

CONSTRUCTION AND THE BUILT ENVIRONMENT

Unit 7: Value and use of the built environment: protecting and maintaining



Construction and the Built Environment

Level 3 Unit 7: Value and use of the built environment: protecting and maintaining

Sample scheme of work

This is an example of a possible scheme of work. You can use it as it is, or you can adapt it to meet your own delivery needs. You may wish to consider the provision of extra learning workshop time for those learners who need additional learning time.

This unit is assessed through an externally set and marked examination of duration two hours. This will be a written examination with five questions. The total number of marks available for the test is 60. Precise guidance on the examination specification is available in the unit specification.

This unit also contains sections entitled 'Guidance for Delivery', 'Opportunities for applied learning' and 'What activities might be involved in this unit?' This scheme of work is designed to support the information therein.

Total GLH	60
Aim	<p>This topic provides learners with the opportunity to explore how the fabric of buildings and structures can be protected from the damage caused by the elements and by people. Learners will investigate how the built environment is maintained and how effective protection and maintenance can impact upon social and community objectives. They will examine the role of asset management in the built environment, and the principles, practices and techniques used in asset management. They will also consider the career opportunities available in protecting and maintaining the built environment and compare and contrast such opportunities in terms of career progression.</p> <p>When they have achieved this unit learners will:</p> <ul style="list-style-type: none"> • understand the importance and benefits of protecting and maintaining the built environment • know about the different ways of minimising energy demands and reducing emissions to water, air and land • know how to improve the sustainability of the built environment, and how to engage stakeholders and communities in protecting buildings and their environment • be able to evaluate private and public asset management in the built environment in terms of social, economic, environmental and other concerns • understand the available career opportunities in the protection and maintenance of the built environment.

<p>Notes</p>	<p>The scheme of work presented here uses a task-based approach to teaching and learning, with applied learning being the central theme. The assessment for this unit is, however, external, and the scheme of work takes this into account.</p> <p>Key for Functional Skills (FS)</p> <p>There are, at present, no Level 3 Functional Skills. Learners following the Advanced Diploma will need to achieve Level 2 Functional Skills, if they have not already achieved these prior to commencement of the Advanced Diploma.</p> <p>There are three Level 2 FS. These are broken down as follows:</p> <p>English: speaking and listening (S&L E); reading (Read E); writing (Write E); or E (all) for all three</p> <p>Mathematics: representing situations using mathematics (RS M); analysing and processing using mathematics (A&P M); interpreting and presenting results (I&P M); or M (all) for all three</p> <p>Information and Communication Technology: use ICT systems (Use ICT); find and select information (F&S ICT); develop, present and communicate information (DPC ICT); or ICT (all) for all three</p> <p>Guided Learning Hours</p> <p>There are 60 GLH associated with this unit. For the purposes of this scheme of work it is assumed that each session will be one hour long and that there will therefore be 60 sessions. Consortia are of course free to organise the time in any way that suits the needs of their learners and of the centres that comprise the consortium.</p> <p>Evidencing PLTS and FS</p> <p>PLTS are signposted against the assessment criteria throughout the unit, and can be evidenced from the learners' assessed work.</p> <p>Where FS are signposted it is because there are opportunities for the development of FS, rather than opportunities for evidencing achievement of FS from the formative assessments and carefully thought out teaching and learning strategies for the unit.</p>
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Session number	Topic	Suggested activities, assignments, assessments and resources	AC	PLTS	FS	GLH	Comments
1	The protection and maintenance of the built environment	<p>The first activity should involve teacher-led sessions used to identify and describe the social, economic and environmental benefits of protecting and maintaining the built environment. This should be followed by a whole-class discussion of the things the built environment must be protected against. Learners should compare and contrast wear and tear, adverse weather conditions, vandalism, fire, electrical and mechanical failure, and subsidence.</p> <p>The second activity should involve small-group research into the principles and practices used to protect and maintain the built environment, with each group researching a different topic. These topics should include the need for regular inspections and surveys, the importance of timely intervention, planned preventative maintenance (PPM), emergency repairs, and sustainable materials, repair and maintenance techniques. Each group should make a short presentation of their findings to the rest of the class. This could be a useful opportunity for formative assessment.</p> <p>The third activity should involve research into the effects of the local infrastructure and transport system in terms of emissions, noise and volume of traffic. This should be followed by a discussion on the benefits of public transport, and how to encourage people to leave their cars at home.</p> <p>Useful resources include: www.maintainyourbuilding.org.uk www.greenbuildnews.co.uk</p>	AC1a-c	IE4 IE5 IE6	E (all) ICT (all)	18	<p>Visits should be made to repair and maintenance sites, wherever possible. It is likely that the centre in which the learners are studying has PPM programmes in place, and this will be a convenient and familiar environment for both teachers and learners.</p> <p>Learners should create and maintain a portfolio to support the delivery of the unit, and to help them prepare for the external assessment. The portfolio should include notes made in class and during visits, together with any handouts, photographs, images, articles from newspapers, websites and trade magazines deemed to be relevant to the unit.</p>

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2	Strategies to minimise energy demands and reduce emissions	<p>The first activity should involve teacher-led sessions used to identify and describe the strategies used to minimise energy demand and reduce emissions to air, land and water. This should be followed by a class discussion, with the learners analysing and evaluating the methods used to reduce CO₂ emissions. These should include lean construction, the use of renewable and alternative sources of energy, natural ventilation and recycling and waste disposal systems. When the broad principles have been established the learners should move on to the second activity.</p> <p>This should comprise small-group work with each group researching a different specific item of sustainable construction. This should include green roofs, grey water systems, energy-efficient domestic appliances, low energy lighting, high efficiency condensing boilers, combined heat and power systems (CHP), solar panels, photovoltaic cells, wind turbines, ground source heat pumps and modern insulation materials and methods. Each group should make a presentation of their findings to the class, and copies of the presentations should be made available to all learners.</p> <p>Useful resources include:</p> <p>www.environment-agency.gov.uk www.cibse.org</p> <p>www.energysavingtrust.org.uk</p> <p>www.communities.gov.uk</p>	AC2a	IE4 IE6	E (all) ICT (all)	12	<p>Although not referenced in the examination specification it is recommended that mention is made of Parts L1 (A and B) and L2 (A and B) of the Building Regulations. This will help the learners to understand that there is legislation relating to the conservation of fuel and power in new buildings and that it is an important issue.</p> <p>Renewable energy sources should be taken to mean solar, wind, ground source heat pumps and bio-fuels.</p> <p>There is a useful video 'Energy use in buildings: Use it better, use it less' available from the European Commission on www.managenergy.net</p>

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3	Strategies to promote the sustainability of the built environment	<p>The first activity should involve teacher-led sessions used to identify and describe strategies that could be used to improve sustainability by minimising the effects of transport on the built environment. This activity would be enhanced by presentations from representatives of the local authority highways department and local transport companies.</p> <p>The second activity should involve small-group work with each group of learners analysing and evaluating one traffic strategy in some depth. These should include traffic-calming measures, pedestrianisation, Park & Ride schemes, the use of bus lanes, congestion charging and the re-introduction of trams. Each group should produce a wall display of their findings and this should remain in place throughout the unit.</p> <p>The third activity should involve a role-playing exercise with one part of the group taking the role of an environmental group campaigning for traffic reduction in the town centre, another group taking the role of a group of shopkeepers and taxi-drivers who oppose the environmental group, and a third group taking the part of the local authority that must take the final decision. The role-play exercise should allow all sides to make their points and must emphasise the importance of local stakeholder involvement in the decision making process for traffic reduction and calming schemes.</p> <p>www.communities.gov.uk www.highways.gov.uk www.environment-agency.gov.uk</p>	AC3a,b	IE4 IE6 CT1 CT3 EP3 EP4	E (all) ICT (all)	10	A second role-playing exercise should be undertaken to agree strategies to protect the local built environment and protect and secure local buildings and structures. The exact nature of the roles to be played and the aims and objectives of the exercise should be agreed by the teacher and learners beforehand. The debate this would necessitate will be another useful learning tool.

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4	Private and public asset management	<p>The first activity should involve teacher-led sessions used to identify and describe the general social, economic, environmental and aesthetic benefits of asset management. This should be followed by a whole-class discussion about the difference between private and public buildings and the characteristics and uses that define each type of building.</p> <p>The second activity should involve a presentation by an experienced asset manager. This should focus on the utility of buildings in social and community terms, and on how the built environment affects the local and national economy. Learners should prepare questions before the presentation. These questions should focus on the lifespan of buildings, how this can be extended, how buildings can be made comfortable and safe, and how to maximise the financial value of buildings and structures. The learners should take notes and collate these for formative assessment.</p> <p>The third activity should involve small-group work with each group of learners evaluating a single asset management practice. These should include the investment, renewal, purchase and disposal of properties, the operation and maintenance of properties, risk management procedures, the need to comply with statutory obligations, and the sustainability and environmental issues associated with asset management. Each group should make a short presentation of their findings to the class.</p> <p>Useful resources include: www.theiam.org www.partnershipsuk.org.uk</p>	AC4a	IE4 IE6	E (all) M (all) ICT (all)	10	<p>The learners could use the centre in which they are studying as a familiar and convenient example of a public building.</p> <p>Cost-benefit issues are referred to in the examination specification and learners will need to discuss such issues in at least one of the three activities. Two common examples that could be debated are:</p> <ul style="list-style-type: none"> • decisions about whether it is better to run buildings into the ground and then demolish them, or to maintain them in good order for as long as possible • decisions on what to do with listed buildings that are no longer used for their original purpose, such as unused churches and warehouses.

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5	Career opportunities in the protection and maintenance of the built environment	<p>The first activity should be a presentation by experienced protection and maintenance professionals, school or college careers staff and the local Connexions service. The activity should focus on the careers that are available in protection and maintenance of the built environment, the roles and responsibilities associated with such careers, opportunities available for career progression, the qualifications required to facilitate career progression and the role of the professional institutions operating in the sector.</p> <p>The second activity should involve learners using the information provided above, plus their own research, including the outcomes of conversations with experienced personnel, to produce individual career development plans that extend from the craft level, through technical and supervisory level, up to professional level. These should specify career goals, the supporting experience and qualifications required, the time taken to achieve such qualifications and other relevant details.</p> <p>The websites below will help learners to recognise the range of employment opportunities in protection and maintenance and in the wider construction and built environment sector:</p> <p>www.bconstructive.co.uk www.assetskills.org www.theiam.org/ www.ciob.org.uk www.rics.org www.cih.org</p>	AC5a	IE4 IE6	E (all) ICT (all)	6	<p>The teacher should stress the variety of jobs available in protection and maintenance of the built environment. Building inspectors, building surveyors, asset managers, facilities managers, housing surveyors, property managers, planners and maintenance managers, among others, all have their part to play, and each of these is a separate career.</p> <p>Useful careers information can be taken from the local press, Yellow Pages, Jobcentre Plus offices and the internet.</p> <p>Teachers may wish to distribute 'you are here' and 'you could be there' cards to the learners and ask them to explain how they would move from the former state to the latter. These could include details of the nature of the work, pay and conditions.</p>

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6	Mock assessment	<p>It is recommended that two hours are spent in undergoing a 'mock' examination. After the teacher has marked the papers, two further hours should be dedicated to the teacher going through the paper, giving the correct answers and explaining the logic behind the selection of the correct answers.</p> <p>An exemplar external assessment and mark scheme for this unit can be downloaded from: www.diplomainfo.org.uk/CBE-External-SAMs.asp</p>	All	-	-	4	It is important that teachers use the 'Examination specification' found in the unit specification to prepare their learners for the written examination. The examinations are set very precisely against this examination specification, and learners will benefit from knowing the broad areas to be examined and how the marks are distributed across the unit.