**Sustainable Communities for Learning Programme**

**Working Towards Whole Life Net Zero Carbon**

**Background**

The Welsh Government are committed to a carbon neutral public sector by 2030 and a 100% reduction in emission of greenhouse gases in Wales by 2050.

The Minister for Education and Welsh Language announced on 2 November 2021 that from 1 January 2022 all new–build, major refurbishment and extension projects requesting funding support through the Programme will be required to demonstrate delivery of Net Zero Carbon in operation plus a 20% reduction on the amount of embodied carbon – that is the carbon emitted through construction materials and the construction process. This requirement will apply to all business case proposals that have not received approval at Outline Business Case (OBC) stage by 1 January 2022.

The change required to do this should not be underestimated; there are many technical, material, developmental and operational challenges in achieving ‘true’ carbon neutrality. However, the desire to change is emerging throughout the supply chain. There is an element of competitiveness clearly emerging in design teams, contractors and material manufacturers.

The Sustainable Communities for Learning Programme presents a unique opportunity, right at the very heart of our young citizens learning environment, to make significant advancements towards a net zero whole life carbon education and learning infrastructure in Wales.

**Net Zero Carbon** **Projects**

All projects as of January 2022 will be required to demonstrate carbon reduction techniques and technologies and achieve Net Zero Carbon Operational and meet an embodied carbon target as per table below;

|  |  |
| --- | --- |
| Years | Embodied Carbon Target |
| 2022 - 2024 | Below 800 kgCO2/m2 |
| 2025 - 2029 | Below 600 kgCO2/m2 |
| 2030 - onwards | Below 350 kgCO2/m2 |

100% of the additional costs to meet this commitment under this current wave of investment will be funded in line with the current benchmark (see Annex 9 Size and Cost Standard)

The ambition is to develop projects that can demonstrate zero carbon in operation and measure embodied carbon to a set target. This embodied target will be a developing target to work towards whole life net zero carbon as developments and technologies in the sector emerge.

Projects should deliver a ‘Working Towards Whole Life Net Zero Carbon’ solution in accordance with the targets below which are based on the UKGBC’s definition and best practice in construction:

**Definition**

*The UK Green Building Council (UKGBC) define whole life net zero carbon as “when the amount of carbon emissions associated with a building’s embodied and operational impacts over the life of the building, including its disposal, are zero or negative”.****[[1]](#footnote-1)[1]*** *This means that throughout the whole lifecycle of a building, including its construction, the products and components used in construction, the operational energy use, during maintenance and at its end of life, there will be net zero carbon emissions. Increasing efficiency of material use, improved construction practices and reducing operational demand should be prioritised, and the building must offset the remaining carbon impacts associated with its lifecycle. Carbon offsetting through methods associated with exporting on-site renewable power/heat generation, the use of construction materials which capture carbon (e.g. through biogenic carbon sequestration in timber) and supporting on-site natural carbon capture (e.g. through tree or native hedge planting) should be considered ahead of off-site options.*

The net zero carbon buildings framework sets out definitions and principles around two approaches to net zero carbon, which are of equal importance:

Net zero carbon – **construction** (1.1): “When the amount of carbon emissions associated with a building’s product and construction stages up to practical completion is zero or negative, through the use of offsets or the net export of on-site renewable energy.”

Net zero carbon – **operational energy** (1.2): “When the amount of carbon emissions associated with the building’s operational energy on an annual basis is zero or negative. A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources, with any remaining carbon balance offset.”

Net zero carbon – **whole life** (1.3) is also proposed at a high level, but further work will be needed to define the scope and requirements for this approach.

**Targets**

Projects will be expected to have Net Zero Carbon - Operational Energy - A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources, with any remaining carbon balance offset.

Highly efficient is defined as using no more than the minimum energy than is required to support occupant health and comfort while allowing the building to function. The pilot project will inform what kwh/m2 energy intensity will be associated with Zero Carbon. The Programme aspiration is that on site renewable energy sources are maximised prior to considering any off-site generation.

**Embodied Carbon Target**

The Programme would expect any solution proposed to comply with the embodied carbon targets as per table below;

|  |  |
| --- | --- |
| Years | Embodied Carbon Target |
| 2022 - 2024 | Below 800 kgCO2/m2 |
| 2025 - 2029 | Below 600 kgCO2/m2 |
| 2030 - onwards | Below 350 kgCO2/m2 |

**Funding**

Business cases will be scrutinised through the usual process with additional scrutiny of the Net Zero Carbon element. Projects will also be required to regularly monitor and review the building’s performance over a five year period reporting any lessons learned during the process to the Programme team.

Business cases providing assurance of Net Zero Carbon in operation and a meeting the embodied carbon target will be eligible for additional funding in line with the current benchmark (see Annex 9 Size and Cost Standard) at 100% intervention rate.

1. [1] [https://www.ukgbc.org/wp-content/uploads/2019/04/Net-Zero-Carbon-Buildings-A-framework-definition.pdf](https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ukgbc.org%2Fwp-content%2Fuploads%2F2019%2F04%2FNet-Zero-Carbon-Buildings-A-framework-definition.pdf&data=04%7C01%7CAlwyn.Jones001%40gov.wales%7C3b622b8b031843e88b1108d8bca41a89%7Ca2cc36c592804ae78887d06dab89216b%7C0%7C0%7C637466760285525485%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=Gybech2YruD6TBhCG7oi%2BMHp%2F6Y%2Ff2zjfNzti%2B8kHko%3D&reserved=0) p.22 [↑](#footnote-ref-1)