

SUSTAINABILITY

SUSTAINABILITY BESPOKE FRAMEWORK

“The Art Works will be a building in which people want to be. It will touch the earth lightly and be a community asset, catalysing new opportunities and supporting positive health outcomes. It will create a landmark movement around sustainable collection care and access, sparking ideas and encouraging innovation. Above all it will set the standard that others aspire to, exciting both current and future generations”

Sustainability is central to The National Gallery of Scotland’s Vision for The Art Works and there is an overall aim of delivering an exemplar of sustainable building practice which is future proofed, minimises energy impact, and provides quality of life opportunities for the local community.

A bespoke Sustainability Framework has been developed for The Art Works to integrate these ambitions within the project and to drive sustainable design, it includes six Sustainability Themes with associated design aims:



RESOURCE EFFICIENCY

Use the Earth’s limited resources in a sustainable manner while minimising impacts on the environment. It allows us to create more with less and to deliver greater value with less input.



HEALTH & WELLBEING

Delivery of interior and exterior environments which promote positive mental and physical health outcomes for staff, visitors and the local community.



ECOLOGY & BIODIVERSITY

Ensure sustainable land use, habitat protection and creation, and improvement of long term biodiversity for the building’s site and surrounding land.



POLLUTION & FUTURE CLIMATE

Reduce the building’s impact on surrounding communities and environments; ensure the building is future proof and comfortable for projected climate change scenarios.



MANAGEMENT

Embed sustainability throughout the project lifecycle, facilitate a cycle of continuous learning and improvement through facilitating user-feedback loops.



LEARNING & ENGAGEMENT

Foster a true, inclusive sense of community around the TAW, maximising sustainability awareness and ensuring all users are empowered to make positive and lasting changes to their life styles.

The overall objectives of the bespoke sustainability framework are to:

- Drive and deliver sustainability throughout the life-cycle of the project;
- Set meaningful, aspirational but achievable targets;
- Provide a means to measure, track and document progress against these targets;
- Identify ownership and responsibilities, as well as integrate the various organisational team members in such a way that allows different disciplines to best utilise their skills to deliver against a mutually agreed common set of sustainability outcomes;
- Provide a central location for all organisation sustainability considerations, providing a basis for transparent and robust internal and external communication; and
- Be rooted in strong scientific evidence, innovation and latest thinking as relevant to sustainability in the cultural sector context;

TAW’s Sustainability Framework has been created through an iterative process which has included review of sustainability drivers, precedent studies and peer organisations, stakeholder engagement workshops, and consideration of site opportunities and constraints.

PASSIVHAUS CERTIFIED BUILDING

One of the main drivers of sustainability for The Art Works is for it to be built to Passivhaus standards. Passivhaus buildings are synonymous with low energy demand and vastly exceed what is required by the Scottish Building Standards.

WHAT IS PASSIVHAUS?

“A Passive House is a building in which thermal comfort can be guaranteed solely by heating or cooling of the supply air which is required for sufficient indoor air quality – without using additional recirculated air” Passivhaus Trust

“The heat losses of the building are reduced so much that it hardly needs any heating at all. Passive heat sources like the sun, human occupants, household appliances and the heat from the extract air cover a large part of the heating demand. The remaining heat can be provided by the supply air if the maximum heating load is less than 10W per square metre of living space. If such supply-air heating suffices as the only heat source, we call the building a Passivhaus.”

Prof. Dr Wolfgang Feist Director of the Passive House Institute, Darmstadt, Germany

In practice this is rarely achieved, and some form of supplementary heating is necessary.

For The Arts Works, cooling also needs to be considered in order to meet the specified environmental conditions in some spaces. Nonetheless, the key characteristics of the Arts Works will uphold all the key Passivhaus principles:

- High standards of thermal insulation including triple glazing
- Zero or minimal thermal bridges
- A compact, thermally efficient building form (the ‘Form Factor’)
- Very low building envelope air-leakage
- Use of mechanical fresh air ventilation with high efficiency heat recovery (MVHR)
- Utilisation of winter passive solar gain for heating and control of summer heat gains via solar shading

Passivhaus certification is a rigorous process and can only be achieved by demonstrating the final as-built/as-installed /as-commissioned building fabric and services to meet the energy target requirements set out by the Passivhaus.

NET ZERO STRATEGY & RENEWABLE

The Arts Works will be a Net Zero operational ‘enabled’ building from day one. The Arts Works has been designed to be inherently low energy by achieving Passivhaus certification and the inclusion of extensive renewable technology, including heat pumps and a roof mounted solar PV array.

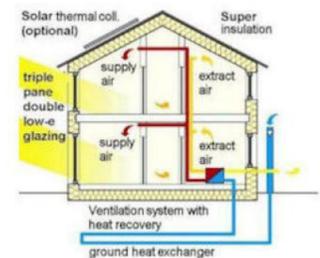
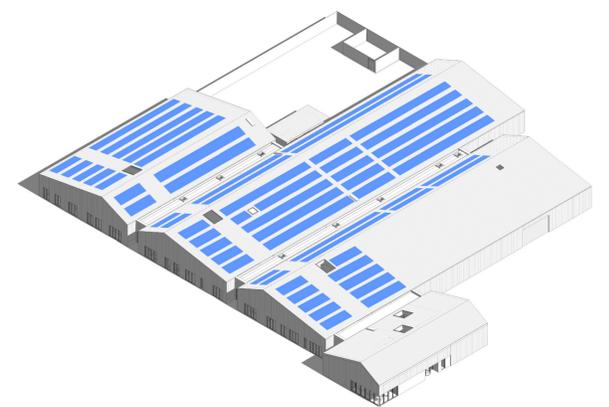


Illustration of Passivhaus Principles
BRE Group



TAW Roof mazing illustrating the full extent of roof photovoltaic panels