# Unit 301: Understanding construction practice in Wales.

# Learning Outcomes 3: Know the changes in construction pressures and materials over time.

**Learner Task Criteria 3.3**

This section considers how twenty-first century construction will have an impact on the environment and how sustainable construction will have an impact on modern twenty-first century building projects.

Research and answer the following questions relating to this topic area. Use the links listed below to help you and any other relevant web links.

1. What is meant by sustainable construction and the increasing pressures of climate change and the carbon footprint of the construction industry?
2. What is meant by sustainable construction and the increasing pressures of climate change and the carbon footprint of the construction industry?
3. What is the importance of energy efficiency and embodied energy in meeting the zero-carbon target?
4. What is the importance of the Well-being of Future Generations (Wales) Act 2015 for the construction industry.
5. What are the quality and uses of building materials used for twenty-first century building projects particular to achieving a zero-carbon footprint including?

(Lime, limecrete, lime renders and mortars and plasters),

natural building materials and engineered materials (timbers, acetylated wood, (re)engineered bricks and blocks, crushed concrete.

glass aggregate, aerated bricks and blocks).

1. Why is it important to recognise the need for sustainability of traditional and vernacular buildings.
2. Why does sustainability include the reuse of buildings, rather than their demolition and the construction of new ones, as well as the thermal performance of traditional buildings.
3. What is meant by the following, off-site manufacturing, modular buildings, prefabricated construction components and digital construction technologies?
4. What are the traditional methods of building surveying and design, and how do they differ from modern construction applications including, digital design software, smart enabled tools, drones, robotics, Building Information Modelling (BIM), Computer Aided Design (CAD), 3D modelling, and simulation?
5. What are the limitations to planning and design in construction when using 2D and 3D software technologies in comparison to using e.g., apps, drones, and robotics?
6. What are benefits and limitations of 3D printing in relation to planning, designing, modelling, and constructing?

Suggested website links:

[Eco Friendly Construction Methods and Materials - Sustainable Build](https://sustainablebuild.co.uk/ecofriendlyconstructionmethodsmaterials/)

**What building materials will we be using in 2050?**

<https://www.google.com/url?sa=t&source=web&rct=j&url=https://blog.ferrovial.com/en/2017/06/future-of-construction-building-materials/&ved=2ahUKEwiShtqulNz9AhWOSkEAHc8wBfQ4HhAWegQIChAB&usg=AOvVaw26uuK6q83mWlYcp5LExivk>

**Why is Timber Construction Popular in 21st Century?**

<https://www.google.com/url?sa=t&source=web&rct=j&url=https://theconstructor.org/building/timber-construction-popularity/21342/&ved=2ahUKEwjbq4rZkNz9AhUhQ0EAHYEZCZw4ChAWegQIERAB&usg=AOvVaw0p9oH-fTtocmIHUO1fER-8>

**The Construction Industry in the 21st Century**

<https://www.google.com/url?sa=t&source=web&rct=j&url=https://m-cacm.acm.org/magazines/2018/3/225464-the-construction-industry-in-the-21st-century/fulltext&ved=2ahUKEwi_jJK-kNz9AhVVREEAHcKEAbwQtwJ6BAhQEAE&usg=AOvVaw1EudNMaUyMDmySoAqghNFK>

**17 Innovative Construction Materials Changing How We Build**

<https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.planradar.com/gb/top-15-innovative-construction-materials/&ved=2ahUKEwi_jJK-kNz9AhVVREEAHcKEAbwQFnoECC8QAQ&usg=AOvVaw1qg9GAOps92zpXev7OpC6v>