QUALIFICATION SPECIFICATION

Level 3 Diploma in Project Controls Practice and Techniques (RQF)

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Diploma in Project Controls Practice and Techniques (RQF)

Introduction

1.1 Objective and overview

The objective of this vocational competence qualification is to provide recognition that a candidate has demonstrated the required level of technical competence to work in project controls on projects in sectors such as engineering, manufacturing, construction, infrastructure, pharmaceuticals, utilities, transport and defence.

Successful completion of the qualification pathway will lead to the candidate being awarded an:

- ECITB Level 3 Diploma in Project Controls Practice and Techniques (RQF).

The qualification is based on National Occupational Standards (NOS) and has been designed following consultation with industry employers and stakeholders on a qualifications' strategy which allows for a wider use of off the job assessment and to further sector needs to improve transferability of skills across the different sectors that comprise the industry. The detail and scope of the assessment criteria within this qualification has been developed by the Engineering Construction Industry Training Board (ECITB) Standards Setting Organisation in conjunction with employers, trainers, and assessors through workshops and consultations.

1.2 Project controls

Project controls includes the technical disciplines of estimating, planning, scheduling and cost control. A project controller identifies project controls' scope and develops: project controls plans; work and cost breakdown and coding structures; schedules; estimates; and budgets. A project controller takes into account external factors, risk and commercial requirements, identifying and making assumptions and allowances for these. The project controller understands and can create the project controls baseline, undertake simple what-if scenario and optimisation processes, and update the baseline, following procedures, as required.

Project controllers have strong analytical skills and a practical approach to interpreting technical information. When working the project controller uses specific, complex software tools to undertake a wide range of project controls tasks, including: identifying the right data for scrutinising progress; inputting and reviewing the integrity of data; tracking progress and systematically analysing performance; forecasting trends; identifying, modelling and anticipating deviations from baseline; assessing the impact of changes; and using insight to recommend early preventative and remedial actions.

Typically project controllers work in large project teams on complex projects in sectors such as construction, manufacturing, engineering, energy, defence, transport, utilities, pharmaceutical and infrastructure – where detailed progress/performance tracking, and an understanding of on-site hazards, health and safety requirements and compliance is critical. Project controls is crucial to ensuring the successful delivery of complex projects and a shortage of skilled professionals provides opportunities for a secure, fulfilling long-term career.

1.3 Entry requirements

There are no mandatory entry requirements. However, due to the level and complexity of the subject, it is recommended that candidates should have attained GCSE grade "C/5" or above or RQF functional skills level 2 or above in English (Language) and Mathematics or are able to demonstrate evidence of other suitable attainment or experience. A candidate's individual circumstances will determine if this qualification is appropriate and the Approved Centre will work with the prospective candidate and, where appropriate, the employer to determine suitability for the qualification.

1.4 Achievement

This qualification consists of 12 mandatory units and a candidate must successfully meet the requirements of all 12 units in order to attain this qualification. This document details the learning outcomes and assessment criteria that a candidate must meet in order to demonstrate the acquisition of the knowledge, skills and behaviours (KSBs) to be awarded a vocational ECITB Level 3 Diploma in Project Controls Practice and Techniques (RQF).

The contents of each unit interrelate, therefore, the Awarding Organisation (AO) does not issue credit certificates for completion of standalone units.

1.5 Assessment

Assessment is through a combination of ECITB AO online knowledge tests; skills assessment reports (SARs) (researched assignments and reports which provide evidence of skills based either on 'live' workplace or simulated workplace/case study projects and experience); mandatory observation and; recorded technical discussions and/or presentations. All assessment is carried out by assessors approved by the AO.

1.6 Total qualification time, level and duration

The total qualification time (TQT) and guided learning for these qualifications is in the table below, the total TQT is 1,850 hours. The amount of time taken to achieve this Level 3 Diploma is typically 36 months.

Units	**Guided learning (hours)**	**Total qualification time (hours)**
Unit PC01 Project controls fundamentals and related safety, ethics, environmental sustainability and governance.	35	69
Unit PC02 Effective communication and behaviour.	25	96
Unit PC03 Risk and opportunity management.	55	130
Unit PC04 Commercial awareness and procurement activities.	25	61
Unit PC05 Scope interpretation including project controls planning.	85	180
Unit PC06 Work and cost breakdown and coding structures.	36	80
Unit PC07 Scheduling practice and techniques.	120	244
Unit PC08 Estimating practice and techniques.	100	195
Unit PC09 Developing the initial budget and baseline.	55	125
Unit PC10 Optimisation practice and techniques.	75	175
Unit PC11 Track progress: data flows, IT systems and managing detailed controls data.	140	255
Unit PC12 Analyse data and forecast out-turns.	120	240
TOTAL (hours)	**870**	**1850**

1.7 Equal opportunities, reasonable adjustments and special considerations

For information about fair assessment, equal opportunities, reasonable adjustments and special considerations please refer to the ECITB AO *'RQF Quality Assurance & Procedures Manual (QAPM)'.*

1.8 Career development within project controls

Successful completion of this qualification and additional work experience can lead to careers as: a project controller; an estimator; a planner, a scheduler; a cost engineer; a quantity surveyor; or a risk analyst – these may eventually lead to a career as a project controls manager/director or a career in project, programme or portfolio management.

For more information about career progression you can go to the ECITB website www.ecitb.org.uk

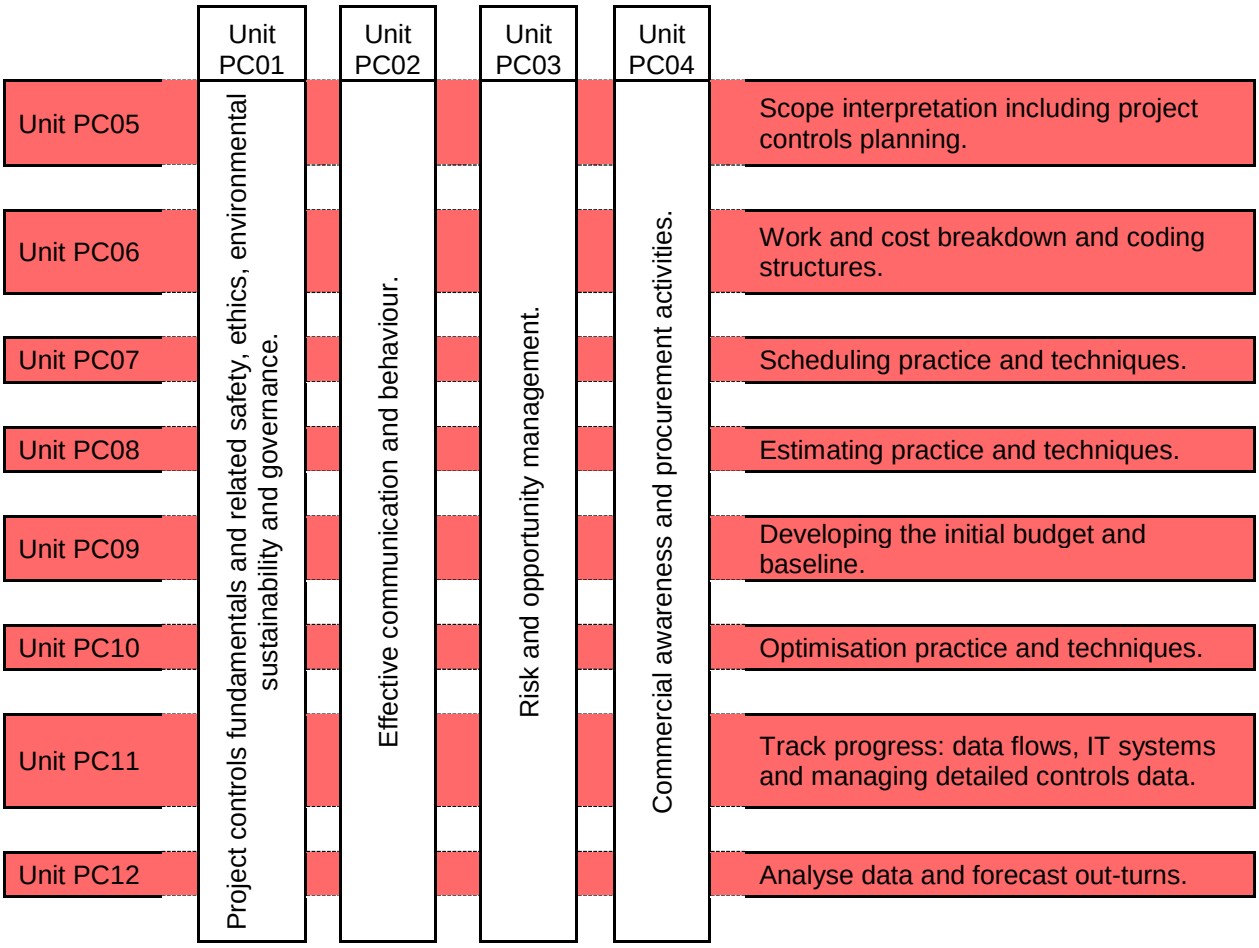
1.9 Further information

For further information either visit the ECITB website or contact ECITB Awarding Organisation:

ECITB AO
Blue Court, Church Lane, Kings Langley, Hertfordshire, WD4 8JP
Tel: 01923 26000
Email: Qualifications@ecitb.org.uk
Website: www.ecitb.org.uk.

2. Qualification units and scope of assessment

Overview of this qualification



This project controls practice and techniques qualification consists of 12 mandatory units.

Knowledge, skills and behaviours (KSBs) within units PC01, PC02, PC03 and PC04 are an integral part of the learning outcomes of the other units and, as such, some of the skills relating to: health, safety and governance etc.; consideration of risk; commercial awareness; and effective communication are also expected to be demonstrated by candidates through the skills assessment tests for units PC05 to PC12.

Unit PC01 Project controls fundamentals and related safety, ethics, environmental sustainability and governance

Learning outcomes:

1. The candidate can demonstrate that they understand what project control is and the critical role it plays in successful project delivery.

2. The candidate can identify and assess factors, including health, safety and environmental regulations, legislation, available technology and environmental sustainability, that affect project controls in their sector and understands how this impacts on project controls.

3. The candidate can demonstrate that they understand important governance systems that are integral to successful project controls and are able to apply them:
- a) Quality management systems (QMS) and procedures.
- b) Change and change management especially in relation to:
  - Scope management.
  - Document control.
  - Version control.

4. The candidate understands the need for ethical working, values, integrity and codes of conduct and the need to observe these in the execution of work in a way that contributes to professionalism.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

PROJECT CONTROLS FUNDAMENTALS

K1.1 Nature of projects and the different stages of the project lifecycle.
K1.2 What project controls is and its purpose.
K1.3 Projects controls and its role in governance and decision making.
K1.4 The relationship between project controls and other disciplines.
K1.5 The different disciplines and elements of project controls and the main terms used:
- a) Stakeholder engagement and good communications.
- b) Risk and opportunity.
- c) Commercial considerations and procurement.
- d) Scope development.
- e) Planning.
- f) Breakdown and coding structures.
- g) Scheduling.
- h) Estimating.
- i) Optimisation.
- j) Setting budgets and baselines.
- k) Tracking and monitoring progress.
- l) Analysing data and forecasting trends.
- m) Project closeout and lessons learned.

K1.6 Where specialist advice can be obtained.

Skills assessment criteria:
The candidate must demonstrate the ability to:

PROJECT CONTROLS FUNDAMENTALS

S1.1 Demonstrate application of knowledge of the fundamentals of project controls and related terminology through the skills assessed in units PC02-PC12.

HEALTH, SAFETY, ENVIRONMENT AND OTHER FACTORS THAT IMPACT ON PROJECT CONTROLS

S1.2 Apply health, safety and environmental statutory legislation and regulations as appropriate.
S1.3 Work in a way that contributes to:
- a) The safety of all.
- b) Environmental sustainability.

S1.4 Identify key factors that impact on project controls including phase of project, socio-economic, technological, political, legal and environmental factors (PESTLE).

GOVERNANCE SYSTEMS: QUALITY ASSURANCE AND QUALITY MANAGEMENT SYSTEMS

S1.5 Follow quality requirements.
S1.6 Follow all relevant procedures as appropriate including completion of all relevant documentation correctly and accurately.

HEALTH, SAFETY, ENVIRONMENT, TECHNOLOGY AND OTHER FACTORS THAT IMPACT ON PROJECT CONTROLS

K1.7 Implications of statutory legislation, regulations, standards and guidelines of the main health, safety and environmental legislation relevant to project controls.
K1.8 The consequences for employers and employees of not fulfilling their legal health and safety responsibilities.
K1.9 How project controls can play a part in reducing the impact on the environment including using material resources efficiently and effectively.
K1.10 Project life-cycle and considerations in relation to project controls.
K1.11 Techniques for identifying key factors that impact on project controls including political, economic, social, technological, legal and environmental factors.
K1.12 New and emerging technology, materials and techniques.

GOVERNANCE SYSTEMS AND PROCEDURES

K1.13 The importance of quality assurance and how quality management systems (QMS) support the governance of projects.
K1.14 QMS and procedures relevant to project controls including:
a) The main terms related to quality and what they mean.
b) Those relevant to project controls and how they fit into an overall QMS.
c) The application of procedures and systems.
d) Related reporting requirements and effective record keeping.
e) The importance of checking and confirming procedures have been followed.
f) How to identify corrective action to deal with non-conformances and to limit their effects.
g) Authorisation limits in terms of making changes to procedures and why these exist.
h) National and international quality assurance codes and standards.
K1.15 Data security, the critical nature of this, access to drives and confidentiality.
K1.16 The main terms associated with change control, the importance of managing change and the key elements of change control especially in relation to:

S1.7 Identify and escalate any issues relating to non-conformance.

PROFESSIONAL ETHICS

S1.8 Demonstrate integrity throughout delivery of project controls activities (assessed through units PC04-12).
S1.9 Maintain a duty of care towards all stakeholders.
S1.10 Keep informed about the professional ethics that should be applied.

a) Documents.
b) Reports.
c) Version control.

PROFESSIONAL ETHICS

K1.17 The purpose of ethics in a typical workplace including:
a) How to identify and report any potential or actual cases of professional malpractice in accordance with approved procedures.
b) What to do in the event of uncertainty over a professional ethics and values issue.
c) How international factors may affect ethical behaviour and communications.

K1.18 What working ethically means in terms of displaying honesty, integrity, accuracy and rigour – especially in relation to project controls reporting.

K1.19 Codes of conduct including:
a) Professional codes of conduct relevant to project controls.
b) Where to obtain authoritative sources of information on them.

K1.20 What constitutes a duty of care.

K1.21 The limits of own responsibility and the importance of dealing promptly and effectively with problems and reporting those which cannot be solved.

Unit PC02 Effective communication and behaviour

Learning outcomes:

1. The candidate can demonstrate that they know how to and can establish and maintain productive working relationships.

2. The candidate can demonstrate that they know how to and can communicate project controls information effectively to a range of stakeholders including technical and non-technical audiences.

3. The candidate is able to work effectively by demonstrating appropriate behaviours.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

K2.1 Why it is important to create and maintain working relationships.

K2.2 The different problems that can affect working relationships and the actions that can be taken to deal with specific difficulties.

K2.3 Project controls related communication:
- a) Obtaining data and the need for an evidence trail.
- b) Who and why to report to.
- c) What and why to report.
- d) When and why to report.

K2.4 Techniques for technical communication including identifying key information that different stakeholders need.

APPROPRIATE BEHAVIOURS

B2.1 Take personal responsibility for own work.

B2.2 Be a team player.

B2.3 Have a positive attitude.

B2.4 Have an attention to detail, with an enquiring mind.

B2.5 Show initiative.

B2.6 Be committed to advancing own learning and competence.

B2.7 Apply and uphold principles of:
- a) Social responsibility.
- b) Environmental sustainability.
- c) Equality and diversity.

Skills assessment criteria:
The candidate must demonstrate the ability to:

S2.1 Develop working relationships with a range of people.
- a) Deal with disagreements in a professional and constructive manner so that effective relationships are maintained.
- b) If needed, seek assistance in relation to work related activities from others in a polite and courteous way without causing undue disruption to normal working activities.
- c) Respond in a timely and positive way when others ask for help or information e.g. prioritise requests, clarify exactly what is required.

S2.2 Communicate project controls information effectively
- a) Document how data has been obtained.
- b) Provide information in the right format.
- c) Provide the right level of detail for the stakeholder.

S2.3 Work effectively by demonstrating appropriate behaviours.

Unit PC03 Risk and opportunity management

Learning outcome:
The candidate understands risk and opportunity identification, mitigation and management and can effectively identify, monitor and control risk.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

K3.1 What risk is and what opportunities are:
  a) The main terms used.
  b) The importance of sound risk management in the successful delivery of projects.
K3.2 Purpose of the risk and opportunity management plan.
K3.3 Sources and techniques for identifying and qualifying risks and opportunities.
K3.4 Techniques for analysing risks and evaluating the impact of risks and opportunities (qualitative and quantitative).
K3.5 Risk response, risk mitigation and risk ownership.
K3.6 Risk reporting, monitoring and control including presentation of risks and use of risk management software.
K3.7 The importance of project scope, related assumptions and its relationship to risk.
K3.8 Incorporating risk and opportunities into the delivery of project controls in relation to incorporating risk into plans, schedules, estimates and cost control.
K3.9 The importance of lessons learned in relation to risk and opportunity management.
K3.10 What issue management is and how this is different to risk management.

Skills assessment criteria:
The candidate must demonstrate the ability to:

S3.1 Identify and quantify project-related risks and opportunities.
S3.2 Demonstrate techniques for analysing risk and opportunities.
S3.3 Assess impact of identified risks and opportunities to the outcome of a project.
S3.4 Recommend contingencies and/or mitigation of risks.
S3.5 Demonstrate techniques for monitoring risk and opportunities e.g. maintain a risk register.
S3.6 Incorporate risk and opportunities and their implications into project scope plans, schedules, estimates and finance costs.

Unit PC04 Commercial awareness and procurement activities

Learning outcomes:

1. The candidate understands key commercial considerations and processes and is able to apply them in the context of project controls.

2. The candidate understands the procurement process for goods and services and is able to undertake simple procurement and contracting activities in the context of project controls.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

K4.1 Commercial considerations within business.
K4.2 Contractual obligations relevant to project controls.
K4.3 Supply chain management.
K4.4 Contract forms, terms and conditions.
K4.5 Contract administration.
K4.6 Contract and risk.
K4.7 The procurement process for goods and services:
- a) Information needed from the supplier to support effective project controls.
- b) Tendering.
- c) Tendering rules and timelines.
- d) Gates.
- e) Subcontractor/supplier selection and criteria.
- f) Agreement to contract terms.
- g) Responding to tenders.

K4.8 The relationship between client/organisational, supply chain objectives and the procurement strategy.

Skills assessment criteria:
The candidate must demonstrate the ability to:

S4.1 Identify and incorporate commercial considerations into project controls activities.
S4.2 Carry out a simple procurement exercise including setting evaluation criteria and ranking potential suppliers.

Unit PC05 Scope interpretation including project controls planning

Learning outcome:
The candidate understands how to and can determine the work scope and develop project controls plans.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

K5.1 The importance of interpreting the scope and identifying the deliverables.
K5.2 The importance of good planning:
- a) To deliver the scope.
- b) The main planning terms used.

K5.3 The need for and importance of different planning and scheduling levels.
- a) The different methods, styles and formats for presenting planning information at different levels.

K5.4 Understand and know how to interpret the sources of information that impact on the work scope including:
- a) Business case/project mandate.
- b) Outline design.
- c) Technical requirements and specification.
- d) Key stakeholders.
- e) Scope of work.
- f) Invitation to tender (ITT).
- g) Contract.
- h) Contract/subcontract strategy.
- i) Procurement strategy.
- j) Project definition.
- k) Bid package.
- l) Risk and opportunity register(s).

K5.5 The inputs required to produce the project controls plan from documents such as:
- a) Project execution plan.
- b) Communication plan.
- c) Information management plan.
- d) Risk and change management plan.
- e) Resource management plan.
- f) Quality plan.

K5.6 The importance of assumptions.
K5.7 Contingencies and allowances.
K5.8 The key elements that must be identified to develop the basis of schedule and estimate.

Skills assessment criteria:
The candidate must demonstrate the ability to:

S5.1 Gather the information required to determine the work scope.
S5.2 Review the information and identify:
- a) Assumptions.
- b) Gaps.
- c) Conflicting data.
- d) Ambiguities.
- e) Actions to take to resolve the above.

S5.3 Produce a document that details the scope of the project.
S5.4 Produce a project controls plan.

Unit PC06 Work and cost breakdown and coding structures

Learning outcome: The candidate understands the implications of a sound approach to the development of and use of different types of breakdown and coding structures to project controls and can develop work breakdown and coding structures to meet project requirements.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

K6.1 Importance and use of breakdown and coding structures in the successful control of projects including:
- a) Interrogation of data.
- b) Communication to stakeholders.
- c) Project governance.
- d) Compliance with standards.

K6.2 The information required to develop breakdown and coding structures.

K6.3 Breakdown and coding structures:
- a) Types (WBS/PBS/CBS/OBS etc.).
- b) Approaches to developing breakdown and coding structures.
- c) Presentation formats and styles.
- d) Numbering and naming conventions.
- e) Level of detail needed.
- f) Pros and cons of consistency.

K6.4 How to produce structures that are flexible enough to accommodate scope and strategy changes.

Skills assessment criteria:
The candidate must demonstrate the ability to:

S6.1 Prepare and present breakdown and coding structures that meet project requirements and are flexible.

S6.2 Apply different levels of complexity and the appropriate level of complexity to breakdown and coding structures depending on the requirements.

Unit PC07 Scheduling practice and techniques

Learning outcome: The candidate understands scheduling techniques and is able to develop and present schedules that meet defined requirements.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

- K7.1 The importance of scheduling and the main terms used in scheduling.
- K7.2 The hierarchy of schedules.
- K7.3 The techniques used to produce schedules and the pros and cons of these (including undertaking these techniques manually).
- K7.4 How to review completed schedules including schedule quality analysis/integrity check.
- K7.5 The importance of assumptions, contingencies and allowances.
- K7.6 The importance and consequences of changes to the scope on the schedule.
- K7.7 The control of schedule versions.
- K7.8 The application of and limitations of software used for scheduling.
- K7.9 How to develop the basis of schedule.

Skills assessment criteria:
The candidate must demonstrate the ability to:

- S7.1 Gather and validate the information required to produce schedules.
- S7.2 Manually create forward/backward pass to calculate total float, free float and critical path.
- S7.3 Determine timescales for component activities and check that developed timescales are consistent with achieving the requirements.
- S7.4 Develop and present schedules.
- S7.5 Develop and present schedule quality checking.
- S7.6 Explain to stakeholders how the schedule meets the requirements.
- S7.7 Develop basis of schedule/schedule narrative.

Unit PC08 Estimating practice and techniques

Learning outcome: The candidate understands the techniques used for estimating (time and cost) and is able to prepare estimates for defined scopes of work at any stage of the project life cycle.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

K8.1 The purpose of estimating, how it is used and the challenges posed when estimating.
K8.2 The development of estimates at various levels of scope definition as well as classes of estimate and their purpose and limitations.
K8.3 How accuracy in estimating is related to the level of information available.
K8.4 The following in relation to estimating:
  a) Key terms.
  b) Information needed for estimating.
  c) Risk assessment and contingency.
  d) Work breakdown and coding structures.
K8.5 How estimating links to other disciplines and the benefits of good estimating.
K8.6 The different techniques for estimating.
K8.7 Key aspects of whole life costing.
K8.8 Means of specifying resources and how this links to schedule durations.
K8.9 How rates and other costs are determined, what they include and why this is important to understand for estimating.
K8.10 How productivity factors are assessed.
K8.11 Styles and formats for presenting estimates.
K8.12 Current good practice in estimating and how this is supported by benchmarking.
K8.13 The key aspects of benchmarking and the normalisation process.
K8.14 The application of and limitations of software in support of estimating.
K8.15 How to develop the basis of estimate.

Skills assessment criteria:
The candidate must demonstrate the ability to:

S8.1 Gather and validate the information required for the estimate (time and cost).
S8.2 Present estimating information in a number of different formats.
S8.3 Apply the main estimating techniques and develop estimates for both time and cost to a specified level of accuracy from information that is provided including:
  a) Conceptual estimates.
  b) Detailed estimates.
S8.4 Develop basis of estimate and present to stakeholders.

Unit PC09 Developing the initial budget and baseline

Learning outcomes:

1. The candidate understands the processes required and is able to prepare the initial budget for the control of work scope delivery.
2. The candidate understands the processes required to prepare and can develop an initial baseline.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

- K9.1 The importance of good budgeting and the main terms used.
- K9.2 How estimates are translated into an initial budget.
- K9.3 Key information needed to develop the:
  a) Initial budget.
  b) The initial baseline for scope, cost and time.
- K9.4 Styles and formats for presenting budget and cost control information.
- K9.5 Contingency allocation and drawdown planning in relation to both cost and time.
- K9.6 How to use the initial budget and initial baseline to establish the project cash flow and cost profile.

Skills assessment criteria:
The candidate must demonstrate the ability to:

- S9.1 Determine the original scope, cost and schedule to establish the initial baseline.
- S9.2 Develop the initial budget for control of work scope delivery using cost estimates, project schedules and breakdown structures.
- S9.3 Develop the initial budget:
  a) Project cost report.
  b) Project cash flow and cost profile requirements.
  c) Recommendations for management of contingencies and allowances.
- S9.4 Develop the initial baseline including:
  a) Resource profile requirements.
  b) Appropriate coding structures and work packages to filter and summarise.
  c) Recommendations for management of time-related contingencies.

Unit PC10 Optimisation practice and techniques

Learning outcomes:

1. The candidate understands the project controls role in optimisation practice and techniques and can undertake a simple review which includes developing recommendations.
2. The candidate understands the change management and stakeholder process required to finalise the project controls plan and baseline and is able to undertake change management correctly and effectively to produce a finalised project controls plan.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

K10.1 The principles of:
- a) What if scenario analysis.
- b) Optimisation.
- c) Lean approaches.
- d) Trade-off of time vs cost vs quality.
- e) PDCA (plan/do/check/act, Deming/Shewhart cycle).
- f) Lessons learned.

K10.2 How to question and review the data to identify:
- a) Potential lower cost.
- b) Potential shorter timescales.
- c) Recovery options.
- d) Performance improvements.

K10.3 Management of assumptions – risk and contingency review.

K10.4 Key aspects of value management techniques including both value engineering and value analysis.

K10.5 The process of reviewing the initial PCP, budget and baseline with stakeholders.

K10.6 Key information needed to finalise the project controls plan.

K10.7 The change management process that needs to be followed to update:
- a) The baseline.
- b) The final project controls plan.

Skills assessment criteria:
The candidate must demonstrate the ability to:

S10.1 Undertake a simple what if scenario analysis and deliver recommendations.

S10.2 Produce a lessons learned report.

S10.3 Update the project controls baseline as a result of review e.g. stakeholder review and/or optimisation process:
- a) Follow change processes/consult with stakeholders and ensure changes are scoped and approved then make agreed adjustments to activities, resources, plans and budgets.
- b) Ensure adjustments are accurately coded, recorded and stored securely.
- c) Ensure any necessary adjustments to activities and cost objects are made.
- d) Produce an updated project controls plan that incorporates updates (as appropriate).

Unit PC11 Track progress: data flows, IT systems and managing detailed controls data

Learning outcomes:

1. The candidate understands IT systems, data sources and data flow pathways and can effectively use IT to carry out project controls.
2. The candidate understands how to monitor and track project controls data in accordance with the project controls plan, can identify variances against the plan/baseline and accurately report on progress.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

IT SYSTEMS AND DATA FLOW

K11.1 The importance of information and data manipulation to good practice in project controls.

K11.2 Where to derive project controls data from.

K11.3 Actions to take when information is perceived to be inadequate for use.

K11.4 Typical sources and flow paths of project related controls data including how the activities in the control schedule are mapped to the progress tracking systems.

K11.5 How software tools and IT systems support successful project controls:
- a) The attributes and limitations of available software tools.
- b) Use of procedures and work instructions.
- c) Extracting data and formatting reports.

K11.6 How to validate and verify application outputs i.e. undertake checks to make sure that data is relevant and appropriate.

MONITOR AND TRACK PROGRESS

K11.7 How to apply the progress measurement as set out in the procedures referenced in the appropriate project controls plan.

K11.8 Techniques for monitoring and tracking progress including:
- a) The use of coding structures to report on activity progress.
- b) Identifying and assessing variances from the appropriate plan/baseline.
- c) How variance impacts on risk, contingencies, allowances and progress.

K11.9 Communicating progress with key stakeholders:
- a) Different types and formats of monitoring reports.
- b) Identifying key data to highlight for

Skills assessment criteria:
The candidate must demonstrate the ability to:

S11.1 Use IT to manage detailed controls data, from a range of sources in accordance with procedures referenced in the project controls plan:
- a) Collect progress data and allocate it to the correct activities and elements of the breakdown structure.
- b) Enter and process data into appropriate systems.
- c) Extract and format data from appropriate systems.
- d) Produce outputs.
- e) Validate and verify data.

S11.2 Review, assess and identify variances between the progress data and the plan/baseline:
- a) Schedule.
- b) Budget.

S11.3 Create, format and present monitoring reports including:
- a) How the data has been validated.
- b) Underlying assumptions.
- c) Highlight variances against plan/baseline.

S11.4 As a result of any variances identified, recommend areas requiring change and/or adjustment.

different levels of stakeholders.	

Unit PC12 Analyse data and forecast out-turns.

Learning outcomes:

1. The candidate understands how to and can analyse data and forecast out-turns and then compare these to the schedule/cost baseline and recommend corrective actions, as appropriate.

2. The candidate understands statistical data techniques and can generate and use statistical data.

Knowledge assessment criteria:
The candidate must demonstrate an understanding of the following in order to satisfy the skills assessment criteria:

K12.1 The importance of trend analysis and its purpose.
K12.2 How to interrogate variances between planned and progress
- a) Real and false variances.
- b) Why has this happened?
- c) What is the out-turn if progress continues as it currently is?

K12.3 How the analysis can be applied to different coding structures.
K12.4 Project controls techniques for analysing progress (time vs cost vs scope):
- a) Earned value analysis.
- b) Quantity tracking.
- c) Exception reporting (top 10).
- d) Other techniques as may be defined in the project controls plan.

K12.5 Techniques for forecasting anticipated completion (time and cost):
- a) Expert human input.
- b) Statistical based.
- c) Balancing a) and b).

K12.6 How to accurately assess the scope and cost impact of variance and consequences of changes (scope and risk).
K12.7 Fundamentals of statistical analysis
- a) Terminology used to reflect time-based differences e.g. base year, current year.
- b) Normalisation of data especially time-based data.
- c) The interpretation of published indices from governmental or commercial sources.
- d) Averages and standard deviations.
- e) Escalation and indexation.

K12.8 The importance of commercial completion of the contract, project close-down and its constituent parts.

Skills assessment criteria:
The candidate must demonstrate the ability to:

S12.1 Apply techniques in order to:
- a) Analyse progress.
- b) Calculate anticipated completion (time and cost) including out-turns.
- c) Analyse identified variances from the baseline (cost, progress, resource, schedule).

S12.2 Apply basic statistical analysis.