

The Scottish Government's Net Zero Public Sector Buildings Standard

Standard Overview

April 2024



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Net Zero Public Sector Buildings Standard

Place

Objective 1

Inclusive NZC Economy Outcomes

Carbon

Objective 2

Construction - Embodied

Objective 3

Operational Energy

Objective 4

Other Whole Life

Environment

Objective 5

Indoor Environmental Quality

Objective 6

Environmental Aspects

Net Zero Public Sector Buildings Standard

The Scottish Government's Voluntary Standard
Developed collaboratively by :

- Scottish Government
- Scottish Futures Trust
- Zero Waste Scotland
- Health Facilities Scotland
- Construction and public sector in Scotland

Outputs and Benefits

Outputs

Benefits



Achieve 6 Objectives



Best practice approach formally verified



Clear roles and responsibilities

- Deliver buildings that deliver on long-term needs and are future ready (saving costs over time)
- Align with government policy and funding opportunities
- Set ambitious but achievable targets
- Develop your industry expertise and improve performance
- Maximise carbon reduction before and during design and construction
- Unlock opportunities to adapt existing buildings
- Prioritise real carbon reductions over offset
- Focus on minimising operational energy, rather than generating to compensate for energy use

NZPSB Standard Objectives

The Standard sets net zero requirements across six Objectives:

Place	Objective 1	Inclusive NZC Economy Outcomes	Sets out the place-based approach requirements of a project in respect to considering wider inclusive net zero carbon economy requirements.
Carbon	Objective 2	Construction embodied carbon	Aims to reduce the embodied carbon impact of the project up to practical completion.
	Objective 3	Operational energy carbon	Covers the operational energy performance of a project. Requires the creation of operational energy targets.
	Objective 4	Other whole life carbon	Requires objectives to be identified that encourage a whole life carbon (WLC) reduction over the project life cycle.
Environment	Objective 5	Indoor environmental quality	Sets key Indoor Environmental Quality requirements including thermal comfort, indoor air quality, natural light, acoustics and water hygiene.
	Objective 6	Other environmental aspects	Allows projects to apply the target setting, monitoring and Verification regime of the Standard to other environmental aspects of project-specific priority

What is Place?



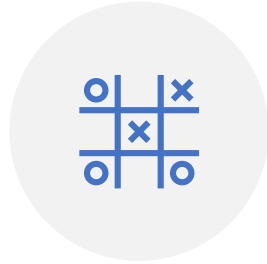
Place is an area of focus...

At a scale that is useful: a street, neighbourhood,
city, campus



...where a range of **locally-specific
interrelated factors define
experience**

Place-based, is an approach



A collaborative way of working



Brings together all stakeholders in a place...



to identify local needs...



to fully consider local specific interrelated factors, resource and activity...



to find the best solutions to address needs.



Lining-up plans over time to deliver strategic long-term outcomes

Investment Hierarchy: A common methodology to aid planning and decision making

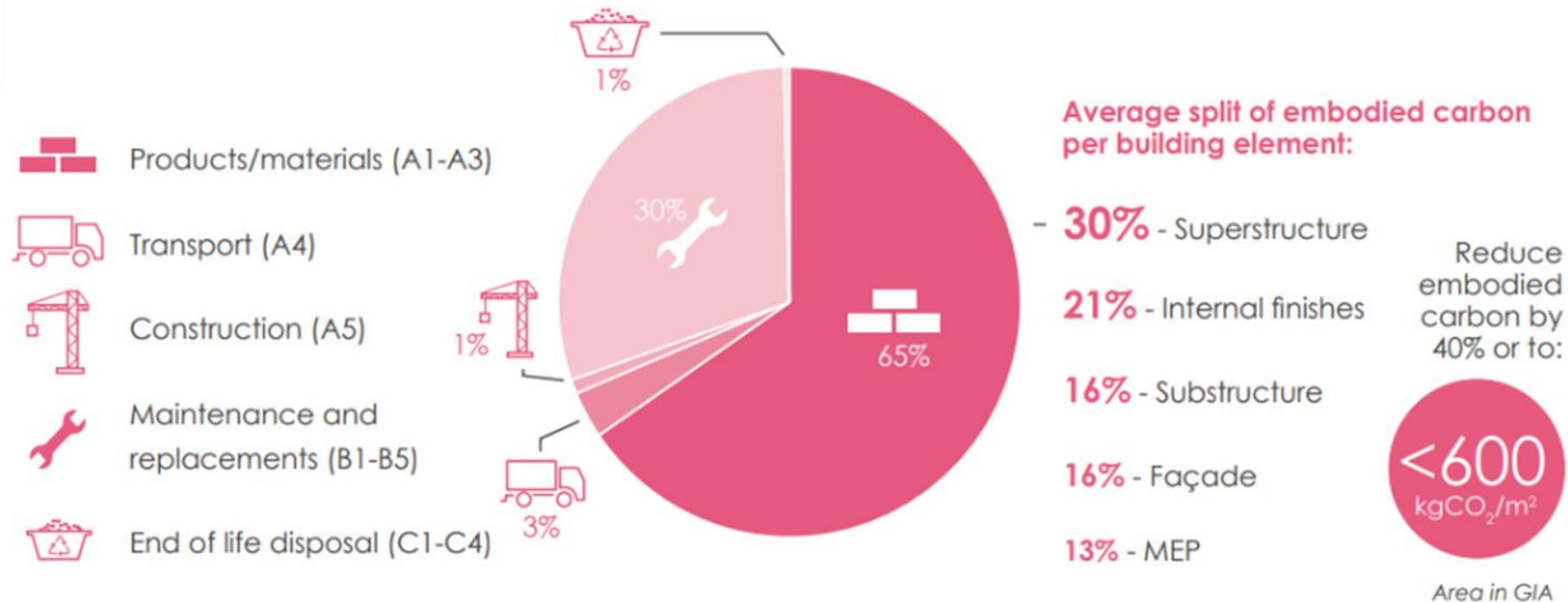


Objective 2 - Construction embodied carbon

Embodied carbon target

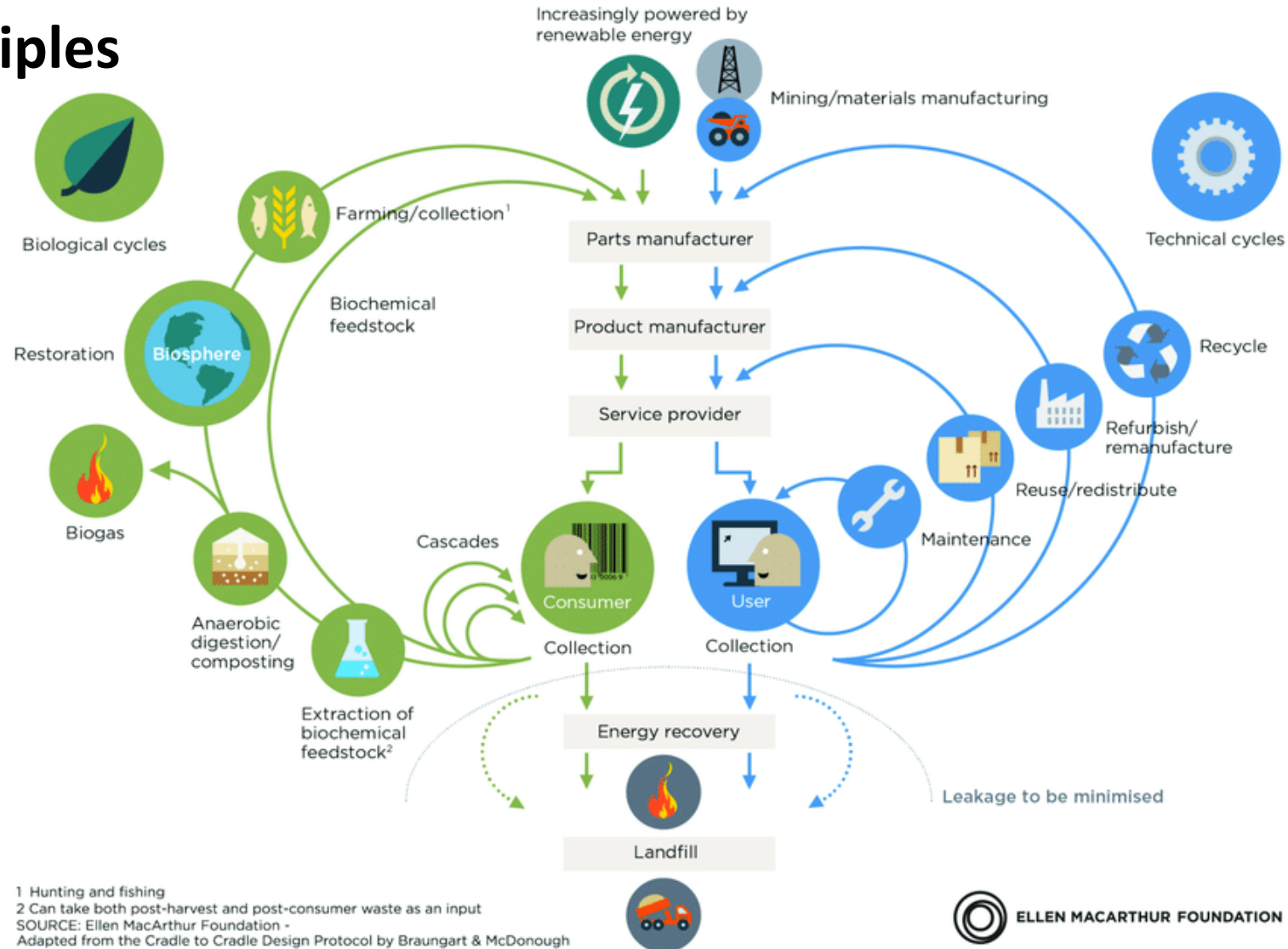
The majority of projects should target no more than **600 kgCO₂e/m² GIA**

For a refurbishment project this target should be adjusted to reflect what is within the project scope



Objective 2 - Construction embodied carbon

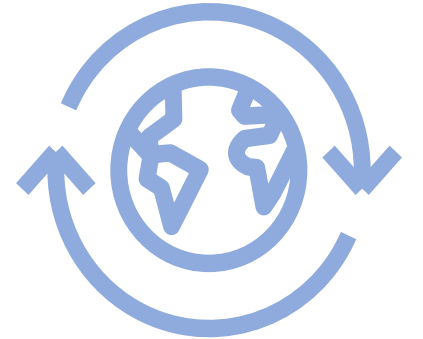
Circular principles



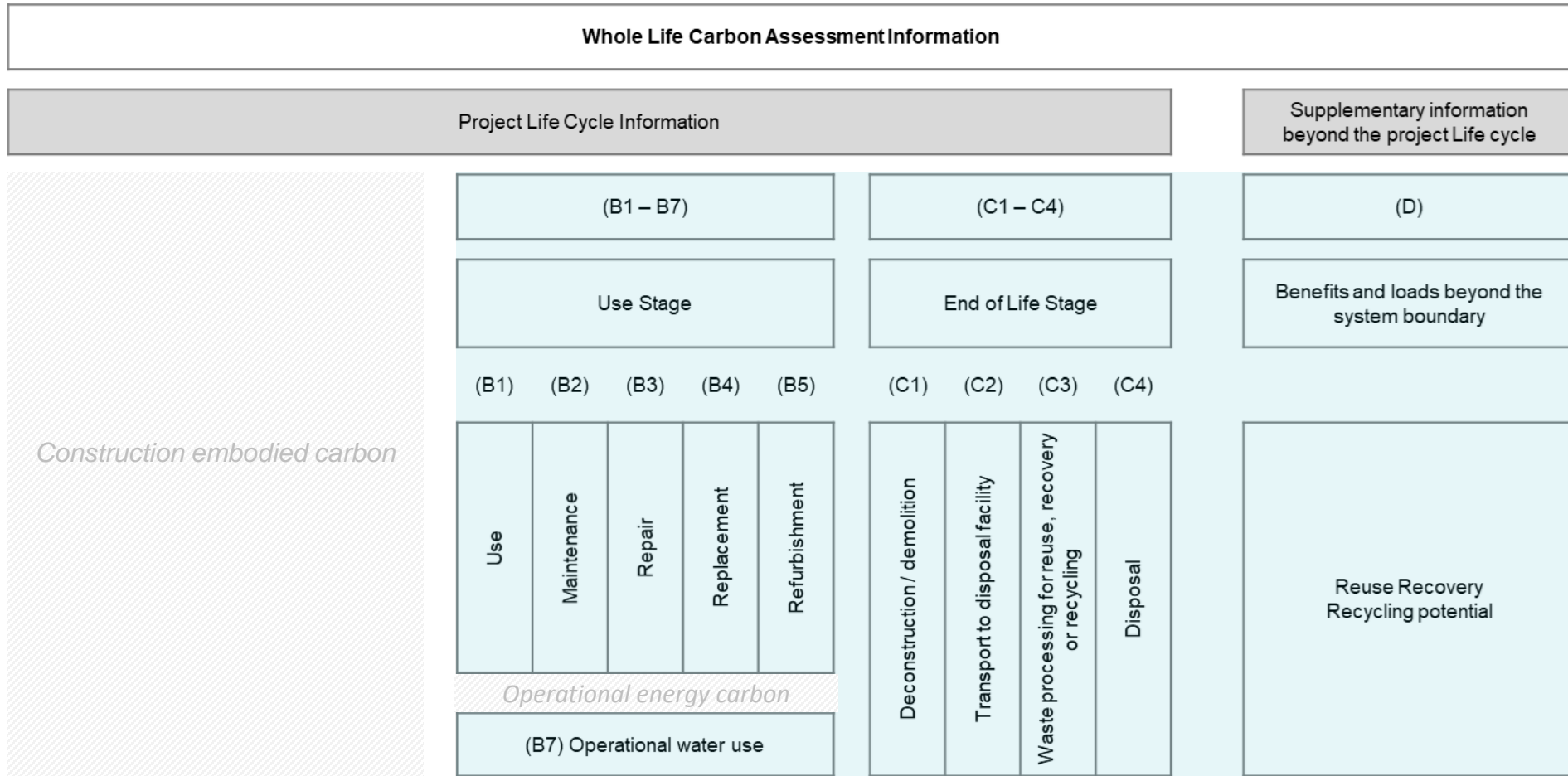
Objective 4: Key terminology

Other
whole life
carbon

NZPSB Standard definition – emissions resulting for the use of a building over its entire life, excluding construction embodied carbon and operational energy carbon



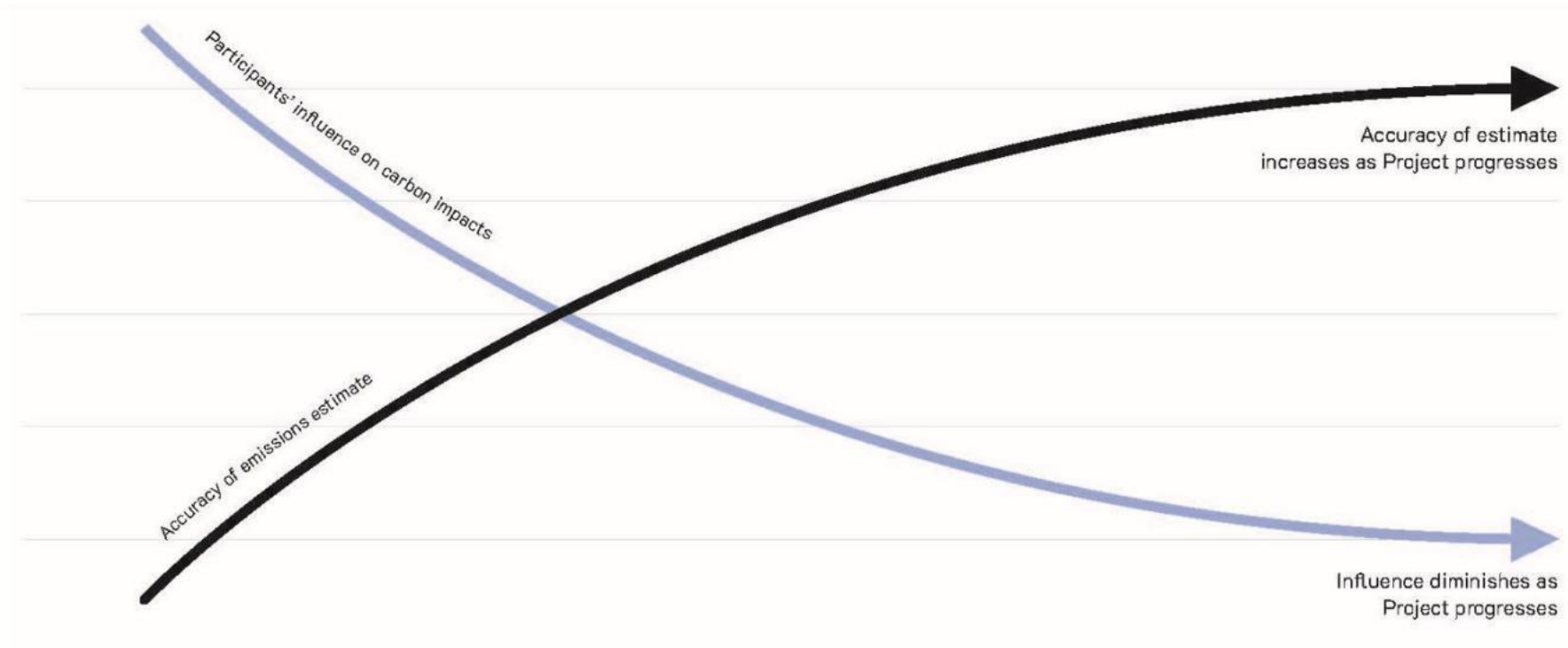
Objective 4 – Other whole life carbon



Existing Buildings' Construction Embodied Carbon is covered largely by modules B4 Replacement & B5 Refurbishment, but is taken out of Objective 4 reporting and separately targeted under OB.2

Covered by Objective 4 for both new and existing buildings

Objective 4 – Other whole life carbon



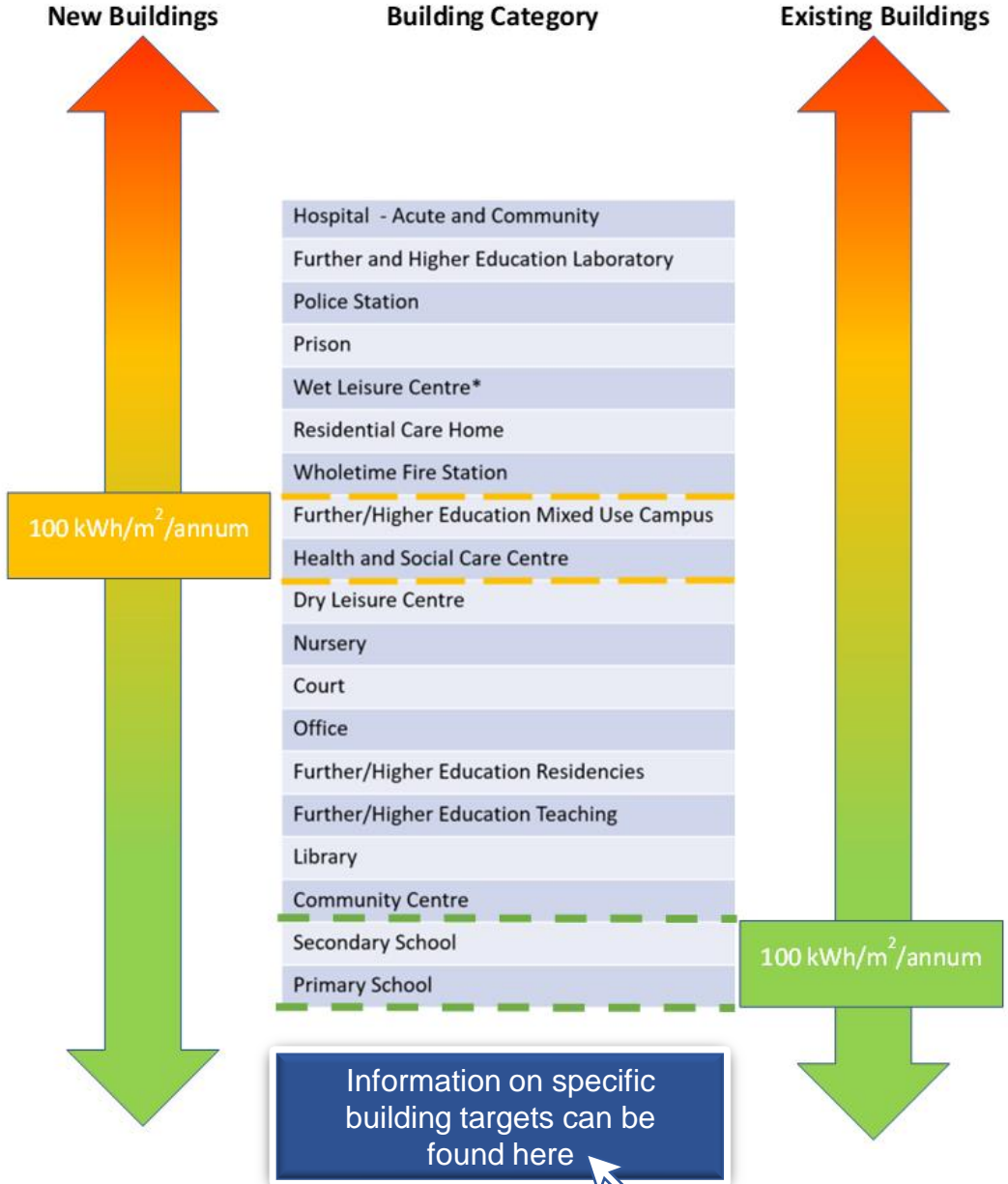
Stages of the Standard



— Participants' Influence

— Accuracy of Estimates

Objective 3 Operational energy carbon



Set from inception
New Build: <100 kWh/m²/year for most; allow for process use
Existing: >100 kWh/m²/year for many; optimise best value

Verified in use
New Build: from ~18 months after handover
Existing: at Net Zero Deadline

Design is evidenced-based
New Build: Dynamic Simulation Modelling
Existing: proportionate modelling

Metered and Measured in use
New Build: Measurement & Verification Plan
Existing: Participant-led

Zero Direct Emission Heating:
New Build: from handover
Existing: by 2045, or relevant NZ Deadline

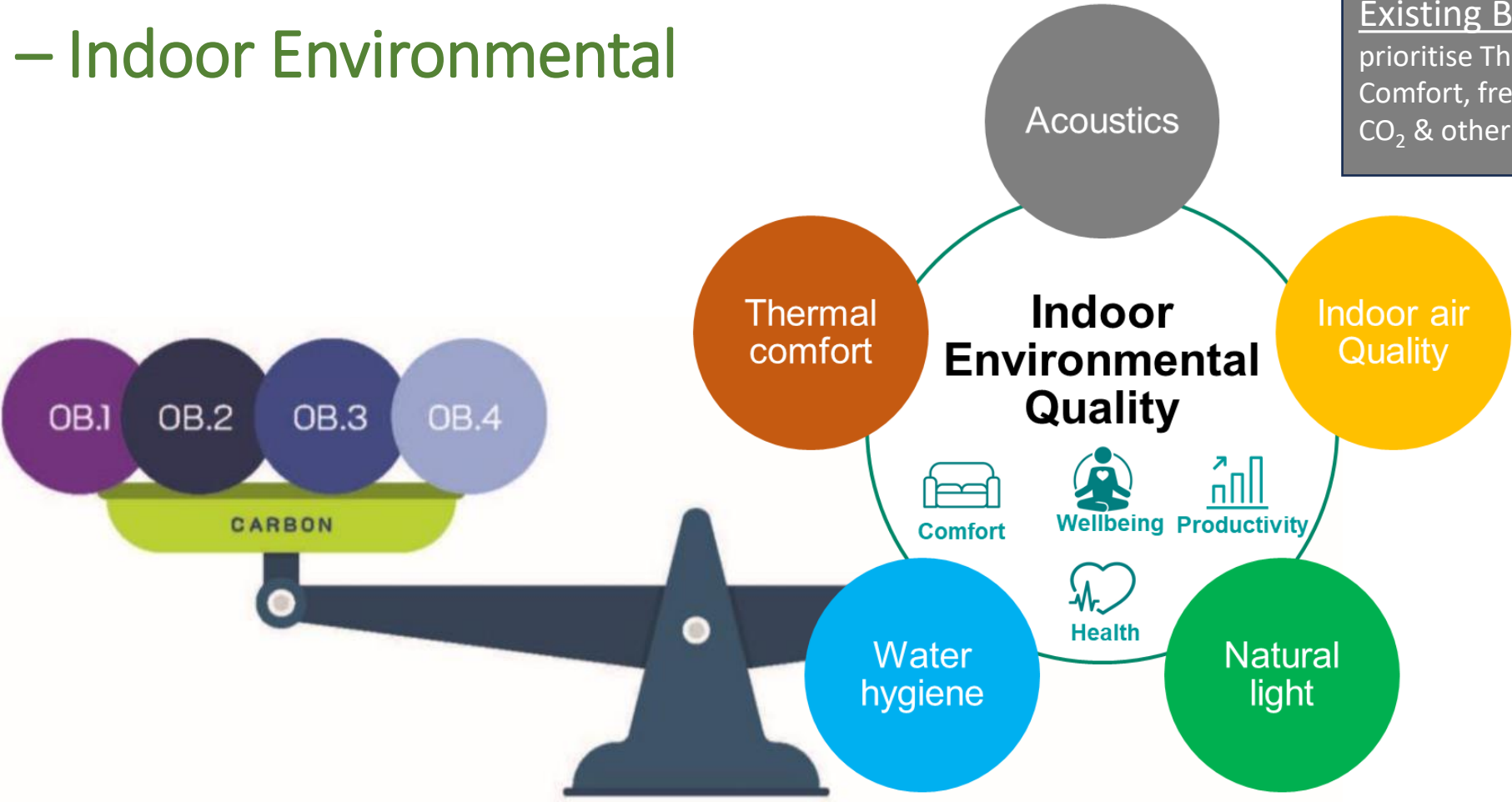
Carbon Strategy plans how to meet the NZ Deadline
New Build: programmed from handover
Existing: from final intervention

Existing Buildings

- OET set in the Construction Intervention Strategy – before works
- The OET may be adjusted as successive Construction Interventions are carried out
- Zero Direct Emission Heating should be installed at a time that will achieve best value –in advance of the NZ Deadline

Objective 5 – Indoor Environmental Quality

Existing Buildings
 prioritise Thermal Comfort, fresh air, Indoor CO₂ & other pollutants



- OB.1 Inclusive Net Zero Economy Outcomes
- OB.2 Construction Embodied Carbon
- OB.3 Operational Energy
- OB.4 Other Whole Life Carbon

- OB.1 Inclusive Net Zero Economy Outcomes
- OB.5 Indoor Environmental Quality
- OB.6 Environmental Aspects

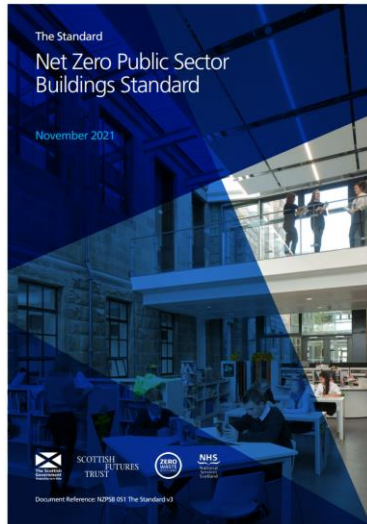
Objective 6 - Other environmental aspects

Standard objective	Criteria – Examples of potential OB.6 criteria and their links to other OBs
Support place requirements	Active travel Community amenities Enable interaction with external natural environment
Support construction embodied carbon intentions	Landscape-led design solutions to minimise sub-structure
Support operational energy requirements	Natural / artificial shading to provide shelter & shade
	Use of external areas for energy generation and/or storage
Support whole life carbon requirement	Specification of low impact, low maintenance grounds Soft dig routes for future heat network connections
Support indoor environmental quality requirements and health and wellbeing	External shading to help minimise summer overheating External acoustic barriers to attenuate noise nuisance Fresh air strategy including outdoor access & careful siting of fresh air intakes away from sources of pollution
Wider environmental aspects	Exemplary digital connectivity Biodiversity net gain and other urban greening factors Climate change adaptation, e.g. minimising flood risk

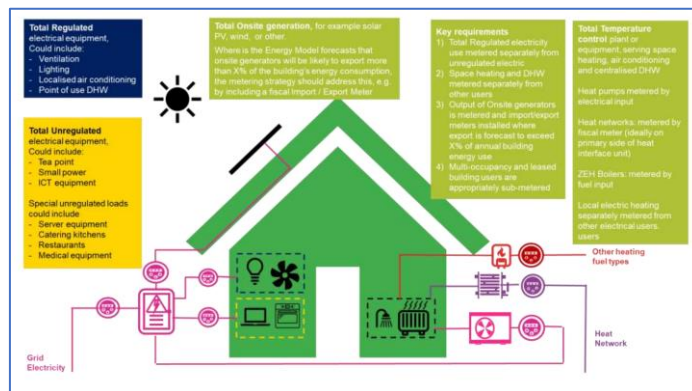
2 criteria selected by the Participant, drawing on Good Industry Practice

How can I apply the Standard?

Standard



Suite of Supporting Documents



1 Objective 1: Inclusive NZC Economy Outcomes – Detailed Guidance

1.0 Inclusive Net Zero Carbon Economy Outcomes Investment Planning and Place Principles

The Standard draws on the Scottish Government's requirement that investment in Scotland's built estate should apply best practice in respect to 'Place-based' solutions, which support inclusive growth and drive a Net Zero emissions future.

The **Investment Hierarchy Approach** vision identifies that all future investment should robustly consider and implement necessary project drivers and requirements under the following three major themes:

- Theme 1 – Enabling Net Zero Emissions and Environmental Sustainability
- Theme 2 – Driving Inclusive Economic Growth
- Theme 3 – Building Resilient and Sustainable Places

The IIP details a step change in the appraisal of the strategic case for change in our built environment, with a clear Investment Hierarchy approach as summarised below:

Figure 3 – The IIP's Investment Hierarchy Approach

Pathfinder Case Studies



ST SOPHIA'S PRIMARY SCHOOL

School

Applying the Net Zero Public Sector Buildings Standard to a Primary School in East Ayrshire Council

Project details

Building type
Primary Schools

Standard review stage
Detailed design

Reduction in climate impacts

Predicted energy use
Less than kWh/m²

Typical usage
162 kWh/m²

Predicted energy usage
kWh/m²

Construction Embodied Carbon

Project specific 500 kg CO₂/m² with a stretch target of 300 kg CO₂/m²

The Net Zero Carbon Standard saves an average of 40% embodied carbon

Project background

The Net Zero Public Sector Buildings Standard influenced the renovation of the St Sophia's Primary School in East Ayrshire Council. It involved influencing the planning of the major 1950s building refurbishment. The approach reflected desire from the local community to keep and enhance their existing buildings.

East Ayrshire Council were keen to explore best practice around refurbishment. Embedding skills and learnings for this type of project and future refurbishments.

In line with recommendations from the Net Zero Public Sector Buildings Standard, the refurbishment adopted the **EnergyPI** approach and aims to demonstrate exemplary energy performance and internal environment.

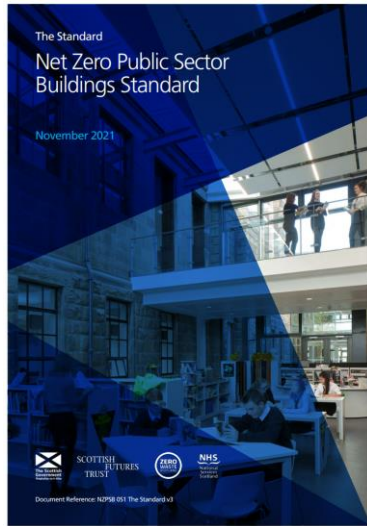
The new voluntary Standard supported East Ayrshire Council to meet its net zero commitments for the refurbished St Sophia's Primary school building, influencing the project from detailed design stage.

Magnus Dowle, Sustainability & Building Services Manager, East Ayrshire Council

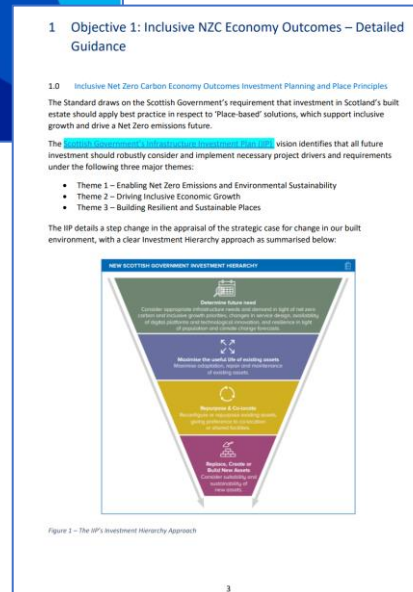
"I think the Net Zero Public Sector Buildings Standard will be a great tool in setting clear targets and agendas from the beginning of the projects, helping designers and the whole project team to plan the project better rather than applying varying standards retrospectively."

How can I apply the Standard?

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Suite of Supporting Documents

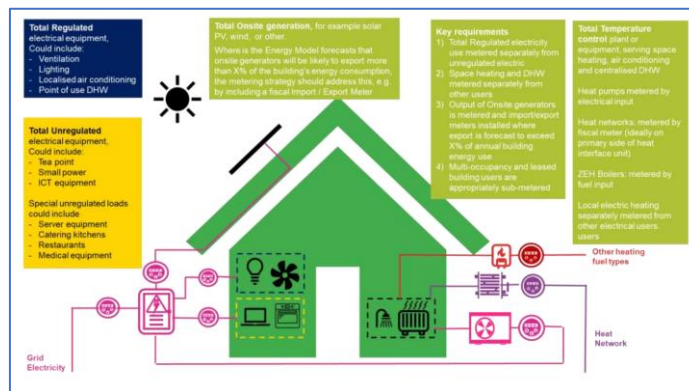


Project Registration Form

- Project Key Facts
- Project Requirements & Targets
- Alternative Routes to Compliance
- Commitment in Principle to Adopt the Standard for this Project

Map onto other Standards:

- NHS SDaC
- UKGBC
- RIBA2030, LETI
- BREEM, WELL
- LEIP3 & PH



Form completed by

- Inclusive Net Zero Champion

Form signed by

- Senior Responsible Owner / Project Director



Figure 2 - The IP's Investment Hierarchy Approach



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Thank you