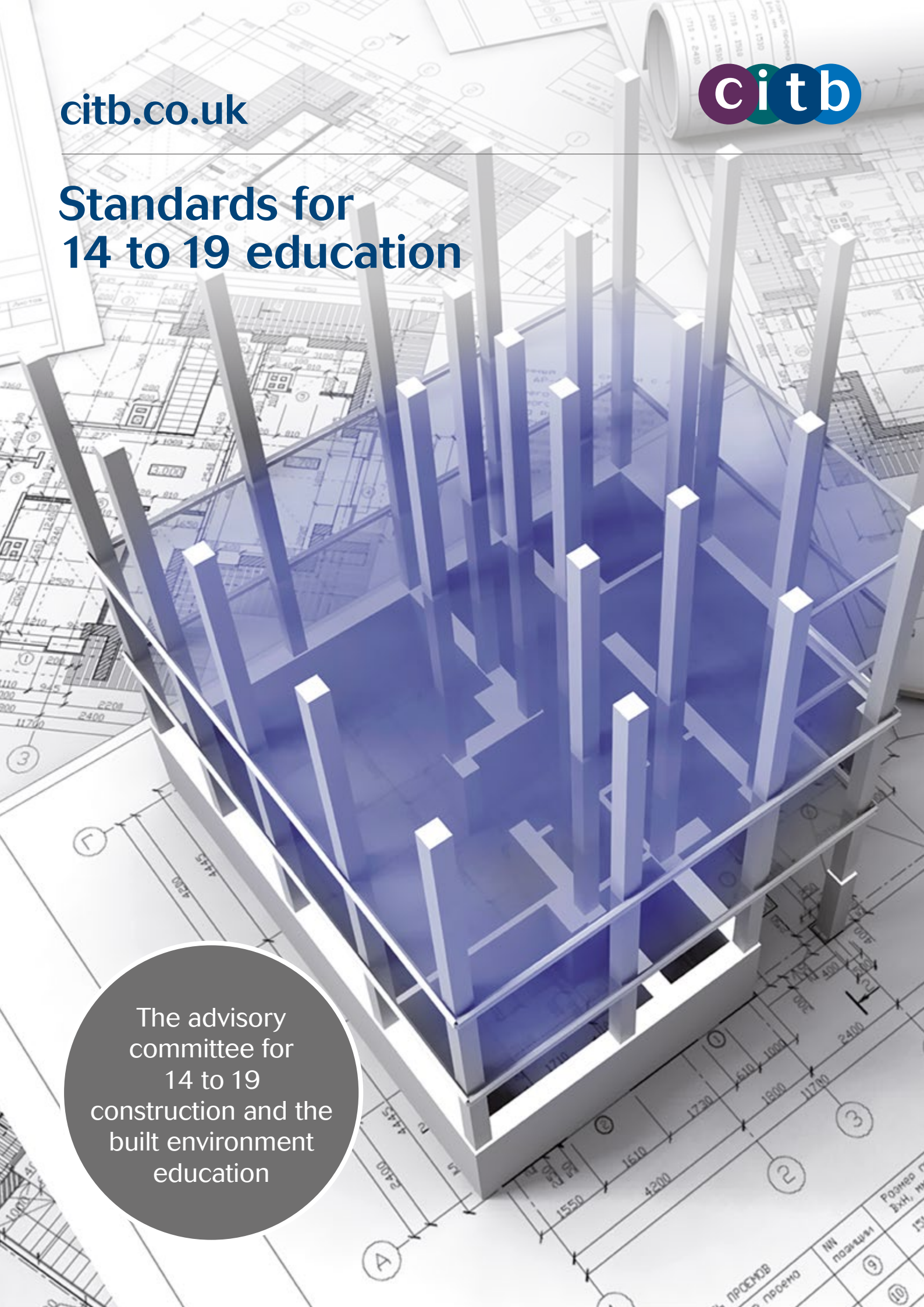


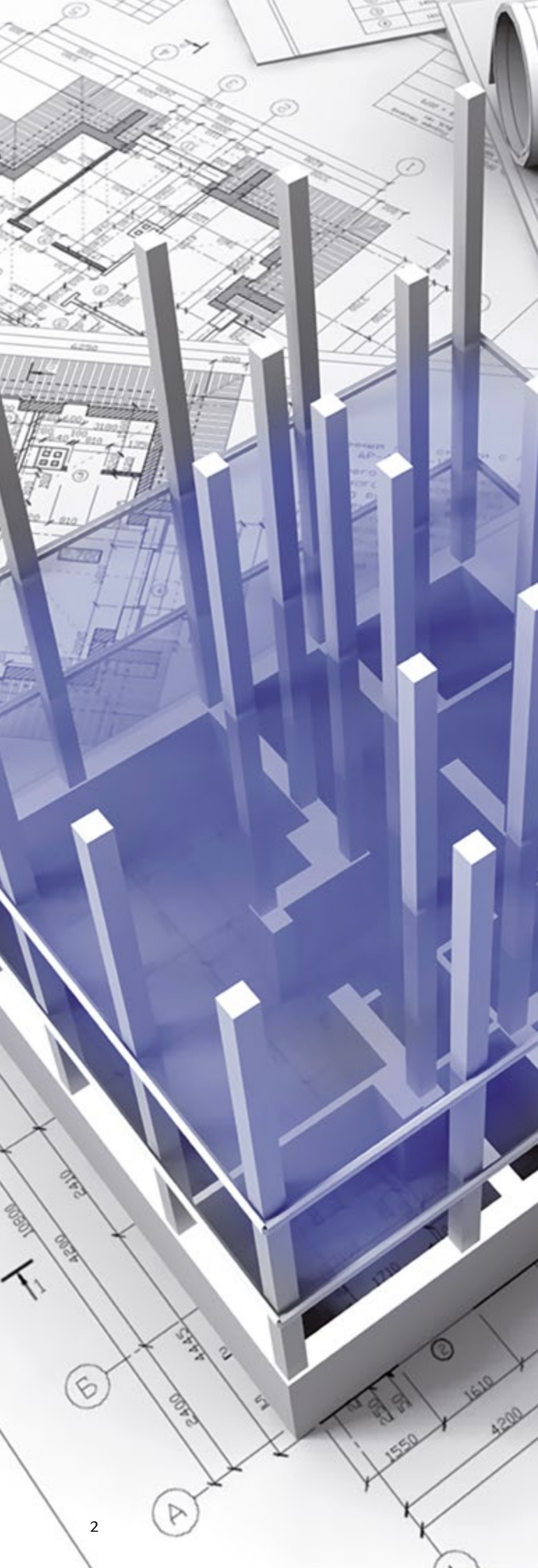
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Standards for 14 to 19 education

The advisory
committee for
14 to 19
construction and the
built environment
education





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Background

Towards the end of 2012 an Advisory Committee for 14 to 19 Construction and the Built Environment education was established under the chairmanship of Roy Cavanagh MBE (Seddons). The committee is convened by CITB and includes membership drawn from a range of organisations representing the breadth of the construction and built environment education. These organisations include employers, professional bodies, sector skills councils, universities, further education and schools. A list of members is set out in the annex to this publication. The committee has its origins in the Construction and the Built Environment Diploma Development Partnership; it is not funded by the UK Government or devolved Governments and operates entirely on voluntary effort and employers who have chosen to invest their time in it. The committee is focused on providing a public voice for those with a legitimate interest in construction and the built environment education. Its role is to provide strategic direction for a programme of work to support the definition, recognition, use and value of standards for education in construction and the built environment for 14 to 19 year olds.

At the first meeting of the Advisory Committee in December 2012, it was a that consideration should be given to establishing, and then promoting, credible 14 to 19 standards based on the content for the Diploma in CBE. A small steering group was created (led by Bridget Bartlett, Chief Operating Officer, Chartered Institute of Building) to lead a programme of work to:

- Ensure that the standards meet the needs of 14 to 19 learners and employers
- Provide a sound basis for progression to Apprenticeships, further, higher and professional education and training and employment
- Ensure that the content not only continues to provide the basis for the content for the Principal Learning Qualification but also forms a unique standard which is a point of reference and specification for school and college-based 14 to 19 learning, curriculum and qualifications in the context of construction and the built environment

- Identify and address any issues concerning content and design and particularly to test that the thematic approach remains one that continues to be supported and valued.

This document presents the 14 to 19 UK standards for construction and the built environment education as supported by partner organisations associated with the work of the advisory committee.

It is recognised that it is important to maintain these standards as up to date and valued. A light touch review will therefore be undertaken in 2016 and a complete review in five years.

Purpose

The standards have been designed to support a programme of applied and practical learning which introduces young people to the fabric of the world in which we live and its impact on individuals and communities. It progressively builds up an understanding of the physical extent and significance of the built environment and of the activities that shape, develop and influence it.

Programmes based on these standards should provide different opportunities to explore the built environment at different levels and will:

- Support progression and transfer laterally, and progress to further training, Apprenticeships and education
- Aid effective transition to further education, work-based learning or higher education and to adult and working life
- Provide the basis for a motivating learning experience for individuals, through a blend of general education and applied learning within a coherent and motivating programme.

Standards 1.1 to 1.3 together provide a broad introduction to the nature and extent of the built environment, the factors influencing its design and construction and its impact on people and communities.

Standards 2.1 to 2.3 together provide an opportunity to develop and apply a range of skills and knowledge in relation to the design, creation, maintenance and use of the built environment.

Standards 3.1 to 3.3 together provide opportunities to analyse, evaluate and explore principles and practices relating to the social, economic and cultural contribution of the built

environment and the wider factors influencing the design, creation, maintenance and management of the built environment.

The purpose of the proposed 14 to 19 Specialist Standards is to support learner choice, to support breadth and depth of study and achievement and also to lay a foundation for future progression to further and higher education, the professions, Apprenticeships and employment.

14 to 19 Specialist Standards in Construction and the Built Environment may also:

- Support choice and progression within a coherent whole programme
- Enable the learner to specialise and/or take up relevant complementary learning
- Provide opportunities to meet particular needs.

These standards will be of interest to awarding organisations to provide a basis for a range of specifications that may inform the design of optional and specialist units in applied, technical and vocational qualifications. The Specialist Standards complement the Construction and the Built Environment 14 to 19 Standards and the qualifications such as the Principal Learning Qualification that have been based on them.

14 to 19 standards and guidance on the design of qualifications

The suite of standards provides opportunities to explore construction and the built environment at different levels.

We recommend that the following guidance should be taken into account by awarding bodies in the future development of relevant qualifications including those designed to replace the Diploma in Construction and the Built Environment in England. This guidance will also provide a benchmark against which endorsement could be made.

- a. Each qualification should be freestanding and provide a breadth of learning opportunities for young people of all abilities who may, or may not, continue to explore the built environment.
- b. Each qualification should present learners with a coherent and comprehensive picture of construction and the built environment in terms of the different demands made upon land use over time and the economic, social and environmental factors that influence this use.
- c. Each qualification should provide opportunities to take a holistic view of the built environment; how solutions to needs are designed; the processes involved in creating buildings and structures; the value and uses of those buildings and structures; and the impact they have on communities and individuals. These three key themes should be treated in ways that reflect the complexity and nature of construction and the built environment.
- d. The qualification should provide opportunities to investigate, explore, analyse and review all aspects of the built environment through focused projects and practical tasks.
- e. Each qualification programme should promote the provision of guidance on career pathways and job roles across the built environment and the levels of educational attainment required for particular professional routes.
- f. Career information is essential and will:
 - Identify families of job roles and their relationship to each other within the built environment
 - Explore typical career pathways and progression within each of the job roles
 - Understand the role of the relevant professional bodies both in personal career and professional development and in setting and maintaining performance and output standards in the sector
 - Identify the skills, attributes and competences required in a range of specific job roles
 - Recognise own skills mix and preferences in relation to careers within the built environment
 - Identify appropriate types of training available to develop skills required for specific job roles and how to access them
 - Identify the qualifications available for recognition of competence and any related entry requirements in relation to specific career pathways.
- g. Each qualification should promote innovative work-related learning.
- h. Each qualification should encourage opportunities for work experience.
- i. Each qualification should encourage at least 50% of learning through real or realistic sector situations.
- j. The qualifications should treat sustainability and environmental issues in ways that they are integrated and embedded.
- k. The qualifications should treat health and safety both in terms of specific health and safety issues in work activities and general awareness of health and safety practices and policies.

Pathways

Some of the Specialist Standards are offered in terms of a number of pathways:

- Construction
- Building services engineering
- Management of built assets
- Management in the built environment.

Each pathway comprises a number of standards and associated learning outcomes.

The 14 to 19 CBE education standards and associated guidance

Standards 1.1 to 1.3

[180 Guided Learning Hours]

The following standards are associated with Level 1 of the National Qualifications Framework in England and related and equivalent levels in the other UK national qualification frameworks.

Standards 1.1 to 1.3 taken together provide individuals with a motivating programme of study in the context of construction and the built environment.

The purpose of these standards is:

- To explore the nature and extent of the built environment
- To introduce the phases of the built environment life cycle
- To explore construction methods and techniques
- To explore the roles of individuals employed within the built environment.

Standard 1.1: Design of the built environment 1

Learning outcomes

- 1.1.1 Identify social and economic and infrastructure factors influencing design
- 1.1.2 Explain how planning of the built environment impacts on design
- 1.1.3 Develop an understanding of sustainability and environmental protection as it applies to the design of the built environment

- 1.1.4 Describe the properties of a range of materials and their impact on the design of the built environment
- 1.1.5 Explain why a range of structures are designed in the way they are
- 1.1.6 Demonstrate an understanding of design principles through the design of a simple structure.

Standard 1.2: Create the built environment 1

Learning outcomes

- | | |
|---|---|
| 1.2.1 Describe how construction methods and materials have changed over time | 1.2.4 Use a range of hand tools and equipment used in the construction crafts and building services |
| 1.2.2 Apply safe working practices to undertake basic operations within the built environment | 1.2.5 Describe where and how sustainable materials and processes can be used during the construction of the built environment |
| 1.2.3 Identify and describe the major requirements for health and safety and environmental protection | 1.2.6 Identify a range of specific job roles in the built environment |
| | 1.2.7 Interpret a range of basic technical information. |

Standard 1.3: Value and use of the built environment 1

Learning outcomes

- | | |
|---|---|
| 1.3.1 Identify how the existing infrastructure and transport services impact on people and places around them | 1.3.3 Identify where and how sustainable materials and processes can be used in maintaining the built environment |
| 1.3.2 Describe how the welfare of people who use the built environment can be ensured | 1.3.4 Describe the life cycle of structures in the built environment and their contribution to economic and social development. |

Standards 2.1 to 2.3

[360 Guided Learning Hours]

The following standards are associated with Level 2 of the National Qualifications Framework in England and related and equivalent levels in the other UK national qualification frameworks.

Standards 2.1 to 2.3 taken together provide an opportunity to develop and apply a range of skills and knowledge in the development, maintenance and use of the built environment.

The purpose of these standards is to provide a broad understanding and working knowledge of:

- Design considerations and architectural features associated with the built environment

- The specific job roles and skills associated with the key functions in the built environment
- The preparation and use of drawings and other technical information
- The properties of materials used in the built environment
- The tools and practical techniques used in the design, construction, maintenance and management of the built environment.

Standard 2.1: Design the built environment 2

Learning outcomes

2.1.1 Identify and explore the factors influencing the design process

2.1.2 Identify planning requirements and their impact on design

2.1.3 Examine the nature and use of utilities in the design of the built environment

2.1.4 Investigate the use and properties of materials used in construction of the built environment

2.1.5 Identify how the use of sustainable materials can influence the design process

2.1.6 Identify, and make use of, a range of technical information available to design the built environment

2.1.7 Analyse a range of common structural forms and building elements used in the design process

2.1.8 Apply design principles through the design and evaluation of a complex structure.

Standard 2.2: Create the built environment 2

Learning outcomes

- | | |
|--|--|
| <p>2.2.1 Examine main job roles and their relationship to each other within the built environment and explore typical career pathways, qualifications and progression</p> <p>2.2.2 Identify, and use, a range of technical information used in the construction of the built environment</p> <p>2.2.3 Investigate a range of methods and techniques used in the construction of groundworks, substructure, superstructure and external works</p> | <p>2.2.4 Identify a range of hazards and risks commonly encountered in the construction of the built environment and show how they can be minimised</p> <p>2.2.5 Identify and apply good practice in safe working techniques</p> <p>2.2.6 Select and use a range of tools, materials and personal protective equipment to perform construction activities.</p> |
|--|--|

Standard 2.3: Value and use of the built environment 2

Learning outcomes

- | | |
|--|--|
| <p>2.3.1 Identify and explore the social, environmental and economic components and benefits of sustainability</p> <p>2.3.2 Identify and describe the contribution that the built environment makes to the physical, spiritual and emotional well-being and economic prosperity of individuals and communities</p> <p>2.3.3 Describe the main activities and roles involved in maintenance and service support functions</p> | <p>2.3.4 Explain the contribution of facilities management and support services to the maintenance, development and economic benefit of the built environment</p> <p>2.3.5 Identify and explore the contribution of property services and housing to the development of the built environment and the wider community.</p> |
|--|--|

Standards 3.1 to 3.3

[540 Guided Learning Hours]

The following standards are associated with Level 3 of the National Qualifications Framework in England and related and equivalent levels in the other UK national qualification frameworks.

Standards 3.1 to 3.3 taken together provide a motivating programme of study in the context of construction and the built environment which equips individuals with the practical skills, knowledge and understanding which underpins progression to technical and professional careers and further study.

The purpose of these standards is to develop a range of analytical and investigative skills in relation to:

- The social, economic and cultural contribution of the built environment to individuals and the community
- The factors and principles influencing the design, creation, maintenance and management of the built environment
- The contribution of activities within the built environment to sustainability
- The resourcing and management of projects in the built environment
- The specific job roles and skills associated with the key functions in the built environment.

Standard 3.1: Design the built environment 3

Learning outcomes

- 3.1.1 Explore the historical, political infrastructure including transport, economic, social and aesthetic factors influencing the design process
- 3.1.2 Identify and explore the principles and methods involved in urban design and their influence on the urban environment
- 3.1.3 Identify and explore the various stages of the design process
- 3.1.4 Examine the various stages of the planning process and evaluate the important factors that affect planning procedures and decisions

- 3.1.5 Examine the health, safety and environmental factors influencing the design of the built environment
- 3.1.6 Investigate the provision of primary services utilities to the design of buildings in terms of the main features, basic operating principles and the materials used
- 3.1.7 Identify the impact of projected climate change on the design of the built environment and on ways of minimising energy demand and reducing emissions to air, land and water.

Standard 3.2: Create the built environment 3

Learning outcomes

- | | | | |
|-------|--|-------|--|
| 3.2.1 | Examine main job roles and their relationship to each other within the built environment and explore typical career pathways, qualifications and progression | 3.2.5 | Identify and evaluate a range of quality assurance and project monitoring processes |
| 3.2.2 | Identify ways of protecting and maintaining the environment during construction of the built environment | 3.2.6 | Identify and evaluate the health, safety and environmental factors influencing the creation of the built environment |
| 3.2.3 | Identify and evaluate the construction processes required to construct the sub- and superstructures of a range of buildings, including finishes and services | 3.2.7 | Compare existing and developing processes used in the creation of the built environment and evaluate their impact |
| 3.2.4 | Identify and evaluate a range of project management tools and techniques | 3.2.8 | Identify and evaluate the principles of renewable energy and its technical and social implications |
| | | 3.2.9 | Identify and evaluate ways of conserving natural resources and recycling waste in the creation of the built environment. |

Standard 3.3: Value and use of the built environment 3

Learning outcomes

- | | | | |
|-------|--|-------|---|
| 3.3.1 | Describe and evaluate ways of engaging stakeholders and communities in the development and use of the built environment and the local infrastructure including transport | 3.3.3 | Evaluate the social, economic and commercial contribution of the built environment to the wider community |
| 3.3.2 | Identify ways of protecting and maintaining the environment during use of the built environment | 3.3.4 | Evaluate the role of asset management in the economic and social development of the built environment |
| | | 3.3.5 | Identify and evaluate ways of protecting the physical structure of the built environment. |

Associated guidance to support the 14 to 19 Education Standards

Standard 1.1: Design of the built environment 1

Learning outcomes and associated guidance

1.1.1 Identify social and economic and infrastructure factors influencing design

This provides learners with an introduction to the broad human and physical factors to be taken into consideration in the design process. This includes identifying how the size and composition of the community influences the design of different buildings and structures; the role of the existing infrastructure in influencing future social needs, including transport services; examining the impact of intended use and users on design; and the economic influence of materials, labour and land costs on design.

1.1.2 Explain how planning of the built environment impacts on design

This provides learners with an introduction to how planning plays a major role in the design process. This involves identifying the local and national planning legislation and its impact on design; identifying appropriate ways of presenting designs at each stage of the planning process; recognising the need for different design solutions for different functions and purposes; and understanding how planning takes account of the local environment and local public opinion.

1.1.3 Develop an understanding of sustainability and environmental protection as it applies to the design of the built environment

This provides learners with an introduction to the contribution good design can make to creating a sustainable and protected environment. This involves identifying how the needs of flora and fauna are encompassed in the design process; identifying and investigating the types of materials that can be sourced from sustainable supplies; exploring the use of recycled materials and the preservation of limited natural resources; and identifying how

local sourcing of materials can be taken into account in the design phases to the benefit of the environment and support local communities.

1.1.4 Describe the properties of a range of materials and their impact on the design of the built environment

This provides learners with an introduction to how the design process takes into account the properties of different materials. This involves exploring the properties of materials available for construction in terms of their aesthetic impact, strength, durability, sound and thermal insulation and fire resistance; reviewing their suitability in relation to required function; considering their contribution to sustainability and environmental protection; and exploring issues of cost.

1.1.5 Explain why a range of structures are designed in the way they are

This provides learners with an introduction to the broad range of factors which will influence the design solution. This involves exploring how the design needs to take account of topography, ground conditions and movement and weather conditions; ways of maximising the use of structures to meet a variety of purposes to meet the needs of local communities; and to develop an understanding of how land availability and the density and nature of the population influence design solutions.

1.1.6 Demonstrate an understanding of design principles through the design of a simple structure

This provides learners with an introduction to processes involved in the creation of a realistic design for a specific structure. This involves establishing the function of the structure and exploring alternative design solutions; investigating the possibilities of different materials; evaluating the 'buildability' (can it be built) of the design; and establishing the skills needed to implement the design.

Standard 1.2: Create the built environment 1

Learning outcomes and associated guidance

1.2.1 Describe how construction methods and materials have changed over time

This provides learners with an introduction to how mechanisation and new materials has influenced construction methods. This includes identifying the types of mechanical equipment available and their use and the types of modern materials available and how this has led to increased productivity.

1.2.2 Apply safe working practices to undertake basic operations within the built environment

This provides learners with an opportunity to carry out a range of basic work activities which involves the selection of personal protective equipment (PPE) and safe methods of work.

1.2.3 Identify and describe the major requirements for health and safety and environmental protection

This provides learners with an introduction to the contribution good housekeeping makes to safety and protecting the environment. This includes identifying how the segregation and disposal of waste is carried out, and how good lighting, temperature control and welfare facilities contribute to maintaining good methods of working.

1.2.4 Use a range of hand tools and equipment used in the construction crafts and building services

This provides learners with an introduction on how to use hand tools when working different materials. This involves sharpening and maintaining hand tools, using hand tools and equipment for basic activities.

1.2.5 Describe where and how sustainable materials and processes can be used during the construction of the built environment

This provides learners with an understanding of how to make best use of materials and processes to help sustain the built environment. This involves identifying what are sustainable materials and how they are processed and formed for use; identifying which materials can be recycled; and reused and where they can be incorporated in the build process.

1.2.6 Identify a range of specific job roles in the built environment

This provides learners with an introduction to career opportunities within the construction and built environment. This involves identifying, within construction and the built environment, the occupations which make up the areas of craft, technical, supervisory and management, the scope of progressing within each and their relationship with each other, including the range and role of professional institutions that exist.

1.2.7 Interpret a range of basic technical information

This provides learners with an introduction to the use of written and graphical information used in the construction and the built environment industry. This involves interpreting specifications, schedules, drawings and manufacturers' information used at the operative and craft levels.

Standard 1.3: Value and use of the built environment 1

Learning outcomes and associated guidance

1.3.1 Identify how the existing infrastructure and transport services impact on people and places around them

This provides learners with an introduction to the visual and social impact of the built environment. This involves understanding the function of different structures and what they contribute to the built environment and the community; assessing the impact and contribution of landmark structures; identifying how the infrastructure affects people's lives, including transport; and recognising how individuals and communities can influence the built environment around them.

1.3.2 Describe how the welfare of people who use the built environment can be ensured

This provides learners with an introduction to how the built environment can add to the well-being, happiness, safety, security and wealth of people. It involves understanding the impact of buildings and structures on where we live, how we travel around and the range of activities available to us; identifying ways in which the built environment can be made safer and more secure for people; identifying ways in which the built environment can be changed to improve our health; recognising the relationship between buildings and our quality of life; understanding the role of the built environment in providing us with economic opportunities.

1.3.3 Identify where and how sustainable materials and processes can be used in maintaining the built environment

This provides learners with an introduction to the ways in which we can maintain a built environment which protects the environment and minimises use of scarce natural resources. This involves understanding the impact of the built environment on the natural environment; identifying where renewable materials can be used which do not harm the environment and can be recycled/reused; understanding how individuals can contribute to the protection and maintenance of a protected environment.

1.3.4 Describe the life cycle of structures in the built environment and their contribution to economic and social development

This provides learners with an introduction to how buildings and structures are planned, built, used and removed. This involves understanding the ways in which land is used for different purposes; identifying the stages involved in the design, planning, building, maintenance and operation and demolition of buildings and structures; understanding the commercial value and economic importance of buildings; understanding and exploring how changes in the built environment affect people's lives and change the nature of communities.

Standard 2.1: Design the built environment 2

Learning outcomes and associated guidance

2.1.1 Identify and explore the factors influencing the design process

This provides learners with a good knowledge, understanding and application of the wider factors that need to be taken into consideration during the design process. This involves establishing the needs of community and the social impact of the proposed structure; exploring how economic factors influence design including project funding and the lifespan of the structure; identifying how the infrastructure influences design, including transport; examining how design can minimise the impact on the environment; examining the impact of intended use and users on design; and investigating the restrictions on design imposed by regulation and development policies.

2.1.2 Identify planning requirements and their impact on design

This provides learners with a good knowledge, understanding and application of the processes involved in responding to planning requirements in the design process. This involves identifying and exploring different types of planning requirements for a wide range of developments of different function and scale; understanding the impact of legislation on the design process; exploring a range of alternative design solutions; ensuring that designs meet the regulatory requirements; and adapting designs to meet planning requirements.

2.1.3 Examine the nature and use of utilities in the design of the built environment

This provides learners with a good knowledge, understanding and application of the processes involved in accommodating the availability and location of utilities in the design process. This involves understanding how the location and accessibility of utilities are taken into account; how utilities are distributed and scaled down; identifying how maintenance requirements for utilities are considered; and examining the environmental impact of utilities provision.

2.1.4 Investigate the use and properties of materials used in construction of the built environment

This provides learners with a good knowledge, understanding and application of the processes involved in understanding the nature of materials used in construction of the built environment and how they influence the design process. This involves examining the structure and properties of materials and their uses; exploring the different functions materials can perform; establishing the relationship of materials to each other; investigating the manufacture, preparation, location and securing of materials; and practising the use of selected materials.

2.1.5 Identify how the use of sustainable materials can influence the design process

This provides learners with a good knowledge, understanding and application of the principles involved in making best use of materials which protect and sustain the built environment. This involves understanding how sustainable raw materials are processed to form materials for sustainable use; exploring which materials are eco-friendly and can be recycled; and investigating the structural properties of sustainable materials and their influence on the design process.

2.1.6 Identify and make use of a range of technical information available to design the built environment

This provides learners with a good knowledge, understanding and application of the major categories of technical information to be considered in the design process. This involves identifying appropriate standards for material production, quality, methods of working and manufacturers' product information and their impact on design; identifying and interpreting environmental information on climatic conditions; and understanding the impact of local authority guidelines and requirements.

2.1.7 Analyse a range of common structural forms and building elements used in the design process

This provides learners with a good knowledge, understanding and application of the various alternative structures and components and their influence on the design process. This involves exploring the benefits of different frame structures and how they impact on design; investigating the nature and use of prefabricated elements and the common structural forms and materials associated with them; and identifying traditional on site construction processes and their suitability.

2.1.8 Apply design principles through the design and evaluation of a complex structure

This provides learners with a good knowledge, understanding and application of the processes involved in the creation of a realistic design for a specific complex structure either in terms of multiple components or function. This involves establishing the function of the structure and exploring alternative design solutions; investigating the possibilities of different materials; evaluating the "buildability" (can it be built) of the design; and establishing the skills needed to implement the design.

Standard 2.2: Create the built environment 2

Learning outcomes and associated guidance

2.2.1 Examine main job roles and their relationship to each other within the built environment and explore typical career pathways, qualifications and progression

This provides learners with a good knowledge and understanding of the variety of the job roles, careers and qualifications which are available. This involves identifying the main occupations within the areas of craft, technical, supervisory and managerial levels appropriate to construction and the built environment, career and qualification progression available in each and including how occupations relate to each other and the range and role of professional institutions.

2.2.2 Identify and use a range of technical information used in the construction of the built environment

This provides learners with a good knowledge, understanding and application of the information available and the ways in which it is presented. This involves identifying and exploring different formats of graphical and written information available and including accessing specifications, schedules and drawings from electronic databases.

2.2.3 Investigate a range of methods and techniques used in the construction of groundworks, substructure, superstructure and external works

This provides learners with a good knowledge, understanding and application of the work methods involved in forming the foundations of the structure and erecting the main framework. This involves understanding how structures can be built entirely insitu or be part fabricated off site, working below ground level and at height using mechanical equipment and manual work skills.

2.2.4 Identify a range of hazards and risks commonly encountered in the construction of the built environment and show how they can be minimised

This provides learners with a good knowledge, understanding and likely hazards and risks encountered on site and in the workshop. This involves exploring how materials have inherent hazards associated with their use and how methods of work should be devised to overcome risks associated with work activities in confined spaces, below ground level, at height and using equipment covered by legislation.

2.2.5 Identify and apply good practice in safe working techniques

This provides learners with a good knowledge, understanding and application of the principles of safe working.

2.2.6 Select and use a range of tools, materials and personal protective equipment to perform construction activities

This provides learners with a good knowledge, understanding and application of skills to use hand-powered tools, natural and manufactured materials and associated personal protective equipment. This involves identifying and using appropriate tools and personal protective equipment related to operative, craft and technical occupations for a limited range of basic work activities and associated materials.

Standard 2.3: Value and use of the built environment 2

Learning outcomes and associated guidance

2.3.1 Identify and explore the social, environmental and economic components and benefits of sustainability

This provides learners with a good knowledge, understanding and application of the principles of sustainability and its contribution to the built environment. This involves exploring how sustainable materials and processes are used and their contribution to environmental protection; identifying how the use of local materials and services can contribute to the local community and reduce emissions and pollution; identifying how the local infrastructure and transport services influence the local environment; exploring the benefits of using materials from renewable sources and which can be reused; exploring ways of balancing the social, environmental and economic impacts on the environment; and identifying ways in which individuals and organisations can contribute to sustainability.

2.3.2 Identify and describe the contribution that the built environment makes to the physical, spiritual and emotional well-being and economic prosperity of individuals and communities

This provides learners with a good knowledge, understanding and application of the ways in which the built environment influences and impacts on individuals and communities. This involves exploring the contribution that each type of building makes to the quality of life in the local community; exploring how we can improve the built environment to enhance the safety and health of individuals and communities; identifying the impact of the local infrastructure including transport services on the quality of people's lives; exploring ways in which the built environment can promote or act against the well-being of individuals and communities; and investigating how the planning and development of the built environment can contribute to the creation of sustainable communities.

2.3.3 Describe the main activities and roles involved in maintenance and service support functions

This provides learners with a good knowledge, understanding and application of the processes involved in maintaining and supporting the built environment. This involves exploring the ways in which built structures are operated, managed and protected to ensure effective functioning, health and safety; and investigating how a range of building maintenance and service support functions are provided.

2.3.4 Explain the contribution of facilities management and support services to the maintenance, development and economic benefit of the built environment

This provides learners with a good knowledge, understanding and application of the processes involved in preserving, maintaining and managing the built environment and how this contributes to wealth creation and quality of life. This involves investigating ways in which a wide range of building maintenance and management services are contracted and delivered; identifying the financial contribution of managed services to the economy; establishing and evaluating the contribution of maintenance and support services to enhancing the lifespan of buildings and structures and the economic and social benefits this brings.

2.3.5 Identify and explore the contribution of property services and housing to the development of the built environment and the wider community

This provides learners with a good knowledge, understanding and application of the processes involved in the purchase and sale of built assets as well as their use for public and social purposes. This involves identifying the role of public and private housing and its contribution to social policy and the well-being of communities; investigating the residential, industrial and commercial property market and its contribution to personal and organisational wealth; and reviewing how the private and public use of built assets makes a direct contribution to local economies and communities.

Standard 3.1: Design the built environment 3

Learning outcomes and associated guidance

3.1.1 Explore the historical, political infrastructure including transport, economic, social and aesthetic factors influencing the design process

This provides learners with the knowledge, understanding and application of the analytical skills involved in evaluating the impact of a wide range of factors influencing the development and design of the built environment. This involves investigating how the built environment has developed and changed over time and the factors influencing changing styles and approaches to design; investigating the impact of different political policies and priorities and their impact on design; identifying and evaluating the impact of different forms of private and public funding on built environment projects and evaluating the influence of the cyclical nature of economic growth and recession; exploring how the built environment responds to community needs, social integration and contributes to social engineering; identifying how infrastructure requirements influence design, including transport, and exploring various architectural styles, landmark projects and the relationship between function, form and visual appearance.

3.1.2 Identify and explore the principles and methods involved in urban design and their influence on the urban environment

This provides learners with the knowledge, understanding and application of the principles and methods involved in urban design and the factors influencing the existing and future spatial structure of urban form. This includes an exploration of the design and governance of urban spaces and their contribution to social inclusion, economic growth, environmental sustainability, transport strategies and the quality of life. Learners will also be given the opportunity to develop and experiment with

a range of design skills in order to manipulate space and produce alternative strategic and detailed representations of the urban environment. The interdisciplinary nature of urban design will also be explored.

3.1.3 Identify and explore the various stages of the design process

This provides learners with the knowledge, understanding and application of the principles involved in taking a design through the complete design cycle. This involves identifying ways of establishing and verifying client requirements/briefs; exploring the visual impact of the proposed design in relation to function; exploring ways of developing preliminary and refined design solutions; identifying the different relationships in the process including client/agent and design team; identifying regulatory and planning requirements in relation to designs; identifying the technical and physical processes involved in realising the design including structural engineers and contractors; and exploring the ways in which the design solution is translated into working drawings and specifications to permit its construction.

3.1.4 Examine the various stages of the planning process and evaluate the important factors that affect planning procedures and decisions

This provides learners with the knowledge, understanding and application of the processes involved in the planning cycle. This includes identifying and evaluating the primary social, political and economic factors that influence the planning process; interpreting planning requirements and developing a strategy to achieve an acceptable design solution; identifying appropriate treatments of the design solution at each stage of the planning process; identifying ways of responding to circumstances to ensure continuing compliance with planning permission; and identify the monitoring and approval requirements to ensure compliance with planning permission.

3.1.5 Examine the health, safety and environmental factors influencing the design of the built environment

This provides learners with the knowledge, understanding and application of the principles involved in ensuring that health, safety and environmental protection are fully reflected in the design process. This involves identifying ways of incorporating health, safety and environmental protection factors which ensure the safety and well-being of people using the built environment; identifying ways of responding to regulatory requirements for health, safety and environmental protection; investigating ways of conducting risk assessment and incorporating risk management in the design process; investigating ways of ensuring the security of people using the built environment; and investigating the design implications of maximising energy efficiency and environmental protection.

3.1.6 Investigate the provision of primary services utilities to the design of buildings in terms of the main features, basic operating principles and the materials used

This provides learners with the knowledge, understanding and application of processes to ensure the external supply of utilities and the functioning of building services are accommodated within the design process. This involves identifying how the provision, location, accessibility and maintenance of utilities influence the design process; understanding how utilities are scaled down to provide effective supply; investigating the implications for design of how utilities are distributed; investigating ways of ensuring that environmental and energy efficiency are taken into account during design; and investigating ways of building in factors which will enhance the management of the built environment.

3.1.7 Identify the impact of projected climate change on the design of the built environment and on ways of minimising energy demand and reducing emissions to air, land and water

This provides learners with the knowledge, understanding and application of principles which ensure that the design process takes full account of environmental and climatic changes and future predictions. This involves understanding and evaluating the influence of global warming on the built environment; identifying ways of designing in protection of the built environment against changes in the water table and drought; investigating how design processes can minimise emissions to the air and contribute to energy efficiency; understanding how waste disposal can affect land pollution and how the design process can minimise this; and investigating ways of designing in the most effective form of heat exhaust. Learners will also gain an understanding of the role of energy use, sourcing, management and renewal and their contribution to the built environment. This will involve gaining an understanding of the principles of renewable energy and their impact on technical, economic and social factors in the design process. Different sources of energy will also be explored as well as ways in which energy performance can be enhanced as a contribution to the responsible design of the built environment.

Standard 3.2: Create the built environment 3

Learning outcomes and associated guidance

3.2.1 Examine main job roles and their relationship to each other within the built environment and explore career pathways, qualifications and progression

This provides learners with the knowledge and understanding to explore relationships between varying occupational job roles their career progression and relevant qualifications. This involves investigating the occupational structure of the construction and the built environment industry in relation to craft, technical, supervisory and management job roles and identifying and linking pathways for career progression and the appropriate qualification routes relating to each and including the range and role of professional institutions.

3.2.2 Identify ways of protecting and maintaining the environment during construction of the built environment

This provides learners with the knowledge, understanding and application of the principles involved in safe guarding structures and their surrounding areas during construction. This involves identifying regulatory requirements and planning conditions governing the construction process and how companies and employees implement procedure to comply with given laid down requirements and conditions.

3.2.3 Identify and evaluate the construction processes required to construct the sub- and superstructures of a range of buildings, including finishes and services

This provides learners with the knowledge, understanding and application of processes needed to develop a working knowledge of the building technology required to bring a typical construction project to a successful conclusion.

3.2.4 Identify and evaluate a range of project management tools and techniques

This provides learners with the knowledge, understanding and application of processes involved in the management of projects. This includes identifying and evaluating personal skills required for dealing with individuals and groups of employees and the recognition of the skills required to manage strengths, weaknesses, opportunities and threats associated with construction and built environment projects.

3.2.5 Identify and evaluate a range of quality assurance and project monitoring processes

This provides learners with the knowledge, understanding and application of the procedures needed to ensure the quality of work meets the given specification and how the project is monitored throughout the build process. This involves identifying and evaluating ways to 'snag' the work during and on completion of the work programme, and monitoring and evaluating material and labour costs, work in process, plant hire costs and production costs as part of the project process.

3.2.6 Identify and evaluate the health, safety and environmental factors influencing the creation of the built environment

This provides learners with the knowledge and understanding to monitor the magnitude of health and safety and environmental issues created by the build process. This involves identifying current legislation and information on non-fatal injuries and fatalities, evaluating their influence on the build process in terms of the cost of safety and evaluating cost implications associated with the supply chain, sustainability of resources and implementation of modern methods of construction.

3.2.7 Compare existing and developing processes used in the creation of the built environment and evaluate their impact

This provides learners with the knowledge and understanding of some key methods used in the creation of the built environment. This involves evaluation of traditional techniques in comparison with modern methods, considering their impact on cost, duration of project time, health, safety and environmental risks, and how they impact on the needs of society.

3.2.8 Identify and evaluate the principles of renewable energy and its technical and social implications

This provides learners with the knowledge, understanding and application of energy production, energy conservation and energy audit with regard to renewable energy sources.

3.2.9 Identify and evaluate ways of conserving natural resources and recycling waste in the creation of the built environment

This provides learners with a good knowledge, understanding and application of the principles involved in making best use of materials to sustain resources for the built environment. This involves understanding how sustainable raw materials are processed to form resources for sustainable use; exploring which materials are eco-friendly and can be recycled; and investigating the uses of sustainable materials and how they influence the construction of the built environment.

Standard 3.3: Value and use of the built environment 3

Learning outcomes and associated guidance

3.3.1 Describe and evaluate ways of engaging stakeholders and communities in the development and use of the built environment and the local infrastructure including transport

This provides learners with the opportunity to analyse, evaluate and explore principles and practices in relation to engagement of the whole community in the creation and use of the built environment. This involves evaluating the role and contribution of the primary stakeholders in the built environment and their different perspectives and interests; investigating ways of balancing the needs of different stakeholders and communities; and evaluating alternative ways in which individuals and communities can contribute to and influence decisions about the development of the built environment.

3.3.2 Identify ways of protecting and maintaining the environment during use of the built environment

This provides learners with the opportunity to analyse, evaluate and explore principles and practices in relation to ensuring the use of buildings and structures protects the environment. This involves identifying ways of minimising energy demand and reducing emissions to air, land and water; identifying sustainable processes which optimise social, economic and environmental benefits; identifying the contribution of the local infrastructure including transport services to the maintenance of the built environment; evaluating technologies and materials which can contribute directly to sustainability; exploring ways of engaging stakeholders and communities in protecting the built environment; evaluating methods of ensuring that buildings and structures are protected from damage and kept secure.

3.3.3 Evaluate the social, economic and commercial contribution of the built environment to the wider community

This provides learners with the opportunity to analyse, evaluate and explore principles and practices in relation to the contribution of the built environment to economic activity, prosperity and social cohesion. This involves identifying the economic and business drivers within the built environment and how this influences its development; evaluating the financial contribution of built environment activities to the broader economy; and investigating the contribution of the built environment in achieving social objectives and community development. Learners will also gain an understanding of the contribution made by planning to the well-being of individuals and communities, social cohesion and community development. Learners will understand the primary social, political and economic factors that influence the planning process and how they relate to other components of the design process.

3.3.4 Evaluate the role of asset management in the economic and social development of the built environment

This provides learners with the opportunity to analyse, evaluate and explore principles and practices in relation to the management of built assets to achieve economic and social benefits. This involves identifying the full range of asset management activities for both private and public provision; evaluating the financial value of asset management services and their contribution to the national and local economy; evaluating the impact of asset management services on the lifespan, financial viability and social utility of built assets; and identifying and evaluating the impact of well-managed assets on the safety, comfort and well-being of individuals and communities.

3.3.5 Identify and evaluate ways of protecting the physical structure of the built environment

This provides learners with the opportunity to analyse, evaluate and explore principles and practices in relation to how the physical fabric of the built environment is kept secure. This involves identifying and evaluating techniques for maintaining the integrity of the structure from damage from the elements and people; identifying ways of protecting the built environment in order to extend its period of usefulness; identifying and evaluating the contribution of protecting the built environment to social and community objectives.

The Specialist 14 to 19 Standards

The following standards are associated with Level 1 of the National Qualifications Framework in England and related and equivalent levels in the other UK national qualification frameworks.

All subjects 30 Guided Learning Hours.

S 1.1: Investigating maintenance of the built environment

This introduces learners to the principles and practices of basic building maintenance.

Learning outcomes

- a. Explore the need for building maintenance and the importance of good design and workmanship
- b. Identify and describe a range of common building defects
- c. Apply safe working practices to undertake basic building maintenance operations.

S 1.2: Investigating modern methods of construction

This provides the learner with an introduction to modern methods of construction and their impact on traditional forms of construction.

Learning outcomes

- a. Identify factors which inhibit the efficiency of traditional construction methods
- b. Identify the range of modern methods of construction which can enhance the efficiency of the construction process
- c. Relate specific modern methods of construction to specific traditional methods of construction
- d. Describe the impact of modern methods of construction on the speed, quality and cost of construction.

S 1.3: Construction and the built environment and its impact on individuals and communities

This provides learners with an introduction to the contribution the built environment makes to the lives of individuals and the wider communities they live in.

Learning outcomes

- a. Identify the various types of buildings and structures and their functions within the built environment
- b. Identify and explore the contribution that different types of building and structures make to the quality of life of individuals and the local community
- c. Describe the impact different types of land use has on the safety, health and well-being of individuals and communities
- d. Identify ways in which individuals and communities can influence the built environment to their benefit.

S 1.4: Health and fitness

This provides learners with an introduction to a healthy life style and the opportunity to increase their level of fitness.

Learning outcomes

- a. Explore the risks associated with smoking, alcohol and substance abuse
- b. Recognise the health implications of their personal lifestyle
- c. Identify and participate in activities that will increase their personal level of fitness.

S 1.5: Handling and storing resources

This introduces learners to safe manual handling of construction materials and how they should be stored.

Learning outcomes

- a. Safely manually handle a range of construction materials and components

- b. Correctly stack and store a range of construction materials and components
- c. Describe the importance of correct lifting techniques and consequences if they are not applied
- d. Recognise correct storage methods for a range of construction materials and components and state the implications of poor storage
- e. Check and record incoming materials and components.

S 1.6: Living in the built environment

This provides learners with an introduction to the role property and housing plays in our lives and its contribution to our quality of life and prosperity.

Learning outcomes

- a. Explore the way in which housing and property fit alongside other types of land use in a planned environment
- b. Identify the importance of where we live and how it affects our own well-being, that of the community and the environment in general
- c. Investigate how property of different kinds contributes to our personal wealth and the wider economy
- d. Describe the different types of job roles performed in selling, letting, managing and maintaining property of different kinds.

S 1.7: Supporting the built environment

This provides learners with an introduction to the support services involved in maintaining and protecting the built environment.

Learning outcomes

- a. Identify and explore the types of services needed to maintain and protect buildings and other structures
- b. Investigate how support services contribute to our health, security and well-being
- c. Describe how support services are organised and delivered

- d. Describe the different types of job roles performed in managing and performing support services.

S 1.8: Building services engineering

This provides learners with an introduction to building services engineering, and the range of occupations and careers available within the sector (air conditioning and refrigeration, electrical installation, heating and ventilating and plumbing industries).

Learning outcomes

- a. Describe the impact of building services engineering on people's lives and the built environment
- b. Identify and discuss the different industries and their careers within building services engineering
- c. Identify the application of building services engineering systems
- d. Describe the function and safe use of hand tools in the building services engineering sector
- e. Demonstrate the safe use of hand tools to carry out simple building services engineering tasks.

S 1.9: Engineering construction

This provides learners with an introduction to the breadth and scale of the engineering construction sector.

Learning outcomes

- a. Recognise the various types of engineering construction plant, and describe their purpose and contribution to the national economy
- b. Describe how the impact of engineering construction plant upon the environment and people's lives is planned and controlled
- c. Describe the various occupations and careers within engineering construction design, build and maintenance
- d. Describe the main principles of engineering construction methods and techniques and the associated safety requirements.

The following standards are associated with Level 2 of the National Qualifications Framework in England and related levels in the other UK national qualification frameworks.

The Specialist Standards include the following pathways:

- Construction
- Building services engineering
- Management of built assets.

All subjects 30 Guided Learning Hours (GLH) unless otherwise stated.

Construction pathway

S 2.1: Performing within wood-related construction operations

This provides learners with a good knowledge and understanding of the application of the processes and techniques required to perform a range of wood-related construction operations.

Learning outcomes

- Identify and select appropriate hand and portable power tools required to carry out wood-related activities
- Apply safe working practices to the use of hand tools and power tools to perform wood-related operations to given specifications
- Carry out setting out operations.

S 2.2: Performing within trowel-related construction operations

This provides learners with a good knowledge and understanding of the application of the processes and techniques required to perform a range of trowel-related construction operations.

Learning outcomes

- Identify and select appropriate hand tools and equipment to carry out simple brickwork and blockwork tasks
- Apply safe working practices to the use of hand tools and equipment to produce solid brick and block walling and cavity walling to given specifications
- Carry out setting out activities to acceptable standards.

S 2.3: Performing within decorative-related construction operations

This provides learners with a good knowledge and understanding of the application of the processes and techniques required to perform a range of decorative-related construction operations.

Learning outcomes

- Identify and select appropriate hand tools and materials commonly used by the decorator for basic painting and wallpapering tasks and producing basic textured finishes and the installation of coving
- Apply safe working practices for the preparation of surfaces, application of paints, hanging of wall coverings and coving and centrepieces to acceptable standards
- Apply safe working practices in the use of low-level access equipment.

S 2.4: Performing within construction and civil engineering operations

This provides learners with a good knowledge and understanding of the application of the processes and techniques required to perform a range of construction and civil engineering operations.

Learning outcomes

- Recognise and select appropriate tools, materials and personal protective equipment to carry out basic construction and civil engineering operations
- Apply safe working practices to the use of hand tools and equipment to perform basic construction and civil engineering operations.

S 2.5: Performing industrial pipefitting operations

This provides learners with a good knowledge and understanding of the application of the principles of industrial pipefitting.

Learning outcomes

- Describe the principles and techniques for the fitting and support of various types of industrial pipework

- b. Identify and describe the function of tools, materials and equipment used for the fitting of various types of industrial pipework and associated components
- c. Understand the key principles of industrial pipework design, protection, insulation and maintenance
- d. Interpret and produce basic industrial pipefitting drawings
- e. Demonstrate an awareness of industrial pipefitting regulations, including how and why to apply those relating to health and safety.

S 2.6: Performing metal-related operations

This provides learners with a good knowledge and understanding of the application of the tools, equipment, techniques and processes involved in the preparation, shaping, joining and finishing of metals and metal products used within the construction process.

Learning outcomes

- a. Identify and describe the properties of different metals and how they behave
- b. Identify and describe the function of tools, materials and equipment used in different metal working activities
- c. Describe and apply the correct standard operating procedures for the shaping, joining and finishing of different metals
- d. Apply safe working practices relevant to each metal working process.

S 2.7: Management of resources, plant and equipment

This provides learners with a good knowledge and understanding of the application of the techniques used to manage resources, plant and equipment.

Learning outcomes

- a. Identify how resources are divided between materials, labour and plant/equipment in any project and how these are calculated
- b. Explore methods used to quantify and plan the use of resources

- c. Describe the techniques used to record resource usage
- d. Explore the common techniques used to control the use of materials, labour and plant/equipment.

S 2.8: Installation and assembly of prefabricated units

This provides learners with a good knowledge, understanding, and application of the principles and techniques of the installation of prefabricated factory produced units.

Learning outcomes

- a. Identify and describe the relative merits of factory produced units as compared with on site production
- b. Identify and describe the tools and equipment used for the installation and assembly of a variety of prefabricated units
- c. Identify the specific hazards of the installation and assembly of prefabricated units
- d. Demonstrate an awareness of the legislation and codes of practice covering the installation of prefabricated units.

S 2.9: Performing structural steelworking operations

This provides learners with a good knowledge and understanding of the application of the principles of structural steelworking.

Learning outcomes

- a. Describe the principles and techniques for the handling and erection of structural steelwork
- b. Identify and describe the function of tools, materials and equipment used for the moving and fitting of structural steelwork
- c. Understand the key principles of structural steelwork design
- d. Interpret and produce basic structural steelwork drawings
- e. Demonstrate an awareness of structural steelworking regulations, including how and why to apply those relating to health and safety.

S 2.10: Performing glazing operations

This provides learners with a good knowledge and understanding of the techniques of glazing in the construction and maintenance of buildings.

Learning outcomes

- a. Describe the properties of glass as a construction material
- b. Identify and describe the tools and equipment used for glazing in a variety of applications
- c. Identify the methods and systems for the installation and repair of glazing
- d. Identify the specific hazards of glazing operations
- e. Demonstrate an awareness of the need for quality assurance in all aspects of glazing operations.

S 2.11: Welding and fabrication

This provides learners with a good knowledge and understanding of the principles and techniques of welding and fabrication.

Learning outcomes

- a. Interpret simple fabrication drawings and accurately mark out simple profiles for a welded assembly
- b. Use mechanical and thermal cutting equipment to cut out simple profiles
- c. Use fusion and welding processes to produce simple welded assemblies and make simple repairs to components
- d. Identify risks and hazards associated with welding processes and apply appropriate safety precautions.

Building services engineering pathway

S 2.12: Building services engineering

This provides learners with an opportunity to focus on building services engineering and explore the range of occupations and careers available within the sector. This topic is a mandatory requirement for learners undertaking any of the following: Level 2 Performing Plumbing Operations, Performing Refrigeration and Air Conditioning Operations, Performing Heating and Ventilating Operations and Performing Electrical Installation Operations.

Learning outcomes

- a. Describe the impact of building services engineering on people's lives, the environment and the UK economy
- b. Identify and discuss the different industries within the building services engineering sector, the careers paths, employment/working terms and conditions and Apprenticeship programmes. Describe how building services engineering occupations interact
- c. Explain the fundamental operating principles of a range of building services engineering systems and their components
- d. Describe and demonstrate the selection and safe use of hand and power tools in the building services engineering sector, identify the characteristics of materials used within systems
- e. Interpret and prepare elementary building services engineering drawings, including use of information and communication technology.

S 2.13: Plumbing studies (60 Guided Learning Hours)

This provides learners with an opportunity to focus on plumbing operations and develop knowledge, understanding and experience of plumbing systems, their operational features and characteristics. It is a requirement that the learner follow the Level 2 Building Services Engineering topic prior to starting this topic

or undertake both topics simultaneously. It is possible to combine the learning outcomes from the two topics into one learning programme.

Learning outcomes

- a. Identify the key legislation and codes of practice and their impact on the plumbing industry
- b. Describe plumbing systems and apply criteria for non-complex component selection
- c. Develop and apply essential plumbing installation techniques
- d. Identify and develop essential plumbing maintenance principles.

S 2.14: Refrigeration and air-conditioning studies (60 Guided Learning Hours)

This provides learners with an opportunity to focus on refrigeration and air-conditioning (RAC) operations, to develop knowledge, understanding and experience of RAC systems, their operational features and characteristics. It is a requirement that the learner follow the Level 2 Building Services Engineering topic prior to starting this topic or undertake both topics simultaneously. It is possible to combine the learning outcomes from the two topics into one learning programme.

Learning outcomes

- a. Identify the key legislation and codes of practice and their impact on the RAC industry
- b. Describe RAC systems and apply criteria for non-complex component selection
- c. Develop and apply essential RAC installation techniques
- d. Identify and develop essential RAC maintenance techniques.

S 2.15: Electrical installation studies (60 Guided Learning Hours)

This provides learners with an opportunity to focus on electrical installation operations in buildings and structures, and develop knowledge, understanding and experience of electrical installation systems, their operational features and characteristics. It is a requirement that the

learner follow the Level 2 Building Services Engineering topic prior to starting this topic or undertake both topics simultaneously. It is possible to combine the learning outcomes from the two topics into one learning programme.

Learning outcomes

- a. Identify the key legislation and codes of practice and their impact on electrical installation
- b. Describe electrical installation systems and apply criteria for non-complex component selection
- c. Develop and apply essential electrical installation techniques
- d. Identify and develop essential electrical maintenance techniques.

S 2.16: Heating and ventilating studies (60 Guided Learning Hours)

This provides an opportunity for learners to focus on heating and ventilating operations and develop knowledge, understanding and experience of heating and ventilating systems, their operational features and characteristics. It is a requirement that the learner follow the Level 2 Building Services Engineering topic prior to starting this topic or undertake both topics simultaneously. It is possible to combine the learning outcomes from the two topics into one learning programme.

Learning outcomes

- a. Identify the key legislation and codes of practice and their impact on the heating and ventilating industry
- b. Describe heating and ventilating systems and apply criteria for non-complex component selection
- c. Develop and apply essential heating and ventilating installation techniques
- d. Identify and develop essential heating and ventilating maintenance techniques.

Management of built assets pathway

S 2.17: Facilities management and support services

This provides learners with a good knowledge and understanding of the application of the activities involved in the managing and delivering of support services in buildings and other structures and their immediate surroundings including cleaning and the maintenance of a safe and hygienic environment.

Learning outcomes

- a. Recognise the role of facilities management within the built environment
- b. Identify the full range of building maintenance and service support functions involved in facilities management and how they relate to each other
- c. Describe the main activities and roles within each separate cleaning, caretaking, hygiene and facilities support services function.

S 2.18: Housing services

This provides learners with a good knowledge and understanding of the application of the activities involved in the allocation, letting and maintenance of the housing stock in the public and private sector.

Learning outcomes

- a. Recognise the role of housing services within the built environment
- b. Identify and explore the wider social, economic and legislative factors which have a direct influence on housing services
- c. Identify and describe the different forms of public and private housing provision available
- d. Identify and describe the contribution housing services make to the well-being of individuals and communities
- e. Identify the full range of functions involved in managing, letting, allocating housing, supporting tenants and how they relate to each other.

S 2.19: Surveying for the built environment

This provides learners with a good knowledge and understanding of the application of surveying techniques and activities used in the built environment.

Learning outcomes

- a. Identify and describe the different types of surveying specialisms and their contribution to the built environment
- b. Identify and apply a variety of measurement methods and mathematical calculations relevant to surveying
- c. Use basic surveying equipment to arrive at accurate measurements
- d. Identify and describe the correct ways of recording and reporting on findings.

S 2.20: Sale and letting of residential, industrial and commercial property

This provides learners with a good knowledge and understanding of the application of the processes involved in the sale, letting and management of residential, industrial and commercial property.

Learning outcomes

- a. Identify and describe the primary functions involved in the sale and letting of residential, industrial and commercial property
- b. Identify and describe the customer care and client support requirements in the sale and letting of residential, industrial and commercial property
- c. Identify and describe the primary legislation governing the sale, letting and management of residential, industrial and commercial property
- d. Identify and describe the services related to the sale and letting of property including surveying and property management
- e. Identify and describe ways of monitoring and responding to local property market changes.

S 2.21: Planning in construction and the built environment

This provides learners with a good knowledge and understanding of the application of the processes involved in planning the development of the built environment.

Learning outcomes

- a. Identify and describe the role of planning and its contribution to the built environment
- b. Identify and describe the economic, legal and social factors which influence the planning process
- c. Identify the full range of functions involved in planning and monitoring developments of the built environment and how they relate to each other
- d. Identify and describe the major stages in the planning process
- e. Identify and describe how individuals and communities can participate in the planning process.

S 2.22: Introduction to valuation

This provides learners with a good knowledge and understanding of the application of the activities involved in establishing the value of physical assets within the built environment.

Learning outcomes

- a. Identify the different purposes of carrying out a valuation of property
- b. Identify the factors which need to be taken into account to determine the value of property
- c. Identify the full range of functions involved in carrying out valuation services
- d. Explain the contribution of valuation services to the maintenance and development of the built environment.

S 2.23: Community management and regeneration

This provides learners with a good knowledge and understanding of the activities involved in relation to the contribution of housing services to community development and regeneration.

Learning outcomes

- a. Identify and describe the factors which influence the growth or decline of communities
- b. Identify and describe the main agencies involved in neighbourhood management and their impact on communities
- c. Describe the contribution of housing services to the health, safety, security and well-being of individuals and local communities
- d. Identify ways in which individuals can influence decisions about the quality of services in the local community.

The following topics may be associated with any pathway

S 2.24: Performing built environment maintenance operations

This provides learners with a good knowledge and understanding of the application of the principles and practices of basic building maintenance.

Learning outcomes

- a. Explore the need for building maintenance and the importance of good design and workmanship
- b. Identify and describe a range of common building defects
- c. Apply safe working practices to undertake basic building maintenance operations.

S 2.25: Relationship of construction and the built environment to the wider community

This provides learners with a good knowledge and understanding of the impact of the built environment on local communities and on the quality of life of individuals within them.

Learning outcomes

- a. Identify the different ways in which land is used to meet the needs of individuals and communities
- b. Identify ways in which the built environment can promote or act against the well-being of individuals and communities
- c. Describe how the planning and development of the built environment has changed over time and the impact of these changes on individuals and communities
- d. Identify ways in which individuals and communities can influence the built environment to their benefit.

The following standards are associated with Level 3 of the National Qualifications Framework in England and related levels in the other UK national qualification frameworks.

The specialist learning is organised in the following pathways:

- Construction
- Building services engineering
- Management of built assets
- Management in the built environment.

All subjects 30 Guided Learning Hours unless otherwise stated.

Construction pathway

S 3.1: The relationship of the built environment to the wider environment and community

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the way in which the built environment influences, and is influenced by, communities and individuals.

Learning outcomes

- a. Identify ways in which the competing demands on land use are balanced and accommodated within the built environment
- b. Identify and explore the impact of planning and development decisions on the quality of life of whole communities and individuals
- c. Identify and define how the built environment can contribute to the health, safety and well-being of individuals and communities
- d. Identify and describe how the planning of the built environment can contribute to sustainability of the physical environment
- e. Identify ways in which individuals and communities can be consulted on, and engage in, the development of the built environment.

S 3.2: Site surveying (60 Guided Learning Hours)

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the full range of surveying and related support services involved in performing a range of surveying activities.

Learning outcomes

- a. Identify and describe the main features of a variety of cartographic material required to carry out different forms of surveying
- b. Identify and describe how to locate key features relevant to the conduct of a survey and their implications
- c. Identify and apply a variety of measurement methods and mathematical calculations relevant to surveying
- d. Use basic surveying equipment to arrive at accurate measurements
- e. Record measurements and key features of a site survey using standard formats, units and terminology.

S 3.3: Civil engineering construction (60 Guided Learning Hours)

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the fundamental techniques, processes and materials associated with civil engineering construction. The role and responsibilities of the civil engineer within the construction industry is also examined.

Learning outcomes

- a. Describe a range of fundamental techniques, processes and materials used in the design, planning and construction of a range of civil engineering works
- b. Evaluate the select techniques, processes and materials appropriate to different physical, financial and environmental requirements and constraints

- c. Define infrastructure projects and determine the contribution made by the civil engineer in their development, construction and maintenance
- d. Explore the roles, responsibilities and interrelationship of key team members in the civil engineering construction process.

S 3.4: Energy and utility supply (60 guided learning hours)

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the installation and maintenance of utilities services.

Learning outcomes

- a. Investigate and describe the procedures used in the installation and maintenance of gas, water, waste water utility supplies to building developments
- b. Investigate and describe the procedures used in the installation and maintenance of overhead and underground electricity and telecommunications utility supplies to building developments
- c. Describe the regulatory framework and health and safety legislation relating to the provision of overhead and underground utilities supplies
- d. Describe the procedures used in the location, detection and inspection of utilities services
- e. Investigate and describe current and developing technologies in the installation, replacement and repair of underground utility supplies.

S 3.5: Construction health and safety (60 Guided Learning Hours)

This provides learners with an understanding of the hazards and risks associated with health, safety and welfare in construction work. It is designed to enable learners to develop an understanding of the requirements of construction health, safety and welfare legislation and their responsibilities.

Learning outcomes

- a. Identify the employer's general responsibilities and the employee's specific responsibilities for health, safety and welfare in the workplace and the implications for them at work
- b. Select methods of reducing the risks identified in the workplace to comply with workplace policy and legal requirements including using hazard identification to establish the work practices or site conditions which may harm themselves or others
- c. Evaluate the employee's role in accident prevention and the avoidance of dangerous conditions
- d. Report and record accidents and incidents to those responsible for health, safety and welfare in the workplace.

S 3.6: Setting out processes (60 Guided Learning Hours)

This provides learners with opportunities to apply the mathematical and practical site surveying skills to the typical setting out processes required in construction work.

Learning outcomes

- a. Use non-programmable calculators to carry out the mathematical operations associated with setting out and demonstrate an appreciation of how spreadsheets and engineering surveying software can help to facilitate such operations
- b. Work with others to carry out fieldwork exercises to establish the contours of an area and make simple volume measurements

- c. Work with other people to perform the setting out of buildings, drainage and roads
- d. Demonstrate an appreciation of the uses and advantages of emerging technology and software for the current techniques employed in setting out processes.

S 3.7: Transport (60 Guided Learning Hours)

This provides learners with an opportunity to explore the scope of and the activities in the transport sector. Learners will be able to describe the key features of the sector and the role of transport in development of society; and they will understand how the planning, design, construction, installation and operation of traffic and transport systems is carried out.

Learning outcomes

- a. Describe the primary features of transport in the UK (e.g. road, rail, water, air), and the importance of the movement of goods and people in national and international contexts
- b. Describe how traffic and transport development in the UK/Europe is managed (e.g. statutes, regulations (EO, DDA, H&S), national, regional and local planning policy)
- c. Explain how the integration of traffic and transport is managed in an urban area (e.g. pedestrians, cycles, cars, lorries, buses, trams, trains) and in a rural area
- d. Identify the chief features of the planning, design, construction, operation and maintenance of a highway or public transport network in the UK, and explore how this can be done in an environmentally sustainable way
- e. Describe the primary features of road safety philosophy, and explore how roads can be made safer for all road users (e.g. pedestrians, cyclists, motorists, animals), with special emphasis on accessibility for vulnerable groups.

Building services engineering pathway

S 3.8: Integrated facilities management and support services

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the full range of services involved in delivering a broad range of discrete and integrated support services including building maintenance, space management, catering, cleaning and security.

Learning outcomes

- a. Identify and describe the full range of functions provided by facilities management and their contribution to the built environment
- b. Identify and describe the key business drivers and factors influencing facilities management delivery
- c. Identify and describe alternative forms of outsourcing and contracting of support services and the procedures for tendering and contracting
- d. Identify and describe the design principles which apply to electrical systems, lighting, mechanical systems and buildings
- e. Identify and describe best environmental practice in the delivery of facilities management services.

S 3.9: Building services engineering (electrical) (90 Guided Learning Hours)

This provides learners with an opportunity to focus on planning, design and analysis of component application in building services engineering (electrical) systems. Learners will develop a knowledge, understanding and experience of the underlying regulations, standards, industry codes of practice and principles associated with the design and installation of low voltage electrical systems for buildings and structures.

It is a requirement that the learner follow the Level 2 Building Services Engineering topic prior to starting this topic or that this topic is undertaken simultaneously.

Learning outcomes

- a. Investigate and describe the regulations and legislation relating to the provision of electricity in buildings and structures
- b. Investigate a range of wiring systems and techniques and their applications
- c. Explore and apply relevant technical and scientific principles
- d. Identify design principles to meet customer specification and needs.

S 3.10: Building services engineering (mechanical) (90 Guided Learning Hours)

This provides an opportunity for learners to focus on planning, design and analysis of component application in building services engineering (mechanical) systems (air conditioning and refrigeration, heating and ventilation and plumbing). Learners will develop a knowledge, understanding and experience of the underlying regulations, standards, industry codes of practice and principles associated with the design and installation of mechanical engineering services systems (air conditioning and refrigeration, heating and ventilation and plumbing) for buildings and structures.

It is a requirement that the learner follow the Level 2 Building Services Engineering topic prior to starting this topic or that this topic is undertaken simultaneously.

Learning outcomes

- a. Investigate and describe the regulations and legislation relating to the provision of mechanical engineering services in buildings and structures
- b. Investigate a range of mechanical engineering services systems and their applications
- c. Explore and apply relevant technical and scientific principles
- d. Identify design principles to meet customer specification and needs.

Management of built assets pathway

S 3.11: Sale, letting and management of built assets

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the full range of services involved in the sale, letting and management of built assets including residential and commercial property.

Learning outcomes

- a. Identify and explore the contribution of residential and commercial property services to the development of the built environment and the wider economy
- b. Identify and describe the primary functions involved in the sale and letting of residential and commercial property
- c. Identify and describe the primary functions involved in the management of commercial property and residential blocks
- d. Identify and describe the primary functions involved in home inspection and reporting
- e. Identify and describe the primary legislation governing the sale, letting and management of residential and commercial property.

S 3.12: Valuation services

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the full range of services involved in establishing the value of property in the built environment for sale, letting and asset purposes.

Learning outcomes

- a. Identify and describe the different purposes of carrying out a valuation of property
- b. Identify and describe ways of gathering and evaluating base data for the evaluation
- c. Identify and describe the full range of techniques required to establish an accurate valuation of different types of property for different valuation purposes

- d. Identify and explore the legal and regulatory factors influencing the valuation
- e. Identify and describe how to prepare and present a valuation to the client which complies with legal requirements and commercial best practice.

S 3.1: The relationship of the built environment to the wider environment and community
– see the construction pathway on page 34

S 3.8: Integrated facilities management and support services
– see the building services engineering pathway on page 37

S 3.13: Community management and regeneration

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the role of housing in contributing to the development of sustainable communities.

Learning outcomes

- a. Identify and describe the legislation governing rented housing and its impact on community development
- b. Identify and describe the contribution of housing associations and their relationship to the wider community
- c. Identify and describe the contribution of tenant participation activities to wider policies of social inclusion, entitlement and community support
- d. Identify and describe the contribution of housing to specific local functions including education, law enforcement, social services and health
- e. Identify and describe the role of neighbourhood management within wider community development initiatives.

S 3.14: Housing management services

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the full range of activities involved in managing housing processes and activities in the built environment.

Learning outcomes

- a. Identify and describe the contribution housing services make to the achievement of political, social and economic policies
- b. Identify and describe major components of housing and property law and their impact on housing policies and practices
- c. Identify and describe the role and functions of institutions responsible for the provision of housing services
- d. Identify and describe how housing provision is financed and the effect of different financing solutions on housing provision
- e. Identify and describe the main management functions involved in the maintenance, refurbishment and regeneration of the housing stock.

S 3.2: Site surveying
– see the construction pathway on page 35

S 3.15: Residential block management

This provides learners with an opportunity to analyse, evaluate and explore the processes involved in the management of residential blocks including negotiating management agreements, providing services preparing service provision bids, managing finances and providing the full range of block management services.

Learning outcomes

- a. Identify and describe ways of establishing customer requirements and setting up management agreements
- b. Identify and investigate ways of establishing, providing and monitoring the required management services

- c. Establish and review financial management and monitoring requirements including collection and arrears
- d. Identify and evaluate ways of letting and monitoring service contracts
- e. Identify and describe ways of ensuring that residential blocks are safe, well maintained and fully insured against risks.

S 3.16: Building surveying and support services

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the full range of building surveying services including surveying the internal and external fabric of a building as well as its internal services.

Learning outcomes

- a. Identify and select appropriate methods to accurately measure the length, width and height of rooms and building spaces
- b. Identify and describe the size, location and condition of building elements, services, appliances and fittings
- c. Identify and describe typical building defects, their causes and potential remedies
- d. Identify and describe the current standards and legislation controlling the safety or otherwise of water, heating and electricity service installations
- e. Identify and describe the correct ways of recording and reporting on findings.

Management in the built environment pathway

S 3.17: Financial management and control

This provides learners with a good knowledge and understanding of the application of the techniques used to manage finances and control spending within projects.

Learning outcomes

- a. Identify and describe the relationship between project price, costs and profit
- b. Identify and describe the key components of a budget for a given project
- c. Identify how resources are divided between materials, labour and plant/equipment in any project and how these are calculated
- d. Describe ways in which resource use is monitored against overall budget and ways of amending projects to maintain efficient and cost-effective use of materials.

S 3.18: Supply chain relationship management

This provides learners with a good knowledge and understanding of the application of the various types of supply chain operating in the built environment and the skills required to manage the supply process.

Learning outcomes

- a. Identify the nature and role of various types of service sub-contractors, materials suppliers and component manufacturers involved in the built environment
- b. Identify and describe the main components of sub-contracted supply contracts
- c. Identify how different sub-contracted services and supplies fit into an overall project plan
- d. Identify and describe the different techniques used for planning supply chains, purchasing services and programming delivery
- e. Describe how supply chain contracts are monitored and evaluated.

S 3.19: Managing the built environment

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the generic skills involved in the management of all aspects of the built environment.

Learning outcomes

- a. Identify ways of identifying and evaluating key market and business factors which define the business drivers within the built environment
- b. Identify and evaluate the principles of organisational structure and how they are applied to different types of organisations in the built environment
- c. Identify and explore the key management competences involved in the planning, delivery and management of projects and services within the built environment
- d. Identify and describe how quality assurance processes are managed in the built environment
- e. Identify and describe how customer service and client liaison processes are managed in the built environment.

S 3.20: Team leadership and participation

This provides learners with an opportunity to analyse, evaluate and explore the ways in which teams are formed, managed and how they operate.

Learning outcomes

- a. Identify and evaluate the different types of team structures and their relevance to different projects and activities within the built environment
- b. Identify and evaluate the factors influencing the selection and recruitment of multi-disciplinary teams for specific projects
- c. Identify and explore the different ways in which teams can be motivated and led dependent on the purpose and nature of projects
- d. Identify and explore the dynamics of how teams function and the ways in which they can be helped to maintain focus and momentum
- e. Describe the life cycle of teams in relation to tasks and identify how to manage the process of completing team activities.

The following topics may be associated with any pathway

S 3.21: Heritage (60 Guided Learning Hours)

This provides learners with an understanding of how work skills apply to conservation construction work. It is designed to enable learners to develop an understanding of the requirements of using traditional methods of construction and materials that are sympathetic to the period of work.

Learning outcomes

- a. Identify building styles in terms of the architectural style and materials used for their construction
- b. Identify defects found in period properties and state their cause and appropriate methods of remedy
- c. Select materials for remedial work that is appropriate to the vernacular style and period of the properties
- d. Explain how conservation work should be carried out to maintain the integrity of the original design and method of construction
- e. Identify practical work skills which are appropriate to the method of work and associated with the period of design.

S 3.22: The regulatory framework and compliance

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the main legislative and regulatory requirements and their impact on processes and practices within the built environment.

Learning outcomes

- a. Identify and describe the regulatory frameworks governing tendering and contracting, planning, health and safety, environmental protection, construction and management of the built environment

- b. Identify and describe the different systems for compliance and accountability used in the built environment and how they are monitored
- c. Identify and describe how regulation and compliance influence working practices in different disciplines within the built environment
- d. Identify and describe the major types of non-compliance, their causes and the consequences of non-compliance
- e. Identify and describe best practice in compliance within the different disciplines within the built environment.

S 3.23: Planning the built environment

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the full range of services involved in planning the design, building and maintenance of the built environment including infrastructure services.

Learning outcomes

- a. Identify and explore the impact of planning decisions on the built environment itself, communities and individuals
- b. Identify and define the various components of the planned environment including commercial, industrial, housing and recreational zoning, amenities and infrastructure requirements
- c. Identify ways in which the competing demands on land use are balanced and accommodated within the planning of the built environment
- d. Identify and explore the stages involved in the planning process and the procedures to be followed to ensure compliance with legislation
- e. Identify and define the legislative framework which controls the planning process and its impact on development of the built environment.

S 3.24: Technical drawing

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to reading and understanding drawings and details and the basic skills required to produce graphical information using manual techniques.

Learning outcomes

- a. Identify the appropriate level of detail and content required to meet requirements
- b. Recognise and describe a wide range of equipment, media and techniques currently used in the production of graphical information
- c. Interpret a wide variety of graphical information and extract relevant and clearly structured information from a range of graphical sources
- d. Produce graphical details and schedules using traditional manual drafting techniques.

S 3.25: CAD

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to CAD within built environment design.

Learning outcomes

- a. Explore the role and potential of computer aided design in the built environment
- b. Identify the appropriate level of detail and content required to meet requirements
- c. Understand and interpret computer generated drawings
- d. Produce basic drawings of existing buildings and/or elements of buildings using CAD
- e. Produce basic built environment designs using CAD.

S 3.26: Client, customer and supplier management in the built environment

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to basic economic principles, the various types of chain supplies operating in the built environment and customer service practices.

Learning outcomes

- a. Describe the different forms of finance available to support construction and the built environment projects
- b. Identify the nature and role of various types of service sub-contractors, materials suppliers and component manufacturers involved in the built environment
- c. Identify how different sub-contracted services and supplies fit into an overall project plan
- d. Describe how supply chain contracts are monitored and evaluated
- e. Identify the various forms and characteristics of different customer care policies and explain how they relate to the business objectives of different forms of organisation in the built environment.

S 3.27: Mathematical techniques in construction and the built environment (120 Guided Learning Hours)

This introduces learners to the application of mathematical techniques to the solution of typical construction and built environment problems.

Learning outcomes

- a. Identify a wide range of analytical methods or techniques and select the correct technique(s) for a variety of relevant construction and built environment problems
- b. Use a variety of analytical methods or techniques to determine clear and accurate answers to a variety of relevant construction and built environment problems
- c. Select and use graphical solutions where most appropriate and produce them accurately, to a high level of presentation, conforming to all the standard conventions
- d. Interpret and explain the solution to relevant construction and built environment problems and clearly explain the use to which the answers may be put and the benefit of the techniques used
- e. Apply mathematical techniques to the manipulation and interpretation of formulae and data

- f. Select and use a range of mathematical techniques to determine accurate solutions to a variety of construction and built environment problems
- g. Apply the principles of differential and integral calculus to solve practical problems
- h. Produce appropriate and accurate solutions using various statistical methods.

S 3.28: Measuring, tendering and estimating processes in construction and the built environment

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the measurement, estimating and tendering processes that are used in a typical project in the construction industry in both the pre- and post-contract stages.

Learning outcomes

- a. Examine the uses of measurement by all professionals during both the pre- and post-contract stages of a simple construction project
- b. Apply basic mensuration techniques and explore the production of accurate quantities
- c. Examine estimating techniques and the way in which they affect the tendering process
- d. Identify the legal and commercial requirements of the tendering process
- e. Describe the common methods used to tender for a variety of construction works and identify the documentation associated with each method.

S 3.29: Science and materials in construction and the built environment (90 Guided Learning Hours)

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the basic factors that affect human comfort in the internal environment are identified and explored, the nature of forces acting on structures and their effects are examined.

Learning outcomes

- a. Describe the basic factors that affect human comfort, identify acceptable ranges of values for each and perform simple calculations appropriate to given internal environments
- b. Identify the various static and dynamic forces that act on structures, the stresses such forces will generate and the effect of such stresses, and perform typical calculations and/or produce graphical solutions as appropriate
- c. Explore a range of construction materials, investigating the reasons for the specification of such materials and describe the production and/or manufacture of each from the basic raw materials
- d. Describe the important properties of the common construction materials, the ways in which they may deteriorate and the preventative techniques used to minimise or eliminate such deterioration.

S 3.30: Structural mechanics

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to structural behaviour and the analysis of beams, columns, frameworks and retaining walls and carrying out simple beam and column design to relevant standards.

Learning outcomes

- a. Apply the concepts of structural mechanics to the analysis of statically determinate beams, columns, frameworks and retaining structures
- b. Carry out mathematical calculations to determine structural properties of sections
- c. Produce calculations for the simple design of beams and columns using relevant British Standards
- d. Investigate the computer software available to assist in structural analysis and design and describe its advantages and uses.

S 3.31: Renewable energy sources

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to energy production and energy conservation with regard to renewable energy sources.

Learning outcomes

- a. Describe the principles of renewable energy
- b. Describe and investigate the technical, economic and social implications of renewable energy
- c. Examine the scientific principles that underpin energy conservation
- d. Investigate and describe various sources and systems of renewable energy
- e. Identify current energy use and evaluate the potential for cost-effective alternative renewable energy sources.

S 3.32: Quantity surveying/cost management and client advisory services

This provides learners with an opportunity to analyse, evaluate and explore principles and practices in relation to the full range of quantity surveying services including estimating, tender documentation, tender analysis, contractual issues and post contract financial control.

Learning outcomes

- a. Identify and describe the methods of cost management of design from feasibility to design completion
- b. Identify and describe the techniques of project evaluation and reporting findings to the client and design team
- c. Identify and evaluate the various forms of standard contract used in the construction industry and the implications and obligations that apply to the parties to the contract
- d. Identify and describe the principles of quantification and costing of construction works as a basis for the financial management of contracts
- e. Identify and evaluate the most appropriate type of procurement and associated tender documentation, analysis procedures and reporting on findings
- f. Identify and describe the project financial control and reporting during the construction phase
- g. Identify and describe the role of a contract administrator under the main forms of standard contract.

Membership of the 14 to 19 Advisory Committee

Balfour Beatty plc
Carillion Training Services
Chartered Institute of Building (CIOB)
Chartered Institute of Housing (CIH)
Construction Industry Council (CIC)
Construction Industry Training Board (CITB)
City & Guilds
Edge Foundation
Baker Dearing Trust
Institute of Civil Engineers (ICE)
Laing O'Rourke
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Middlesex University
North West Kent College
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Pearson UK
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Royal Institute of Chartered Surveyors (RICS)
Seddon Construction
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Notes

Notes

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