Unit 40: Sustainable Construction

Unit code: R/600/0212

QCF Level: 3

Credit value: 10

Guided learning hours: 60

Unit aim

The aim of this unit is to enable learners to know which features of the natural environment need to be protected and understand how the activities of the construction and built environment sector impact on the natural environment. Learners will also find out about how the natural environment can be protected against these activities, including the use of sustainable construction techniques.

Learning outcomes and assessment criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit

Learning outcomes	Assessment criteria
1 Know the important features of the natural environment that need to be protected	1.1 describe six different features of the natural environment that must be considered at the planning stage of a construction project
2 Understand how the activities of the construction and built environment sector impact on the natural environment	2.1 explain four different forms of global pollution arising from construction projects
	2.2 explain how four different forms of local pollution arising from construction projects may harm the local environment

3 Understand how the natural environment can be protected against the activities of the construction and built environment sector	3.1 explain four key methods used to protect the natural environment from the impact of the construction and built environment sector
4 Understand sustainable construction techniques that are fit for purpose	4.1 explain three different, fit-for-purpose sustainable construction techniques

Unit content

1 Know the important features of the natural environment that need to be protected

Features: air quality; ozone quality; soil quality; natural drainage landscape; natural amenities; land use; green belts; agriculture; forestry; countryside; heritage; water (resources, quality); marine environment; wildlife; biodiversity; natural habitat

2 Understand how the activities of the construction and built environment sector impact on the natural environment

Global pollution: build-up of greenhouse gases (CO2) causing global warming; polluting emissions to air causing acid rain; ozone depletion due to use of chlorofluorocarbons (CFCs); over-extraction (of water, fossil fuels and raw materials); increased energy consumption; electricity generation; deforestation; loss of natural habitat; reduction in biodiversity

Local pollution: air pollution from combustion products and volatile organic compounds (VOCs); polluting discharges to water by communities, industry and agriculture, contaminated land; waste disposal; existing site dereliction; comfort disturbance (traffic, smells, noise, dust and dirt); increased pressure on existing services and infrastructure; specification of hazardous materials eg lead and asbestos; extraction of raw materials (by drilling, mining and quarrying); electromagnetic radiation from overhead power lines; 'sick building' syndrome

3 Understand how the natural environment can be protected against the activities of the construction and built environment sector

Protection by legislation: relevant Acts of Parliament; UK regulations; European directives

Protection by control: Health and Safety Executive (HSE); Environment Agency (EA); local authorities (eg environmental services, planning, building control departments)

Protection by design and specification: reduction in energy usage; minimisation of pollution; reduction in embedded energy; specification of environmentally friendly/renewable materials; re-use of existing buildings and sites

Protection by management: simple environmental impact assessments (EIAs); improved management of construction sites; clear policies and objectives (eg reduction in wastage, increase in recycling, noise management, dust and dirt control); sharing of good practice; raising awareness; communication of information

4 Understand sustainable construction techniques that are fit for purpose

Fit for purpose: to meet the needs of the present without compromising the ability of future generations to meet their own needs eg social progress that recognises the needs of everyone, effective protection of the environment, prudent use of natural resources, maintenance of high and stable levels of economic growth and employment

Sustainable construction techniques: energy based; materials based; waste based

Energy-based techniques: eg reduced energy consumption, improved energy efficiency, use of renewable and alternative sources of energy

Materials-based techniques: eg specification of renewable materials, consideration of embodied energy and low-energy manufacture of materials and components

Waste-based techniques: eg producing less waste and recycling more, off-site prefabrication, modern methods of construction