



Department
for Education

T Level Foundation Year Supporting progression to T Level

National technical outcomes

**Construction and the built environment
route**

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Introduction

This document sets out national technical outcomes (NTOs) for the T Level Foundation Year (formerly the T Level Transition Programme), relevant to a particular T Level route. Delivery of the NTOs is expected as part of the programme, as set out in the [Framework for Delivery](#) and will provide the basis for the content of T Level Foundation Qualifications that will be available from 2026. The T Level Foundation Year is a level 2 study programme to prepare young people for progression onto a T Level in a particular T Level route. There are NTOs for each T Level route.

Updating the national technical outcomes

We will review whether the NTOs need updating if and when there are any changes to T Levels or their content. As the NTOs are high-level and relevant across a T Level route, we expect that they may need updating only where there are significant changes to T Level content. Should the NTOs need revising, we would expect AOs to review their qualification specification.

Who is this publication for?

This document is for anybody with an interest in the T Level Foundation Year national technical outcomes, supporting progression to T Levels. This includes:

- Schools, colleges, training providers and their representative bodies
- Awarding organisations and their representative bodies
- Third sector and representative organisations
- Learners, parents/guardians/carers
- Employers

Contact

For enquiries about this document, please email the team at TLevelTransition.PROGRAMME@education.gov.uk

National technical outcomes explained

The NTOs provide students with an introductory foundation for any T Level in their chosen T Level route. They consist of a minimum of three outcomes that students are expected to be able to demonstrate by the end of the year, and the knowledge and skills they will need to develop and apply to demonstrate the outcomes. The outcome-based structure of the NTOs is important to prepare learners for the nature of T Levels. Two routes – Agriculture, Environmental and Animal Care and Health and Science – include an outcome based on applying knowledge only.

The knowledge and skills within each outcome consist of topic areas and the underpinning content to be covered (the bullet points). They relate to the content of the T Levels in the route and are appropriate for level 2 study. Behaviours integral to achieving the outcome, and which can be explicitly assessed, are embedded into the skills. It is intended that students will typically acquire the knowledge and skills through realistic employment-related contexts and situations, and the outcomes are worded in a way that allows them to be applied in different contexts.

Supplementary information is included for education providers to use, at their discretion, to support teaching and learning. For each outcome there is:

- an explanation for the combination of outcomes selected for the route
- the rationale for each outcome
- how the outcomes could be delivered in combination
- how to set the level of demand to meet students' development needs
- illustrative examples of how breadth and depth could be introduced into teaching and learning
- opportunities to support the contextualised development and application of English, maths and digital skills, and
- examples of behaviours that are integral to the outcome but not expected to be assessed explicitly.

The NTOs are intended to provide a minimum foundation for the T Level route, not competence in any occupation. They are designed to be taught within 120-150 guided learning hours (GLH), with each outcome designed for approximately 30-50 GLH, based on the minimum level of knowledge and skills essential for demonstrating the outcomes. This allows education providers to add more breadth or depth, according to students' development needs, whilst ensuring there is sufficient time for the other components of the T Level Foundation Year.

A glossary of terms is provided in the Annex.

Information for awarding organisations

Each T Level Foundation Qualification must be based on the NTOs for a single T Level route. When developing the NTOs into the detailed content of a qualification, awarding organisations will be expected to adhere to the principles for developing the NTOs into qualification content. Awarding organisations may also refer to the supplementary information and illustrative examples, should they wish to do so, but this is not required.

T Level Foundation Qualifications must focus on students' demonstration of the outcomes in the NTOs, through the application of relevant knowledge and skills. The outcomes are broad and applicable to different contexts but assessments could be set in a single context. The outcomes are designed to be demonstrated independently or in combination. In determining their assessment design, awarding organisations will need to refer to Ofqual's conditions, requirements and guidance for these qualifications.

Principles for developing the national technical outcomes into qualification content

Principle 1: Qualification content must include all the outcomes for the route and the specified knowledge and skills

This will ensure an overall level of consistency across different qualifications in the same route. Assessment must focus on the demonstration of these outcomes. The underpinning knowledge and skills elements (the bullets) reflect the minimum needed to demonstrate the outcomes, so this is expected to be included in the qualification content. All the optional content will need to be developed, where optionality between or within an outcome is specified in the NTOs for the route, and this optionality must be available to learners taking the qualification.

Principle 2: Elaboration of the detailed qualification content must fit within the guideline size of 120 to 150 GLH for these qualifications, be relevant to demonstrating the outcomes and must not constrain skills development

The guideline size reflects that the NTOs were designed so that the minimum knowledge and skills required to demonstrate the outcomes can be taught within this range, excluding assessment time. The knowledge and skills within the NTOs are expressed in high-level terms so they will need to be elaborated on to develop the detailed content to be taught within the knowledge and skills elements. Detailed content should not be included where it is not relevant to demonstrating the outcome. Skills development takes time and is an important part of the NTOs as preparation for T Levels, so this should be allowed for when determining the detailed qualification content.

Principle 3: Additional content may be proposed where it is relevant to demonstrating the outcome and fits within the size guideline

The rationale for including additional content, above the minimum content set out in the NTOs, must be clear. Any extra content that is proposed should ensure the qualification size still fits within the size guideline for these qualifications and it does not change the nature of the outcome. Additional skills content, particularly transferable skills, should be prioritised over proposing extra knowledge content, as skills development is important preparation for T Levels. No additional outcomes may be introduced.

National technical outcomes: Construction and the built environment route

All students are to develop the knowledge and skills to be able to demonstrate the following three outcomes, by the end of the programme:

Outcome 1 (O1). Develop ideas to meet planning requirements for sustainable construction projects

Outcome 2 (O2). Design sustainable construction projects

Outcome 3 (O3). Produce sustainable construction project outputs

Introductory rationale

Preparing for progression to T Levels in Construction and the built environment route

These national technical outcomes are designed to support progression to either the Design, surveying and planning for construction T Level (introduced from September 2020), or Building services engineering for construction T Level, or the Onsite construction T Level (both introduced from September 2021).

The outcomes introduce theories, concepts and principles that are relevant to the core of all three T Levels within the route. They also allow for technical skills development related to all three T Levels such as measurement and surveying, computer-aided design (CAD), painting and decorating. As a result, they provide an insight into the content of all three T Levels, enabling students to make informed choices about their next step and which T Level is most appropriate for their needs and aspirations.

The outcomes will provide opportunities for students to learn about different occupations within the route. For example, when developing ideas to meet the planning requirements for sustainable construction projects, students learn about building controls, leading to an opportunity to learn about associated occupations at local and national levels, their roles and responsibilities and entry and progression pathways within those occupations. This will support students to make informed choices about their next step and which T Level is most appropriate for their career aspirations.

Setting the level to meet individual student needs

For level 2, the sustainable construction projects will be relatively straightforward and routine, set in locations and contexts that are familiar to students. For example, a single storey building in a local community environment. The project may involve the construction of a new structure or involve adaptations, reflecting local activities. For example, a new structure could be a storage facility for a community garden or charity event, or the project could require a room to be adapted to accommodate an individual with mobility problems.

Providers may want to introduce stretch and challenge for students by introducing new types of locations and contexts that are more complex and unfamiliar. For example, a construction site with multiple individual projects, two-storey buildings, adaptations that are more complex such as introducing changing facilities to a community centre, or a small retail catering outlet.

Holistic delivery of outcomes

The outcomes can be delivered independently of each other, with each focussed on different types of construction projects. This allows for students to explore different contexts and types of construction and built environment projects. It also supports students to develop ideas for a construction project that is ambitious and aspirational. The ideas developed may go beyond expectations for level 2 and so creating a separate project for creating a design (O2) or producing an output (O3) would ensure the student has the capability to produce a related output. Separating the projects through different projects ensures that each context supports students' progression and abilities.

However, they can also be delivered together in combination. For example, having proposed solutions for the planning requirements of a sustainable construction project (O1) students could then design the sustainable construction project (O2) and then apply their technical skills in the construction of an output of the same sustainable construction project (O3). The holistic nature of the project will need to ensure that students have the capability to follow the outcomes throughout the project and are not penalised and restricted by any initial ideas and designs to meet early outcomes.

Outcome 1: Develop ideas to meet planning requirements for sustainable construction projects

Rationale

This outcome focuses on the requirements for the approval of a sustainable construction project. It provides an opportunity to focus on sustainability – a concept of significant importance to construction projects nationally and of interest to young people. The knowledge content of this outcome provides the bigger picture and an understanding of how projects meet local needs and regulations, relevant to whether a plumber is installing a system, a carpenter adapting the roof to support an extension or a surveyor inspecting the environment. It is based on knowledge in the core content of all three Construction and the built environment T Levels and enables providers to identify employers locally that are engaged in these types of projects.

The elements of built environments and building controls were included as they were considered to involve concepts providers considered potentially challenging for students. Introducing these elements within familiar and straightforward contexts should enable students to grasp the fundamental concepts, principles and theories and show their ability to learn. This should then raise their confidence in their ability to learn and enable them to cope with grasping new concepts as they move to level 3 study.

The outcome also provides an opportunity to develop technical measurement skills to ensure that there is a practical nature to students learning and provide opportunities to visit construction and the built environment sites.

There are also opportunities to develop transferable investigative and decision-making skills, in credible and authentic contexts. These transferable skills have been identified as beneficial to students taking T Levels and generally to support student progression to level 3 study.

Communication skills are developed with a focus on written communication (reading and writing). Students will carry out investigations where they will encounter written information to read and interpret. The development of written communication skills would therefore be through their note taking and synthesis of information obtained. The written communication theme is further developed through the production of clear and coherent documentation.

Numeracy skills focus on measurement and the application of key units of measurement as well as geometry as students will be exploring potential construction sites and aligning these to planning requirements.

There are also supporting digital skills to complement the content which allow students to develop their investigation skills through the exploration of secondary data located on the internet. The digital skills will also complement their written communication skills through the development of documents and the incorporation of images, such as those related to a potential construction site.

It is envisaged that students will be provided with client briefs setting out requirements such as a small extension, a change to internal rooms. Students will investigate the planning requirements and other projects associated with the brief and develop their own ideas to present in writing to a client.

Knowledge

Built environments

- Built environments: characteristics of different types, designations, uses by different stakeholders of built environments and value of built environments to different stakeholders

Building controls

- Requirements: local planning requirements, building control requirements permissions and restrictions
- Planning application process: key stages, associated documentation, timescales and roles involved
- Rules of ethics and professional conduct for construction industry personnel

Tools and equipment

- Measurement equipment: characteristics, purpose, safety, security, storage, maintenance, operation and applications

Sustainability

- Sustainable development: national and international development goals, purpose of targets, associated actions, benefits of sustainability actions to organisations, societies and environments, restrictions and permissions
- Construction project development life cycle: stages and related sustainability issues
- Sustainable actions used to enhance the value of built environments

Information and data

- Sources of data and information used to support construction projects: purpose, typical content, typical formats and terminology

Investigation

- Validity of information and data: accuracy, reliability, currency and bias

- Referencing of sources: techniques used to reference sources directly, paraphrasing and different types of sources

Communication

- Geomatics: principles, mapping conventions, use in presenting information and data related to construction and the built environment
- Principles of effective communication: conventions of different types of written communication and suitability for different types of audiences
- Reading: principles, reading for comprehension, identifying salient points, summarising key points and synthesising information from different sources
- Spelling, punctuation and grammar (SPAG): punctuation markers, grammatical conventions and spelling of key technical and non-technical terminology

Numeracy

- Standard units of measurement: length, area, volume, capacity and conversion between units
- Measurement: principles, standards, terminology, errors and accuracy

Digital

- Software: features, functions and applications for software to create and edit text
- Protection of information and data: legal framework, risks to confidentiality and security and procedures used to mitigate for those risks
- Online/internet searches: techniques used to carry out and refine searches, Search Engine Optimisation (SEO) and its implication for search results

Skills

Investigating

- Develop search criteria to support an investigation
- Identify sources of information and data required for an investigation
- Reference sources of information
- Interrogate information and data for validity

Decision-making

- Identify likely impact of decisions
- Assess evidence and advice to support decision-making
- Justify how a decision would lead to achieving objectives
- Substantiate proposals with evidence
- Conclude arguments

Communicating

- Synthesise information and data from different sources
- Interpret planning information and data presented in different formats
- Apply written communication skills to clearly articulate a message
- Produce clear and coherent texts
- Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context
- Summarise information and data

Recording

- Transcribe information into pro-forma

Numeracy skills

- Estimate lengths, areas and boundaries of a construction project based on information provided
- Represent space at different scales using standard conventions
- Apply formulae to calculate area
- Calculate perimeters of 2D shapes

Measuring

- Apply techniques to use measuring equipment effectively
- Measure existing topographical features in the natural and built environment
- Set out levels in an environment

Digital skills

- Apply software functions to enter and format information and data
- Apply software functions to highlight key features in images

Supplementary information to support teaching and learning

Illustrative examples: Develop breadth through:

Built environments

- Different types of built environments: residential, leisure and recreation, industrial and commercial, retail spaces, mixed use and infrastructure characteristics
- Different stakeholders: owners, users and local community
- Designations of built environments: listed buildings and protected areas
- Value of built environments: social, economic and environmental

Building controls

- Local planning and building controls: building regulations, local plans and local styles
- Permission and restrictions of planning requirements: zero carbon agenda and use of sustainable materials

Tools and equipment

- Types of measuring equipment: measuring tapes, digital/laser levels and multimeters

Sustainability

- Sustainable development goals: United Nations Sustainable Development Goals

Information and data

- Typical sources of data and information: circuit diagrams, drawings, sketches, new rules of measurement and building regulations
- Geomatic sources of information: Ordnance Survey (OS) maps and topographical maps

Illustrative examples: Develop depth for stretch and challenge through:

- Knowledge in relation to unfamiliar environments and types of construction projects, with unknown planning controls, where students investigate controls and identify potential issues with proposals
- Factors that affect the value of the built environment and how changes in value affect stakeholders
- How built environments can transform communities
- Positive and negative impacts of construction on an environment and measures that can be taken to minimise negative impacts at different stages in the development cycle
- The impact of technology on construction projects

Behaviours:

- Perceptive
- Resilience
- Self-awareness
- Self-confidence

Mapping of opportunities to support students' development of English, maths and digital skills:

English

- GCSE: Critical reading and comprehension
 - Synthesise information and data from different sources
 - Interpret planning information and data presented in different formats
 - Summarise information and data
- GCSE: Writing
 - Apply written communication skills to clearly articulate a message
 - Produce clear, coherent texts
 - Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context
- Functional skills: Reading
 - Synthesise information and data from different sources
 - Interpret planning information and data presented in different formats
 - Summarise information and data
- Functional skills: Writing
 - Apply written communication skills to clearly articulate a message
 - Produce clear, coherent texts
 - Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context

Maths

- GCSE: Number
 - Apply formulae to calculate area
 - Estimate lengths, areas, boundaries of a construction project based on information provided
- GCSE: Ratio, proportion and rates of change
 - Represent space at different scales using standard conventions
- GCSE: Geometry and measures
 - Estimate lengths, areas, boundaries of a construction project based on information provided
 - Apply formulae to calculate area
 - Calculate perimeters of 2D shapes
 - Represent space at different scales using standard conventions
- Functional skills: Using numbers and the number system
 - Apply formulae to calculate area
- Functional skills: Measures, shape and space
 - Calculate perimeters of 2D shapes
 - Represent space at different scales using standard conventions

- Functional skills: Solving mathematical problems and decision making
 - Estimate lengths, areas, boundaries of a construction project based on information provided

Digital

- Functional skills: Using devices and handling information
 - Carry out and refine internet searches for information and data
- Functional skills: Creating and editing
 - Apply software functions to enter and format information and data
 - Apply software functions to highlight key features in images

Outcome 2: Design sustainable construction projects

Rationale

This outcome focuses on the design of sustainable construction projects. Whilst there are occupations and a T Level specifically related to 'design' (Design, surveying and planning) there are also occupations in building services engineering and onsite construction that require an element of design such as a joiner and electrical installation engineer. Knowledge of the principles that underpin design decisions are therefore critical to any occupation in the Construction and built environment route and have been selected for inclusion in this outcome.

The outcome provides a purposeful context for the introduction of fundamental technical knowledge relating to building technology and science. This has been intentionally limited to a small number of fundamental concepts, for students to master these in preparation for the concepts they will learn on the T Level. It is acknowledged that students may need to be introduced to a range of contexts for the breadth of content to be learned in ways that are relevant and not contrived.

The outcome also provides an opportunity to develop technical computer-aided design (CAD) skills as these are closely aligned to design principles and provide an opportunity for practical application of learning.

The outcome includes transferable creativity skills, essential to the design process and support student progression to level 3 study.

The communication skills included in the content focus on oral communication (speaking and listening) to reflect the potential interaction with the client, for example, clarifying requirements of a brief.

The numeracy skills developed reinforce mathematical concepts and techniques that exist within the GCSE maths and Functional Skills maths curricula enabling students to see the relationship between construction and numeracy. For example, they will apply formula as they produce scale drawings of their designs.

Digital skills that are included enable students to develop skills to present their design ideas directly with a client.

It is envisaged that students will interact with a 'client' to clarify their needs and review alternative designs that are developed. This could be, for example, through role plays with peers or with employer representatives or local community group representatives.

Knowledge

Building technology

- Performance requirements of buildings

- Structures: sub-structures, super-structures, purposes, characteristics of different types and contributions to achieving performance requirements of buildings super-structure components to achieve performance requirements of buildings
- Digital construction: building information modelling (BIM) principles

Science

- Behaviour of structural members under loads
- Mechanical principles and simple mechanical machines
- Electricity: electrical principles, units of electrical measurement and typical electrical calculations
- Heat: types, characteristics, effects on materials, heat transfer and evaporation and thermal conductivity
- Scientific developments contributing to innovative sustainable construction projects

Materials

- Materials: different types of natural and processed materials, properties, purpose and applications in construction projects

Sustainability

- Sustainability: techniques and materials and how they impact on building performance
- Technological developments contributing to innovative sustainable construction projects

Information and data

- Sources of information and data required to support the design of construction projects: purpose, typical content, typical format and terminology

Communication

- Sketching techniques and their application to presenting design ideas to others
- Principles of effective oral communication: two-way process (send and receive messages), methods (verbal, non-verbal) and styles (formal, informal)
- Oral communication: pitch, tone and intonation and their impact on how a message is received
- Non-verbal communication: types of body language and they can be perceived, types and value of images and other materials when presenting information and data
- Engaging with an audience: techniques for establishing rapport, in conversation, in discussion and when obtaining and clarifying information
- Construction drawings: principles, types, terminology, purpose and conventions

Numeracy

- Trigonometry: principles, trigonometric functions and use of trigonometry to determine dimensions in 2D and 3D
- Geometry: principles, properties of geometric points, lines and angles, Pythagoras' theorem and scale factors

Digital

- Computer-aided design (CAD): principles, features and conventions
- Software: features, functions and applications used to present construction designs
- Software: features, functions and applications of presentation software used to present information and data

Skills

Creativity skills

- Lateral thinking to consider opportunities from different perspectives
- Recognise ideas, alternatives and possibilities
- Make novel connections between design ideas
- Form ideas iteratively

Communicating

- Sketch 3D designs
- Apply communication techniques to secure audience understanding
- Apply technical language in relevant contexts
- Apply oral communication skills to clearly articulate a message
- Engage in discussion listening to and responding to questions and feedback
- Apply non-verbal communication techniques to support communication of key messages
- Synthesise information and data from different sources

Numeracy skills

- Substitute numerical values into formulae and expressions
- Apply scale factors and scale diagrams to construction designs
- Use the standard ruler and compass constructions to create 2D representations
- Apply the properties of angles at a point
- Construct plans and elevations of 3D shapes

Digital skills

- Apply software functions to produce computer aided designs
- Apply advanced software functions to produce digital presentation materials

Supplementary information to support teaching and learning

Illustrative examples: Develop breadth through:

Contexts

- Built environments: domestic, industrial, commercial, leisure and recreation, retail spaces and mixed use

Building technology

- Performance requirements: strength, stability
- Substructure components: foundations, drainage and utilities
- Super-structure components: walls, floors and roofs
- Building information modelling (BIM) principles: employer information requirements and BIM execution plans

Science

- Structural members: beams and walls
- Mechanical principles: theory of moments, velocity and ratio
- Simple mechanical machines: levers, pulleys and cogs
- Electrical principles: electrical flow, materials' conductivity and resistance
- Units of electrical measurement: Ohms
- Types of heat: latent and sensible
- Scientific developments: alternative energy systems: solar and biomass
- Physics principles: force, pressure, light and acoustics

Materials

- Types of natural and processes materials: stone and copper
- Properties of materials: strength and conductivity

Sustainability

- Sustainable techniques: reuse and repurposing of existing materials
- Sustainable materials: sheep's wool and cork
- Technological developments: artificial intelligence and automation

Information and data

- Information and data to support the development of construction designs: client brief, site plans and Ordnance Survey (OS) maps

Communication

- Sketching techniques: hatching, lines, elevations
- Methods of oral communication: verbal, non-verbal and active listening
- Styles of communication: formal and informal
- Types of drawings: location, assembly, component and presentation

Digital

- Computer-aided design (CAD) principles: annotations and symbols

Illustrative examples: Develop depth for stretch and challenge through:

- Budgets, budget control, estimating, financing and costing of construction projects and impacts of external factors on costs
- The effects of different factors on the performance of sub-structures, super-structures and materials
- Interaction between science and technology and building performance and performance efficiencies, and how performance efficiencies are calculated
- Mathematical techniques and applications used to measure efficiencies gained from sustainable techniques and materials

Behaviours:

- Respectful
- Self-awareness
- Self-confidence
- Socially adept

Mapping of opportunities to support students' development of English, maths and digital skills:

English

- GCSE: Critical reading and comprehension
 - Synthesise information and data from different sources
- GCSE: Spoken language
 - Apply communication techniques to secure audience understanding
 - Apply technical language in relevant contexts
 - Apply oral communication skills to clearly articulate a message
 - Engage in discussion listening to and responding to questions and feedback
 - Apply non-verbal communication techniques to support communication of key messages
- Functional skills: Reading
 - Synthesise information and data from different sources

- Functional skills: Speaking, listening and communicating
 - Apply communication techniques to secure audience understanding
 - Apply technical language in relevant contexts
 - Apply oral communication skills to clearly articulate a message
 - Engage in discussion listening to and responding to questions and feedback
 - Apply non-verbal communication techniques to support communication

Maths

- GCSE: Algebra
 - Substitute numerical values into formulae and expressions
- GCSE: Ratio, proportion and rates of change
 - Apply scale factors and scale diagrams to construction designs
- GCSE: Geometry and measures
 - Use the standard ruler and compass constructions to create 2D representations
 - Apply the properties of angles at a point
 - Construct plans and elevations of 3D shapes
- Functional skills: Measures, shape and space
 - Use the standard ruler and compass constructions to create 2D representations
 - Apply the properties of angles at a point
 - Construct plans and elevations of 3D shapes

Digital

- Functional skills: Creating and editing
 - Apply software functions to produce computer aided designs
- Apply advanced software functions to produce digital presentation materials

Outcome 3: Produce sustainable construction project outputs

Rationale

This outcome continues the theme of sustainability to reinforce its importance to construction projects, but the key focus is on technical, practical, hands-on construction skills and their application to create an output that would contribute to a sustainable construction project. The technical skills are those that are mostly relevant to occupations related to T Levels in Building services engineering and Onsite construction. Technical skills relating to occupations in Design, surveying and planning were incorporated into outcome 1 (surveying) and outcome 2 (design). This supports the route-based approach to the design of these national technical outcomes as throughout all three outcomes, students engage with theory and technical skills related to all three T Levels in the Construction and built environment route.

The inclusion of these technical skills is considered important to motivate and engage students who benefit from the opportunity to apply knowledge throughout practical application. It also provides an opportunity to identify potential challenges students may encounter with the practical aspects of T Level occupational specialisms.

Although the focus of this outcome on technical skills development, it provides an opportunity for students to learn about concepts related to health and safety and construction processes in contexts that relate directly to the practical tasks that they will be completing.

For this outcome, it is envisaged that students will develop basic skills related to one occupation, although there is the potential to use this outcome to provide tasters of a range of occupations and T Level occupational specialisms.

In addition, the technical construction skills, the content of this outcome also allows for the development of transferable planning skills, which can be useful not just when working on sustainable construction projects, but also when planning their own work and studies.

Students will need to read and interpret technical information and this is reflected in the communication skills. The numeracy skills developed focus on the basics of the four operations – addition, division, multiplication, and subtraction as they calculate resource requirements for their own project. Digital skills that are included enable students to develop the ability to use planning software as part of their planning and preparation.

It is envisaged that students will be provided with a drawing of part of a sustainable construction project. They produce a risk assessment and a plan to show how different occupations would engage in completing the project. They would then produce an output of that project, based on at least one occupation.

Knowledge

Construction processes

- Construction occupations: different types, different levels, roles and responsibilities, contribution to construction projects, implications of the work undertaken to users and the local and wider community
- Construction projects: stages, sequencing of stages, factors that affect sequencing of stages and potential implications for completion of a project and different occupations and processes involved at each stage

Health and safety

- Typical health and safety hazards that individuals can create and encounter when applying technical skills to sustainable construction projects
- Likelihood and severity of health and safety risks associated with typical hazards
- Controls used to minimise health and safety risks
- Risk assessment: purpose, use and content
- Techniques used to support healthy and safe working practices, including manual handling

Tools and equipment

- Tools: characteristics, purpose, security, safety, maintenance and operation of hand-held and power tools used to apply an occupation's technical skills to sustainable construction projects
- Equipment: characteristics, purpose, security, safety, maintenance and operation of different types of equipment used to apply an occupation's technical skills to sustainable construction projects

Materials

- Materials: characteristics, purpose, applications, security, maintenance and quantities of different types of materials used when applying an occupation's technical skills to sustainable construction projects
- Factors affecting choice of materials: sustainability, cost, availability, durability, form and suitability for purpose

Quality

- Quality: concept of quality, principles, difference between quality control and quality assurance, standards and their application to construction projects

Sustainability

- Sustainability implications for use of different materials in construction projects

- Waste management: principles, techniques (refuse, reduce, reuse, repurpose, recycle) and procedures in place within the sector to manage waste

People

- Professional behaviours: definitions and how behaviours are demonstrated

Project management

- Project planning and monitoring: tools and techniques

Information and data

- Construction drawings: different types, their purpose and conventions
- Sources of information used to plan construction projects: purpose, format, terminology and typical content

Communication

- Reading: principles, reading for comprehension, identifying salient points
- Spelling, punctuation and grammar (SPAG): punctuation markers, grammatical conventions, spelling of key technical and non-technical terminology
- Vocabulary: technical and non-technical, used to achieve particular effects and for different purposes

Numeracy

- Numbers and the number system: techniques for the application of the four operations (addition, division, multiplication, subtraction)

Digital

- Software: features, functions and applications for project planning

Skills

Construction skills – skills related to one occupation as indicated:

Bricklayer

- Prepare environments for activities
- Mark out required measurements
- Mix mortar to application requirements
- Cut brickworks to required shape
- Lay brickwork to project requirements
- Maintain plumb, line and level
- Maintain tools and equipment

Carpenter and joiner

- Prepare environments for activities
- Mark out required measurements
- Use tools and equipment to produce the required shaped timber-based components
- Cut timber-based products to size and shape
- Join timber-based components to other timber-based components and non-timber-based components, including fixtures and fittings, to project requirements
- Maintain tools and equipment

Electrical installer

- Prepare environments for activities
- Isolate systems
- Mark out required measurements on wiring materials
- Cut wiring materials to required size
- Install wiring accessories to project requirements
- Maintain tools and equipment

Painter and decorator

- Prepare environments for activities
- Prepare surfaces for coating
- Apply coatings to surfaces as required
- Maintain tools and equipment

Plasterer

- Prepare environments for activities
- Set out plasterboard to studwork as required
- Affix plasterboard to backgrounds as required
- Apply plasters to internal surfaces as required
- Maintain tools and equipment

Plumber

- Prepare environments for activities
- Isolate systems
- Mark out required measurements
- Cut pipework to required size and shape
- Bend pipework to required shape

- Join pipework as required
- Affix pipework to surface as required
- Maintain tools and equipment

Health and safety skills

- Assess an area for potential health and safety risks
- Apply Personal Protective Equipment (PPE) appropriately following agreed procedures
- Establish a safe working area
- Apply manual handling techniques when lifting and moving tools, equipment and materials as appropriate

Sustainability skills

- Minimise waste
- Dispose of waste sustainably

Planning

- Identify discrete steps to be followed to achieve an outcome
- Estimate time and resources required to achieve an outcome
- Prioritise activities required to achieve an outcome
- Sequence activities required to achieve an outcome

Self-managing

- Monitor own performance against objectives
- Manage own time in achieving objectives
- Move within an environment demonstrating situational awareness

Self-reflecting

- Identify success criteria for a task
- Consider process and evidence available for review
- Make judgements based on evidence available

Communicating

- Interpret information and data presented in different formats
- Apply written communication skills to create documents for different purposes
- Apply appropriate vocabulary and spelling to documents

Numeracy skills

- Calculate resource requirements for sustainable construction projects

Digital skills

- Apply software functions to produce project planning materials

Supplementary information to support teaching and learning

Illustrative examples: Develop breadth through:

Construction processes

- Stages in a construction project: setting up site, groundwork, sub-structure, super-structure, external works and internal services and finishes

Health and safety

- Health and safety hazards: sharp objects, loose materials
- Health and safety risks: slips, trips and falls
- Controls: Personal Protective Equipment (PPE) and housekeeping

Materials

- Materials used in construction projects: timber, timber-based products and plastic pipework

Information and data

- Types of construction drawings: location, assembly, component and presentation
- Sources of information and data: method statements, risk assessments and Gantt charts

Illustrative examples: Develop depth for stretch and challenge through:

- How construction processes and roles interact; analysis of a range of factors that can impact on successful completion of a construction project and actions to be taken
- Introduction of advanced technical skills for one or more occupations
- Develop risk assessments and method statements
- Complex mathematical calculations based on missing data

Behaviours:

- Focussed
- Persistent
- Resilience
- Self-confidence

Mapping of opportunities to support students' development of English, maths and digital skills:

English

- GCSE: Critical reading and comprehension
 - Interpret information and data presented in different formats
- GCSE: Writing
 - Apply written communication skills to create documents for different purposes
 - Apply appropriate vocabulary and spelling to documents
- Functional skills: Reading
 - Interpret information and data presented in different formats
- Functional skills: Speaking, listening and communicating
 - Apply written communication skills to create documents for different purposes
 - Apply appropriate vocabulary and spelling to documents

Maths

- GCSE: Number
 - Calculate resource requirements for construction projects
- GCSE: Algebra
 - Calculate resource requirements for construction projects
- GCSE: Ratio, proportion and rates of change
 - Calculate resource requirements for construction projects
- GCSE: Geometry and measures
 - Calculate resource requirements for construction projects
- Functional skills: Using numbers and the number system
 - Calculate resource requirements for construction projects
- Functional skills: Measures, shape and space
 - Calculate resource requirements for construction projects
- Functional skills: Solving mathematical problems and decision making
 - Calculate resource requirements for construction projects

Digital

- Functional skills: Creating and editing
 - Apply software functions to produce project planning materials

Annex: Glossary

Term	Description
Behaviours	<p>The behaviours included are enabling attributes and attitudes identified by employers as important to industry and to achieving the outcomes. They are taken from the list developed for T Levels, available from the Operating Instructions for the Creation of Outline Content Annex E. Most of the behaviours have been included as supplementary information for providers in designing teaching and learning.</p> <p>Those that can be assessed in context have been incorporated into the skills to be assessed. These are: “self-reflecting” and “self-managing”.</p>
Content	<p>The national technical outcomes set out at a high level, the minimum content needed to demonstrate the outcomes for the specified route. The content includes the outcomes, all knowledge and skills topic area headings and the underpinning bullets.</p>
English, maths and digital	<p>There are English (communication), maths (numeracy) and digital topic areas in the knowledge and skills where they are required to achieve the outcome and must be covered in the qualification. Supplementary information provides mapping and references to relevant English, maths and digital qualification subject content. This is to support naturally occurring opportunities for these skills to be developed and applied in context, to help consolidate students’ learning and understand their relevance and value to industry. The mapping references relate to qualification subject content from:</p> <ul style="list-style-type: none"> • GCSE English language • GCSE mathematics • Functional Skills English • Functional Skills mathematics • Functional Skills Qualifications - digital subject content
Holistic delivery	<p>Holistic delivery involves integrated learning so that students make connections between skills, knowledge and understanding from across the programme.</p>
Illustrative examples of breadth and depth	<p>Illustrative examples of how breadth and depth could be introduced into teaching and learning.</p> <p>Developing breadth – supports the consolidation of knowledge and skills at the same level, by applying concepts, facts and theories to different contexts.</p> <p>Developing depth – provides stretch and challenge to move students towards the next level, by analysing information and ideas from across the contexts, to draw conclusions and make judgements.</p>

Term	Description
Knowledge and understanding	The knowledge content included in each outcome includes both knowledge and understanding, which relate to the theoretical facts, principles, concepts, procedures and techniques that students should acquire.
Outcomes	<p>The national technical outcomes describe what the student should be able to do by the end of the programme. They encompass:</p> <ul style="list-style-type: none"> • the activities that students will undertake to demonstrate their learning • the content (knowledge and skills) being taught and learnt • the knowledge, skills and behaviours being developed in students. <p>Most outcomes include both knowledge and skills. The Agriculture, environmental and animal care and Health and science routes include an outcome with knowledge only.</p>
Rationale	This is the reasoning for the content. There is an introductory rationale for each set of national technical outcomes and a rationale for each outcome.
Route	The Sainsbury Review set out 15 routes structuring occupations across the labour market that require technical education. There are T Levels for 12 Technical Education routes.
Route-based approach	There is one set of national technical outcomes for each of the 12 T Level routes, rather than each T Level or occupational specialism. This is to enable progression to any T Level within the route.
Route-based project	T Level Foundation Year students are expected to complete a small project relevant to their route. A resource is available to help education providers design and deliver effective route-based projects.
Skills	<p>There are different types of skills included in the national technical outcomes:</p> <ul style="list-style-type: none"> • Technical skills – which are occupation-specific, mostly practical skills. These may vary widely between industry, sector, occupation and job type. • Employability or transferable skills – which correspond to those developed for T Levels, examples of which are available from the Operating Instructions for the Creation of Outline Content Annex E. Also included are English, maths and digital skills which appear under Communication, Numeracy and Digital headings.
Topic areas	The topic areas are the headings which set out, at a high level, the underpinning key knowledge and skills areas required to demonstrate the outcome.



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