2. Produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.	1. Evidence showing how these functional adaptation measures have been implemented into the design of the building, e.g. drawings or written narratives. 2. A building adaptability and disassembly guide	1	0.60%	0	0.00%	0	0.00%	A Stage 4 update to the Concept Design Wst 06 report is needed to award the credit.
									2	1.20%	0	0.00%	1
Total Section Score:							6	3.60%	2	1.20%	1	0.60%	

Summary of BREEAM requirements: Land Use and Ecology

Land Use and Ecology												
Issue ref.	Credit title	RIBA Stage	Resp. Party	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
LE 01	Site Selection	N/A	Architect	One Credit - Previously Occupied Land - NOT TARGETED At least 75% of the proposed development's footprint is on an area of land which has previously been occupied by industrial, commercial or domestic buildings or fixed surface infrastructure.	1.Existing site plan and/or site photographs confirming previous land use and area (m ²) of that use. 2. A proposed site plan showing the location and footprint of the proposed development and temporary works.	0	0.00%	0	0.00%	0	0.00%	The proposed project site is known to be on greenfield
			-	One Credit - Contaminated Land - POSSIBLE 1. A site investigation, risk assessment and appraisal have deemed land within the site to be affected by contamination. 2. The site investigation, risk assessment and appraisal have identified the degree and source of the contamination, as well as options for remediation. 3. The client or principal contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan as recommended by the contaminated land professional	1. A copy of the site investigation and assessment report. Evidence of remediation works in compliance with the relevant standards. 2. A copy of the remediation strategy and implementation plan.	0	0.00%	1	1.00%	0	0.00%	No contamination has been identified on site however, laboratory testing will be required to confirm that soils used in the development are suitable for use from a contamination perspective for both human health and controlled waters.
									0	0.00%	1	1.00%
LE 02	Ecological Risk and Opportunities	RIBA Stage 1	Ecologist	Prerequisite - Assessment route selection - LIKELY 1. An assessment route for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist. 2. Compliance is monitored against all relevant UK and EU or international legislation.	Completed copy of Guidance Note 34: BREEAM, CEEQUAL and HQM Ecology Risk Evaluation Checklist.	Y						
			Client / Principal Contractor	Prerequisite - Statutory Obligations - LIKELY The client or contractor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.	Signed off letter from the client to confirm that the contractor shall adhere to all relevant UK and EU or international legislation.	Y						
			-	Route 1: This route is only appropriate where the level of ecological risk associated with the site is of a level that can be addressed with non-specialist knowledge and publicly available resources and information. This would be assessed by completing the Ecological Risk Evaluation Checklist.	Route 1 1. Completed copy of Guidance Note 34: BREEAM, CEEQUAL and HQM Ecology Risk Evaluation Checklist. 2. Design drawings specifications showing the measures put in place to avoid, protect and where possible, enhance biodiversity on site.	0	0.00%	0	0.00%	0	0.00%	
		RIBA Stage 1	Ecologist	Route 2: - LIKELY 1. A Suitably Qualified Ecologist (SQE) is appointed at a project stage. 2. Prior to the completion of the Preparation and Brief project stage, an appropriate level of survey and evaluation has been carried out to determine the ecological baseline of the site. 3. Data are collated and shared with project team to inform the site preparation, design and construction works. 4. During Concept Design, the project team liaise and collaborate with representative stakeholders to identify the optimal ecological outcome for the site. 5. The ecological outcome for the site is determined by identifying, appraising and selecting specific solutions and measures. 6. The optimal ecological outcome for the site is selected after liaising with representative stakeholders and the project team.	Route 2 1. A copy of the Ecological Survey and Evaluation document. A phase 1 habitat assessment or other equivalent type of assessment can act as acceptable evidence as long as it can be shown that they cover the content of the assessment criteria. 2. A copy of the Ecologist's report confirming the measures put in place to avoid, protect and where possible, enhance biodiversity on site. 3. Design drawings / specifications showing these measures in place.	2	2.00%	0	0.00%	1	1.00%	Preliminary Ecological Appraisal Report has been produced. The other credit will be awarded when the BNG and PEAR are shared with Contractor's team to influence decisions made for activities during site preparation, design and construction works.
				Exemplary Criteria: 1. When determining the optimal ecological outcome for the site consider the wider site sustainability-related activities and the potential for ecosystem service related benefits. 2. Achieve HEA07, Pol03 and Pol05		0	0.00%	1	1.00%	0	0.00%	
						2	2.00%	1	1.00%	1	1.00%	

LE 03	Managing Negative Impacts on Ecology		Principal Contractor / Ecologist	Prerequisite - LIKELY 1. Completed LE02 requirements.	1. Design drawings including proposed and existing site plan / survey	Y						
		RIBA Stage 1 or 2	Ecologist	One Credit - Planning, Liaison, Implementation and Data - LIKELY 1. Roles and responsibilities for managing negative impacts on the ecology are clearly defined to influence the Preparation and Brief or Concept Design. 2. Identify the potential impact of site preparation and construction works on ecology. 3. The project team, liaising and collaborating with representative stakeholders and, taking into consideration data collated and shared, have selected measures to be implemented during site preparation and construction works.		1	1.00%	0	0.00%	0	0.00%	The BNG report and PEAR are produced. The credit will be awarded when on-site measures for managing negative ecological impacts are confirmed to be used during site preparation and construction. The credit will be awarded when on-site measures for managing negative ecological impacts during site preparation and construction are implemented in-practice at RIBA Stage 4.
				Up to Two Credits - Managing Negative Impacts One Credit - Route 1: - LIKELY Negative impacts from site preparation and construction works have been managed according to the hierarchy and no overall loss of ecological value has occurred.	Route 1: Refer to GN35 - BREEAM UK New Construction 2018 Ecology Assessment - Route 1 methodology, for further guidance.	0	0.00%	0	0.00%	0	0.00%	
			Ecologist	Up to two credits - Route 2: - POSSIBLE Negative impacts from site preparation and construction works have been managed according to the hierarchy and no net loss of ecological value has occurred OR the loss of ecological value has been minimised.	Route 2: Guidance Note 40: Ecology Assessment Reporting Template can be referred to and used to collate information and evidence for the assessment.	1	1.00%	1	1.00%	0	0.00%	The project will have to provide net gain through off-site enhancements. A robust reason has been provided in BNG report. The credit will be awarded with Stage 4 confirmation.
							2	2.00%	1	1.00%	0	0.00%
LE 04	Change and Enhancement of Ecological Value	N/A	Client / Principal Contractor	Prerequisite - LIKELY 1. Completed LE03 basic requirements. 2. The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.	1. Design drawings including proposed and existing site plan / survey	Y						The project will have to provide net gain through off-site enhancements. A robust reason has been provided in BNG report. The credits will be awarded when it is confirmed that 2.37 BU have been provided through an off-site habitat bank.
				One Credit - Change and Enhancement of Ecology Route 1: 1. The project team, liaising and collaborating with representative stakeholders and have implemented locally relevant ecological solutions. Those are based on recommendations from recognised 'local' ecological expertise and specialist input and guidance.	Route 1: 1. Refer to GN35 - BREEAM UK New Construction 2018 Ecology Assessment - Route 1 methodology, for further guidance.	0	0.00%	0	0.00%	0	0.00%	
			Ecologist	One Credit - Liaison, Implementation and Data Collation Route 2: - LIKELY 1. Solutions and measures implemented enhance the ecological value on site, and where this is not feasible, as well as off site within the zone of influence. 2. Data collated are provided to the local environmental records centres nearest to, or relevant for, the site.	Route 2: 1. Guidance Note 40: Ecology Assessment Reporting Template can be referred to and used to collate information and evidence for the assessment. 2. Calculations according to GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2.	1	1.00%	0	0.00%	0	0.00%	
			Ecologist	Up to Three Credits - Change and Enhancement of Ecology Route 2: - THREE CREDITS LIKELY Credits are awarded based on the calculation of the change in ecological value occurring as a result of the project. This must be calculated accordance to GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2.	Route 2: 1. Guidance Note 40: Ecology Assessment Reporting Template can be referred to and used to collate information and evidence for the assessment. 2. Calculations according to GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2.	3	3.00%	0	0.00%	0	0.00%	
				Exemplary Criteria Calculations in accordance with GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2 must achieve a significant net gain of ecological value (percentage score of 110 or above).	Route 2: 1. Guidance Note 40: Ecology Assessment Reporting Template can be referred to and used to collate information and evidence for the assessment. 2. Calculations according to GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2.	1	1.00%	0	0.00%	0	0.00%	
								5	5.00%	0	0.00%	

LE 05	Long Term Ecology Management and Maintenance	N/A	Client / Principal Contractor / Ecologist	Prerequisite - Roles and Responsibilities, Implementation, Statutory Obligations - LIKELY 1. The client or contractor has confirmed that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site. 2. Completed LE03 criteria 2 or 3 Route 1 or 2. 3. For Route 2, at least one credit under LE 04 for 'Change and Enhancement of Ecology' has been awarded.	Letter confirming compliance with UK/EU Standards.	Y							The credits to be awarded when relevant evidence confirming that the measures have been implemented to manage and maintain ecology throughout the project, and the confirmation that the measures are included in the tenant or building owner information is received in RIBA Stage 4.
			Client / Principal Contractor	One Credit - Management and Maintenance Throughout the Project - LIKELY 1. Monitor and review the effectiveness with which the plans for LE 03 & LE 04 are implemented, as well as review management and maintenance solutions. 2. Monitoring and reporting of the ecological outcomes for site implemented at the design and construction stage, as well as the outcomes from the project. 3. Maintaining the ecological value of the site and its relationship or connection to its zone of influence. 4. Maintaining the site in line with the any sustainability linked activities, e.g. ecosystems benefits (LE 02). 5. Remedial or other management actions are carried out which relate to those identified in LE 02, LE 03 and LE 04. 6. Include a section on Ecology and Biodiversity in the tenant or building owner information supplied to inform the owner or occupant of local ecological features.	BREEAM compliant Ecology Report Copy of the tenant or owner information.	1	1.00%	0	0.00%	0	0.00%		
			Ecologist	One Credit - Landscape and Ecology Management Plan Development - LIKELY 1. Landscape and ecology management plan is developed in accordance with BS 42020:2013 Section 11.11 covering as a minimum the first five years after project completion.	A BREEAM compliant Landscape and Ecology Management Plan	1	1.00%	0	0.00%	0	0.00%		
								2	2.00%	0	0.00%	0	
Total Section Score:						11	11.00%	3	3.00%	1	1.00%		

Summary of BREEAM requirements: Pollution

Pollution											
Issue ref.	Credit title	Resp. Party	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
POL 01	Impact of Refrigerants	MEP (Mechanical)	Prerequisite - LIKELY All systems with electric compressors comply with the requirements of BS EN 378:20161 (parts 2 and 3).	1. Copies of the relevant specification clauses confirming either the absence of refrigerant in the development or the types of refrigerant to be used. Manufacturer's information confirming the GWP of each refrigerant. 2. Completed copy of the Pol 01 calculator tool 3. Documentary evidence supporting the data used to complete the calculator tool. 4. Specification detailing the leak detection system.	Y						
			Up to Two Credits - Impact of Refrigerants Two credits The direct effect life cycle CO ₂ equivalent emissions (DEL _C) of ≤100 CO ₂ -eq/kW. OR All refrigerants used have a global warming potential (GWP) ≤10.		0	0.00%	1	0.67%	0	0.00%	
		MEP (Mechanical)	One credit - LIKELY Systems using refrigerants have a DEL _C of ≤1000kgCO ₂ -eq/kW cooling and heating capacity.		1	0.67%	0	0.00%	0	0.00%	100120806-MM-ZZ-EG-GA-MD-5001 MEP General Specs confirms that calculation and specification of refrigerant using systems will have DEL _C of less than 750 kgCO ₂ e/kW. Stage 4 drawings and specs to be provided by the Contractor to close out the credit.
		-	One Credit - Leak Detection - LIKELY 1. All systems are hermetically sealed or only use environmentally benign refrigerants. OR Systems have a permanent automated refrigerant leak detection system. OR An inbuilt automated diagnostic procedure for detecting leakage is enabled. 2. In the event of a leak, the system must be capable of automatically responding and managing the remaining refrigerant charge to limit loss of refrigerant.		1	0.67%	0	0.00%	0	0.00%	MM BREEAM team has been informed that this is noted and will be included in the specs. Stage 4 drawings and specs to be provided by the Contractor to close out the credit.
						2	1.33%	1	0.67%	0	0.00%
POL 02	Local Air Quality	MEP (Mechanical)	Up to two credits - TWO CREDITS LIKELY All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity. OR Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the levels set in Table 12.4 and Table 12.5. (Refer to credit link)	1. Relevant specification clauses confirming the type of heating system(s) installed. 2. Manufacturer's details confirming NO _x emissions rate in mg/kWh and VOC emissions in mg/m³.	2	1.33%	0	0.00%	0	0.00%	All heating and hot water is supplied by electricity. RIBA Stage 4 specs are needed to award the credit.
					2	1.33%	0	0.00%	0	0.00%	

POL 03	Flood and Surface Water Management	Civil Engineer	Prerequisite - LIKELY An appropriate consultant is appointed to carry out and demonstrate the development's compliance with all criteria.	Consultant provides confirmation statement as to how they comply with the BREEAM requirements.							
		Civil Engineer	Up to Two Credits - Flood Resilience Two Credits - Low Flood Risk - LIKELY A site-specific flood risk assessment (FRA) confirms the development is in a flood zone that is defined as having a low annual probability of flooding for all current and future sources of flooding.	1. A copy of the flood map or flood risk assessment confirming the flood zone or annual probability of flooding in the site location. 2. A copy of the flood risk assessment and site plans confirming: the design flood level for the site; the design ground levels for all developed areas of the site; safe access and escape routes. 3. Correspondence from the appropriate statutory body confirming a reduced annual probability of flooding due to flood defences where applicable.	2	1.33%	0	0.00%	2	1.33%	It has been confirmed in Flood Risk Report that the site is in Flood Zone 1.
			One Credit - Medium or High Flood Risk 1. A site-specific FRA confirms the development is in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain. 2. The final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2017		0	0.00%	0	0.00%	0	0.00%	
			Two Credits - Surface Water Run-off Prerequisite: Surface water run-off design solutions must take account of the specific site requirements and natural or man-made environment of and surrounding the site. One Credit - Surface Water Run-Off, Rate - LIKELY 1. Calculations for drainage measures include an allowance for climate change. 2. Refer to credit link for further detailed explanation of different site requirements. 3. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified Sustainable Drainage Systems (SuDS) are in place.	Consultant's report containing all information necessary to demonstrate compliance including: 1) Type and storage volume (L) of the drainage measures. 2) Total area of hard surfaces (m2) 3) Peak/volume flow rates (l/s) pre and post development for the return periods. 4) Additional allowance for climate change designed into the system. 5) Impact on the building of flooding from local drainage system failure.							
		Civil Engineer	One Credit - Surface Water Run-Off, Volume - LIKELY 1. Flooding of property will not occur in the event of local drainage system failure. 2. Drainage design measures are specified so that the post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. OR Drainage design measures are specified so that the post-development peak rate of run-off is reduced to the limiting discharge.		1	0.67%	0	0.00%	1	0.67%	It is confirmed in Floor Risk Analysis in Section 4.3 that the run-off will be developed to mimic the natural drainage systems.
		Civil Engineer			0	0.00%	1	0.67%	0	0.00%	If this credit is sought to be achieved, The following needs to be confirmed in RIBA Stage 4: Drainage design measures are specified so that the post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. This must be for the 100-year 6-hour event, including an allowance for climate change. If this is not possible, then:
		Civil Engineer	One Credit - Minimising Watercourse Pollution - LIKELY 1. There is no discharge from the developed site for rainfall up to 5mm (confirmed by the Appropriate Consultant). 2. In areas with a low risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques.	1. Consultant's report detailing the design specifications, calculations and drawings to support the 5mm rainfall discharge criteria. Design drawings and/or relevant section/clauses of the building specification or contract indicating: 1) High and low risk areas of the site 2) Specification of SUDS, source control system soil/petrol interceptors and shut off valves as appropriate. 2. Confirmation is required within the reports confirming that water pollution prevention systems are designed in accordance with PPG3 and the SUDS manual (where appropriate).	1	0.67%	0	0.00%	0	0.00%	The Stage 4 specifications and calculations will be needed to close out the credit.
					4	2.67%	1	0.67%	3	2.00%	
POL 04	Reduction of Night Time Light Pollution	MEP (Electrical)	One credit - Reduction of Night Time Light Pollution - LIKELY 1. The external lighting strategy has been designed in compliance with Tables 3-8 (and their accompanying notes) of the ILP Guidance notes for the Reduction of Obtrusive Light, 2020. 2. All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00. 3. If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in the ILP's Guidance notes.	1. Design drawings, along with the relevant section / clauses of the specification or alternatively the external lighting design data / calculations. 2. M&E engineer to provide indicative examples of where and how the external lighting design strategy complies with the assessment criteria.	1	0.67%	0	0.00%	0	0.00%	MM Electrical Team confirmed on 28/11/2024 that external lighting design will aim to suit pedestrians and bats. Night time pollution will be avoided where applicable. RIBA Stage 4 design drawings and specs to be provided by the Contractor to award the credit.
					1	0.67%	0	0.00%	0	0.00%	
POL 05	Reduction of Noise Pollution	Acoustician	One Credit - Reduction of Noise Pollution - LIKELY 1. When there are no noise-sensitive areas within 800m of the development OR 2. A noise impact assessment should be undertaken by a qualified acoustician in compliance with BS 4142:2014 to measure existing background noise levels and rate the noise level resulting from the new development. 3. Acoustician to be appointed and carry out this assessment.	1. A copy of the acousticians report to include the acoustician's qualifications and professional status 2. Relevant specification clauses requiring a noise assessment in compliance with BS 4142:2014 by a suitably qualified acoustician; OR Formal written confirmation from the design team confirming the same.	1	0.67%	0	0.00%	1	0.67%	The noise impact assessment has been provided. It concludes that the mechanical plant shall be designed in accordance with the assessment results: the plant should achieve the rating levels of 35dB during daytime and 25dB at night any nearby residence.
					1	0.67%	0	0.00%	1	0.67%	
Total Section Score:					10	6.67%	2	1.33%	4	2.67%	

Summary of BREEAM requirements: Innovation

Innovation											
Issue ref.	Credit title	Resp. Party	Key actions	Evidence Required	Likely credits	Impact on final score (Likely)	Possible credits	Impact on final score (Possible)	Secured Credits	Impact on final score (Secured)	Notes and comments
<u>Innovation</u>	Innovation	Principal Contractor	<u>Man 03 Exemplary Performance</u> - POSSIBLE	As defined within existing BREEAM issues. One innovation credit can be awarded for each innovation application approved by BRE Global, where the building complies with the criteria defined within an Approved Innovation application form.	1	1.00%	0	0.00%	0	0.00%	
Total Section Score:					1	1.00%	0	0.00%	0	0.00%	

Issue and revision record

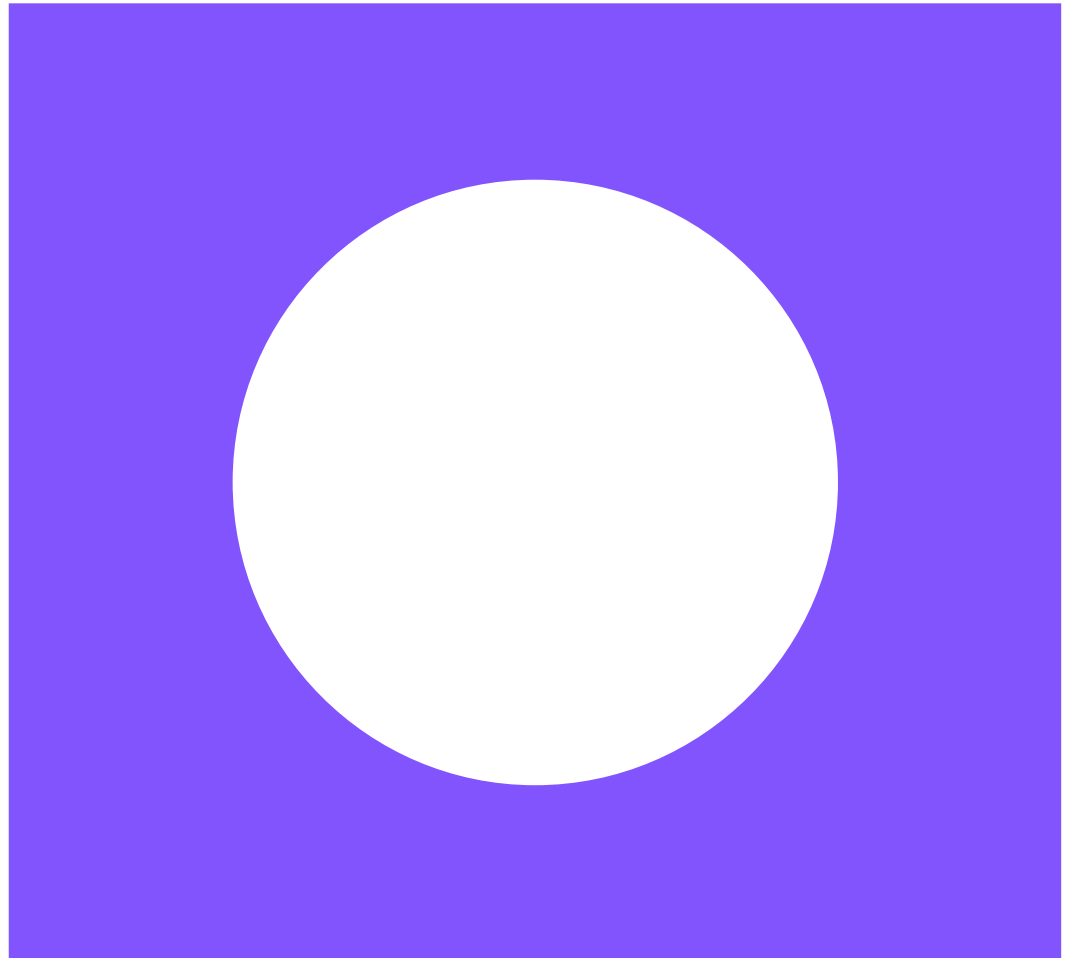
Revision	Date	Originator	Checker	Approver	Description
Rev 01	31/10/2024	SD	LA	LA	Pre-Assessment
Rev 02	20/12/2024	SD	LA	LA	RIBA Stage 3 Draft Report
Rev 02a	20/01/2025	SD	LA	LA	RIBA Stage 3 Report

Issued by:

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Appendix 2



QVH CDCs - East Grinstead

RIBA Stage 3 Report - Net Zero

January 2024

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RIBA Stage 3 Report - Net Zero

January 2024

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
P01		K Williams	H Lovelady	J Hamill	Stage 3 issue

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Executive summary

This report was originally produced at RIBA stage 2 to outline the building performance targets and carbon performance to date of the project to align with the NHS Net Zero Building Standard (NZBS)¹. Although East Grinstead CDC is not required to comply with the NZBS, it will be used to align with industry best practice. Furthermore, this report identifies low carbon design solutions to support net zero principles. The upfront carbon and operational energy limits have been summarised as follows.

This report is an updated version of the original RIBA 2 report (100120806-MM-ZZ-EG-RP-MD-0001), and has been updated to include results from the embodied carbon assessment at RIBA stage 2 and Part L compliance assessment at RIBA stage 3.

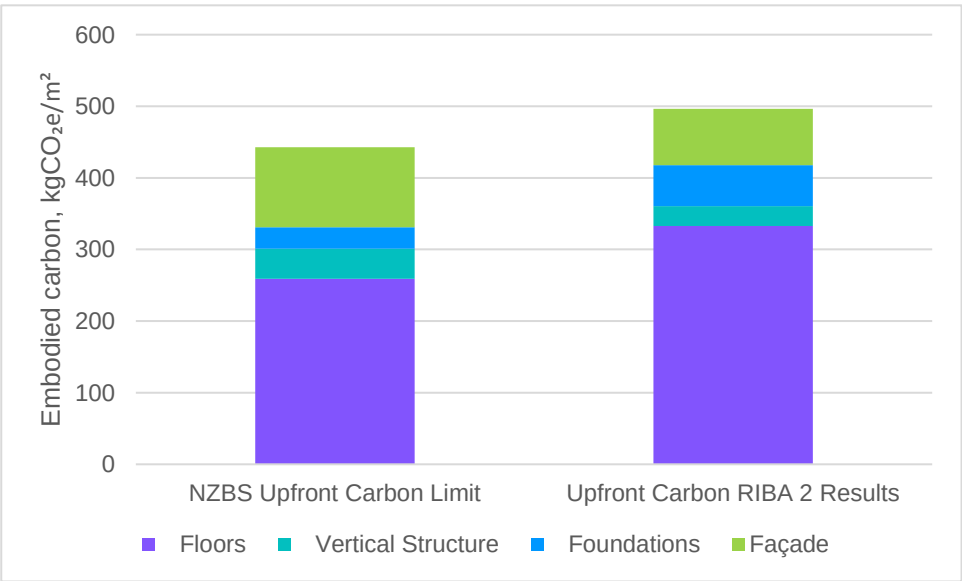
Upfront carbon

The upfront carbon targets have been established using the NZBS Whole Life Carbon Compliance (WLC) Tool and should be used as a guidance to reduce the impact of embodied carbon. At RIBA stage 2, an embodied carbon assessment was conducted using One Click LCA, aligned to the requirements of BREEAM Mat 01. The results of this study and the upfront carbon limit generated using the NZBS tool are summarised below.

Table 0.1 Upfront carbon [A1-A5] limits

	tCO ₂ e	kgCO ₂ e/m ²
Upfront Carbon [A1-A5] Limit	350	443
RIBA 2 Upfront carbon (Tier 1 elements)	390	500

Figure 0.1: Performance against NZBS upfront carbon target



¹ The NHS Net Zero Building Standard: NHS England » NHS Net Zero Building Standard (2022)

Operational energy

The Operational Energy and Carbon Compliance Tool (OE&C) was used to establish an energy limit for the East Grinstead CDC. This includes regulated energy limits for low, medium and high-tech spaces and domestic hot water (DHW) for low tech spaces only.

These limits should be met and demonstrated through dynamic simulation modelling (DSM) in accordance with TM54 in the following design stages. DSM calculates the predicted annual operational energy based on the proposed design.

Table 0.2 Operational energy limits

Energy use	Item	Limit	Unit
	Total energy limit	28,324	(kWh/yr)
	Total regulated energy (without DHW)	44.0	(kWh/m²/yr)
	Total unregulated energy	45.0	(kWh/m²/yr)

Following this design stage, the design team should consider low carbon solutions in order for East Grinstead CDC to meet these targets.

The net zero team has carried out an embodied carbon assessment to check compliance with upfront carbon limits. TM54 operational energy modelling should be carried out at the next stage to ensure compliance with operational energy limits.

1 Introduction

Mott MacDonald have been appointed by Queen Victoria Hospital (QVH) to support in aligning the proposed East Grinstead CDC with the NHS Net Zero Building Standard (NZBS).

The project proposals are being developed to an outline business case (OBC) level of design; considering the clinical functionality, site constraints and engineering technical performance criteria. This generally equates to a RIBA stage 2 level of design from all disciplines.

The net zero carbon (NZC) strategy deliverables and approach may be mapped against the RIBA, NHS, Construction Playbook and Building Safety Act gateways and development stages as shown in Figure 1.2.

This report aims to establish the necessary operational energy and upfront carbon project limits in line with the NZBS and has been developed to support the approach taken by QVH for the CDC project. Results of the embodied carbon assessment conducted at RIBA stages 2 and 3 are also summarised within the report.

This report considers the following principles in alignment with the NZBS recommendations:

- Background to the NZBS;
- Setting of roles and responsibilities;
- Approach to assessment;
- Setting targets/benchmarks for good practice;
- Provide details of the NHS NZC toolkits outputs;
- Design principles to support net zero.

This document also references the QVH NZC targets as informed by their Green Plan².

1.1 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.

For the NHS to achieve **net zero**, two targets have been developed as shown in Figure 1.1:

- Net zero by 2040 for direct emissions (**NHS Carbon Footprint**)
- Net zero by 2045 for indirect emissions (**NHS Carbon Footprint Plus**)

These targets will be key to informing design decisions in order to reduce embodied and operational carbon impacts of East Grinstead CDC.

² Queen Victoria Hospital. NHS Foundation Trust: Our Green Plan (2022)

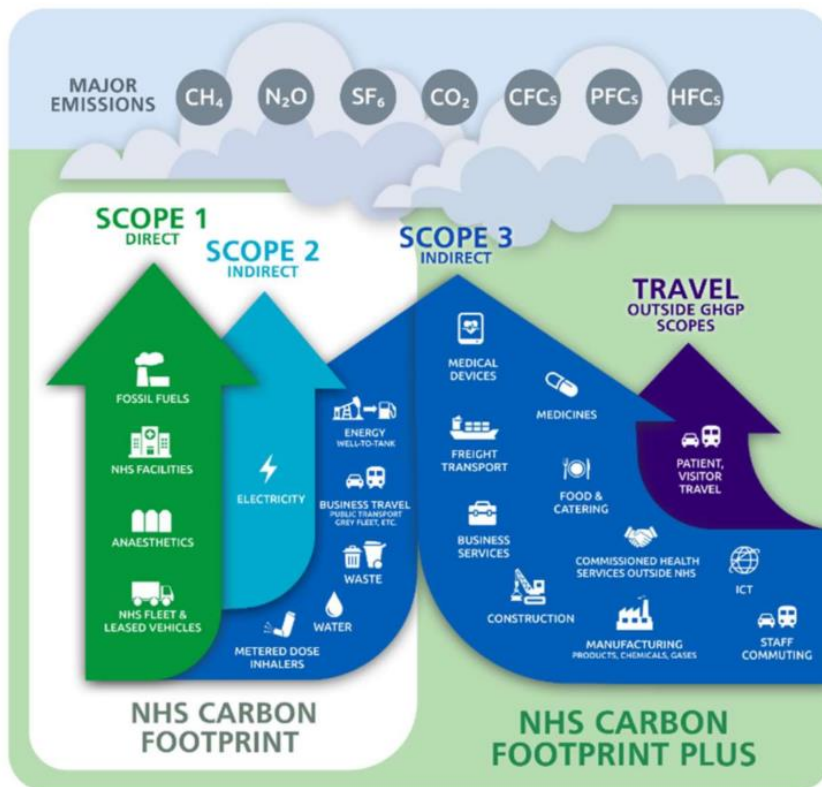


Figure 1.1 NHS Carbon Footprint

1.2 QVH Green Plan

The QVH Green Plan commits to a goal of NZC and has been set out to decarbonise the Trust's activities and services. Some of the key actions include:

- Interim target: 57% reduction in direct emissions by 2025 against 2016/17 baseline
- Electricity consumption to be from renewable energy sources and exploring opportunities for renewable gas;
- Utilise energy efficient systems and effective control strategies;
- Develop a strategy for sub-metering to improve data coverage;
- A consideration for reducing impact from new construction including embodied carbon.

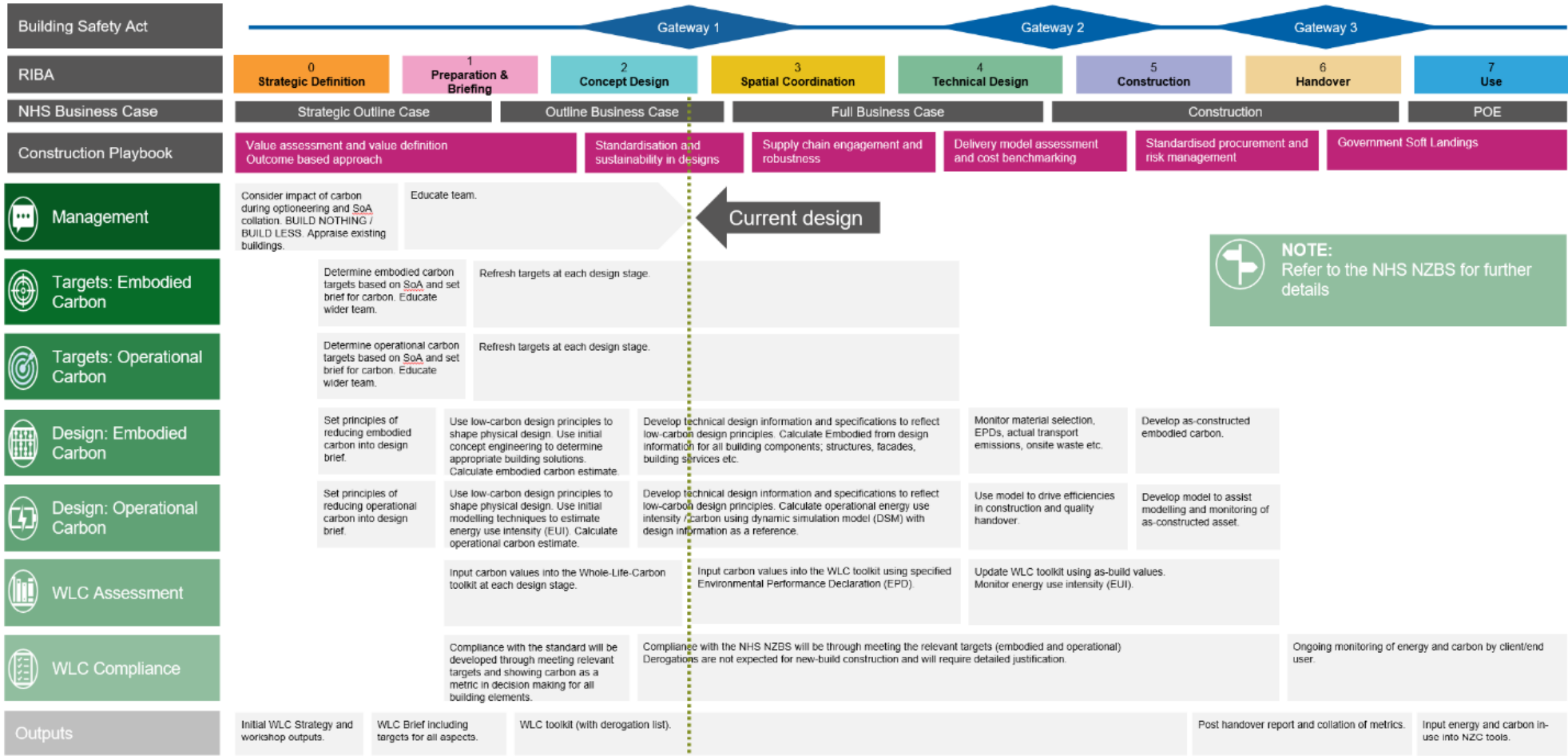


Figure 1.2 Net zero carbon workflow

1.3 NHS Net Zero Building Standard

The NZBS has been created to set out the vision for achieving whole life net zero carbon buildings in healthcare whilst also providing a roadmap and a clear set of performance criteria for reducing building operational 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 targets for operational energy and embodied 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, 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.

Although the NZBS compliance does not apply to the East Grinstead CDC, the standard will be used to align with project with industry best practice.

2 Methodology

2.1 Whole life carbon

The targets in the NZBS are established and calculated using industry standard methodology and are in line with RICS Whole Life Carbon Assessment for the Built Environment Approach³. The diagram illustrates the scope of whole life assessment based on BS EN 15978, stages of life cycle assessment with typical scope boundaries drawn.

- **Modules A1–A5 – Upfront carbon** represents the product and construction stages (excluding enabling works) which are the most significant of the lifecycle stages;
- **Modules B1–B5 – In-use embodied carbon** represents the carbon associated with refrigerant leakage, maintenance, repair, replacement and refurbishment which is a key consideration for systems with high replacement cycles and low durability;
- **Modules B6–B7 – In-use operational carbon** represents the carbon associated with the operational energy and water usage of a building;
- **Modules C1–C4 – End of life carbon** represents the carbon associated with deconstruction and demolition of a built assets;
- **Module D – Beyond the lifecycle** – this represents the carbon associated with potential benefit from future energy recovery, reuse, and recycling of materials.

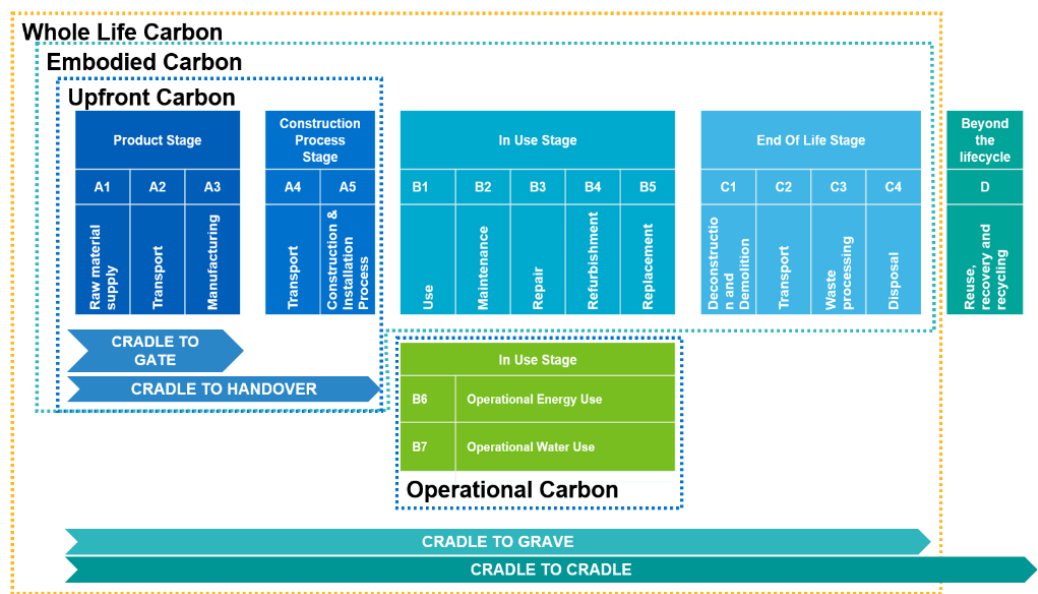


Figure 2.1 Whole life carbon defined

³ RICS Whole Life Carbon Assessment for the Built Environment Approach Whole life carbon assessment (WLCA) for the built environment (rics.org)

2.2 Establishing limits

The upfront carbon and operational energy limits are set using the approach outlined in the NZBS and by using:

- Schedule of accommodation
- General arrangement plan review

These are used to complete the space type allocations in the OE&C Tool which calculates the energy limits for the proposed schedule of accommodation.

The outputs and summary of these spaces is then calculated using the WLC Tool to calculate the upfront carbon limit for the scheme.

2.3 Space types

Spaces within the NZBS toolkits are defined as support, low, medium and ultra-high tech. These space types typically link to the level of energy usage associated within each of the spaces. For example, low-tech spaces such as offices have lower energy usage than high-tech spaces such as operating theatres. The space type definition and breakdown is shown in **Error! Reference source not found.**

Clinical accommodation

- **Medium Tech:**
 - Type 1 – consulting/exam/treatment work areas and intensive care units that are occupied 24 hours a day;
 - Type 2 – treatment work areas that are occupied during the day e.g. Outpatients treatment;
 - Type 3 – consulting work areas that are occupied during the day e.g. Outpatients consultations;
 - Type 4 – bed areas that are occupied 24 hours a day including single rooms and multiple person wards.
- **High Tech Types 1 and 2:** operating theatre suites and laboratories.
- **Ultra-High Tech:** high energy demand areas such as imaging suites (CT, X-Ray and MRI scanners).

Non-clinical accommodation

- **Low Tech Types 1 and 2:** reception areas, non-departmental circulation, offices and ancillary spaces.
- **Support Types 1-3:** catering, server rooms, plant rooms and stores.

				
Low Tech	Medium Tech	High Tech	Ultra High Tech	Support
Non-clinical spaces such as circulation, entrance, office, teaching and waiting spaces	Clinical spaces such as consult exam, treatment and ward spaces	Clinical spaces such as operating theatres	Clinical spaces such as imaging and laboratory spaces.	Non-Clinical spaces such as plant and building services spaces
Characteristics: Lightly serviced, could be naturally lit or ventilated. Similar characteristics to non-healthcare building typologies (retail, commercial). Light-medium loaded with non-onerous floor vibration criteria.	Characteristics: Medium services requirement, 6-10Air-change-rates (ACR) typical. Large services voids required in corridors. Likely to require background lighting with some spaces needing daylight controls. Light-medium loaded with some spaces requiring onerous floor vibration criteria.	Characteristics: Heavily serviced; 10+ Air-change-rates (ACR) typical. Large services voids required in corridors and within spaces. High energy requirements due to equipment with all spaces requiring lighting and daylight controls. Medium to heavy loading with spaces requiring onerous floor vibration criteria.	Characteristics: Heavily serviced; 10+ Air-change-rates (ACR) typical. Large services voids required in corridors and within spaces. High energy requirements due to equipment with all spaces requiring lighting and daylight controls. Medium to heavy loading with spaces requiring onerous floor vibration criteria.	Characteristics: Unheated back-of house spaces. No specific requirements

Figure 2.2 Definition of space types

To establish benchmark targets for operational carbon, NZBS groups spaces into different usage typologies as identified below. Extensive NZBS benchmarking data is then used to generate operational energy and upfront carbon limits for each space type and the overall building. **Error! Reference source not found.** below shows the space type breakdown based of the schedule of accommodation for East Grinstead CDC.

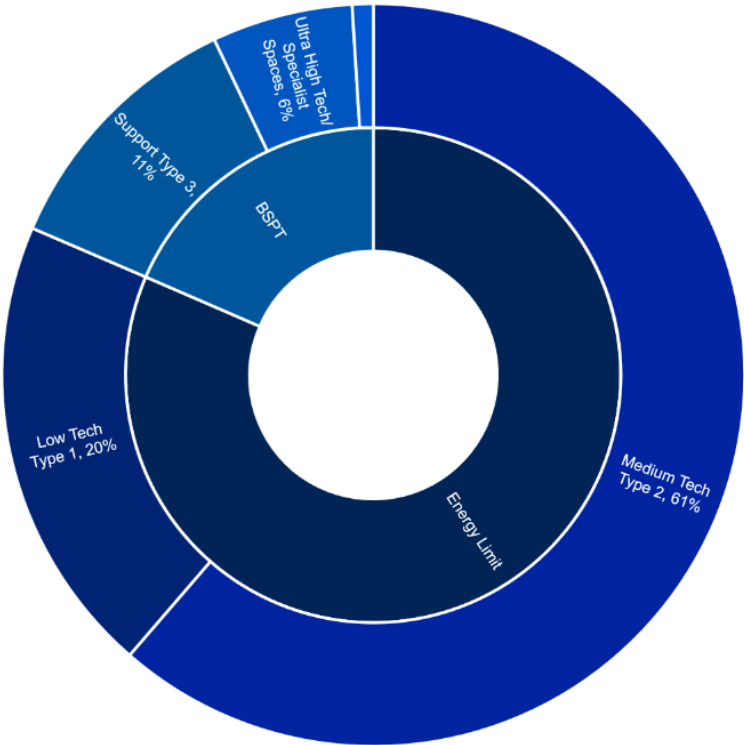


Figure 2.3 East Grinstead space type breakdown

2.4 Upfront carbon

The NZBS targets whole life carbon (WLC) on the journey to net zero healthcare. With respect to reducing the embodied carbon associated with construction of new buildings, the NZBS uses a project bespoke upfront carbon limit for a number of elements, classified as tier 1. The limit is applied to building elements where there is a robust and known dataset within the construction industry, to ensure reporting can be undertaken.

For this reason, the NZBS sets limits for only the following elements within the WLC tool. The remaining elements are to be reported on as part of WLC reporting to monitor progress and develop the robust methodology required to achieve the 'low carbon' goals of the project.

- Superstructure – floor structure (A1-A5)
- Superstructure – vertical structure (A1-A5)
- Substructure – foundations (A1-A5)
- Substructure – basements (A1-A5)
- Façades (A1-A5)

Considerations at early design stages have the greatest impact on reducing embodied carbon, however there are significant opportunities to be included at OBC and FBC that have been developed by the design team.

The embodied carbon hierarchy shown in Figure 2.4 provides a useful framework to enable decision making regarding reduction of embodied carbon. The hierarchy proposes the following strategies:

Build nothing – use of existing built assets;

Build less – maximise space utilisation and challenge the brief;

Build clever – use smart materials and techniques to reduce embodied carbon;

Waste Less – use prefabrication to reduce on site waste as well as MMC to improve efficiency and productivity of construction.

Figure 2.4 Embodied carbon hierarchy

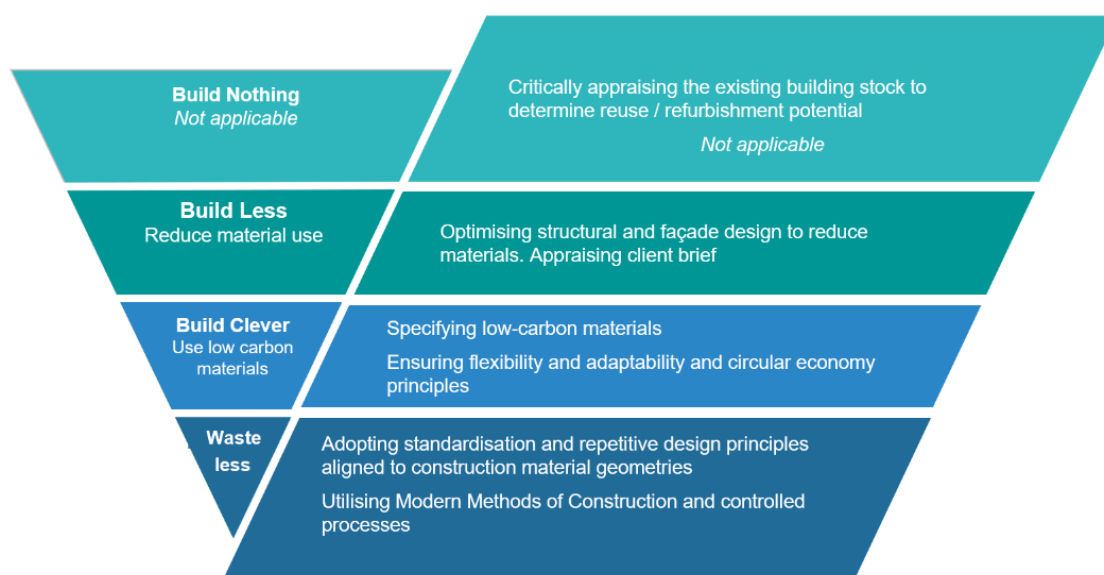


Table 2.1 provides additional detail on the low carbon solutions that may be explored following current design stage in line with the embodied carbon hierarchy.

Table 2.1 Low carbon solutions for reducing embodied carbon

Solution	Description
Build Less	
Briefing	It is important to optimise the briefing for high performance requirement spaces. Highly flexible floor plates will come at a carbon cost.
Grid structure	Optimised grids should be considered to limit the embodied carbon. Regular grid arrangements than align with the efficiency of the particular material are preferred. Designs should be optimised to meet the internal layouts, provide long-term flexibility and minimise carbon.
Landscape elements	Landscape elements should be pragmatic and avoid significant increases in embodied carbon
Vibration	Healthcare environments contain a multitude of specialist functions that have very specific vibration criteria that can influence the structural design and therefore embodied carbon. It is important that the design is optimised to suit the performance requirements.
Finishes	Applied non-structural finishes, such as non-structural screeds, can have a significant carbon impact. These should be minimised where possible to avoid additional carbon.
Façade materials	Façade treatment should be optimised to reduce amount of material used.
Build Clever	
Design for flexibility	The use of regular structural grids promotes flexibility, and the design of the stability system enables flexible arrangement of modules. The structural design loading and vibration requirements must allow for change of use of space within same category (or lower technology group). The design for now and strengthen later approach to lean design must be taken for converting spaces to higher tech.
Low carbon materials	Low carbon materials such as cement and concrete replacements
Material locality	The design needs to explore the use of low carbon materials as much as economically possible; in the façade, timber in the floors and roofs where its use is appropriate.
Component Circularity	Circular design principles should ideally be employed to allow future deconstruction and reuse.
Waste Less	
Use modern methods of construction (MMC)	MMC is a methodology to evolve construction from traditional ways of working to those that increase value across the supply chain, focusing on off-site construction techniques such as mass production and factory assembly.
Minimise construction waste	Reducing construction waste is a key outcome from the MMC principles and embodied carbon hierarchy. This can be through efficient design at early stages to construction and manufacturing processes.

At RIBA stage 2, an embodied carbon assessment of the design was undertaken, aligned to the requirements of BREEAM Mat 01, to compare the current performance against the targets and ensure compliance. This assessment was conducted using the calculation software One Click LCA and covered superstructure and substructure of the proposed CDC building, however emissions associated with building services, hard landscaping, finishes, fixtures, fittings and equipment, and other elements were excluded.

In line with the requirements of BREEAM and the NZBS, it is recommended that a further assessment is carried out at RIBA stage 4 and on completion to monitor progress and verify the final impact of the design.

2.5 Operational energy

The NZBS aims to reduce operational energy and associated carbon emissions for healthcare buildings through a bespoke project energy limit and implementation of whole building and installed building services performance targets as detailed below.

Building Performance Targets:

- Envelope – U- values, air tightness, glazing parameters;
- Metering and monitoring of energy systems;
- Refrigerant global warming potential (GWP);
- Domestic Hot Water (DHW) efficiencies.

Energy Limits:

- Based on space type, location, equipment and DHW demand;
- Regulated energy: lighting, heating, cooling and ventilation.
- Advisory limits for DHW and unregulated loads;
- Unregulated: TVs and monitors and equipment.
- Applicable to low, medium and high-tech spaces;
- Ultra-high tech and support spaces are expected to align with the building services performance targets (BSPTs) outlined in the NZBS.

Following this design stage, energy modelling should be used to provide an anticipated energy consumption for the building and check compliance against energy limits. Typically to assess the performance of a scheme in terms of operational energy, dynamic simulation modelling (DSM) in accordance with TM54 methodology is used. This produces both an anticipated energy use intensity (EUI) as well as fabric performance values.

Other documents that should be submitted as part of operational energy compliance are:

- Part L modelling;
- Thermal Energy modelling;
- Monitoring and verification strategy;
- Renewables strategy.

Operational Energy Hierarchy

The energy hierarchy in Figure 2.5 outlines the approach to reducing operational energy. This approach should be followed in order to enable energy limits to be reached. The elements are defined as:

- **Be Seen:** in use energy metering, monitoring and verification to understand energy use and system operation;
- **Be Lean:** reduce energy demand and CO₂e emissions adopting a fabric first approach. Review efficiencies of installed services such as heat recovery and ventilation systems;
- **Be Clean:** supply energy efficiently and cleanly by switching away from fossil fuels as the primary energy source;
- **Be Green:** maximise renewable energy generation and storage to reduce grid demand and CO₂e emissions.

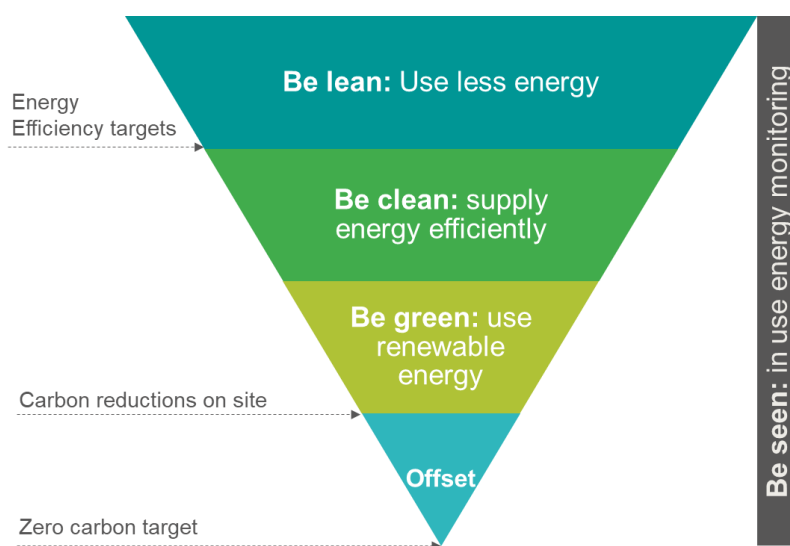


Figure 2.5 Energy hierarchy

Table 2.2 provides additional detail on the low carbon solutions that may be explored at the next design stage in line with the energy hierarchy.

Table 2.2 Low carbon solutions to reduce operational energy

Solution	Description
Be Seen	
BMS and monitoring systems	A BMS is a centralised control system that monitors, automates, and optimises various aspects of a building's operations, including HVAC, lighting, security, and more. It collects real-time data from sensors and devices throughout the building to enable functions like energy management, fault detection, and remote access.
Seasonal commissioning and annual review	Seasonal commissioning and annual performance reviews are required as part of the NZBS, BREEAM and Government Soft Landings (GSL). A commissioning plan should be produced to support the design, construction, and eventual operation of a project that meets the project requirements for energy, water, indoor environmental quality, and durability, as well as best practice access provision for operation and maintenance. A schedule of commissioning and testing in accordance with current Building Regulations, BSRIA and CIBSE guidelines is advised to be provided alongside the plan.
Post occupancy evaluation (POE)	Post occupancy evaluation is the process of obtaining and reviewing feedback from a buildings user(s) on a building's performance during operation. This should be carried out annually for the first 3 years of occupation as part of the NZBS and Soft Landings requirements with the option to align with BREEAM requirements
Be Lean	
Fabric performance	The building fabric should be designed to align with the NZBS targets of thermal performance, thermal bridging and air tightness.
Natural and hybrid ventilation	Opportunities for natural and hybrid ventilation systems should be optimised where practical. This may not always be possible due to the nature of the occupation of the building and compliance with HTMs.
Glazing performance	The glazing performance must be chosen to balance the natural light with solar gain. Double glazing is most advisable, however for some primary care facilities it can be more advantageous to install triple glazing.

Solution	Description
Lighting performance, lighting occupancy (PIR) and daylight controls	LEDs are highly efficient, durable and have a long lifespan compared to traditional incandescent or fluorescent bulbs. Motion sensors for LED lights are devices that detect movement within their vicinity and trigger the lights to turn on or off accordingly. Lighting controls include systems such as presence detection, photocells and dimming. These can reduce lighting energy use based on occupancy and outdoor conditions.
HVAC efficiency	Ventilation systems should be designed with specific fan powers (SFPs) aligned with the NZBS for ultra high and support type spaces as required in the NZBS. Distribution losses should be minimised as much as possible.
Refrigerants	Specification of refrigerants utilised in the building with both a low global warming potential (GWP) and direct effect lifecycle (DELCL).
High efficiency heat recovery	Heat recovery should be from low-grade heat sources including within the air distribution system(s) and from large clinical equipment.
HVAC controls and demand management control	Use of smart BMS and energy management system to optimise plant operation. Load management can optimise time of use and peak load.
Be Clean	
Net zero carbon aligned energy supply solutions	These include electric solutions such as air source heat pumps (ASHPs), water source heat pumps and ground source heat pumps (GSHP).
Low temperature heat distribution networks	Lower operating temperature heat distribution can enable higher efficiency of heat generating plant such as heat pumps.
Offsite district heating networks (DHN)	District heat networks (DHNs) distribute energy from a central energy centre to surrounding buildings. The energy can be used for space heating and domestic hot water. These systems can cover varying area sizes, from hospital/ university sites to city centres with the distribution typically underground. The energy source can be a heat pump, power plant, waste incinerator or geothermal systems.
Other emerging technologies	These technologies include the use of hydrogen and biofuel, combined heat and power (CHP) systems, and hydrogen fuel cells within the existing infrastructure decarbonisation planning.
Be Green	
Renewable energy generation on site	The most common photovoltaic (PV) technology uses solar cells to convert solar energy into electricity. Hybrid silicon solar panels can generate DHW as well. Whilst these are the most efficient panels due to hot water production maintaining a cooling effect on the PV panels, they are significantly more expensive and have considerable weight impacts as well. Solar thermal uses solar energy to generate DHW using solar collectors. There are two main types of solar collectors, flat plate, and evacuated tubes, with the latter being more efficient but also more costly. The heat from these collectors is used to heat a storage tank of water. Therefore, this system requires a hot water plant close to the generation to minimise losses.
On-site storage	Battery storage can be used for the reduction of peak demand and grid connected battery storage projects are becoming commercially viable for many applications.

Operational energy modelling has not been conducted at RIBA stages 2-3. It is recommended that modelling is undertaken to determine the performance against NZBS targets at RIBA stage 4 and on completion. This will also support the attainment of BREEAM credits.

3 Results

3.1 Upfront carbon

The WLC Tool has derived an upfront carbon limit (modules A1 – A5) using the space allocations and the massing of the scheme for the East Grinstead CDC building with the results presented in Table 3.1. The total upfront carbon limit is approximately **350 tCO₂e, equivalent to 443 kgCO₂e/m²**. The limit is split by structural and façade elements. The SCORS Benchmark Rating for structural limit is “E” ⁴.

An embodied carbon assessment and options appraisal was conducted based on the RIBA 2 design, the results of which are detailed in the QVH East Grinstead BREEAM Mat 01 Options appraisal summary document (100120806-MM-ZZ-EG-RP-MD-0001). The total embodied carbon of the substructure and superstructure of the chosen option is **570 kgCO₂e/m²**, with the upfront carbon of elements covered by the NZBS target totalling **500 kgCO₂e/m²**. The total embodied carbon for the building will be higher than that estimated here, as elements including building services, hard landscaping and finishes have not been assessed.

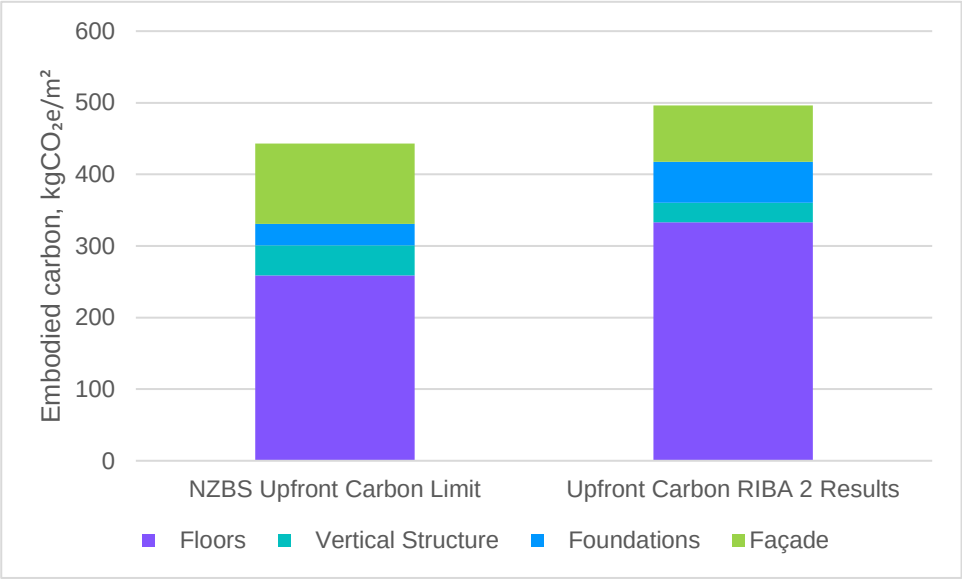
A summary of the upfront carbon results for building elements covered by the NZBS upfront carbon target is tabulated below. All results are rounded to two significant figures and include a 15% uncertainty uplift. The current design exceeds the NZBS upfront carbon limit by over 10%. This is due to the design of the floors and foundations exceeding the NZBS target.

Table 3.1 Embodied carbon results

Building element	NZBS Upfront Carbon Limit		RIBA 2 Upfront Carbon Assessment Results	
	kgCO ₂ e	tCO ₂ e	kgCO ₂ e	tCO ₂ e
Total	443	350	500	390
Structural	331	261	420	330
Floors (incl. roof)	259	205	330	260
Vertical Structure	42	33	28	22
Foundations	30	24	57	45
Façade	112	88	79	62

⁴ SCORS Rating is not mandatory and is provided for information only. The rating includes structure and substructure elements only.

Figure 3.1 Upfront carbon results split by building element



The detailed results from the WLC Tool can be found in Appendix A1.

3.2 Operational energy

The OE&C Tool has determined an energy limit for the East Grinstead CDC building as shown in Table 3.2. The regulated and unregulated operational energy limit is **44.0 and 45.0 kWh /m²/year** respectively with a total energy usage limit of **28,324 kWh/year**. Table below also presents the limits for fabric U-values, air tightness and glazing parameters in accordance with the NZBS.

Table 3.2 Operational Energy Limits

Item		Performance Target Value	Unit
Energy Use	Total Energy Limit	28,324	kWh/year
	Total Regulated Energy (without DHW)	44.0	kWh/m ² /year
	Total Un-regulated Energy	45.0	kWh/m ² /year
Fabric U-Values	Wall	0.15	W/m ² K
	Floor	0.12	W/m ² K
	Roof	0.12	W/m ² K
	Window	1.2	W/m ² K
Air Tightness		2.5	m ³ /hr/m ² @50Pa
Glazing Parameter	E/S/W Facades G-Value	0.35	-
	E/S/W Façade VLT	0.65	-
	N Facades G-Value	0.5	-

	N Façade VLT	0.65	-
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The detailed results from the OE&C Tool can be found in Appendix A2.

At RIBA stage 3, a review of the design's performance for compliance against Building Regulations Part L was undertaken. Further details of energy modelling at this stage can be found in the RIBA 3 Part L Assessment Report (100120806-MM-ZZ-EG-RP-MD-0002). It was found that the primary energy rate was **54.45 kWh /m²/year**, with regulated energy demand of **86.2 kWh/m²/year**. Energy used of equipment was estimated to be **119.69kWh/m²/year**.

Table 3.3: RIBA 3 Part L compliance assessment results

RIBA 3 Part L assessment	Actual building	Notional building
Regulated energy demand, kWh/m²/year	86.2	60.9
Equipment energy demand, kWh/m²/year	119.7	119.7
PV generation, kWh/m²/year	49.2	5.2

These results cannot be compared with NZBS targets, as the NZBS target applies to low and medium tech space types only, and due to differences in assumptions regarding operational energy demand of different space types. TM54 operational energy modelling has not been conducted at RIBA stages 2-3. This should be undertaken at RIBA stage 4 to understand the predicted operational energy of the building and assess the performance against NZBS limits and identify opportunities to improve energy efficiency.

4 Recommendations

As a result of the assessment, NZBS limits have been established for upfront carbon and operational energy. The upfront carbon of elements covered by the NZBS target has been quantified, and at this stage, the design exceeds the target. Although there is no requirement for the project to achieve the NZBS targets, to support the NHS goal of minimising carbon emissions, the following actions are proposed to improve the embodied carbon performance of the CDC scheme:

- Optimisation of the steel frame to minimise structural material quantities.
- Consideration of recycled steel and brickwork.
- Local sourcing of materials to minimise transport emissions.

Additionally, the following should be undertaken to optimise the operational energy performance:

- Completion of TM54 compliant DSM modelling to confirm the energy performance of the building;
- Monitoring and verification strategy;
- Flexibility and adaptability strategy;
- Seasonal commissioning strategy;
- Assessment of solar gains and overheating issues;
- Confirmation of the following:
 - DELC of refrigerant systems;
 - DHW delivery efficiency;
 - PV Efficiency.

Appendix

A.1 WLC tool inputs

Inputs from Brief	OBC	
No. Floors	1	Low Rise
No. Basement Levels	-	-
- Floor in Contact with Ground (Area of Cat 1-3)	789	m²
- Exposed Roof (Area above Cat 2 and 5)	789	m²
- Lightweight Covering (Area above Cat 3 and 6)	-	m²
Area of the following at Upper Levels (Cat 4-6):		
- Support (Plant/ Storage)	-	m²
- Low Tech	-	m²
- Medium Tech	-	m²
- High Tech	-	m²
- Ultra High Tech	-	m²
- All Other Internal Areas (Cat 7)	-	m²
Total GIA	789	m²

A.2 OE&C Tool Outputs

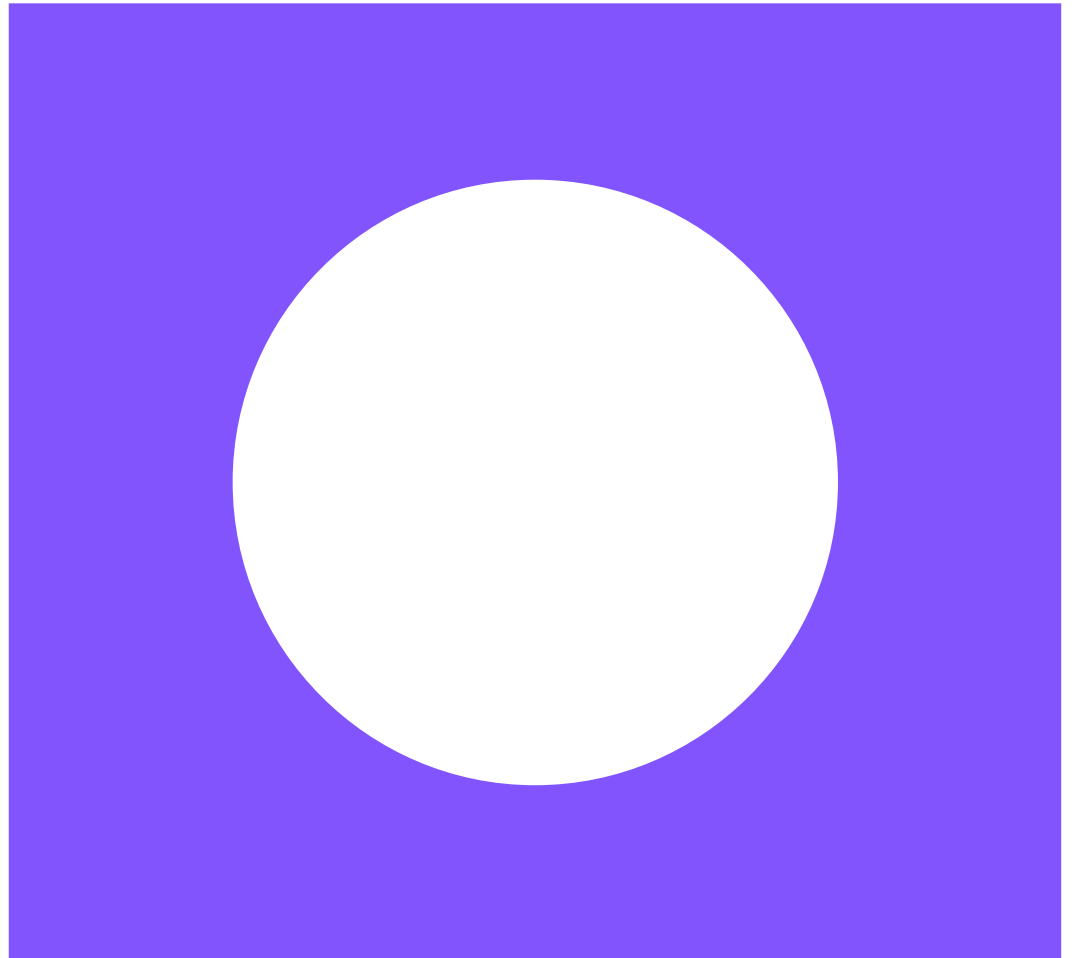
BUILDING SUMMARY

Location Zone	B
Building Type	Secondary Healthcare
RIBA Stage	2: Concept Design
Heating Strategy	0

For Information: Building GIA Summary		
Total building Gross Internal Area* [m2]		
789.34		
Breakdown	Floor Area* [m2]	% of total building
Spaces with Energy Limit	643.13	81%
Spaces with Building Services Performance Target	146.21	19%

Step	Space Type	Area it applies to (m²)	Energy Limit in kWh/yr		
			Compliance	Reference	
			Total Energy Limit [kWh/yr]	DHW Energy Limit [kWh/yr]	Unregulated Energy Limit [kWh/yr]
Step 2a: Space Type Energy Limit	Low Tech Type 1	158.56	5550	-	-
	Low Tech Type 2	0	0	-	-
	Medium Tech Type 1	0	0	0 - 0	0
	Medium Tech Type 2	484.57	22775	852 - 2,053	21806
	Medium Tech Type 3	0	0	0 - 0	0
	Medium Tech Type 4	0	0	0 - 0	0
	High Tech Type 1	0	0	0 - 0	0
	High Tech Type 2	0	0	0 - 0	0
	Support Type 2	7.07	0	-	-
	Support Type 3	90.7	0	-	-
	Total Energy Limit	740.9	28324	N/A	21806

Step	Space Type	Compliance Target Element	GIA it applies to (m²)	TARGET	DESIGN
				Compliance Target Value: Regulated Energy Limit	Achieved Design Value: Regulated Energy Limit
Step 2b: Space Type Building Services Performance Target	Ultra High Tech/Specialist Spaces + Support Type 1	AHU SFP (W/l/s)	0	1.3	N/A
		Heat Recovery (General HR Devices)	0	80%	N/A
		Heat Recovery (Run Around Coil)	0	60%	N/A
		Lighting (W/m²/100 lux)	0	2	N/A
		Heating SCOP	0	3.5	N/A
		Cooling SEER	0	5.5	N/A
		DHW COP	0	2.4	N/A



Appendix 3

Queen Victoria Hospital East Grinstead

RIBA 3 Part L Assessment

Project:	Queen Victoria Hospital East Grinstead		
Prepared by:	Salman Farooqui	Date:	08/01/2025
Approved by:	Santiago Velez	Checked by:	Elias Berbel Roman
Subject:	RIBA 3 Part L Assessment		

1 Introduction

Mott MacDonald Ltd (MMD) has been appointed by Queen Victoria Hospital NHS to develop a RIBA Stage 3 design for the new Community Diagnostic Centre (CDC) at the East Grinstead site. MMD have developed an energy assessment study for the proposed building.

This technical note presents the energy assessment carried out for the new Community Diagnostic Centre (CDC) at the East Grinstead regulated under Approved Document Part L 2021 (with 2023 amendments) Volume 2 (ADL2) of the Building Regulations.

Based on the proposed design as described herein, the proposed building would meet the ADL2 2021 Regulation 26 and 26C, i.e.:

- Building Primary Energy Rate (BPER) < Target Primary Energy Rate (TPER); and
- Building Emissions Rate (BER) < Target Emission Rate (TER).

The studies and results presented in this document are based on Dynamic Thermal Modelling (DTM). It is important to note that with any modelling exercise there are assumptions and approximations that have to be made. Details of assumptions and approximations used are detailed in this document. All results are directly influenced by the inputs provided in this document; any deviation from these inputs is likely to produce different results.

All results are based on the output from computer modelling software in line with the actual National Calculation Methodology (NCM). The results should reflect the predicted regulated energy consumption, not the operational energy consumption of the building.

The following Sections describe the calculations and results that are intended to inform the design deliverables.

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2 Purpose

The purpose of this Energy Assessment is to demonstrate how compliance with Building Regulations Part L 2021 can be achieved, by producing dynamic thermal modelling calculations to show that the building has the potential to meet both of the following as a minimum, as required in line with Regulation 26 and 26C of the Building Regulations Part L:

- Target Primary Energy Rate (TPER); and
- Target Emission Rate (TER).

3 Thermal Model

The thermal model is based on the proposed architectural layout, fabric performance, heating, ventilation, and air conditioning (HVAC) systems. The details are presented in the following sections.

3.1 Calculation Methodology

The National Calculation Methodology (NCM) 2021 is used to calculate the CO₂ emission rates (BER and TER) and the primary energy rate (PBER and PTER) for the assessed spaces of the proposed building.

3.2 Building Modelled

The studies and results presented are based on Dynamic Simulation Modelling (DSM). All DSM studies were carried out using EDSL Tas Version 9.5.6, a dynamic thermal modelling software written by Environmental Design Solutions Limited (EDSL), approved by the Department for Levelling Up, Housing and Communities (DLUHC) for demonstrating Building Regulations compliance for buildings other than dwellings in England. The latest version available at the time of the assessment being carried out was used.

The 3-D thermal model for Part L Assessment of the CDC building was constructed based on the architectural information received on 24th November 2024:

- 100120806-MM-A1-EG-GA-AR-0001- Proposed Ground Floor Plan
- 100120806-MM-A1-EG-GA-AR-0002- Proposed Roof Plan
- 100120806-MM-A1-EG-GA-AR-0301- Proposed Site Location Plan
- 100120806-MM-A1-EG-EL-AR-0100– Elevations
- 100120806-MM-A1-EG-SE-AR-0200- Proposed Sections

The external plantroom where the Air Source Heat Pumps (ASHP) will be located has been excluded from the assessment as it is an external space.

Surrounding buildings have not been modelled but nonetheless, it is expected that the presence of any structures located to the north of the assessed building would not have any significant impact to the assessment.

3.3 Building Elements and Fabric Performance

Details of the building elements and fabric performance used within the thermal model for the proposed building are included below in Table 3.1 under “Modelled values”. Part L 2021 limiting and notional values are also presented for comparison.

Table 3.1: Envelope Characteristics

Building Element	Property	Part L 2021 Limiting Values	Part L 2021 Notional Values	Modelled values
External Wall	U-value (W/m ² K)	0.26	0.18	0.15
Ground Floor	U-value (W/m ² K)	0.18	0.15	0.12
Roof	U-value (W/m ² K)	0.18	0.15	0.12
Door	U-value (W/m ² K)	1.60	1.90	1.6
Window (South, East and West)	U-value (W/m ² K)	1.6	1.4	1.2
	g-value	N/A	0.29	0.35
	VLT (%)	N/A	60	65
Window (North)	U-value (W/m ² K)	1.6	1.4	1.2
	g-value	N/A	0.29	0.5
	VLT (%)	N/A	60	65
Air permeability	m ³ /(hr.m ²) @ 50 Pa	8	3	2.5

Default thermal bridging values have been used for the building following the NCM for Part L 2021 energy and CO₂ emission calculations.

3.4 Lighting Specification and Controls

The lighting specification for the building was provided by MM Electrical team on 6th December 2024. Details are included in the table below. A detailed list of Part L lighting set-up can be found in Appendix B.

Table 3.2: Lighting specification

Area type	Occupancy Control	Daylight Control	Lighting Power Density (W/m ²)	Illuminance (Lux)
Acc WC	Auto On / Auto Off	No Daylight Control	5.65	200
Baby Change	Auto On / Auto Off	No Daylight Control	9.93	200
Baby Food	Auto On / Auto Off	No Daylight Control	6.53	300
Changes	Auto On / Auto Off	No Daylight Control	6.44	150
Changing Places	Auto On / Auto Off	Photocell Control Dimming	4.67	200
Changing Staff Area-F	Auto On / Dimmed	Photocell Control Dimming	5.5	200
Changing Staff Area-M	Auto On / Dimmed	Photocell Control Dimming	4.98	200
Clean Utility	Auto On / Auto Off	No Daylight Control	3.5	200
Cleaner Store	Auto On / Auto Off	No Daylight Control	3.49	200
Corridor	Manual On/ Manual Off	No Daylight Control	4.64	-
Corridor/ Sub Waiting	Auto On / Auto Off	No Daylight Control	5.56	200
Corridor/ Waiting Area	Auto On / Auto Off	No Daylight Control	5.56	200
Dark Room	Auto On / Auto Off	No Daylight Control	5.8	300
Dexa Scanner Room	Manual On/ Manual Off	No Daylight Control	7.28	500
Interview Room	Manual On/ Manual Off	No Daylight Control	7.34	500

Area type	Occupancy Control	Daylight Control	Lighting Power Density (W/m ²)	Illuminance (Lux)
IT	Manual On/ Manual Off with additional automatic sweeping extinction signal	No Daylight Control	9.66	300
Lung Function Test	Auto On / Auto Off	Photocell Control Dimming	7.18	500
Office	Auto On / Auto Off	Photocell Control Dimming	7.63	500
Ophthalmology	Auto On / Auto Off	No Daylight Control	5.41	500
Phlebotomy	Auto On / Auto Off	Photocell Control Dimming	6.79	500
Plant	Manual On/ Manual Off with additional automatic sweeping extinction signal	No Daylight Control	3.13	200
Reception	Auto On / Auto Off	No Daylight Control	5.12	300
Staff Rest	Auto On / Dimmed	No Daylight Control	3.76	300
Switch Room	Manual On/ Manual Off with additional automatic sweeping extinction signal	No Daylight Control	11.76	200
Treatment Room	Auto On / Dimmed	Photocell Control Dimming	7.17	500
Ultrasound Room	Auto On / Auto Off	Photocell Control Dimming	7.21	500
Unisex WC/ Shower	Auto On / Auto Off	No Daylight Control	4.75	200
Virtual Consult Room	Auto On / Dimmed	No Daylight Control	9.9	500
WC	Auto On / Auto Off	No Daylight Control	4.75	200

Perimeter zones will have daylight control with parasitic power of 0.125 W/m², which has been agreed with the MMD Electrical team for areas with automatic daylight controls.

The model has been assumed with back space sensor in the areas with daylight control.

3.5 HVAC and DHW Systems

3.5.1 Ventilation Strategy

The ventilation strategy in occupied spaces is reliant on mechanical ventilation through the entire year. Details of the ventilation system modelled for each room can be found in Appendix C. The table below shows details of the ventilation strategy for each system.

Table 3.3: Ventilation strategy

System name	Ventilation strategy	HVAC type	SFP (W/l/s)	Heat recovery (%)	Demand control	Local Extract SFP (W/l/s)
AHU	Mechanical Supply and Extract	VAV	1.9	68% (Run Around Coil)	Yes	N/A
DX cooling	VRF and Natural Ventilation	Split systems	N/A	N/A	No	N/A
Extract only	Extract only	Fan remote from the zone	N/A	N/A	No	0.5

3.5.2 Heating System Performance

The heating efficiency for the proposed system is listed in the table below. A detailed list of Part L system set-up can be found in Appendix C.

Table 3.4: Heating strategy

Heat Source	Heating Seasonal Efficiency (%)	Heating Delivery Efficiency (%)
Heat pump (electric): Air source	345	95
Electric Panel Heater	100	100

3.5.3 Cooling System Performance

The cooling efficiency for the proposed system is listed in the table below. A detailed list of Part L system set-up can be found in Appendix C.

Table 3.5: Cooling strategy

Cooling Source	Cooling Seasonal Efficiency (%)	Cooling Delivery Efficiency (%)
Heat pump (electric): Air source (AHU)	403	95
Heat pump (electric): Air source (VRF)	630	100

3.5.4 Domestic Hot Water Strategy

The detail for proposed system for baseline model is listed in the table below. A detailed list of Part L system set-up can be found in Appendix C.

Table 3.6: Domestic hot water strategy

Heat Source	Heating Seasonal Efficiency (%)	Distribution Efficiency (%)
Direct Electric	100	95

The model has a storage tank with the below properties.

Table 3.7: DHW tank properties

Properties	Value
Height (m)	1.54
Insulation conductivity (W/m°C)	0.03
Insulation thickness (mm)	90
Volume (l)	264

The secondary circulation system has been proposed with a pump power of 500W. The Domestic Hot Water (DHW) system have been assumed without time switch.

3.5.5 Miscellaneous

An HVAC monitoring system that incorporates sub-metering and warnings for out-of-range values has been assumed.

A power factor correction of above 0.95 has been assumed for the building for the energy and CO₂ emission calculations carried out.

3.6 Photovoltaic panels

A photovoltaic (PV) technology has been selected as appropriate for the proposed development, see in the below table the properties for the panel selected for the assessment.

Table 3.8: PV Systems Characteristics

Properties	PV System value
Inclination of PV panels (°)	30°
Module type	Mono crystalline silicon
Panel area (m ²)	1.931
Nominal power (W)	425
Orientation of PV panels	180°
Level of overshadowing	None or very little < 20%
Ventilation strategy	Strong Ventilated modules

The PV panel properties listed above are based on a model from SunPower¹.

4 Results

Results indicate that the strategy incorporating the measures outlined above, inclusive of renewables, would enable the proposed building to achieve the Part L 2021 Target Emission Rate (TER) and Target Primary Energy Rate (TPER). Table 4.1 shows the area of PV required the model to pass.

Table 4.1: Results

Model	Required PV area m ²	Target CO ₂ Emissions Rate (TER), (kgCO ₂ /m ²)	Building CO ₂ Emissions Rate (BER), (kgCO ₂ /m ²)	Target Primary Energy Rate (TPER) (kWh/m ²)	Building Primary Energy Rate (BPER) (kWh/m ²)
qvh_east grinstead_pl_riba3 _m01_v02	192	7.54	5.25	82.09	54.45

The BRUKL documents for Part-L modelled can be found in Appendix A.

¹ [Microsoft Word - Datasheet Commercial REV4_AD \(maxeon.com\)](#)

Appendices

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A. BRUKL Document

BRUKL Output Document



Compliance with England Building Regulations Part L 2021

Project name

East Grinstead CDC

As designed

Date: Wed Jan 08 15:57:55 2025

Administrative information

Building Details

Address: Queen Victoria Hospital CDC, Holtye Road, East Grinstead, West Sussex, East Grinstead, RH19 3DZ

Certifier details

Name: Yudish Dabee
Telephone number: 02076510300
Address: 10 Fleet Place, London, EC4M 7RB

Certification tool

Calculation engine: TAS
Calculation engine version: "v9.5.6"
Interface to calculation engine: TAS
Interface to calculation engine version: v9.5.6
BRUKL compliance module version: v6.1.e.0

Foundation area [m²]: 316.7The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² :annum	7.54
Building CO ₂ emission rate (BER), kgCO ₂ /m ² :annum	5.25
Target primary energy rate (TPER), kWh _e /m ² :annum	82.09
Building primary energy rate (BPER), kWh _e /m ² :annum	54.45
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.15	0.15	External Wall
Floors	0.18	0.12	0.12	Ground Floor
Pitched roofs	0.16	0.12	0.12	Roof
Flat roofs	0.18	-	-	No flat roofs in project
Windows** and roof windows	1.6	1.2	1.2	Window (N)
Rooflights***	2.2	-	-	No rooflights in project
Personnel doors [^]	1.6	1.33	1.6	Door Plant
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	-	-	No high usage entrance doors in project
U _a -Limit = Limiting area-weighted average U-values [W/(m ² K)] U _a -Calc = Calculated area-weighted average U-values [W/(m ² K)] U _i -Calc = Calculated maximum individual element U-values [W/(m ² K)] * Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. ** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position. [^] For fire doors, limiting U-value is 1.8 W/m ² K NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	2.5

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- LEV (14 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

2- DX unit (IT Hub and Server Room)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0	6.3	-	-	-
Standard value	N/A	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

3- Air Source Heat Pump

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.45	4.03	-	1.9	0.68
Standard value	2.5*	N/A	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

^ Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

1- New HWS Circuit

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0
Standard value	1	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
Unisex Shower		-	-	0.5	-	-	-	-	-	-	-	N/A
Cleaners Store		-	-	0.5	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		Zone	Standard
Changing Staff Area - M	-	-	0.5	-	-	-	-	-	-	-	-	N/A
Changing Staff Area - F	-	-	0.5	-	-	-	-	-	-	-	-	N/A
Dirty Utility	-	-	0.5	-	-	-	-	-	-	-	-	N/A
WC 01	-	-	0.5	-	-	-	-	-	-	-	-	N/A
WC 02	-	-	0.5	-	-	-	-	-	-	-	-	N/A
Change	-	-	0.5	-	-	-	-	-	-	-	-	N/A
Changing Places	-	-	0.5	-	-	-	-	-	-	-	-	N/A
WC 03	-	-	0.5	-	-	-	-	-	-	-	-	N/A
WC 04	-	-	0.5	-	-	-	-	-	-	-	-	N/A
Acc WC	-	-	0.5	-	-	-	-	-	-	-	-	N/A
WC 05	-	-	0.5	-	-	-	-	-	-	-	-	N/A
WC 06	-	-	0.5	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value		95	80	0.3
G clinic room (respiratory)		-	-	-
Lung Function Test room		-	-	-
G clinic room (cardiac testing)		-	-	-
G clinic room (cardiac consultations)		-	-	-
Virtual consult room 01		-	-	-
Unisex Shower		-	-	-
Ultrasound Room		-	-	-
G clinic room (ophthalmology)		-	-	-
Office - 4 person		-	-	-
Waiting area 01		-	95	-
Reception		-	95	-
Cleaners Store		-	-	-
Plant		-	-	-
Changing Staff Area - M		-	-	-
Changing Staff Area - F		-	-	-
Dexa Scanner Room		-	-	-
Store - Equipment		-	-	-
Dirty Utility		-	-	-
WC 01		-	-	-
WC 02		-	-	-
Phlebotomy 01		-	-	-
Change		-	-	-
Clean Utility		-	-	-
Bev Bay		-	-	-
Ophthalmology Diagnostic Room		-	-	-
Changing Places		-	-	-
Baby Change		-	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
Baby Feed		-	-	-
WC 03		-	-	-
WC 04		-	-	-
Acc WC		-	-	-
Dark Room		-	-	-
IT Hub and Server Room		-	-	-
Switch Room		-	-	-
Trolley bay		-	-	-
Interview room		-	-	-
Circulation 01_P		-	-	-
Circulation 04_P		-	-	-
Circulation 03_P		-	-	-
Circulation 02_P1		-	-	-
Circulation 02_P2		-	-	-
Circulation 05		-	-	-
Circulation 06		-	-	-
Circulation 01		-	-	-
Circulation 02		-	-	-
Circulation 03		-	-	-
Circulation 04		-	-	-
Stretcher Bay		95	-	-
Generic Treatment Room		-	-	-
Virtual Consult Room 02		-	-	-
Sub Waiting		-	-	-
Waiting area 02		-	-	-
Staff Rest		-	-	-
WC 05		-	-	-
Vending Area		-	-	-
WC 06		-	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
G clinic room (respiratory)	NO (-61%)	NO
Lung Function Test room	NO (-61%)	NO
G clinic room (cardiac testing)	NO (-61%)	NO
G clinic room (cardiac consultations)	NO (-61%)	NO
Virtual consult room 01	N/A	N/A
Ultrasound Room	NO (-52%)	NO
G clinic room (ophthalmology)	NO (-53%)	NO
Office - 4 person	NO (-33%)	NO
Waiting area 01	YES (+21%)	NO
Reception	NO (-85%)	NO
Dexa Scanner Room	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Store - Equipment	N/A	N/A
Phlebotomy 01	NO (-11%)	NO
Clean Utility	N/A	N/A
Bev Bay	N/A	N/A
Ophthalmology Diagnostic Room	N/A	N/A
Baby Change	N/A	N/A
Baby Feed	N/A	N/A
Dark Room	N/A	N/A
IT Hub and Server Room	N/A	N/A
Trolley bay	NO (-95%)	NO
Interview room	N/A	N/A
Circulation 01_P	YES (+47%)	NO
Circulation 04_P	YES (+47%)	NO
Circulation 03_P	YES (+15%)	NO
Circulation 02_P1	YES (+0%)	NO
Circulation 02_P2	NO (-6%)	NO
Circulation 05	NO (-98%)	NO
Circulation 06	NO (-50%)	NO
Circulation 01	NO (-96%)	NO
Circulation 02	NO (-81%)	NO
Circulation 03	NO (-95%)	NO
Circulation 04	NO (-91%)	NO
Stretcher Bay	NO (-25%)	NO
Generic Treatment Room	NO (-60%)	NO
Virtual Consult Room 02	N/A	N/A
Sub Waiting	NO (-99%)	NO
Waiting area 02	YES (+12%)	NO
Staff Rest	N/A	N/A
Vending Area	NO (-48%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	713	713
External area [m ²]	2083	2083
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	344	443
Average U-value [W/m ² K]	0.17	0.21
Alpha value* [%]	30.08	15.08

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
10	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
89	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
1	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	3.5	3.32
Cooling	7.53	10.9
Auxiliary	57.81	32.73
Lighting	15.02	11.99
Hot water	2.35	1.93
Equipment*	119.69	119.69
TOTAL**	86.2	60.87

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	49.16	5.16
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>49.16</i>	<i>5.16</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	132.16	205.24
Primary energy [kWh _{PE} /m ²]	54.45	82.09
Total emissions [kg/m ²]	5.25	7.54

HVAC Systems Performance									
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Unflued radiant heater, [HS] Unflued radiant heater, [HFT] Electricity, [CFT] Electricity									
Actual	67.5	0	18.8	0	146.3	1	0	1	0
Notional	78.9	0	16.4	0	117	1.34	0	----	----
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	0	1266.1	0	55.8	0	0	6.3	0	6.3
Notional	0	1273.6	0	80.4	0	0	4.4	----	----
[ST] Single-duct VAV, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	20.2	129.6	1.7	9.4	47.9	3.28	3.83	3.45	4.03
Notional	16.9	227.2	1.8	14.3	25.9	2.64	4.4	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

B. Building Data Input Summary

08/01/2025 16:34:08



UK Building Regulations Studio

Building Data Input Summary

Contents

- | | |
|--------------------------------------|----------------------|
| 1. Project Details | 4. Building Elements |
| 2. Building Category and Regulations | 5. U-Values |
| 3. Source Fileset(s) | 6. Lighting Control |

DISCLAIMER: This document summarises the data inputted to Tas UK Building Regulations Studio. It is a direct representation of the raw data entered into the software by the user. It is the sole responsibility of the user to ensure inputs are sensible.

1. Project Details

Building		Certifier	
Name	East Grinstead CDC	Name	Yudish Dabee
Occupier		Employer	Mott MacDonald Ltd
Address	Queen Victoria Hospital CDC, Holtye Road, East Grinstead, West Sussex	Phone No.	02076510300
City	East Grinstead	Address	10 Fleet Place
Postcode	RH19 3DZ	City	London
		Postcode	EC4M 7RB

2. Building Category and Regulations

NCM Version	NCM 6.1
Country	England
Building Type	C2 Residential Institutions - Hospitals and Care Homes
Building Category	Other
Building Stage	As Designed
Accredited Constructions?	No
Compliance Check on air permeability value?	Yes
Light Metering with warnings for out-of-range values?	Yes
Electricity Power Factor	>0.95
Modular and Portable?	No
Planned Time of Use	N/A
Date of Manufacture	N/A
Weather File	LON

3. Source Fileset(s)

Set #1

Actual 3d Model (t3d)	qvh_eg_pl_riba3_m01_qa.t3d		
Actual Building Simulator (tbd)	qvh_eg_pl_riba3_m01_qa.tbd		
Notional 3d Model (t3d)	Same As Actual		
Notional Building Simulator (tbd)	qvh_eg_pl_riba3_m01_qa__reexported.tbd		
Actual Air Permeability	2.50	Building	Infiltration
Building as defined in CIBSE Guide A Infiltration Tables	Hospital	Actual	0.15
		Notional	0.1
Building Size	2 Storeys, 1000m ²	Reference	0.3
Reference Building Type			

4. Building Elements

Element	Surface Type
External Wall	External Walls
Internal Wall	Internal Walls
Ground Floor	Exposed and Ground Floors
Window (E/S/W)-frame	Windows
Window (E/S/W)-pane	Windows
Window (N)-frame	Windows
Window (N)-pane	Windows
Window (N) 1.2x2.5m -frame	Windows
Window (N) 1.2x2.5m -pane	Windows
Door Plant-frame	Pedestrian Doors
Door Plant-pane	Pedestrian Doors
Roof	Pitched Roof
null-floor/Internal Ceiling	Internal Floors
Door L-frame	Pedestrian Doors
Door L-pane	Pedestrian Doors
Window (N) Full Height-frame	Windows
Window (N) Full Height-pane	Windows

5. U-Values

Element	Ua-Limit	Ua-Calc	Ui-Calc	Surface where this maximum value occurs*
		0.15	0.15	External Wall
		0.12	0.12	Ground Floor
		0.12	0.12	Roof
		0.00	0.00	No flat roofs in project
		1.20	1.20	Window (N)
		0.00	0.00	No rooflights in project
		1.33	1.60	Door Plant
		0.00	0.00	No vehicle access or similar large doors in project
		0.00	0.00	No high usage entrance doors in project
		0.12	0.12	Roof

	1.20	1.20	Window (N)
	0.00	0.00	No roof windows in project

Ua-Limit = Limiting area-weighted average U-Values [W/m²K]

Ua-Calc = Calculated area-weighted average U-Values [W/m²K]

Ui-Calc = Calculated individual element U-Values [W/m²K]

* There may be more than one surface exceeding the limiting standards.

** U-Value check does not apply to curtain walls whose limiting standards are similar to those for windows

*** Display windows and similar glazing are not required to meet the standard given in this table.

6. Lighting Control

Zone	Automatic Presence Detection	Daylight Control	Efficacy (lumens / watt)	Efficiency (W/m ² per 100 lux)	Minimum Percentage Gain	Daylight Factor (%)	Target Room Illuminance (lux)	Design Room Illuminance (lux)	Parasitic Power (W/m ²)	Photocell Sensor on Timer Clock	Area Cutoff (m ²)	Display Lighting Efficacy (lumens / watt)	Auto Time Switching for Display Lighting
G clinic room (respiratory)	AOn/Dim	PCDim	-	1.44	0	0.97	300	500	0.125	N	-	-	-
Lung Function Test room	AOn/AOff	PCDim	-	1.44	0	0.97	300	500	0.125	N	-	-	-
G clinic room (cardiac testing)	AOn/Dim	PCDim	-	1.44	0	0.97	300	500	0.125	N	-	-	-
G clinic room (cardiac consultations)	AOn/Dim	PCDim	-	1.44	0	0.97	300	500	0.125	N	-	-	-
Virtual consult room 01	AOn/Dim	None	-	2.01	-	-	300	500	-	-	-	-	-
Unisex Shower	AOn/AOff	None	-	2.38	-	-	200	200	-	-	-	-	-
Ultrasound Room	AOn/AOff	PCDim	-	1.44	0	0.98	50	500	0.125	N	-	-	-
G clinic room (ophthalmology)	AOn/Dim	PCDim	-	1.08	0	0.98	300	500	0.125	N	-	-	-
Office - 4 person	AOn/AOff	PCDim	-	1.53	0	2.97	300	500	0.125	N	-	-	-
Waiting area 01	AOn/AOff	None	-	2.78	-	-	200	200	-	-	-	95	N
Reception	AOn/AOff	None	-	1.71	-	-	200	300	-	-	-	95	N
Cleaners Store	AOn/AOff	None	-	1.75	-	-	100	200	-	-	-	-	-
Plant	MOOn/MO ff + ASES	None	-	1.57	-	-	200	200	-	-	-	-	-
Changing Staff Area - M	AOn/Dim	PCDim	-	2.49	0	1.25	100	200	0.125	N	-	-	-
Changing Staff Area - F	AOn/Dim	PCDim	-	2.75	0	1.15	100	200	0.125	N	-	-	-
Dexa Scanner Room	MOOn/MO ff	None	-	1.46	-	-	50	500	-	-	-	-	-
Store - Equipment	AOn/AOff	None	-	3.24	-	-	100	150	-	-	-	-	-
Dirty Utility	AOn/AOff	None	-	1.72	-	-	100	200	-	-	-	-	-
WC 01	AOn/AOff	None	-	2.38	-	-	200	200	-	-	-	-	-
WC 02	AOn/AOff	None	-	2.38	-	-	200	200	-	-	-	-	-
Phlebotomy 01	AOn/AOff	PCDim	-	1.36	0	1.88	300	500	0	N	-	-	-
Change	AOn/AOff	None	-	4.29	-	-	100	150	-	-	-	-	-
Clean Utility	AOn/AOff	None	-	1.75	-	-	100	200	-	-	-	-	-
Bev Bay	AOn/AOff	None	-	2.36	-	-	100	200	-	-	-	-	-
Ophthalmology Diagnostic Room	AOn/AOff	None	-	1.08	-	-	50	500	-	-	-	-	-
Changing Places	AOn/AOff	PCDim	-	2.34	0	1.14	100	200	0.125	N	-	-	-
Baby Change	AOn/AOff	None	-	4.97	-	-	100	200	-	-	-	-	-
Baby Feed	AOn/AOff	None	-	2.18	-	-	100	300	-	-	-	-	-

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Zone	Automatic Presence Detection	Daylight Control	Efficacy (lumens / watt)	Efficiency (W/m ² per 100 lux)	Minimum Percentage Gain	Daylight Factor (%)	Target Room Illuminance (lux)	Design Room Illuminance (lux)	Parasitic Power (W/m ²)	Photocell Sensor on Timer Clock	Area Cutoff (m ²)	Display Lighting Efficacy (lumens / watt)	Auto Time Switching for Display Lighting
WC 03	AOn/AOff	None	-	2.38	-	-	200	200	-	-	-	-	-
WC 04	AOn/AOff	None	-	2.38	-	-	200	200	-	-	-	-	-
Acc WC	AOn/AOff	None	-	2.83	-	-	200	200	-	-	-	-	-
Dark Room	AOn/AOff	None	-	1.93	-	-	500	300	-	-	-	-	-
IT Hub and Server Room	MOOn/MO ff + ASES	None	-	3.22	-	-	100	300	-	-	-	-	-
Switch Room	MOOn/MO ff + ASES	None	-	5.88	-	-	200	200	-	-	-	-	-
Trolley bay	AOn/AOff	None	-	2.36	-	-	100	200	-	-	-	-	-
Interview room	MOOn/MO ff	None	-	1.47	-	-	300	500	-	-	-	-	-
Ciculation 01_P	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 04_P	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 03_P	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 02_P1	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 02_P2	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 05	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 06	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 01	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 02	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 03	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Ciculation 04	MOOn/MO ff	None	-	4.64	-	-	100	100	-	-	-	-	-
Strechter Bay	MOOn/MO ff	None	95	-	-	-	100	100	-	-	-	-	-
Generic Treatment Room	AOn/Dim	PCDim	-	1.43	50	0.98	300	500	0.125	N	-	-	-
Virtual Consult Room 02	AOn/Dim	None	-	1.98	-	-	300	500	-	-	-	-	-
Sub Waiting	AOn/AOff	None	-	2.78	-	-	100	200	-	-	-	-	-
Waiting area 02	AOn/AOff	None	-	2.78	-	-	100	200	-	-	-	-	-
Staff Rest	AOn/Dim	None	-	1.25	-	-	100	300	-	-	-	-	-
WC 05	AOn/AOff	None	-	2.38	-	-	200	200	-	-	-	-	-
Vending Area	MOOn/MO ff	None	-	9.7	-	-	100	100	-	-	-	-	-
WC 06	AOn/AOff	None	-	2.38	-	-	200	200	-	-	-	-	-

C. Plant and System Input Summary

UK Building Regulations Studio

Plant and System Input Summary

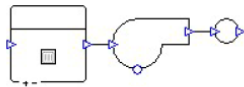
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DISCLAIMER: This document summarises the data inputted to Tas UK Building Regulations Studio. It is a direct representation of the raw data entered into the software by the user. It is the sole responsibility of the user to ensure inputs are sensible.

Airside Systems

LEV [Extract Only]

Multiplicity: 1



BRUKL Details

Demand Control	None
Heating Source	Unflued radiant heater
HVAC Type	Unflued radiant heater
Pump Config	Constant speed pumping
Monitoring for OOR Values	TRUE
Shell or Core	N/A

Component Details

14 Zones	Extract Fan	Design Flow Rate	520.0 l/s
		SFP	0.5 W/l/s
	Zone Heating	Duty	Sized
		Type	Direct Electric

DX unit [VRF]

Multiplicity: 1



BRUKL Details

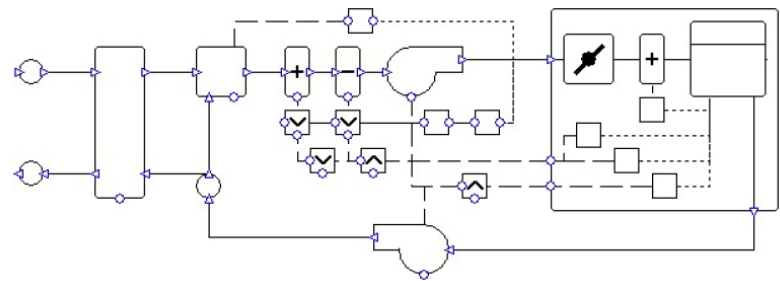
Demand Control	None
Heating Source	Heat pump (electric): air source
HVAC Type	Split or multi-split system
Pump Config	Constant speed pumping
Monitoring for OOR Values	TRUE
Shell or Core	N/A

Component Details

IT Hub and Server Room	Zone	Name	IT Hub and Server Room
		Area	6.107 m ²
		Volume	16.184 m ³
	Terminal Cooling Coil	Bypass Factor	0.1 (0-1)
		Duty	Sized
	Terminal Heating Coil	Duty	Sized

Air Source Heat Pump [VAV]

Multiplicity: 1



Air Source Heat Pump with Electric Reheat

BRUKL Details

Demand Control	Control based on occupancy density
Heating Source	Heat pump (electric): air source
HVAC Type	Single-duct VAV
Pump Config	Constant speed pumping
Monitoring for OOR Values	TRUE
Shell or Core	N/A

Component Details

Central AHU	Pre-Heat Coil	Duty	Sized
	Exchanger	Sensible Efficiency	0.68×
	Supply Fan	Design Flow Rate	Sized
		SFP	1.0 W/l/s
	Extract Fan	Design Flow Rate	Sized
		SFP	0.9 W/l/s
	Heating Coil	Duty	Sized
	Cooling Coil	Bypass Factor	0.1 (0-1)
40 Zones	Zone Heating	Duty	Sized
		Type	Radiator

Unoccupied [Occupied and Unheated]

Multiplicity: 1



BRUKL Details

Demand Control	None
Heating Source	LTHW boiler
HVAC Type	No Heating or Cooling
Pump Config	Constant speed pumping
Monitoring for OOR Values	TRUE
Shell or Core	N/A

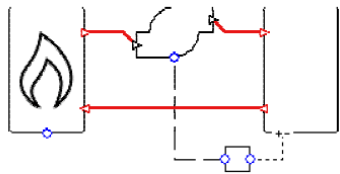
Component Details

Plant	Zone	Name	Plant
		Area	79.437 m ²
		Volume	210.507 m ³

Plantroom

DX

Type: Boiler Circuit



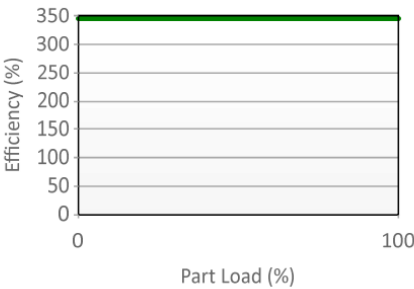
Component Details

Heating Source Group (Heating)	Duty	Sized
	Control Strategy	Parallel
	New Heating Source: Fuel Source	Grid Supplied Electricity
	New Heating Source: Capacity	100
	New Heating Source: Heat Pump	True
Heating Group	Distribution Efficiency	100.0%

Efficiency Profiles

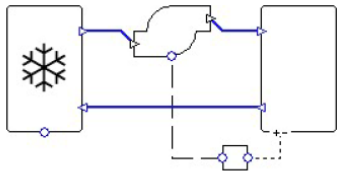
Heating Source Group (Heating): New Heating Source

Part Load (%)	Efficiency (%)
0	345
100	345



DX unit

Type: Chiller Circuit



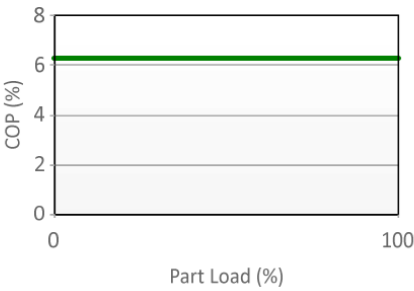
Component Details

Cooling Source	Duty	Sized
	Control Strategy	Serial
	Cooling Source: Capacity	100
Cooling Group	Distribution Efficiency	100.0%

Efficiency Profiles

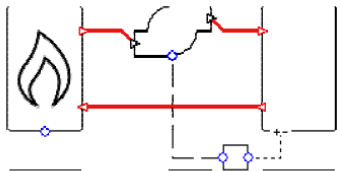
Cooling Source: Cooling Source

Part Load (%)	COP (%)
0	6.3
100	6.3



ASHP

Type: Boiler Circuit



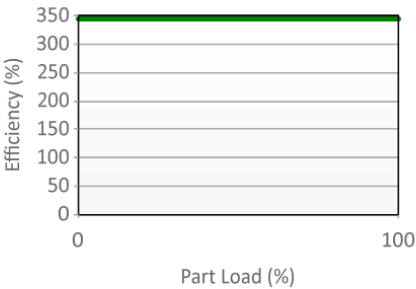
Component Details

Heating Source Group (Heating)	Duty	Sized
	Control Strategy	Parallel
	New Heating Source: Fuel Source	Grid Supplied Electricity
	New Heating Source: Capacity	100
	New Heating Source: Heat Pump	True
Heating Group	Distribution Efficiency	95.0%

Efficiency Profiles

Heating Source Group (Heating): New Heating Source

Part Load (%)	Efficiency (%)
0	345
100	345



New HWS Circuit

Type:

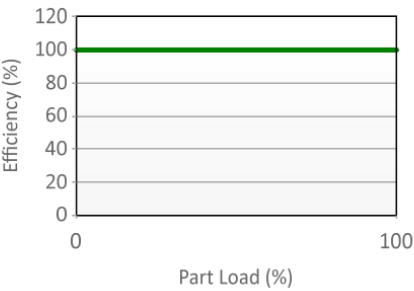
Component Details

Heating Source Group (DHW)	Duty	Sized
	Control Strategy	Parallel
	New Heating Source: Fuel Source	Grid Supplied Electricity
	New Heating Source: Capacity	100
	New Heating Source: Heat Pump	False
Tank	Height	1.54m
	Insulation Conductivity	0.03 W/m·°C
	Insulation Thickness	90.0mm
	Volume	264.0 l
DHW Group	Distribution Efficiency	95.0%

Efficiency Profiles

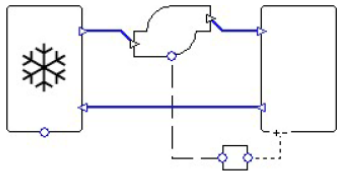
Heating Source Group (DHW): New Heating Source

Part Load (%)	Efficiency (%)
0	100
100	100



ASHP

Type: Chiller Circuit



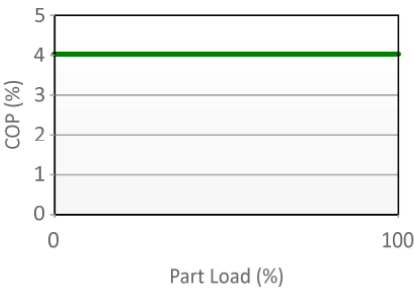
Component Details

Cooling Source	Duty	Sized
	Control Strategy	Serial
	Cooling Source: Capacity	100
Cooling Group	Distribution Efficiency	95.0%

Efficiency Profiles

Cooling Source: Cooling Source

Part Load (%)	COP (%)
0	4.03
100	4.03



Renewables

Type: PV Panel



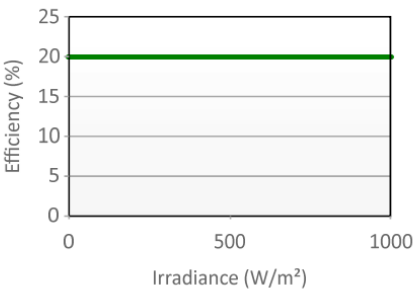
Component Details

192m2 PV	AC Inverter Size	Sized
	Solar Conversion Efficiency	1.0×
	Multiplication Factor	1
	Area (m²)	192

Efficiency Profiles

192m2 PV

Irradiance (W/m²)	Efficiency (%)
0	20
500	20
1000	20



D. Zones and Systems Summary

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UK Building Regulations Studio

Zones and Systems

Zone	Internal Condition	Airside Configuration	Heating Circuit	Cooling Circuit
G clinic room (respiratory)	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Lung Function Test room	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
G clinic room (cardiac testing)	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
G clinic room (cardiac consultations)	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Virtual consult room 01	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Unisex Shower	PrmHlthCare_Toilet_v6.1.b	LEV	Electrical Group - Direct Electric	-
Ultrasound Room	Hosp_Diagnostic_v6.1.b	Air Source Heat Pump	ASHP	ASHP
G clinic room (ophthalmology)	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Office - 4 person	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Waiting area 01	PrmHlthCare_Reception_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Reception	PrmHlthCare_Reception_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Cleaners Store	PrmHlthCare_Store_v6.1.b	LEV	Electrical Group - Direct Electric	-
Plant	PrmHlthCare_Plant_v6.1.b	Unoccupied	-	-
Changing Staff Area - M	PrmHlthCare_Circulation_v6.1.b	LEV	Electrical Group - Direct Electric	-
Changing Staff Area - F	PrmHlthCare_Circulation_v6.1.b	LEV	Electrical Group - Direct Electric	-
Dexa Scanner Room	Hosp_Diagnostic_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Store - Equipment	PrmHlthCare_Store_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Dirty Utility	PrmHlthCare_Store_v6.1.b	LEV	Electrical Group - Direct Electric	-
WC 01	PrmHlthCare_Toilet_v6.1.b	LEV	Electrical Group - Direct Electric	-
WC 02	PrmHlthCare_Toilet_v6.1.b	LEV	Electrical Group - Direct Electric	-
Phlebotomy 01	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Change	PrmHlthCare_Circulation_v6.1.b	LEV	Electrical Group - Direct Electric	-
Clean Utility	PrmHlthCare_Store_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Bev Bay	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Ophthalmology Diagnostic Room	Hosp_Diagnostic_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Changing Places	PrmHlthCare_Circulation_v6.1.b	LEV	Electrical Group - Direct Electric	-
Baby Change	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Baby Feed	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP

WC 03	PrmHlthCare_Toilet_v6.1.b	LEV	Electrical Group - Direct Electric	-
WC 04	PrmHlthCare_Toilet_v6.1.b	LEV	Electrical Group - Direct Electric	-
Acc WC	PrmHlthCare_Toilet_v6.1.b	LEV	Electrical Group - Direct Electric	-
Dark Room	Hosp_Lab_v6.1.b	Air Source Heat Pump	ASHP	ASHP
IT Hub and Server Room	Misc24Hr_ServerRoom_v6.1.b	DX unit	DX	DX unit
Switch Room	PrmHlthCare_Plant_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Trolley bay	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Interview room	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 01_P	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 04_P	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 03_P	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 02_P1	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 02_P2	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 05	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 06	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 01	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 02	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 03	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Circulation 04	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Stretcher Bay	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Generic Treatment Room	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Virtual Consult Room 02	PrmHlthCare_Office_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Sub Waiting	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Waiting area 02	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
Staff Rest	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
WC 05	PrmHlthCare_Toilet_v6.1.b	LEV	Electrical Group - Direct Electric	-
Vending Area	PrmHlthCare_Circulation_v6.1.b	Air Source Heat Pump	ASHP	ASHP
WC 06	PrmHlthCare_Toilet_v6.1.b	LEV	Electrical Group - Direct Electric	-