Unit 202: Changing practices over time

# Case study 2

**Case study: The Ty Newydd**

The Ty Newydd is a residential development project in a rural area of Wales. This case study highlights the sustainable construction practices employed during construction and the sustainable design features which ensure environmentally friendly and energy efficient usage. The project prioritised using locally sourced and environmentally friendly construction materials. Recycled and reclaimed materials were used whenever feasible, reducing the demand for new resources. The project team considered the lifecycle assessment of materials, selecting those with low embodied energy and carbon footprint.

During construction, energy efficiency techniques were utilised such as advanced insulation systems, airtight building envelopes and high-performance glazing. These techniques helped minimise heat loss and reduce the energy demand for heating and cooling. The energy efficient design and renewable energy integration in the Ty Newydd project led to reduced energy consumption and lower energy bills for residents. The emphasis on sustainable features translated into long-term cost savings and increased affordability for homeowners.

The architectural design of the Ty Newydd development incorporated passive design strategies to maximise natural lighting, ventilation and thermal comfort. This approach minimises the reliance on artificial lighting and mechanical cooling systems, resulting in lower energy consumption and improved occupant comfort. The Ty Newydd development prioritised the integration of renewable energy sources. Solar panels were installed on rooftops to generate clean electricity, reducing reliance on traditional energy grids. This renewable energy generation lowered carbon emissions and minimised long-term energy costs for residents. All residential units have energy efficient appliances and lighting fixtures. These appliances consume less energy, reducing the overall energy demand and contributing to sustainable usage practices.

The project incorporated water-efficient fixtures and systems to reduce water consumption, both during construction and in the operational phase. Rainwater harvesting systems were installed to collect and reuse rainwater for non-potable purposes, such as irrigation and toilet flushing. To promote water conservation, the project implemented water-efficient fixtures such as low-flow toilets, showerheads and faucets. Additionally, landscaping was designed with native plants and efficient irrigation systems to minimise water usage while maintaining an aesthetically pleasing environment.

The sustainable design and usage features of Ty Newydd created a comfortable and healthy living environment for residents. Ample natural light, efficient ventilation and reduced exposure to toxins enhanced the overall well-being of occupants. By implementing sustainable construction practices and incorporating energy efficient features, the development significantly reduced its environmental impact. The project minimised carbon emissions, conserved resources, and protected the local ecosystem. Effective waste management practices were adopted to minimise construction waste and promote recycling. Materials were carefully planned to avoid excessive waste generation, and any surplus was sorted and recycled appropriately. This approach reduced landfill contributions and conserved resources.

The Ty Newydd case study highlights the successful implementation of sustainable construction practices and features that prioritise energy efficiency, resource conservation and occupant well-being. By adopting such strategies, the project achieved its sustainability goals while providing a model for future residential developments committed to environmental responsibility and sustainable living.