

**SHTN 02-01: Sustainable Design and Construction Guide**

NHSS Climate Emergency and Sustainability Board (SGHSC)

National Environmental Sustainability Group (NESG)

RE-EVALUATION AND OPTIMISATION OF THEMES THROUGHOUT DEVELOPMENT

Theme	W1: Healthy Places - Total Wellbeing	W2: Indoor Environmental Quality	CE: Circular Design and Construction	CC1: Operational Emissions	CC2: Embodied Carbon	CC3: Water Consumption	CC4: Environmental Security	CC5: Active Travel and Sustainable Transport	Theme
Key Considerations	Promote social wellbeing by encouraging inclusive design that creates opportunities for integration and positive connection with others, in both indoor and outdoor environments.	Ensure the design delivers comfortable and stable environments for thermal comfort and air quality and takes into consideration the following:	Adopt a circular design and construction approach with the aim of keeping materials in use for longer. Commit to a circular procurement hierarchy approach, as defined by Zero Waste Scotland:	Ensure consideration of Passive Design Principles and a Fabric First Approach from the outset to limit energy demand.	Prioritise building/material reuse	Follow waste water discharge best practice guidance to ensure the efficient use of water and prevent pollution to local sewerage systems.	Carry out early options, site and strategic planning appraisals and ensure that brownfield site selection is prioritised with protection and retention of existing natural features. Issues to consider are:	Prioritise and promote design for an active, accessible and more sustainable transport strategy whilst considering the following:	Key Considerations
	Encourage design that promotes inclusive growth, enabling greater equality and more inclusive practices.	<ul style="list-style-type: none"> <li>Fabric;</li> <li>Thermal details;</li> <li>External shading;</li> <li>Thermal mass;</li> <li>Massing and form factor;</li> <li>Ventilation;</li> <li>Heat gains;</li> <li>External factors;</li> </ul>	<ul style="list-style-type: none"> <li>Prevention;</li> <li>Reduce;</li> <li>Reuse;</li> <li>Recycle;</li> <li>Recover;</li> </ul>	Optimise System Efficiency through the specification of energy efficient building systems and the integration of smart energy management systems	Carry out Whole Life Cycle Assessments (LCA) to inform building design and product selection following a robust methodology:	Promote the use of a permanent water leak detection system with the capability to detect leaks anywhere within the site boundary.	<ul style="list-style-type: none"> <li>Minimizing geo-environmental and external pollution source risks;</li> <li>Optimise site layout and building orientation;</li> <li>Integrating greenspace interventions;</li> <li>Protecting and enhancing biodiversity;</li> </ul>	<ul style="list-style-type: none"> <li>Removing need to travel;</li> <li>Safe movement;</li> <li>Design for Quality;</li> <li>Design for resilience;</li> </ul>	
	Promote physical wellbeing through the design and delivery of healthy, comfortable and active places.	<ul style="list-style-type: none"> <li>Odours</li> <li>Acoustics</li> <li>Quality of light</li> <li>Functional aspects of space</li> <li>Controllability</li> <li>Occupant satisfaction</li> </ul>	Design out waste and pollution from the start	Ensure a renewable heat source is used or develop a credible route map to achieve this by 2038. Ensure the carbon conversion content at source of heat and power supply is considered. Stress-test the design against well considered Operational templates	<ul style="list-style-type: none"> <li>Define goal and scope;</li> <li>Estimate quantities of materials, products and processes;</li> <li>Assess environmental impact;</li> <li>Refine and reiterate results;</li> </ul>	Promote the use of flow control devices.	Adopt a landscape-led approach and ensure this is explored at early conceptual stages.	Carry out early site transport appraisals on existing local transport and infrastructure provisions including proximity to such infrastructures.	
	Encourage design that promotes the occupational wellbeing of all users through attractive and supportive internal and external environments.	IEQ strategy that considers approaches towards the following in addition to thermal comfort and indoor air quality:	Adopt responsible design, procurement and construction practices	Ensure adequate Management, Monitoring and Control of services are adopted and incorporate an integrated and fully commissioned Building Management System.	Prioritise low embodied carbon materials whilst ensuring subsequent effect on operational carbon and circularity are considered.	Commit to a wastewater management strategy.	Ensure appropriate flood risk assessments are carried out at the appropriate stages, incorporating present and future risk.	Promote and participate in continued stakeholder engagement.	
	Support Mental wellbeing through sensitive internal and external design solutions and the creation of psychologically conscious spaces.	HAI-SCRIBE duties: e.g. location of fresh air intakes.	Design to restore and regenerate natural systems	Promote the adoption of active demand response measures to further drive operational efficiencies.	Embodied carbon calculations to include emissions at product, construction, in-use and end of life cycle stages.	Commit to adopting a water consumption strategy that prioritises water management and efficiency options by use of the following water hierarchy:	Utilise Green Space Factors to ensure quality green space is better planned to contribute to a functioning green infrastructure network	Adopt an integrated design approach considering Sustrans 'Places for Everyone' six design principles.	
	Consider the quality of internal and external environments and the effect these will have on the wellbeing of users.		Consider expected product lifespan for all building elements and 'durable' components, including management, maintenance and replacement.		Adopt a robust carbon reduction strategy and identify all opportunities for carbon reduction for all life cycle stages.	<ul style="list-style-type: none"> <li>Eliminate;</li> <li>Alternative;</li> <li>Reduce;</li> <li>Reuse;</li> <li>Recycle;</li> <li>Disposal;</li> </ul>		Ensure both an early transport assessment and the project team collates a robust Travel Plan.	

NHS Board (or Body) Climate Emergency and Sustainability Group/ Team

- Executive Lead
- Sustainability Champion
- Environmental Management Representative (EMR)
- Waste Management Officer
- Biodiversity/Greenspace Officer
- Travel Officer
- Sustainable Care Medical Planning Team
- Operational Sustainability Lead
- Energy Manager

NHS Board (or Body) Strategies / Policies

- Net Zero
- Climate Change Adaptation
- Procurement and Circular Economy
- Waste Reduction
- Energy Efficiency
- Greenspace and Biodiversity
- Transport
- Active Travel
- Management ISO 9001
- Environmental Management ISO 14001

NHS Scotland Body

**OPTIMISING THEME PERFORMANCE TO REACH NET-ZERO**

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Evaluate	Place Standard AEDET NDAP	CIBSE TM52/TM59 Modelling Daylight Modelling Acousticians Report	Circular Design Cost Benefits Operational Waste Reduction	Detailed Dynamic Simulation Modelling	LCA One Click Tool	Litres/sec Litres/activity	Landscape Report Biodiversity Report	Green Travel Plan	Evaluate
Measure	AEDET	Co2 ppm TVOCs/Formaldehyde mg/m3	Waste Generated (Tonnes/m3) Waste Avoided (Tonnes/m3)	Key building performance metrics EUI (kWh/m2yr)	kgCO2e/m2	Total Litres	Green Space Factors (GSF)	Avoided Miles / Co2 Saved	Measure
Monitor	SDaC PoE	SDaC PoE	SDaC PoE	Smart / Zoned Metering Digital Twin Monitoring eSight	SDaC PoE	Measure Water Usage in Operation eSight	Board wide Biodiversity Mapping SDaC PoE	SDaC PoE	Monitor

Public Bodies Climate Change Duties Report

Annual Health Board Climate Change and Sustainability Report

Triennial Statutory Biodiversity Report

NHSScotland Sustainability Assessment

NHSS Reporting

\* Please note: SHTN 02-00 in need of update following issue of DL(2021)38