



Construction and the Built Environment – Unit 1

1.6 Sustainable construction methods (2 of 2)

Sustainable materials used to create building frames, walls, roofs:

- **Wood** is highly sustainable when sourced from managed forests. Waste wood can also be recovered and stripped for reuse or reprocessing.
- **Steel** is used for frames or cladding and can be recovered and recycled.
- **Reclaimed bricks**, after being cleaned, may be reused or crushed to be recycled as hardcore or aggregate for construction.
- **Straw bales** have an excellent insulation rating and can be used as part of walls within a timber or steel frame.
- **Wool** is a natural, renewable material that can be used as insulation instead of man-made options such as fibreglass.

Waste disposal – Materials should be identified and then divided into separate categories. Hazardous and non-hazardous waste need to be treated separately from materials that can be reused or recycled. In the past, landfill and incineration have been common methods of waste disposal. However, this has led to many negative environmental impacts:

- Leakage from sites, leading to contamination.
- Occupying undisturbed natural habitats.
- Noise and air pollution.

Reuse – Materials may be altered, resized, refinished, or adapted, but they are not reprocessed in any way and remain in their original form. Materials that can be reused in the building industry include:

- bricks, slates and steel sections.

Recycle – A variety of processes, such as crushing and smelting, can be used to transform waste materials into valuable products:

- Rubble can be crushed and used as aggregate.
- Waste wood can be reprocessed into OSB board and MDF.
- Metals, glass and plastics can be melted down and repurposed.

Planning permission is the approval required from a local government authority to construct something new or to make changes to an existing building. Its purpose is to ensure that the development is appropriate for its location, complies with planning conditions, and provides local residents with an opportunity to voice their opinions.

Brownfield sites have been built on before and tend to be on disused or derelict land. They are usually found in or around town and city centres.

Benefits	Drawbacks
It is easier to obtain planning permission for brownfield sites compared to areas that have not been previously developed.	Clearing may be costly and time-consuming, with existing structures potentially needing demolition or decontamination.
Infrastructure such as roads, drainage, and utilities may already be in place.	Land prices in prosperous city-centre locations can be very high.
These sites may have been vacant for a long time, and local authorities may offer financial incentives to encourage redevelopment.	Neglected sites can be valuable to the environment, supporting plant and animal life.
Government policy supports redeveloping brownfields to protect countryside.	Upgrading infrastructure can also be costly.
Redevelopment can help clean up health hazards and improve unsightly areas.	

Greenfield sites are areas that have not previously been built on.

Benefits	Drawbacks
Buildings are constructed from scratch, allowing them to be designed to meet both current and future needs.	Increased costs and time are required for infrastructure works, including new roads and utilities.
Land in rural areas tends to be cheaper to develop, subject to legal and planning constraints.	Valuable rural areas of natural beauty may be lost, and natural habitats destroyed.
The town or city can expand, and the population can grow.	Greenfield sites can be controversial and slow to gain planning permission.
A more pleasant environment with less congestion.	Building will inevitably result in more pollution and traffic congestion.