



GIG
CYMRU
NHS
WALES

Partneriaeth
Cydwasaethau
Gwasanaethau Ystadau Arbenigol

Shared Services
Partnership
Specialist Estates Services

NHS Wales Net Zero Building Standard Alignment

Mapping, application, and considerations for implementing the NHS Net Zero Building Standard and supplementary guidance for schemes over £2million works cost

This document has been updated from the original version published on 25 November 2024 to provide additional guidance for projects with works costs between £2-20million, where full application of the NHS England Net Zero Building Standard is not required.

Version 2, April 2026

Effective from 1 June 2026

Contents

Using this document	3
NHS Net Zero Building Standard	3
Language usage	3
1 Introduction	4
Background and purpose	4
Applicability	5
New build projects	6
Retrofit or refurbishment projects	6
Policy landscape	7
Well-being of Future Generations Act	8
NHS Wales Decarbonisation Strategic Delivery Plan	8
WHTMs and WHBNs	9
2 Alignment	10
Business case stage alignment	10
Roles and responsibilities	11
Net zero carbon coordinator	11
BREEAM Alignment	14
3 Application	16
Project limits	16
Operational energy limit	17
Upfront carbon limit	17
Reporting and evidence requirements	17
Projects over £20million	18
Projects between £2-20million	18
NHSW Reporting Template	19
Excluded projects	20
Derogations	20
4 Supporting net zero projects	21
Energy and carbon hierarchies	21
Best practice for retrofit and refurbishment	22
Decarbonisation	22
Heat decarbonisation plans (HDPs)	22
Climate adaptation	23
Materials and circularity	23
Cost reporting	23

Appendix A – DSDP alignment	24
Appendix B – Roles	25
Appendix C – Templates	26
Appendix D – Approvals Processes	28

Using this document

NHS Net Zero Building Standard

This document should be read in conjunction with the NHS Net Zero Building Standard (NZBS) suite of documents as detailed in the following table.

These documents and tools have been developed to help assist the project teams comply with a new process and suite of requirements, and standardise reporting for ease of quality assurance, business case approvals and learning across capital investments. This document does include some minor deviations from the NZBS in terms of the works costs thresholds and the associated NZC approach.

Document / Tool	Description
NHS Net Zero Building Standard (NZBS)	NHS England Net Zero Building Standard provides technical guidance and requirements for the development of net zero carbon healthcare buildings. Will be an iterative document which will be regularly updated to align with and signpost best practice.
NHS Net Zero Building Standard User Guide	A supporting document to help users interpret and apply the requirements within the NZBS to their project.
Design Management Tool (DMT)	This Excel tool is provided specifically for the Net Zero Carbon coordinator to manage the delivery of the net zero carbon requirements and capture qualitative elements of compliance.
Operational Energy and Carbon (OE&C) Compliance Tool	This Excel tool provides the space allocation tab which is populated based on project specific schedule accommodation, proposed building geometry/massing and location to determine requirements for operational energy limits. The output of the space allocation tab is also used in the WLC Compliance Tool to generate the upfront carbon limit. The tool is used to record and demonstrate compliance against operational energy limits and performance targets, and record derogations.
Whole Life Carbon (WLC) Compliance Tool	This Excel tool is provided to generate the upfront carbon limit and demonstrate compliance at outline and full business case stages based on whole life carbon reporting.

Language usage

To be consistent with the NZBS, in this document modal verbs such as “must”, “should” and “may” are used to convey notions of obligation, recommendation or permission. The choice of modal verb will reflect the level of obligation needed to be compliant. The following describes the implications and use of these verbs in this document (readers should note that these meanings may differ from those of industry standards and legal documents):

- “must” is used when indicating mandatory compliance with this document
- “should” is used to indicate a recommendation (not mandatory/obligatory), i.e., among several possibilities or methods, one is recommended as being particularly suitable – without excluding other possibilities or methods

- “may” is used for permission, i.e., to indicate a course of action permissible within the limits of this document

Glossary

Term	Abbreviation	Definition
Building Research Establishment Environmental Assessment Methodology	BREEAM	A method of assessing, rating, and certifying the sustainability of buildings. It focuses on: energy, land use and ecology, water, health and wellbeing, pollution, transport, materials, waste, and management.
Embodied carbon		The total amount of CO ₂ e emitted in the production and use of a material or product. These include emissions caused by extraction, manufacture/processing, transportation and assembly of every product and element in the asset, maintenance and replacement, and end of life processes.
Modern methods of construction	MMC	Is a methodology to evolve construction from traditional ways of working to those that increase value across the supply chain.
Net zero carbon	NZC	NZC balances the quantity of CO ₂ e emitted by a building during construction and operation, with the amount avoided or sequestered.
Operational carbon		Operational carbon is the CO ₂ e emissions associated with the in-use operation of the building, typically from electricity, gas and oil consumption. Measured in kgCO ₂ e.
Operational energy limits		The NZBS includes operational energy limits in the energy usage intensities, expressed in kWh/m ² of gross internal floor area per year that covers energy use of the building.
Whole life carbon	WLC	The total sum of carbon emissions and related GHG emissions for all assets and removals, both operational and embodied over the lifecycle of an asset including its disposal (modules: A1-A5 upfront; B1-B7 in use; C1-C4 end of life). Overall WLC asset performance includes separately reporting the potential benefit from future energy recovery, reuse, and recycling (Module D).
Energy conservation measures	ECMs	Technologies and solutions that reduce energy consumption and improve energy efficiency on projects such as fabric upgrades, plant and equipment upgrades, heat pump technologies and renewables.
Health Technical Memoranda	HTM / WHTM	HTMs give comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare. WHTM refers to Welsh HTM.
Health Building Notes	HBN / WHBN	HBNs give best practice guidance on the design and planning of new healthcare buildings and on the adaptation or extension of existing facilities. WHBN refers to Welsh HBN.
Net zero carbon coordinator	NZC coordinator	A role within the design team that oversees and manages the process of compliance with the NZBS. The coordinator interfaces between the client and project team.

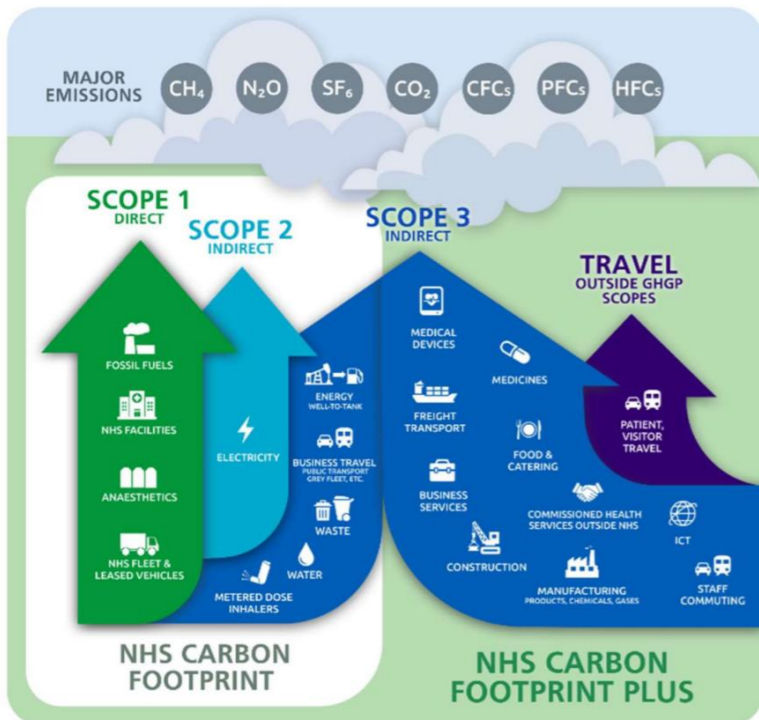
1 Introduction

Background and purpose

1.1 Climate change is a threat to public health; however the healthcare sector also contributes to the problem. In 2019 the Welsh Government declared a climate emergency and subsequently launched the ‘Prosperity for all: A Low Carbon Wales’ report, which sets out the ambition for public sector to be net zero by 2030 and specifically highlights the need to reduce emission in healthcare. The Welsh Government published the ‘NHS Wales Carbon Footprint 2018/19’ report (2020) calculating NHS Wales’ (NHSW) carbon footprint as approximately 1MtCO₂e; this value has been set as the baseline for emission reduction targets moving forwards.

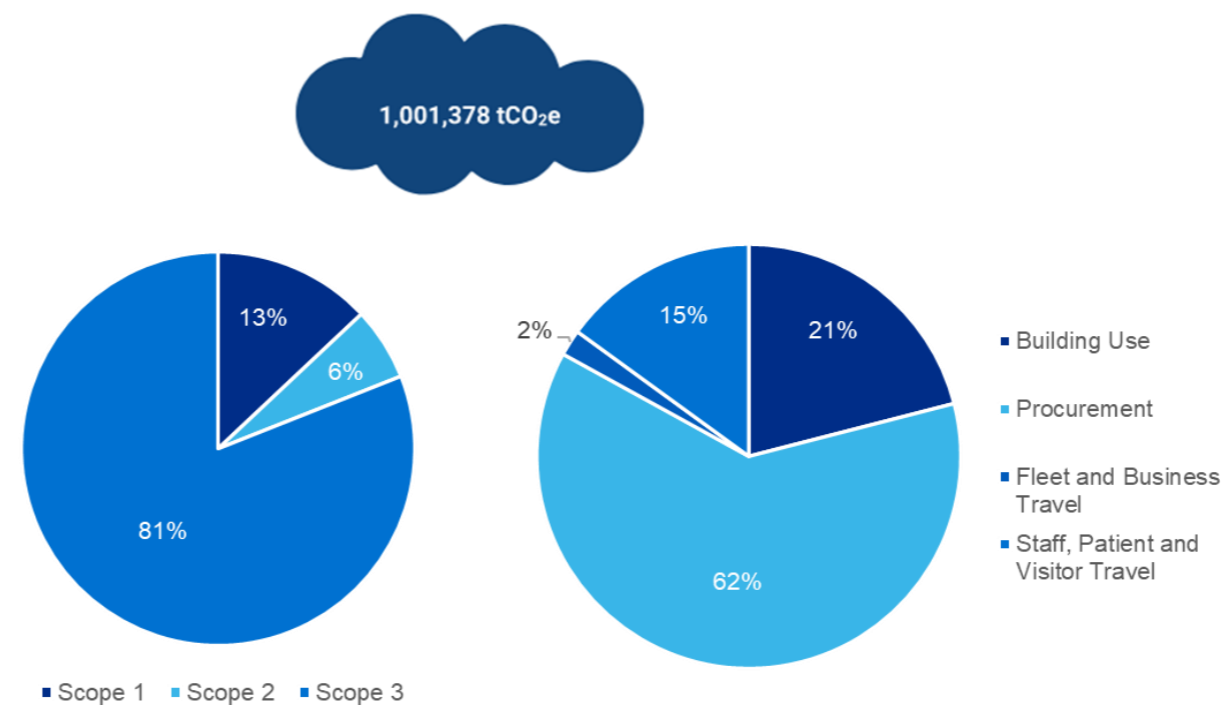
1.2 The Welsh Government published the ‘NHS Wales Decarbonisation Strategic Delivery Plan’¹ (DSDP) which was refreshed in 2025² to drive ambitious carbon emissions reductions. This reinforces the commitment of NHSW to achieving net zero carbon emissions by 2030 across all three scopes as defined by the Greenhouse Gas (GHG) Protocol in line with the Welsh Government’s net zero target for the public sector. The DSDP sets out carbon emissions targets for NHSW as a whole, and four categories of use, rather than by scopes; unlike NHS England’s ‘Delivering a Net Zero National Health Service’ (2022).

Figure 1.1: NHS Carbon Footprints and Emissions Scopes



Source: Delivering a Net Zero National Health Service (2022)

Figure 1.2: NHS Wales Carbon Footprint and Categories of Use 2018/19



Source: NHS Wales Decarbonisation Strategic Delivery Plan (2021)

1.3 To meet the Welsh Government’s legislative net zero commitments and to prevent irreversible impacts from climate change, bold action must happen now. In response to this, NHSW has made a commitment that all new buildings will be designed and accredited to a net zero framework and for all existing buildings to undergo an energy efficient upgrade.

1.4 To meet its targets and commitments, NHSW has adopted the ‘NHS England Net Zero Building Standard’ (NZBS) (2023). The NZBS is the first healthcare net zero building standard and provides technical guidance to support the development of sustainable, resilient and energy efficient buildings that meet the needs of patients now and in the future.

1.5 The NZBS considers whole life carbon (WLC) emissions; embodied carbon emissions associated with construction and operational carbon emissions associated with the energy consumption of buildings. By considering WLC the aim is to reduce carbon emissions and incrementally improve the NHS estate, progressing towards net zero targets.

¹ [NHS Wales Decarbonisation Strategic Delivery Plan 2021-2030](#)

² [NHS Wales Decarbonisation Strategic Delivery Plan 2025 to 2030](#)

1.6 The purpose of this document is to support the adoption of the NZBS in Wales. The document aligns the principles and processes of the NZBS to the Welsh business case process and provides supplementary guidance to enable roll out in Wales. Practical considerations and methods of application are also highlighted.

Applicability

1.7 Full application of the NZBS applies from [1 June 2026](#) to all applicable schemes that are pre-strategic outline case (SOC) with a works cost above £20million.

1.8 Projects with a [works cost between £2-20million](#) are expected to align with the supplementary guidance in this document from [1 June 2026](#). The supplementary guidance has been developed to provide an alternative approach for assessing the energy and upfront carbon of schemes with lower project value.

1.9 A phased approach has been developed for project compliance depending on project status.

Table 1.1 NHSW NZBS Application

Projects pre strategic outline case (SOC)	Projects beyond or undergoing strategic outline case approval (SOC) (e.g. undergoing outline business case (OBC))	Projects within construction
Must comply with the newest version of the NHSW NZBS document in its entirety, applying appropriate guidance aligned with project works cost, including operational energy and upfront carbon limits.	Derogations are permitted for missing new operational energy and upfront carbon limits in detailed design stage and construction.	No application of the newest version of the NHSW NZBS document required at this stage. However, organisations should be aware that the building will still need to achieve net zero operational carbon by 2030.
	Key reporting expectations from the construction and verification phases (RIBA Stage 5 onwards) of the newest version of the NHSW NZBS document should be met.	In-use energy monitoring and verification expectations should be taken as best practice by the Health Board.

1.10 This guidance and associated requirements apply to the following projects:

- New NHSW buildings
- Major refurbishments or extensions affecting >50% of the building envelope or services.

1.11 The table below sets out the application requirements at different cost thresholds. Note that the [project value](#) used throughout the guidance refers to [works cost only](#), not total project value.

Table 1.2: Application requirements

Project type and value	Energy and upfront carbon limits	NZC strategy and decarbonisation proposals	NZC coordinator required	Reporting
Emergency Works - Fire enforcement, RAAC, major infrastructure failure	No	No	No	None
Projects up to £2million	No	No	No	None
Projects £2million up to £20million	Yes – limits from this guidance/ use of the NHSW reporting template	Yes	Advised, but not required formally	NHSW reporting template
Projects over £20million	Yes – project bespoke limits using NZBS	Yes	Yes	Submission of NZBS tools

1.12 Although [emergency works](#) and [projects below £2million](#) do not specifically require decarbonisation strategies and proposals it is expected that all projects consider decarbonisation opportunities throughout the project lifecycle.

1.13 Where the full documentation process associated with the NZBS is not required it is encouraged that all schemes continue to adopt and apply net zero design principles throughout the project lifecycle.

New build projects

1.14 The NZBS does not require buildings to be net zero carbon in operation (NZCiO) upon handover, however it is vital that they have a plan to become net zero by 2030.

1.15 Where new build projects are being constructed on existing sites, these sites must have decarbonisation plans to remove fossil fuels from legacy estate.

Retrofit or refurbishment projects

1.16 Reuse and refurbishment of existing buildings is a key opportunity to reduce carbon emissions, typically requiring less material use. However, in some cases it means an operational energy limit is very challenging, or technically unfeasible, to achieve. When retrofitting, a WLC assessment must be undertaken to demonstrate the WLC benefit for the proposed works when compared to a new build solution.

1.17 Energy limits defined by the NZBS and this guidance might be challenging to achieve for refurbishment projects and therefore the SCP is expected to log and detail all derogations associated with non-compliance using the appropriate reporting processes.

1.18 A typical approach to understanding retrofitting and refurbishment options across an estate might include:

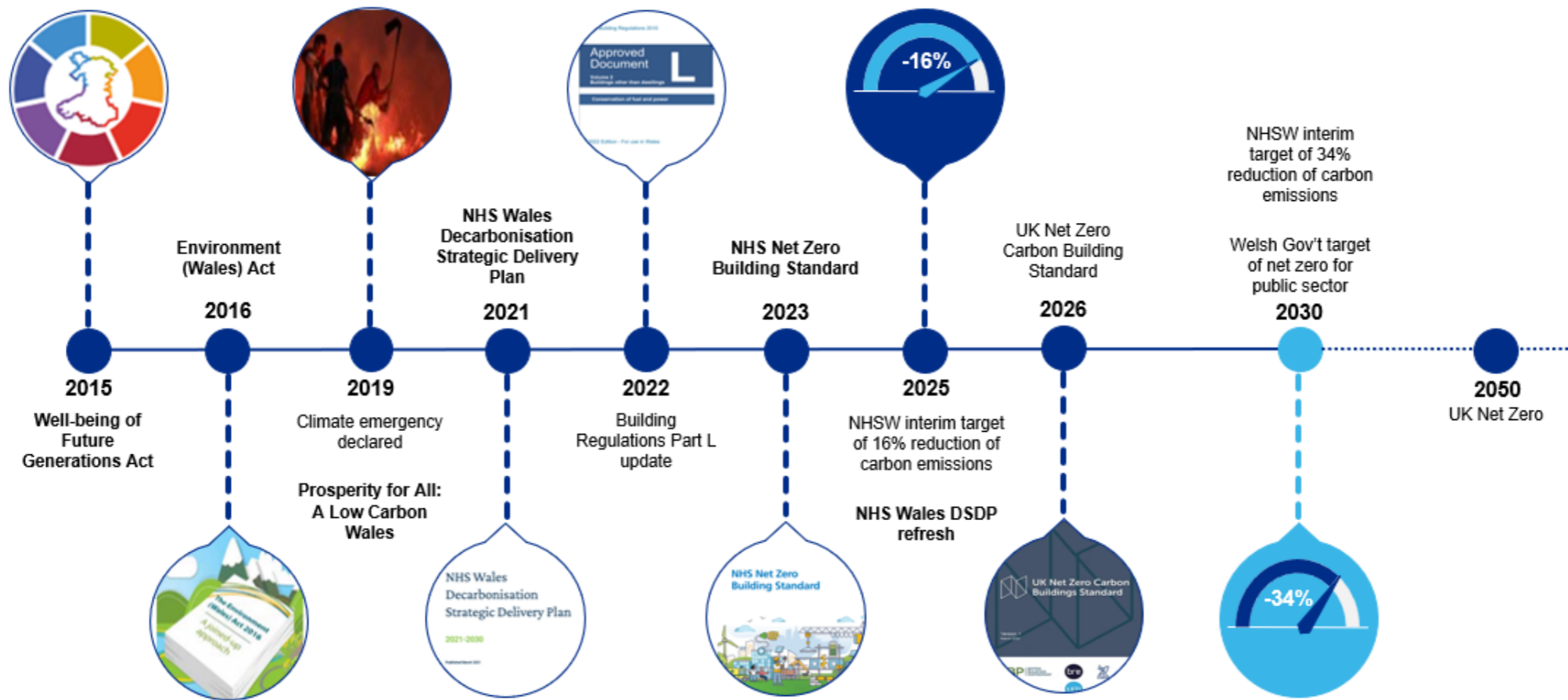
- Establishing the baseline position with respect to current energy, carbon, and costs.
- Carry out building energy audits and assessment of data.
- Identification of the potential energy conservation measures (ECMs) possible within the audited building(s).
- Identification of the priority projects, with an indicative 'spend to save' associated with the investments.
- Assessment of the WLC impact of ECMs and other developments, enabling use of carbon as a decision-making metric.

Where projects need to be prioritised over one another, a Business Case might be developed to support in the identification of how the priority feasibility projects may be developed, funded, and delivered.

Policy landscape

1.19 The NZBS aligns with the key policy documents published by the Welsh Government and NHSW and will provide additional guidance in the development of net zero healthcare buildings without contradicting the trajectory of progress already established. The following timeline details the targets and policies in Wales and the broader targets of the UK Government the development of policy and guidance considered in this document.

Figure 1.3: Policy and target timeline



*The recent announcements by the UK Government do not affect the policies and targets outlined for NHS Wales, NHS and UK Net Zero in Figure 1.3.

1.20 The NZBS aligns with the following legislation, strategies and ministerial ambitions that run throughout Wales' policies.

Table 1.3 Wales policies

Legislation	Strategy	Ministerial ambition
<ul style="list-style-type: none"> Well-being of Future Generations (Wales) Act 2015 Environment (Wales) Act 2016 The Climate Change (Carbon Budgets) (Wales) Regulations 2018 	<ul style="list-style-type: none"> Prosperity for All – Economic Action Plan (2017) Prosperity for All – A Low Carbon Wales (2019) 	<ul style="list-style-type: none"> Net Zero public sector by 2030 70% of Wales's electricity consumption to be renewable by 2030

Well-being of Future Generations Act

1.21 The NZBS supports the aims of the 'Well-being of Future Generations Act' (2015) and provides a practical framework to implement actions that support the act's goals. The NZBS's aim to develop sustainable, resilient, and energy efficient buildings that meet the needs of patients now and in the future, aligns closely with the Well-being of Future Generations Act, which seeks to improve the social, economic, environmental and cultural well-being of Wales.

1.22 Business cases for programmes that implement the NZBS are strengthened by this strong alignment to national policy. Key features of the NZBS that map to the goals of the Well-being of Future Generations act are presented below. Themes of the NZBS are reflected under all goals, except for 'A Wales of vibrant culture and thriving Welsh language', due to the culture-agnostic nature of the NZBS.

A prosperous Wales

- The **NZBS** will ensure improved **energy efficiency**, **generate cost savings** and improve public finances
- The **NZBS** will ensure **improved energy performance** which in turn will **improve patient and staff health and wellbeing**, assisting in comfort and productivity of building users

A resilient Wales

- The **NZBS** sets performance criteria for development, creating framework for development that is resilient to **future demands of health system**
- The **NZBS** recommends the use of **modern methods of construction and digital solutions**, which will create estates that are **resilient to future requirements**
- By applying the NZBS, energy efficiency and local energy generation will reduce dependency on external factors (energy prices)

A healthier Wales

- By complying with the **NZBS**, improved **energy efficiency** will generate **cost savings** and allow for investment in other areas of healthcare
- Net zero actions drives better environmental health, reducing risk of diseases such as heart disease, asthma and cancer
- The NZBS sets a vision for achieving whole life net zero carbon buildings, whilst improving patient care

A more equal Wales

- **Net zero** actions provide the opportunity to **reduce health inequalities** through improved environmental health
- By following the principles of the **NZBS user-centric designs** will be developed, with **accessibility** as a key principle of design

A Wales of cohesive communities

- Adoption of the **NZBS** will ensure **sharing of best practice** within the healthcare industry
- In turn this will enable visible implementation of best practice

A globally responsible Wales

- Adopting the **NZBS** will ensure a visible contribution to **UK's net zero targets**
- **Supply chains** are also considered through use of **whole life carbon assessments** and benefits of locally sources labour and materials

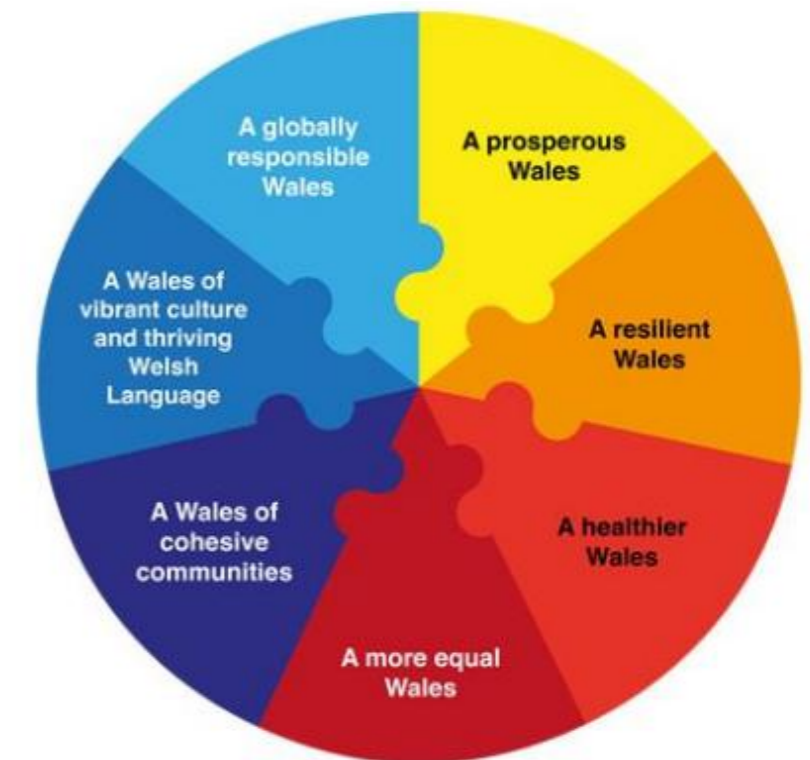
NHS Wales Decarbonisation Strategic Delivery Plan

1.23 The 2021 publication of the DSDP highlighted building decarbonisation as a key focus area for the plan, with building use being responsible for 21% of carbon emissions as reported in the 2018/19 baseline.

1.24 The DSDP sets out targets for NHSW as a whole, and the four categories of carbon emissions, rather than by scopes. With building use being the category that is most relevant for comparison with the NZBS. Our review identified that there were no contradictions between the two documents and therefore roll out of the NZBS would support delivery to achieve the requirements of the DSDP.

1.25 Building decarbonisation continues to be one of six main initiatives to deliver NHSW's net zero goals as published in the 2025 update of the DSDP, classified as 'Buildings and land'. The DSDP outlines 8 headline actions which have been mapped to the NZBS to show points of consensus and difference, and are presented in **Appendix A**.

Figure 1.4: Well-being of Future Generations Act goals



- The application of the NZBS to both new build and refurbishment schemes as detailed in 1.7 will support the following 'Building and land' DSDP actions:
 1. Building energy and utilities consumption will be actively managed and minimised.
 2. Actively identify opportunities (capital and maintenance) to decarbonise NHS buildings.
 3. Asset decarbonisation plans will be implemented to decarbonise NHS buildings.
 4. Existing CHP plant will be maintained at maximum efficiency until life expired. No further fossil fuelled CHP plant will be installed, but renewable CHP will be supported.
 5. Renewable energy opportunities will be progressed to increase energy generation activities and ensure NHS land will be used to its maximum potential.
 6. Primary and Community Care contractors, business owners and landlords will seek to improve energy efficiency and decarbonise their buildings.
 7. All new buildings and major refurbishments will align with the new Welsh interpretation of the NHS Net Zero Carbon Building Standard.
 8. Engage proactively with landlords and tenants across leased properties to drive low-carbon building operations.
- The NZBS complements the DSDP focus areas and goals by defining specific targets for carbon and energy efficiency, providing measurable performance criteria.
- The NZBS requires detailed operational energy (TM54) and WLC calculations increasing measurable data associated with the impact of construction and building use, complementing the principles of the DSDP. The reporting of all results (including elements outside of the upfront carbon and operational energy limits) will enable iterative development of the standard and provide more detailed data for NHSW for future carbon foot printing and target setting.

WHTMs and WHBNs

1.26 The NZBS has been developed in England in compliance with the majority of the requirements set out within NHS England's Health Technical Memoranda (HTMs) and Health Building Notes (HBNs). There are a number of derogations from the HTMs/HBNs challenging previous guidance to drive towards increased energy and carbon savings and reaching net zero carbon targets. Upon review, there aren't any significant differences between the HTMs/HBNs and the WHTMs/WHBNs that will impede the adoption of the NZBS in Wales.

1.27 The notable approaches that differ from traditional HTM/WHTM compliance when implementing the NZBS are listed below:

- **Hot water storage temperature** - The NZBS suggests a target hot water storage temperature of 55°C where possible, making allowance for the system to be able to increase the temperature periodically to eliminate the risk of legionella as a means to reduce energy consumption associated with domestic hot water storage. HTM 04-01, WHTM 04-01, and HSE guidance all request a minimum storage temperature of 60°C; NHS Wales will not deviate from the HTM guidance. The domestic hot water (DHW) energy use is included within the energy limit for 'low tech type' spaces only; where the operational energy model does not meet the energy limit for the low-tech spaces due to the DHW storage temperature and this is fully evidenced, this will be an acceptable derogation.
- **Temperature set points** - The set points within the clinical space types in the NZBS differ to the typical 18-28°C and 18-25°C set points in the HTMs, reflecting typical operational temperatures in the range of 21-25°C to better predict operational energy consumption.
- **Resilience review** - The NZBS suggests a resilience review is required as the current HTMs assume fossil fuel heating with dual fuel backup and electrical system with generator backup. With a move to electrical heating and cooling as well as future weather conditions it is becoming increasingly challenging to meet backup of the full site with generators.

2 Alignment

2.1 The purpose of this section is to provide detail on how the NZBS, and supplementary guidance, is applied specifically to NHSW business case stages and outline the required evidence at each stage.

Business case stage alignment

2.2 Business case stages are where compliance is checked formally by parties outside of the Project Team; aligned with the 'NHS Wales Infrastructure Investment Guidance' (2018). Requirements align with the business case stages in the NHSW decarbonisation process and is supplemented by the 'NZBS Compliance Matrix' (2023).

2.3 The early business case stages of NHS E/I and NHSW processes have a slight difference; there is the additional Business Justification Case (BJC) process in NHSW that runs across RIBA stages 1-4 that is used for projects typically below £4million. Projects that fall under the BJC process and those with works costs between £2-20million should follow the supplementary guidance in this document.

Table 2.1: Correlation between business case stages, NHSW proposed decarbonisation process, NZBS and BREEAM

NHS Wales Stage	Business Case Stage	RIBA Stage	NHSW – Proposed decarbonisation process	NZBS Requirement (Project work cost over £20million)	NZBS supplementary guidance (Project work cost £2-20million)	BREEAM Requirement
1	Strategic Outline Case (SOC)	Programme Business Case (PBC)	0 Commitment to achieve NZC and adopt the NZBS approach. Make cost provisions for decarbonisation. Responsibility of Health Board and Cost Advisor/ Quantity Surveyor	Derive the project brief including operational energy and upfront carbon limits using schedule of accommodation. No submission documents required	Define the project brief including operational energy and upfront carbon limits using NHSW Reporting Template. No submission documents required	Commitment to relevant BREEAM minimum target rating: Excellent – new build projects Very Good – refurbishments
2	Outline Business Case (OBC)	Business Justification Case (BJC)	1-2 Pre assessment decarbonisation outline estimate (Design tool) Attainment of rating precondition for approval of OBC. SCP/Contractor to produce evidence and Cost Advisor/ Quantity Surveyor to review.	Review evidence submitted by SCP/Contractor. NZC coordinator to ensure demonstration of compliance. Submit NZBS compliance tools and decarbonisation strategy.	Review evidence submitted by SCP/Contractor. Populate NHSW Reporting Template for OBC submission for business case approval. Submit NHSW Reporting Template and decarbonisation strategy	BREEAM pre assessment and targeting of early-stage credits.
3	Full Business Case (FBC)		3-4 Include populated compliance tools to demonstrate new build projects will achieve targets. Refurbishment to populate tools and provide derogations for non-compliance. SCP/Contractor to produce evidence, Cost Advisor/ Quantity Surveyor to review.	Review evidence submitted by SCP/Contractor. NZC coordinator to ensure demonstration of compliance. Submit updated NZBS compliance tools.	Review evidence submitted by SCP/Contractor. Populate NHSW Reporting Template for FBC submission stage for business case approval. Submit NHSW Reporting Template	Design stage BREEAM certification.
4	Design Completion and Construction		5 Develop as-built information and update tools to log any changes during construction to ensure compliance is still achieved. SCP/Contractor to produce evidence, Cost Advisor/ Quantity Surveyor to review.	As-built revision of DSM. Undertake quality assurance inspections. Submit design register and carbon savings evidence.	Undertake quality assurance inspections and monitoring for data gathering. No submission documents required	Design activities, evidence collection and assurance across BREEAM Credits to be done throughout RIBA 2 – 7.

NHS Wales Stage	Business Case Stage	RIBA Stage	NHSW – Proposed decarbonisation process	NZBS Requirement (Project work cost over £20million)	NZBS supplementary guidance (Project work cost £2-20million)	BREEAM Requirement
5	Operational Commissioning	6	Six months after project handover undertake post construction review to demonstrate attained targets. SCP/Contractor to produce evidence, Cost Advisor/ Quantity Surveyor to review.	Evidence of carbon savings must be presented and collate evidence that installed technologies comply with project's energy strategy. Submit updated NZBS compliance tools. Assumptions from design stage to be replaced with actual data.	Present and collate evidence that installed technologies comply with project's operational energy and upfront carbon limits. Submit NHSW Reporting Template	Post Construction BREEAM Certification.
6	Project Completion	7	SCP/Contractor to undertake post occupancy evaluation and create lessons learnt summary. End user to follow monitoring and verification (M&V) plan and report findings.	Follow M&V plan for 3 years. Contractor and project team to prepare lessons learnt summary Submit summary of missing information and results of each stage.	Follow M&V plan for 3 years. Contractor and project team to prepare lessons learnt summary Submit reporting back to NHSW for operational energy consumption.	Post occupancy evaluation.

Roles and responsibilities

2.4 The NZBS has a defined set of responsibilities assigned to roles to deliver the requirements. A high level summary of roles and responsibilities for the Health Board/Trust, supply chain partners (SCPs) and Contractors, BREEAM assessors and the net zero carbon (NZC) coordinator are presented in **Table 2.2**, as part of the main activities across the project lifecycle. This summary is supported by additional information for activities, processes and responsibilities for the delivery team.

2.5 At SOC stage the Health Board/Trust team will require input from the Cost Advisor/ Quantity Surveyor and a suitably qualified net zero consultant for the development of the business case. This support will continue throughout the project to validate outputs from the SCP.

Net zero carbon coordinator

2.6 The net zero carbon (NZC) coordinator is a role whose purpose is to manage the design process regarding net zero carbon performance, and to create an interface between the client/trust and the project team. It is likely that this role will sit within the design team and will support the supply chain to navigate the processes outlined in the NHS net zero standard. Where appropriate, the coordinator challenges the design teams to help them work towards compliance with the NZBS.

2.7 The NZC coordinator is an identified and trained member of the Design Team who is responsible for compliance against the NZBS' process and technical requirements. A summary of responsibilities of the NZC coordinator include:

- Act as an interface between project teams, to translate technical requirements and outcomes to internal and external stakeholders
- Maintain close engagement with the Cost Advisor/ Quantity Surveyor to ensure cost is a key consideration for all decisions making and appropriate cost data is provided to evidence chosen net zero solutions are value for money
- Advocate for NZC performance within the Design Team
- Finalise requirements around carbon and energy limits
- Facilitate stakeholder engagement
- Complete and maintain the Design Management Tool, capturing key design decisions that impact operational energy and embodied carbon performance
- Assist in capturing and sharing lessons learnt across with the Trust/HB, other Professional Bodies and Supply Chain to enable continuous improvement services
- Ensure energy and carbon limits, and performance targets are set and communicated to the Design Team, and that the Design Team are on track against the limits through design stages

A detailed description of the responsibilities of the NZC coordinator is in Appendix B.

Whilst the NZC coordinator does not need to be a technical specialist, they must have sufficient knowledge of the components of operational energy, WLC performance and design processes so that they can effectively communicate between project teams and wider stakeholders. Full responsibilities are specified in the NZBS, section 6.26 – 6.31.

2.8 For projects between £2-20million, the NZC coordinator role is advised, but not explicitly required.

Table 2.2: Roles and Responsibilities Matrix

NHS Wales Stage	Business Case Stage		RIBA Stage	Health Board / Trust		Supply Chain Partners (SCP) / Contractor		
				Health Board	Cost Advisor / Quantity Surveyor	SCP	NZC coordinator	BREEAM assessor
1	Strategic Outline Case (SOC)	Programme Business Case (PBC)	0	Develop the project brief. Commitment to relevant BREEAM rating. Include the strategy to achieve NZC and adopt the NZBS approach. Make cost provisions for decarbonisation in SOC		-	-	-
2	Outline Business Case (OBC)	Business Justification Case (BJC)	1-2	Appoint SCP. SCP team to include NZC coordinator. Review of RIBA 2 deliverables.	Review costs provided by SCP including costs associated with net zero design.	Engage with and understand low carbon design philosophy. Passive design analyses, TM54 modelling, energy and carbon strategy development and input for OE&C and WLC tools. Develop M&V plan and adaptability strategy. Provide costs for Cost Advisor/ Quantity Surveyor review.	Review schedule of accommodation and undertake space allocation (to inform limits for projects over £20million). Complete appropriate reporting tools. Support with development of net zero cost evidence.	Undertake BREEAM preassessment. Identify mandatory credits and confirm target rating. Collaborate with the SCP to develop evidence required for early-stage credits. Review of RIBA 2 deliverables.
3	Full Business Case (FBC)		3-4	Review of RIBA 3 and 4 deliverables including design, BREEAM and completion of NZBS compliance tools and relevant supporting documents.	Review costs provided by SCP including costs associated with net zero design.	Develop design and update TM54 modelling. Provide updated inputs for reporting tools. Finalise M&V plan. Provide costs for Cost Advisor/ Quantity Surveyor review.	Update limits for the project to reflect any design changes. Complete appropriate reporting tools. Support with development of net zero cost evidence.	Support development of design stage evidence and review for completion of design stage assessment. Submission for in design certification.
4	Design Completion and Construction		5	Review any updates associated with changes during construction to ensure ongoing compliance.	Support during construction to review any changes and ensure value for money is still maintained.	Prepare as-built revision of model. Undertake quality assurance inspections.	Monitoring through construction and collation of evidence for reporting.	Monitoring through construction and collation of evidence for reporting.
5	Operational Commissioning		6	Attend any training sessions and ensure familiarisation with M&V strategy and building usage.		Evidence of carbon savings must be presented and collate evidence that installed technologies comply with project's energy strategy	Complete appropriate reporting tools.	Submission for construction certification.

NHS Wales Stage	Business Case Stage		RIBA Stage	Health Board / Trust		Supply Chain Partners (SCP) / Contractor		
				Health Board	Cost Advisor / Quantity Surveyor	SCP	NZC coordinator	BREEAM assessor
6	Project Completion		7	Ongoing monitoring and verification of the building in use and reporting.		Contractor and project team to prepare lessons learnt summary.	Involvement with in-use data reporting and lessons learnt.	Involvement with lessons learnt.

BREEAM Alignment

2.9 The NZBS supports the NSW stance that all new build projects should target a minimum BREEAM rating of 'Excellent' and all refurbishments, a minimum of 'Very Good'. There are mandatory credits required to achieve these ratings however the NZBS also highlights credits that align with the principles of the NZBS and the development of net zero healthcare buildings. If a new build project targets all BREEAM credits as referred to in the NZBS up to 18 credits can be achieved, however some may only be partially achieved and further coordination with the BREEAM assessor is required.

Figure 2.1 BREEAM V6.1 Credits and Alignment with NZBS

BREEAM Credits and NZBS Alignment				
BREEAM Credit	MAN 03 – Construction	MAN 04 – Commissioning	MAN 05 – Aftercare	HEA 01 – Visual Comfort
Description	Responsible construction practices	Commissioning and handover	Aftercare and post occupancy evaluation	Encourage best practice in visual performance and comfort
Compliance	The construction and handover requirement outlined in the NZBS align with the requirements of this credit.	The commissioning activities required in the NZBS align with the requirements of this credit.	NZBS requires seasonal commissioning and 3 years of post occupancy evaluations to be undertaken which supports compliance with this credit.	NZBS recommends daylight analysis to maximise natural daylight and optimise controls. It is recommended this is done at early design stages to maximise impact on design.
HEA 02 – Indoor Air Quality	HEA 04 – Thermal Comfort	ENE 01 – Reduction of Energy	ENE 02 – Energy Monitoring	ENE 04
Encourage best practice in visual performance and comfort	Ensure building can provide thermal comfort	Compliance model and operational energy model	Standard requires enhanced sub-metering. 90% of all energy uses required per BREEAM	Passive design, LZC, free cooling
NZBS recommends daylight analysis to maximise natural daylight and optimise controls. It is recommended this is done at early design stages to maximise impact on design	NZBS has a requirement to undertake thermal modelling for current and future weather files. Early stage passive design options will have significant impacts on thermal comfort and system design	NZBS requires dynamic simulation modelling for operational energy in accordance with CIBSE TM54 to provide a more accurate estimation of energy use above compliance modelling. This is required at each RIBA stage (refer to Compliance Matrix)	NZBS requires enhanced metering and monitoring strategy which aligns with this credit.	NZBS requests passive design analysis which aligns with this credit
ENE 05 – 08	MAT 01 – Environmental Impact	MAT 02 – Environmental Impact	MAT 03 – Environmental Impact	WST 01 and 02 – Construction waste management and Recycled Aggregates
Specialist energy and unregulated energy	Life cycle assessment (LCA)	Life cycle assessment (LCA)	Life cycle assessment (LCA)	Waste Reduction
These credits are directly impacted by the TM54 analysis required in the NZBS, i.e. analysing the equipment being procured and ensuring end users are selecting efficient products.	Carbon optioneering must be undertaken in accordance with section 4.71 of the NZBS which would support compliance with this credit.	Use of EPDs for production of WLC assessment is required in the standard and therefore will support compliance with this credit.	The principles of the standard support sustainable procurement to reduce embodied carbon aligning with this credit.	Although not directly related with the requirements of these credits the nature or reducing embodied carbon means reduced waste is considered throughout design and construction.

2.10 BREEAM V7 was launched in September 2025. Registrations to V6.1 are closed from 26th January 2026 at which point V7 will be mandatory to apply. Changes to credits that align with the NZBS are summarised below.

Figure 2.2 BREEAM V7 Credits and Alignment with NZBS

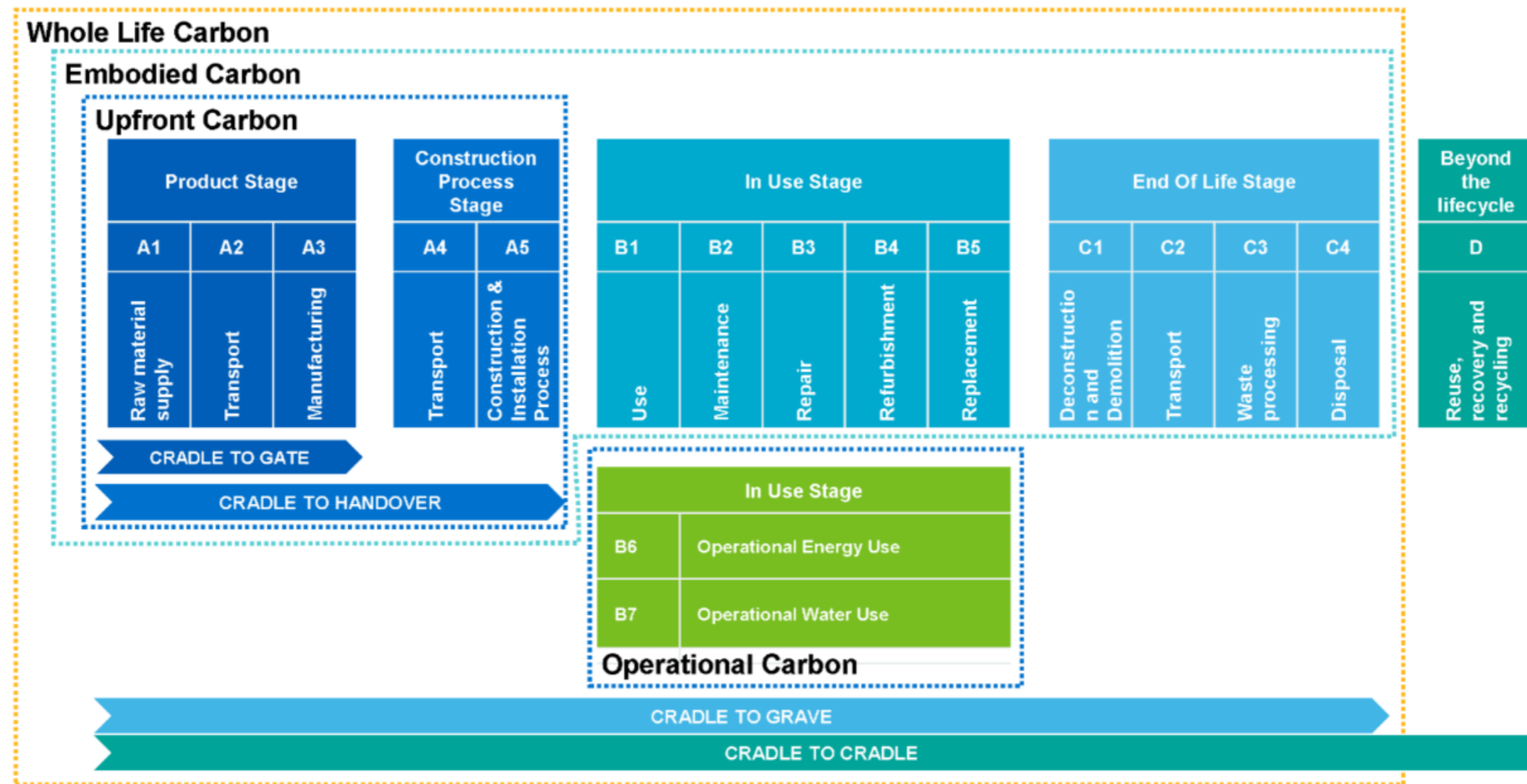
BREEAM V7 Credits and NZBS Alignment					
<p>MAN 03 – Responsible construction</p> <p>The construction and handover requirement outlined in the NZBS align with the requirements of this credit</p>	<p>MAN 04 – Commissioning and handover</p> <p>The commissioning activities required in the NZBS align with the requirements of this credit</p>	<p>MAN 05 – Aftercare</p> <p>NZBS requires seasonal commissioning and 3 years of post occupancy evaluations to be undertaken</p>	<p>HEA 01 – Natural Light</p> <p>NZBS recommends daylight analysis to maximise natural daylight, view out and optimise controls.</p>	<p>HEA 02 – Artificial light</p> <p>Reduction of artificial light in line with NZBS. Requirements for internal and external lighting as well as flicker and lighting control</p>	<p>HEA 03 – Non-visual effects of light</p> <p>Aligns with NZBS aims for improving occupant wellbeing in healthcare settings</p>
<p>HEA 04 – Indoor air quality</p> <p>Indoor air quality plan, ventilation and internal finishes requirements</p>	<p>HEA 05 – Thermal comfort</p> <p>Undertake thermal modelling for current and future weather files. Early stage design decisions will have significant impacts on thermal comfort and system design</p>	<p>ENE 01 – Energy and carbon performance for regulated energy uses</p> <p>Compliance modelling for Part L requirements to demonstrate energy and carbon performance</p>	<p>ENE 02 – Prediction of operational energy and carbon</p> <p>Detailed energy modelling to mitigate risks of underperformance and generate a realistic prediction of energy and carbon emissions</p>	<p>ENE 03 – Energy monitoring</p> <p>NZBS requires enhanced metering and monitoring</p>	<p>ENE 04 – Low carbon design</p> <p>NZBS requires passive design analysis to explore the impact of form and fabric performance. NZBS also requires LZC and renewable technologies</p>
<p>ENE 05 -06 – Energy efficient equipment and systems</p> <p>Determining the impact of unregulated energy uses compared to installed building services energy consumption</p>	<p>ENE 07-08 – Flexible demand response and installed controls</p> <p>Flexible demand response capability and robust controls to optimise use of renewable technology and energy efficient operation</p>	<p>MAT 01 – Building life cycle assessment</p> <p>Optioneering undertaken in accordance with section 4.71 of the NZBS including post-construction assessment, benchmarking and reporting results to carbon database</p>	<p>MAT 02 – Environmental product declarations</p> <p>Use of EPDs and specifying products with robust environmental data for production of WLC assessment</p>	<p>MAT 03 – Responsible sourcing of construction products</p> <p>Sustainable procurement plan, specifying products with ISO14001, BES6001, FSC etc</p>	<p>MAT 04 – Durability and resilience</p> <p>Ensuring a durable and resilient building, reducing need for repair supporting the NZBS to design for durability .</p>
<p>MAT 05 – Material efficiency</p> <p>Consideration and implementation of opportunities for material efficiency at all design stages and during construction to reduce embodied carbon</p>	<p>WST 01 – Construction waste management</p> <p>Reduction of waste is considered throughout design and construction. Requirement for pre demolition audit and waste targets during construction</p>	<p>WST 02 – Use of recycled and sustainably sourced aggregates</p> <p>Specification of recycled and locally sourced aggregates to reduce embodied carbon.</p>	<p>WST 05 – Adapting to climate change</p> <p>Risk assessment and design to ensure resilience to future climate change impacts.</p>	<p>WST 06 –Disassembly and adaptability</p> <p>NZBS requires a flexibility and adaptability strategy at early design stage</p>	<p>Pol 01– Impact of refrigerants</p> <p>Minimise refrigerant global warming impact in line with NZBS requirement to specify refrigerants with a GWP ≤ 5 or a DELC ≤750 kg CO₂e/kW</p>

3 Application

3.1 The purpose of this section is to advise how the NZBS and supplementary guidance will be applied to projects in Wales.

3.2 The NZBS considers whole life carbon (WLC) providing limits for both embodied carbon and operational carbon via energy performance limits. This move to considering WLC is intended to drive better carbon lifecycle design decisions.

Figure 3.1: Scope of Whole Life Carbon (WLC) based on BS EN 15978



Project limits

3.3 Projects with a works cost above £20million should apply the NZBS in full using the suite of compliance tools. Projects are expected to achieve the bespoke scheme operational energy (B6) and upfront carbon (A1-A5) limits; derogations are to be provided where this is not achieved.

3.4 More details on the application can be found in the [NHS Net Zero Building Standard](#)³, with a requirement to submit all NZBS tools and required strategies at each business case stage.

³ [NHS England » NHS Net Zero Building Standard](#)

3.5 Projects with a [works cost between £2-20million](#) (other than excluded schemes) are expected to comply with the limits set out in this guidance. This guidance provides operational energy (B6) and upfront carbon (A1-A5) limits for new build and refurbishment projects which will apply to any building that has not yet reached OBC submission stage on [1 June 2026](#).

3.6 [Emergency works](#) and projects with [works costs below £2million](#) are not required to comply with the limits as set out in this guidance, however they should look to identify and implement best practice interventions and design where applicable.

Operational energy limit

3.7 The operational energy limit is an energy use intensity (EUI) value in kWh/yr/m² to enable assessment of how efficiently the building uses energy.

3.8 The operational energy limit includes both regulated and unregulated energy consumption:

- Regulated energy includes consumption from fixed installed services such as lighting, heating, cooling and ventilation.
- Unregulated energy includes plug in consumption from equipment such as monitors and medical equipment.

3.9 It is expected that the majority of new build projects within the £2-20million work cost range will achieve the operational energy limit. Energy intensive facilities such as laundry and radio pharmacy may seek derogations and amended limits during the business case review process.

Table 3.1: Operational energy limits

	New build	Major refurbishment
Operational energy limit (kWh/yr/m ²)	100	130

Upfront carbon limit

3.10 The upfront carbon limit applies to modules A1-A5 of the RICS Whole Life Carbon assessment methodology (Figure 3.1).

3.11 The upfront carbon limit for a project is dependent on the date of commencement on site. The upfront limit decreases in line with the reductions anticipated by the [UK Net Zero Carbon Buildings Standard](#)⁴.

Table 3.2: Upfront carbon limits

	2025	2030	2035
Upfront carbon limit (kgCO ₂ e/m ²)	550	413	275

2.11 The NZBS is clear that to achieve NZC it must be considered at project outset and remain a key item throughout the project lifecycle. Consideration of carbon early in the project lifecycle enables the maximum impact on carbon emissions and avoids potential rework and resulting increases in costs.

Reporting and evidence requirements

3.12 The operational energy for the building should be calculated with using operational energy modelling in alignment with CIBSE TM54.

3.13 Upfront carbon should be reported using RICS Whole Life Carbon Assessment (WLCA) methodology, using a calculation tool such as OneClick LCA or equivalent.

3.14 At each stage, the following information should be generated or submitted to NHS Wales SSP. Provision should be made in the project programme and fees for producing this information.

⁴ [UK Net Zero Carbon Buildings Standard](#)

Projects over £20million

3.15 For projects with [works costs over £20million](#), the compliance tools developed as part of the NZBS should be used at each RIBA stage to ensure project information is captured and the project is on track to meet the limits, and capturing derogations as applicable.

Table 3.3: Use of the NZBS and reporting requirements for projects over £20million

	RIBA 0-1	RIBA 2	OBC	RIBA 3	RIBA 4	FBC	RIBA 5	RIBA 6	Handover	RIBA 7
Use of the NZBS	✓	✓	✓	✓	✓	✓	✓	✓		✓
Design Management Tool		✓		✓	✓		✓	✓		✓
Use compliance tools to report and monitor progress against limits		✓		✓	✓		✓	✓		✓
Submit Reporting Tabs of Compliance Tools			✓			✓			✓	
Submit additional costing information			✓			✓				
Business Case Checklists			✓			✓				

Projects between £2-20million

3.16 For projects with [works costs between £2-20million](#), the [NHSW Reporting Template](#) should be used to set and report against operational energy and upfront carbon limits.

Table 3.4: Evidence and reporting requirements for projects between £2-20million

	RIBA 0-1	RIBA 2	OBC	RIBA 3	RIBA 4	FBC	RIBA 5	RIBA 6	Handover	RIBA 7
Agreement of project limits	✓		✓			✓			✓	
Submission of the reporting template			✓			✓			✓	
Whole life carbon assessment		✓			✓			✓		
Energy modelling		✓			✓					
Submit costing information			✓			✓				

NHSW Reporting Template

3.17 The NHSW Reporting Template should be completed at each business case stage for projects between £2-20million to ensure limits are appropriately assigned for the scheme and to capture relevant project data throughout the lifecycle of the project.

3.18 The proforma will be reviewed by NHS Wales SSP as part of the business case submission with the following governance and responsibilities:

- Project Board Responsibility: ensure carbon compliance is tracked alongside cost, programme, and quality.
- Design Team Responsibility: provide upfront carbon and operational energy reporting at key RIBA stages.
- NHS Wales Carbon Officer: review and approve compliance; ensure lessons learned are recorded for future projects.

3.19 The reporting template has been developed to provide expected operational energy and upfront carbon limits based on the project inputs as shown in Figure 3.2.

3.20 At each business case stage, it is expected that the building area (GIA) is confirmed and the project limits reviewed. Where a limit is deemed inappropriate, discussions should be had with NHS Wales SSP to agree a revised limit. At each stage there is a means to capture notes and derogations for the relevant item and business case.

3.21 The project design values are set to automatically format to provide easy identification of compliance with the relevant limit.

Figure 3.2: NHSW Reporting Template

NHSW Reporting Template			GIG CYMRU NHS WALES Partneriaeth Cydwasaethau Shared Services Partnership														
Project details	Project:	Project name	Confirmed building area (GIA)	2650	m2	Confirmed building area (GIA)	2500	m2	Confirmed building area (GIA)	2500	m2						
	Health board:	Health board		Operational energy	Project energy limit		100	kWh/m2/yr		Operational energy	Project energy limit	100	kWh/m2/yr	Operational energy	Project energy limit	200	kWh/m2/yr
	Location:	Location			Annual energy consumption		265,000	kWh/yr			Annual energy consumption	250,000	kWh/yr		Annual energy consumption	250,000	kWh/yr
	RIBA stage:	1 - Preparation and brief		Limit confirmed	Yes			Limit confirmed		No		Limit confirmed	Yes				
	Business case stage:	Business justification case (BJC)		Design estimated energy	150		kWh/m2/yr	Design estimated energy		165	kWh/m2/yr	Design estimated energy	100	kWh/m2/yr			
	Overall project value:				Annual estimated energy		397,500			kWh/yr	Annual estimated energy		412,500	kWh/yr	Annual estimated energy	250,000	kWh/yr
	Construction works cost:			Derogations			Derogations			Derogations							
	Project type:	New build		Upfront carbon	Modules A1 - A5 limit		413	kgCO2e/m2		Upfront carbon	Modules A1 - A5 limit	413	kgCO2e/m2	Upfront carbon	Modules A1 - A5 limit	413	kgCO2e/m2
	Building type:				Modules A1 - A5 limit		1,093	tCO2e			Modules A1 - A5 limit	1,031	tCO2e		Modules A1 - A5 limit	1,031	tCO2e
	Estimated building area (GIA):	2500 m ²		Limit confirmed	Yes			Limit confirmed		Yes		Limit confirmed	Yes				
	Year of construction:	2032		Upfront carbon	413		kgCO2e/m2	Upfront carbon		420	kgCO2e/m2	Upfront carbon	440	kgCO2e/m2			
	Project description			Upfront carbon	1,093		tCO2e	Upfront carbon		1,050	tCO2e	Upfront carbon	1,100	tCO2e			
	Description here - eg. new build of 2,500m2 of community health centre			Derogations			Derogations			Derogations							
Revision			Revision			Revision											
Date			Date			Date											
Description			Description			Description											
1			1			1											
01/12/2025			01/12/2025			01/12/2025											

Excluded projects

3.22 These projects do not have to apply the reporting template and comply with operational energy and upfront carbon limits:

- Emergency work
- Fire remediation/enforcement

Derogations

3.23 Derogations should be submitted in the reporting template following discussions with NHS Wales SSP.

4 Supporting net zero projects

4.1 The purpose of this section is to provide additional information to support the delivery of net zero in Wales.

Energy and carbon hierarchies

4.2 The design hierarchies for operational energy and embodied carbon provide a clear framework to optimise design and reduce the WLC impacts of construction.

4.3 The energy hierarchy outlines the approach to reducing operational energy. It advocates for a 'fabric first' and passive design approach to reduce energy demand prior to assessing how energy can be efficiently used:

- **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.

4.4 The embodied carbon hierarchy provides a useful framework for design decision making regarding reduction of embodied carbon:

- **Build nothing:** use of existing built assets and challenge brief.
- **Build less:** use less material.
- **Build clever:** use smart materials and techniques to reduce embodied carbon.
- **Build efficiently:** ensure structure is highly utilised (linked to build less).
- **Waste less:** use prefabrication to reduce on site waste as well as modern methods of construction (MMC) to improve efficiency and productivity of construction.

Figure 4.1: Operational energy hierarchy

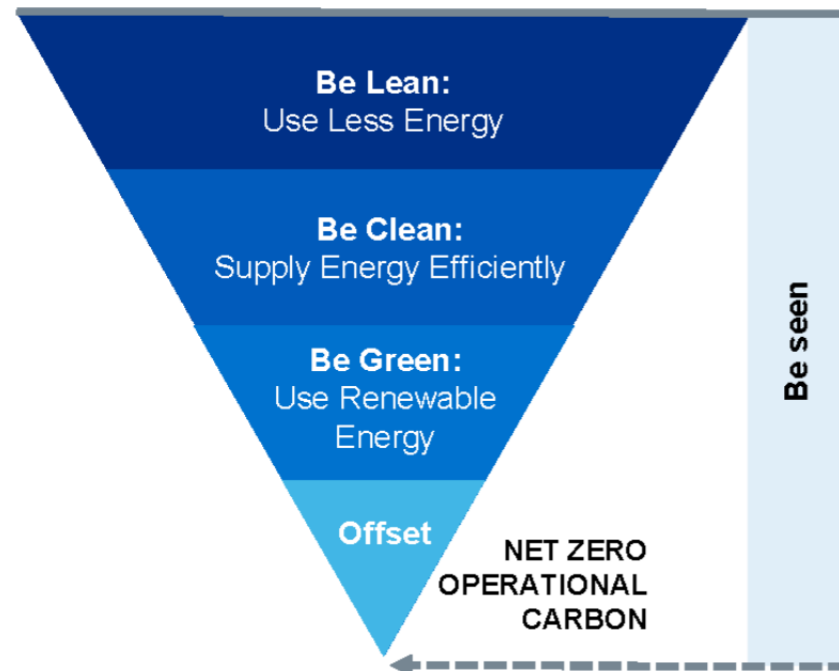
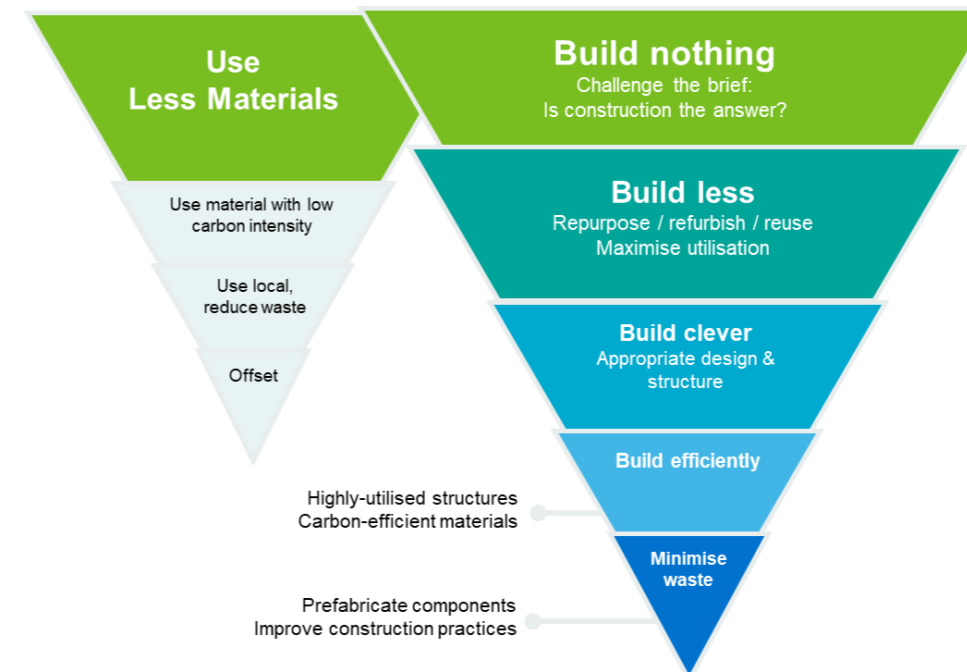


Figure 4.2: Embodied carbon hierarchy



Best practice for retrofit and refurbishment

4.5 Retrofit and refurbishment schemes will require decarbonisation measures to be applied to ensure compliance with the principles of the NZBS and the DSDP. To inform these it is recommended that energy audits are undertaken to assess the extent of decarbonisation measures that can be applied on a project.

4.6 Site energy audits will yield a variety of energy conservation measures (ECM) which would typically have qualitative assessments or rationalisation. An example qualitative ECM identification and rationalisation table has been included in Appendix C – Templates.

4.7 Further to the above, priority ECM planning may provide commentary on the measures chosen to be taken forward and whether any have been ruled out due to feasibility of implementation. An example of a prioritisation exercise has also been included in Appendix C – Templates.

Decarbonisation

4.8 The decarbonisation of an existing site or service should consider the whole life impact of installed services, particularly the phase out of fossil fuels and electrical capacity of the site.

4.9 Other elements that should be considered regarding whole life impacts are refrigerant selection and embodied carbon of interventions.

4.10 Heat decarbonisation plans (HDPs) are an essential part of planning a route for existing healthcare estates to decarbonise. A HDP seeks to provide a roadmap to achieve net zero carbon operation focusing on the scope 1 and 2 emissions associated with operational energy.

4.11 The next step is to consider the embodied carbon of interventions to provide a robust assessment of WLC impacts, such as the embodied carbon associated with glazing replacements or PV installations.

Heat decarbonisation plans (HDPs)

4.12 HDPs should outline the most cost-effective pathways to decarbonising heat through integration of energy efficiency measures that reduce a site's heat demand, taking a 'whole building approach' to decarbonisation, followed by replacing fossil fuel heating systems with low carbon alternatives. A HDP should be suitable for the type of estate an organisation operates; estate portfolios range from numerous standalone facilities to campus style activities, each requiring a considered, specific approach.

4.13 The standard sections that should be included in a HDP include:

- **Executive summary** – summarise the plan to decarbonise heating on site including the buildings included within the plan, costed interventions, expected carbon emission reductions and indicative programme
 - **Introduction** – context for the development of the HDP including details of the site and the current carbon emissions
 - **Buildings** – overview of the built estate and site infrastructure including the existing heating and cooling systems installed, primary energy sources, consumption and energy uses
 - **Low carbon transition** – context for reduction of carbon and the site methodology to reduce energy consumption. This section should include a qualitative review of options for heat decarbonisation and energy efficiency opportunities, including relevant ECMs. Templates for mapping ECM savings have been included in Appendix C – Templates.
 - **Electricity loading** – a review of the existing electrical capacity and infrastructure on site and constraint analysis for increasing installed capacity to meet the requirements for electrification of heat
 - **Monitoring and validation (M&V) reporting plan** – a review of the existing monitoring and metering strategy on site and proposed improvements to ensure better energy monitoring and reporting on the impacts of proposed measures to reduce energy and carbon emissions
 - **Resources** – governance for decarbonisation projects including potential KPIs, a review of procurement options, funding mechanisms and recommended next steps
 - **Future plans for the site** – consideration of changing requirements for clinical delivery and estate development that will impact energy consumption and site operations
 - **Key considerations and challenges** – high level review of constraints involved with decarbonisation of heat on the site.
- Additional information can be included in the plan such as project phasing strategy, survey/audit results and cost estimations and assumptions.

4.14 Further detail can be found on the Salix website⁵. Salix delivers government funding schemes across the UK for public sector organisations to improve energy efficiency and enable decarbonisation.

⁵ Salix [Project delivery: support and guidance](#)

Climate adaptation

4.15 Climate adaptation should be considered when designing new healthcare facilities and managed carefully alongside the HTMs, WHTMs and any future guidance from NHS Wales regarding climate adaptation.

4.16 The Climate Adaption Toolkit⁶ aims to support health and social care organisations to improve adaptation literacy and develop implementation and delivery plans.

Materials and circularity

4.17 Design teams should prioritise low-carbon, locally sourced materials; include material passports and environmental product declarations (EPDs) where possible through specification.

4.18 Carrying out carbon assessments at design stages throughout the project lifecycle provides opportunities for early-stage carbon hotspot identification as well as improvements for post-construction verification.

4.19 As the construction industry continues to develop NHS Wales is looking to maximise the impact of developments through sustainable opportunities such as material and construction goals such as:

- Achieve embodied carbon < 350 kgCO₂e/m² where feasible for structure and façade
- Target 50% of project materials to be reused or circular
- Maximise off-site construction to reduce on-site waste
- Targets for stages of MMC to reduce WLC impacts and wider innovation

Cost reporting

4.20 A cost reporting pro-forma would be beneficial to enable SCPs to fill out the required costing information that will be requested over and above the standard and ensure consistency of information provided across all schemes. While the NZBS does not currently ask for costing information, NHSW will request the following:

For new build projects

- Cost to achieve NZC on the project compared to a baseline (*Part L compliance*).

For retrofit and refurbishment

- Costs to decarbonise the building.
- Potential inclusion of a £/tCO₂e limit, aligned to Salix.
- Payback period.

4.21 An example cost reporting summary table of priority ECMs has been included in [Appendix C – Templates](#). NHSW will require the cost forms at every stage of business case submission of the project. It is expected that projects track changes of costs as move they through the project stages.

⁶ [Health and social care climate adaptation toolkit](#)

Appendix A – DSDP alignment

Table A.1: NHSW DSDP and NZBS alignment

NHS Wales Decarbonisation Strategic Delivery Plan (2025-2030) initiative	NHS Net Zero Building Standard Alignment
1. Building energy and utilities consumption will be actively managed and minimised.	Best practice enabled by dedicated Net Zero Carbon Coordinator role, with oversight of design and construction of projects. Wider roles and responsibilities are recommended within the NZBS.
2. Actively identify opportunities (capital and maintenance) to decarbonise NHS buildings.	Aligns with the principles of the NZBS i.e. requirement to refine building performance practices to ensure targets continue to be met in use (behavioural and technical).
3. Asset decarbonisation plans will be implemented to decarbonise NHS buildings.	
4. Existing CHP plant will be maintained at maximum efficiency until life expired. No further fossil fuelled CHP plant will be installed, but renewable CHP will be supported.	Aligns with the NZBS requirement to eliminate fossil fuels. This includes ensuring new buildings are not connected to existing site wide fossil fuel led networks. Principles of decarbonisation and decision making can be applied i.e. application of the energy hierarchy. Aligns to heat hierarchy outlined in NZBS.
5. Renewable energy opportunities will be progressed to increase energy generation activities and ensure NHS land will be used to its maximum potential.	NZBS identifies the requirement to maximise generation from renewables.
6. Primary and Community Care contractors, business owners and landlords will seek to improve energy efficiency and decarbonise their buildings.	Energy efficiency measures mandatory within the NZBS for new buildings, with smart BMS systems encouraged. Relevant to existing estates where the principles of energy hierarchy for operational carbon are applicable. Application of NZBS guidance will ensure best practice is applied to completing heat studies.
7. All new buildings and major refurbishments will align with the new Welsh interpretation of the NHS Net Zero Carbon Building Standard.	Direct reference to the NZBS, stating requirement for alignment.
8. Engage proactively with landlords and tenants across leased properties to drive low-carbon building operations.	Aim for incorporation of standard into Treasury business case approval process will involve interaction with wider leadership and corporate teams.

Appendix B – Roles

Table B.1: NZC coordinator responsibilities

Stage	Outline business case	Full business case	Construction
Responsibility	<ul style="list-style-type: none"> • Deliver stage specific NZC workshops. • Support with development of NZC proposals. • Advise on project targets for delivery against the NZBS at OBC. • Advise on project requirements from design team to complete the OBC requirements. • Support development of adaptability and flexibility report – with design input by others. • Challenge and support the DT in development of NZC ideas. • Review design team deliverables in relation to NZC; i.e. embodied carbon calculations, TM54 modelling etc. • Participate in any Value Engineering discussions and review proposals from a WLC perspective. • Complete technical reviews of design proposals with respect to NZC; these may be architectural, MEP or structural designs. • Provide technical support to business case authors demonstrating NZC targets have been considered in design. 	<ul style="list-style-type: none"> • Deliver stage specific NZC workshops. • Support with development of NZC proposals. • Advise on project targets for delivery against the NZBS at FBC based on targets set at OBC. • Advise on project requirements from design team to complete the FBC stage requirements. • Challenge and support the design team in its development of ideas for NZC. • Review design team submittals in relation to NZC; i.e. embodied carbon calculations, TM54 modelling etc. • Participate in any Value Engineering discussions and review proposals from a WLC perspective. • Complete technical reviews of design proposals with respect to NZC; these may be architectural, MEP or structural designs. • Providing technical support to business case authors in demonstrating NZC targets have been considered in design. 	<ul style="list-style-type: none"> • Deliver stage specific NZC workshops. • Confirm benefits profile for the project to support monitoring the achievement of NZC opportunities and objectives across the project. • Develop and agree with the Contractor(s), targets with reference to NZC, including collation of carbon calculations and energy modelling etc. • Review and comment on the Contractor(s) NZC strategy and methodology and the proposals for measurement and reporting. • Input into discussions on NZC with the Project Team and Contractor(s) where relevant and appropriate. • Review of NZC design stage outputs and input into the refinement of the Works Information. • Provide advice and support in relation to the review of the Contractor(s) proposals. • Support the delivery of the client’s NZC targets through construction and into operation.
Deliverables	<ul style="list-style-type: none"> • In collaboration with the DT prepare and submit required reporting. The calculations/data will be provided by the DT. • Ensure relevant costing information is provided by the QS as part of the business case submission to identify NZC costs associated with proposals. • Provide input to end of RIBA Stage/ Business Case reports, to be collated by the Architect, summarising the consultant’s work in the relevant RIBA Stage. 	<ul style="list-style-type: none"> • In collaboration with the DT prepare and submit required reporting. The calculations/data will be provided by the DT. • Ensure relevant costing information is provided by the Quantity Surveyor as part of the business case submission to identify NZC costs associated with proposals. • Provide input to end of RIBA Stage / Business Case reports, to be collated by the Architect, summarising the consultant’s work in the relevant RIBA Stage. 	<ul style="list-style-type: none"> • In collaboration with the DT and Contractor prepare final NZC assessment for required reporting. Information will be provided by DT and Contractor. • Ensure relevant costing information is provided by the Contractor to identify actual NZC costs associated with delivered solutions. • If required, undertake a post-occupancy review (subject to additional scope of services).

Appendix C – Templates

Templates for identifying, rationalising and costing ECMs are included below with example inputs.

Table C.1: Qualitative ECM Identification and Rationalisation

ECM Category	ECM Item	Opportunity? (High/ Medium/ Low / None)	Commentary
BE SEEN – Energy Metering	Utility Meters	<i>E.g. None</i>	<i>Low availability for meter enhancement unless consideration given to additional electrical capacity requirement.</i>
	Sub-Meters		
BE LEAN – Energy Demand Reduction	Glazing replacement / upgrade	<i>E.g. High</i>	<i>Existing windows and surrounds are looking tired with some notable deterioration of window seals etc.</i>
	Wall insulation		
	Roof insulation		
	Air Permeability Improvement / Draught Proofing		
	External lighting Replacements		
	Lighting Replacements		
	Lighting Controls		
	Heating Controls		
	Heating Infrastructure		
BE CLEAN – Supply Energy Efficiently	Heat pumps	<i>E.g. High</i>	<i>Currently the most viable means of displacing fossil fuel consumption for space heating and DHW. Building plant space is limited but it may be possible to utilise the roof above the existing plantroom to site A-W ASHP or VRV Outdoor Units - subject to structural suitability.</i>
	District Heat Networks		
	Hydrogen		
BE GREEN –Renewable Energy	Solar PV		
	Wind		
	Other		

Table C.2: Example Priority ECM Projects, Post Qualitative Assessment

ECM Category	ECM	Priority Measure to Progress (Y/N)	Rationale / Commentary
Be Lean	Wall insulation	N	Disruptive works on operational building
Be Lean	Roof insulation	Y	Roofs on site are thought to be original and as such the thermal insulation levels are likely to have room for improvement.
Be Lean	Draught proofing	Y	Low cost means of reducing heat loss from the buildings via infiltration.
Be Lean	Upgrade double glazing		
Be Seen	Submeters		
Be Lean	Lighting replacements		
Be Green	Solar PV		
Be Clean	Heat pumps		
Be Lean	Lighting controls	N	Potential to improve energy efficiency by introducing presence detection on light switching. Limited benefit in areas of high use

The savings set out in Table C.3 are informed by the carbon savings associated with each measure. The quantity column provides an indicative unit used to calculate capital costs for the ECMs to then derive their carbon savings.

Table C.3: Priority ECM Cost Summary

ECM	ECM Category	Quantity of ECM	Capital Cost (£)	Annual Saving (kWh)	Annual Saving (£)	Annual Maintenance Cost Variance (£)	Annual Carbon Saving (t.CO ₂)	Average Simple Payback (Years)	Lifetime Carbon Saving (LT. tCO ₂)	£ / LT. tCO ₂
Upgrade Roof Insulation	'Be Lean'	m ² of roof served	£295	200,000	£10k	Cost neutral	37	32	1100	£270
Draught Proofing	'Be Lean'	m ² of doors and windows draughtproofed	£13k	52,000	£2,700	Cost neutral	10	5	280	£47
Upgrade double glazing	'Be Lean'									
Submeters	'Be Seen'									
Lighting replacements (LED)	'Be Lean'									
Solar PV	'Be Green'									
Heat Pumps	'Be Clean'									
Total	-	-				-				

Appendix D – Approvals Processes

The below figures outline the decisions trees related to best practice against the NZBS.

Figure D.1: Project and Compliance Development using the NZBS prior to Business Case Submission

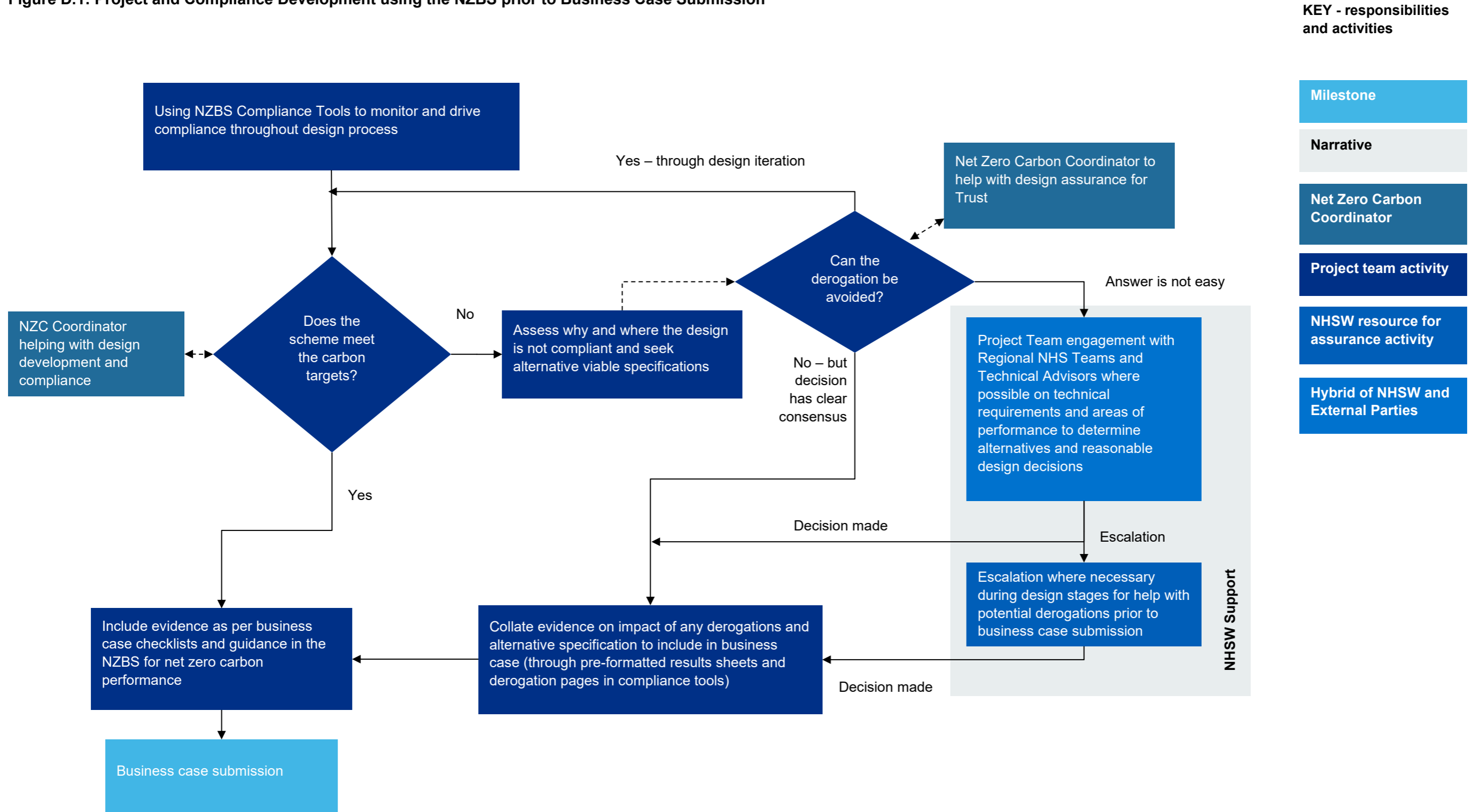
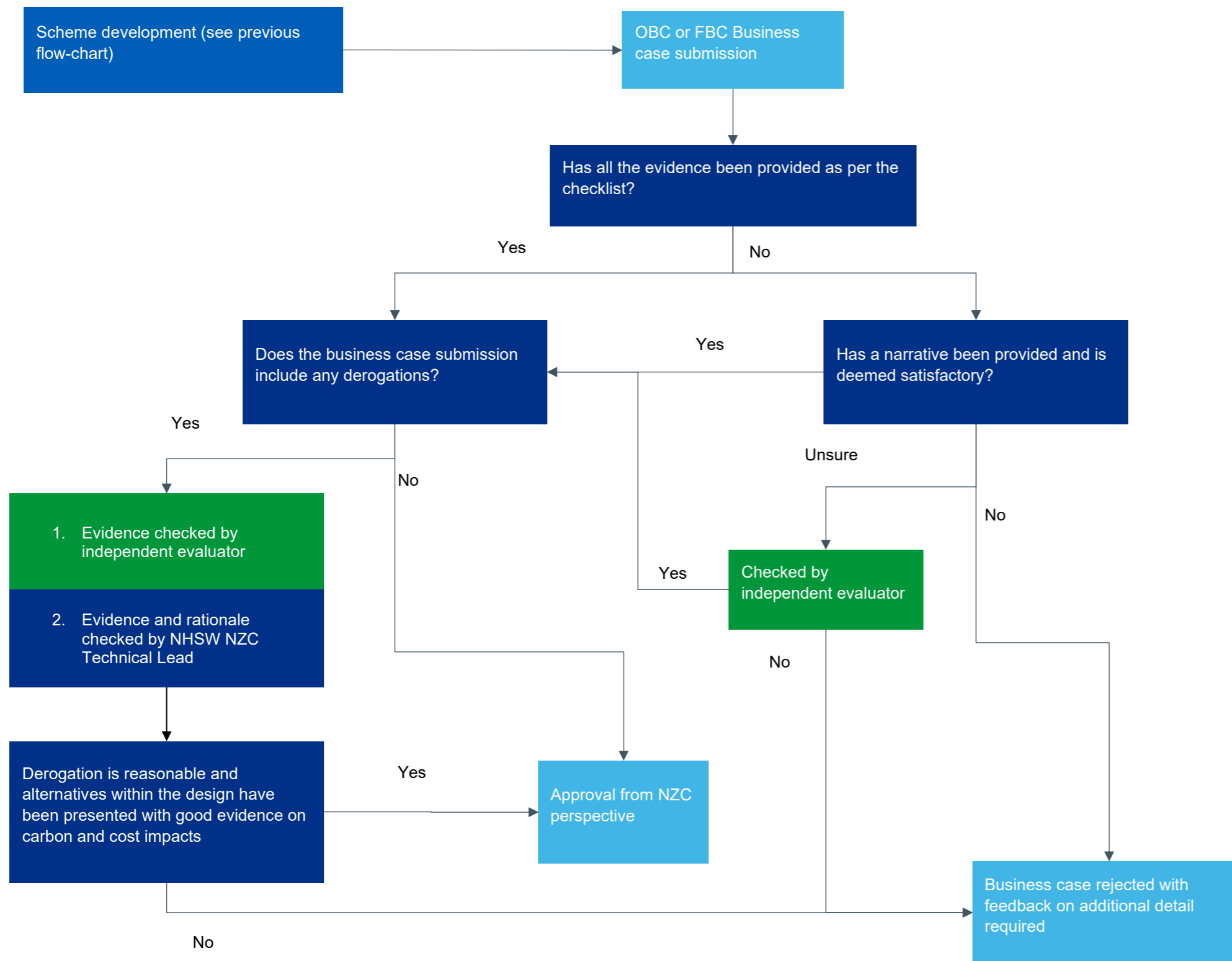


Figure D.2: Derogation Review and Approval within Business Case Process



KEY – responsibilities and activities

- Milestone
- Net Zero Carbon Coordinator
- Project team activity
- NHSW resource for assurance activity
- External Parties*

*Note: we are considering resource requirements for NZC business case reviewers in our technical assurance team going forward (longer term solution)



GIG
CYMRU
NHS
WALES

Partneriaeth
Cydwasaethau
Gwasanaethau Ystadau Arbenigol
Shared Services
Partnership
Specialist Estates Services

This document has been produced by Mott MacDonald, for and on behalf for NHS Wales Shared Services Partnership.

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

NHS Wales Shared Services Partnership
4-5 Charnwood Court
Heol Billingsley
Parc Nantgarw
Cardiff
CF15 7QZ

This publication can be made available in a number of other formats on request.
© NHS Wales