

Your APC pathway guide to Quantity Surveying and Construction



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Introduction

About the APC

The RICS/SCSI Assessment of Professional Competence (APC) ensure that those applying for RICS/SCSI membership are competent to practise and meet the high standards of professionalism required by RICS/SCSI. There is a wide range of pathways available to qualify as an RICS/SCSI member covering 19 different areas of practice, at APC (Chartered) level.

The APC normally consists of:

- a period of structured training
- a final assessment.

The structured training is based on candidates achieving a set of requirements or competencies. These are a mix of technical, professional, interpersonal, business and management skills

How to use this guide

This guide is designed to help you understand more about qualifying as an RICS/SCSI member in quantity surveying and construction. The material is set out in three sections.

Section one- provides information on this area of practice with a general overview of the valuation pathway.

Section two- lists the competency requirements of the quantity surveying and construction APC.

Section three- describes the main technical competencies associated with quantity surveying and construction providing expanded sector specific guidance on each of them. This forms the main part of the guide.

About the competencies

The APC aims to assess that you are competent to carry out the work of a qualified chartered surveyor. To be competent is to have the skill or ability to perform a task or function. The RICS/SCSI competencies are not just a list of tasks or functions, they are also based upon attitudes and behaviours. The competencies have been drawn up in a generic way so that they can be applied to different areas of practice and geographical locations. This guide is designed to help you interpret these competencies within the context of quantity surveying and construction.

The competencies are defined at three levels of attainment and each APC pathway has its own specific combination of competencies that you must achieve at the appropriate level. You must reach the required level in a logical progression and in successive stages:

Level 1 – knowledge and understanding

Level 2 – application of knowledge and understanding

Level 3 – reasoned advice and depth of technical knowledge.

The competencies are in three distinct categories:

Mandatory competencies – the personal, interpersonal, professional practice and business competencies common to all pathways and compulsory for all candidates. These are explained in more detail in the *APC Requirements and competencies guide*.

Core competencies – the primary competencies of your chosen APC pathway.

Optional competencies – a set of competencies selected by the candidate from a list defined for the particular pathway. In most cases there is an element of choice. These are mostly technical competencies, but certain mandatory competencies also appear on the optional competency list and candidates are permitted to select one of these at a higher level.

This guide only deals with the principal core and optional competencies associated with this area. It does not cover the mandatory competencies.

Choosing your competencies

It is important that you give careful thought to your choice and combination of competencies. Your choice will inevitably reflect the work you do in your day-to-day environment (driven by the needs of your clients/employer). Your choice and combination of competencies will be a reflection of your judgement. At the final assessment interview, the assessors will take these choices into account. They will expect you to present a sensible and realistic choice that reflects the skills needed to fulfil the role of a surveyor in your field of practice.

This guide should help candidates and employers with a degree of assistance in choosing the competencies that are most appropriate to their area of practice.

How to find help

SCSI Education and Membership will be able to help you with any general APC queries:

T 01 6445500

F 01 6611797

education@scsi.ie

www.scsi.ie

About Quantity surveying and construction

Quantity surveyors are the cost managers of construction. They are initially involved with the capital expenditure phase of a building or facility, which is the feasibility, design and construction phases, but they can also be involved with the extension, refurbishment, maintenance and demolition of a facility.

The construction industry is global and extends across all real estate and infrastructure markets. Quantity surveyors work in all sectors of the construction industry worldwide. In real estate this covers residential, commercial, industrial, leisure, agricultural and retail facilities. In infrastructure it covers roads, railways, waterways, airports, sea ports, coastal defences, power generation and utilities. Quantity surveyors may also work in process engineering, such as chemical engineering plants or oil rigs.

They must understand all aspects of construction over the whole life of a building or facility. They must have the ability to manage cost effectively, equating quality and value with individual client needs.

Quantity surveying and construction APC

As a quantity surveyor you may be working as a consultant in private practice, for a developer or in the development arm of a major organisation (eg retailer, manufacturer, utility company or airport), for a public sector body or for a loss adjuster.

On the contracting side you could be working for a major national or international contractor, a local or regional general contractor, for a specialist contractor or sub-contractor, or for a management style contractor.

Your work may include the following:

- preparing feasibility studies or development appraisals
- assessing capital and revenue expenditure over the whole life of a facility
- advising clients on ways of procuring the project
- advising on the setting of budgets
- monitoring design development against planned expenditure
- conducting value management and engineering exercises
- managing and analysing risk
- managing the tendering process
- preparing contractual documentation
- controlling cost during the construction process
- managing the commercial success of a project for a contractor
- valuing construction work for interim payments, valuing change, assessing or compiling claims for loss and expense and agreeing final accounts
- negotiating with interested parties
- giving advice on the avoidance and settlement of disputes.

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Quantity surveyors may also work in process engineering, such as chemical engineering plants or oil rigs.

They must understand all aspects of construction over the whole life of a building or facility. They must have the ability to manage cost effectively, equating quality and value with individual client needs.

RICS/SCSI qualification pathways in this sector: Chartered alternative designations related to this pathway

All candidates qualifying under the Quantity surveying and construction APC pathway, whether they work in private practice or for a contractor, will be entitled to use the designation 'Chartered Quantity Surveyor'.

Pathway Requirements

Quantity surveying and construction APC

Mandatory	
Level 3	<ul style="list-style-type: none"> • Ethics, rules of conduct & professionalism
Level 2	<ul style="list-style-type: none"> • Client Care • Communication and negotiation • Health and safety
Level 1	<ul style="list-style-type: none"> • Accounting principles and procedures • Business planning • Conflict avoidance, management and dispute resolution procedures • Data management • Diversity, inclusion and teamworking • Inclusive environments • Sustainability
Core	
Level 3	<ul style="list-style-type: none"> • Commercial management (of construction works) or Design economics and cost • Planning* • Construction technology and environmental services • Contract practice • Procurement and tendering • Project finance (control and reporting) • Quantification and costing (of construction works)
Optional	
Two to Level 2	<ul style="list-style-type: none"> • Capital allowances • Commercial management (of construction works) or Design economics and cost planning (whichever is not selected as core competency) • Conflict avoidance, management and dispute resolution procedures or Sustainability • Contract administration • Corporate recovery and insolvency • Due diligence • Insurance • Programming and planning • Project feasibility analysis • Risk management

*Candidates working in a **commercial or contracting environment** will likely choose **Commercial management to Level 3**.

Candidates working in a consulting environment within either the public or private sector will likely choose **Design economics and cost planning to Level 3**.

Note:

Candidates should select from one of the following fields of work in which to demonstrate their competency. Other fields may be accepted, subject to written approval from the SCSI Education and Membership Department.

- Building.
- Civil Engineering.
- Railways.
- Petro-chemicals.
- Oil / gas installations.
- Mechanical and electrical installations.

Competency guidance

The pages that follow are intended to provide guidance for users on the main competencies associated with quantity surveying and construction.

The guidance has been drawn up by experienced practitioners and aims to give you a clear and practical understanding of how to apply the listed core and optional competencies in the context of quantity surveying and construction. The guidance does not cover the mandatory competency requirements.

The official competency definitions (at levels one, two and three) are provided, followed by a description of the key knowledge and activities that are likely to fall within the scope of each competency.

The information provided is designed to be helpful but informal guidance. The knowledge and activities described under each competency are not exhaustive, and should not be relied upon as any form of revision list. Candidates must satisfy themselves and their employers that they have reached the required level of attainment before applying for final assessment.

The competencies are arranged in alphabetical order.

The full list of RICS/SCSI competencies and pathway requirements can be found in the *Requirements and Competencies guide*.

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Capital allowances

Reference no. T008

Description of competency in context of this sector

This competency covers the taxation incentives/capital allowances available on property and structures in order to prepare claims and give advice to clients. Candidates should have an awareness of the various types of capital allowance that are available in accordance with capital allowances legislation. They should have a thorough understanding of types used on their projects.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of capital allowances and grants.

Examples of knowledge comprised within this level are:

- The definition of capital allowances and the history behind their existence
- The client types that they apply to
- The main types of capital allowances available relating to property, including plant and machinery, industrial building allowances, hotel allowances and enhanced capital allowances
- The property types that capital allowances apply to.

Level 2

Apply knowledge of capital allowances and grants, including the ability to use source documents necessary to prepare taxation allowances analyses.

Examples of activities and knowledge comprised within this level are:

- Collecting the relevant documentation to prepare a claim relating to the type of transaction. For acquisitions this might include sale agreements, valuation reports, ledgers, drawings and specifications. For developments this might include ledgers, building contracts, final accounts, invoices
- Understanding, establishing and applying entitlement and compliance issues, including other capital allowances such as long life assets, short life assets, flat conversion, research and development
- Identifying and quantifying qualifying expenditure
- The property types that capital allowances apply to.

Level 3

Provide evidence of giving reasoned advice; preparing claims; making applications for grants; preparing and presenting reports to clients; and corresponding and negotiating with the relevant government and other authorities.

Examples of activities and knowledge comprised within this level are:

- Preparing and presenting reports and documentation
- Providing advice on issues affecting acquisitions, disposals and developments
- Giving advice on the effect and interaction of capital allowances, in general taxation and accounting issues
- Negotiating and agreeing capital allowances claims with taxation authorities.

Commercial management of construction works

Reference no. T010

Description of competency in context of this sector

This competency covers the commercial management of construction works. Candidates should have an awareness of how commercial competitiveness balances against profitability. They must have a thorough understanding of the financial processes used to achieve profitability and how these integrate with the overall delivery of the project.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the principles of the management of construction projects.

Examples of knowledge comprised within this level are:

- Identifying and understanding the components that make up the cost of the project to the contractor
- Understanding of the effect that the design and construction processes have on the cost
- Awareness of the techniques used to reconcile the cost against income
- Awareness of the techniques to financially manage sub-contractors and suppliers
- Understanding the use of cashflows.

Level 2

Apply your knowledge to the financial management of construction projects, including regular monitoring and reporting on cashflow and profitability.

Examples of activities and knowledge comprised within this level are:

- Collecting of data for reports
- Carrying out cost to completion exercises
- Preparing cashflows
- Preparing reports such as liability statements, cost to complete and cost value reconciliations
- Applying value engineering processes
- Preparing and submitting cost data for in-house and/or external use in relation to areas such as cost of preliminaries, comparative cost of different construction techniques and taxation allowances.

Level 3

Monitor, report and advise on project cashflows and profitability. Evaluate and advise on the financial implications and appropriate management actions.

Examples of activities and knowledge comprised within this level are:

- Monitoring, analysing, reporting and advising at a senior level on project cashflows and profitability for internal use
- Evaluating and advising on financial implications and appropriate management actions.

Conflict avoidance, management and dispute resolution procedures

Reference no. M006

Description of competency in context of this sector

This competency covers the quantity surveyor's involvement with the avoidance, management and resolution of disputes in construction projects. Candidates should be aware of the various processes and techniques commonly used in the industry. They should have a detailed understanding of how these are applied in practice.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the techniques for conflict avoidance, conflict management and dispute resolution procedures including for example adjudication and arbitration, appropriate to your APC pathway.

Examples of knowledge comprised within this level are:

- Techniques for conflict avoidance, management and resolution, in particular by the appropriate selection of procurement routes and use of processes such as partnering
- How various forms of contract deal with dispute avoidance and their provisions for resolving disputes
- Legal and statutory requirements for the resolution of disputes in construction contracts
- Conflict management and dispute resolution procedures within the construction process including negotiation, mediation and conciliation, adjudication, arbitration, independent expert determination and litigation.

Level 2

Provide evidence of practical application in your area of practice having regard to the relevant law.

Examples of activities and knowledge comprised within this level are:

- Direct experience of conflict avoidance and management and dispute resolution procedures including Mediation, Adjudication, Arbitration, Expert Determination, Dispute Boards etc.
- Compiling evidence for use in dispute resolution procedures.

Level 3

Provide evidence of the application of the above in the context of advising clients in the various circumstances referred to above.

Examples of activities and knowledge comprised within this level are:

- Developing an in depth knowledge of law governing conflict avoidance and management and dispute resolution procedures, including relevant legislation and case law
- Giving reasoned advice on different dispute resolution procedures having reference to particular project circumstances
- Giving advice on relevant law governing evidence of fact and expert evidence and the practice and procedures adopted by surveyors in the role of either advocate or expert witness
- Giving advice as an expert witness.

Construction technology and environmental services

Reference no. T013

Description of competency in context of this sector

This competency covers the design and construction of buildings and other structures. Candidates should have a clear understanding of the design and construction processes commonly used in the industry. They should have detailed knowledge of construction solutions relevant to their projects.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the principles of design and construction relating to your chosen field of practice.

Examples of knowledge comprised within this level are:

- The stages of design from inception to completion
- Impact of current legislation and regulations (both national and international)
- How the various elements of the building work and inter-relate
- The process of constructing the works
- Operational and maintenance processes post contract
- Knowledge of modern construction techniques, such as prefabrication.

Level 2

Apply your knowledge to the design and construction processes.

Examples of activities and knowledge comprised within this level are:

- Appreciating how design solutions vary for different types of building such as clear span requirements for warehousing or acoustic requirements for accommodation
- Understanding alternative construction details in relation to functional elements of the design such as different types of piling or structural frame solutions.

Level 3

Advise on the selection and application of particular processes within your area of experience. This should include liaison with specialists and consultants to develop project specific design and construction solutions.

Examples of activities and knowledge comprised within this level are:

- Advising on the choice of construction solutions for your project
- Reporting on the impact of different design solutions and construction processes on cost and programme.

Contract administration

Reference no. T016

Description of competency in context of this sector

This competency covers the role of a surveyor administering a construction contract. Candidates should be aware of the roles and responsibilities of the administrator under the main forms of contract. They should have a detailed understanding of the contractual provisions relating to the forms of contract that they have administered.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the contractual, legislative and statutory terminology/requirements, of a construction contract.

Examples of knowledge comprised within this level are:

- The various standard forms of contract and sub-contract used in the industry
- Basic contractual mechanisms and procedures applied at various stages of the contract
- The roles and responsibilities of the administrator.

Level 2

Implement administrative procedures necessary for the smooth running of a construction contract.

Examples of activities and knowledge comprised within this level are:

- Issuing instructions
- Dealing with payment provisions
- Managing change procedures
- Involvement with dispute avoidance
- Dealing with completion and possession issues
- Issuing certificates.

Level 3

Advise on the administrative procedures necessary for the smooth running of a construction contract including document control techniques and systems, meetings and reporting procedures.

Examples of activities and knowledge comprised within this level are:

- Resolving disputes
- Assessing entitlement for extension of time
- Assessing entitlement for loss and expense
- Advising all parties of their contractual rights and obligations.

Contract practice

Reference no. T017

Description of competency in context of this sector

This competency covers the various forms of contract used in the construction industry. Candidates should have an awareness of all of the main standard forms of contract and a thorough understanding of contract law, legislation and the specific forms that they have used.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the various forms of contract used in the construction industry and/or your area of business.

Examples of knowledge comprised within this level are:

- Basic contract law and legislation
- Contract documentation
- The various standard forms of contract and sub-contract
- When the different forms would be used
- Basic contractual mechanisms and procedures at various stages of the contract
- Third party rights including relevant legislation and the use of collateral warranties.

Level 2

Apply your knowledge of the use of the various standard forms of contract at project level, including the implications and obligations that apply to the parties to the contract.

Examples of activities and knowledge comprised within this level are:

- Producing contract documentation
- Carrying out the contractual mechanisms and procedures relevant to the financial management aspects of your project, such as change procedures, valuations, loss and expense and final accounts
- Understanding general contractual provisions such as letters of intent, insurances, retention, bonds, liquidated and ascertained damages, early possession, practical completion and other common contractual mechanisms.

Level 3

Provide evidence of reasoned advice, prepare and present reports on the selection of the appropriate form of contract and warranties for your chosen procurement route. This should include advising on the most appropriate contractual procedure at the various stages of a construction or other contract.

Examples of activities and knowledge comprised within this level are:

- Selecting the appropriate form of contract and/or sub-contract for your chosen procurement route
- Advising on the most appropriate contractual procedure at the various stages of a contract
- Evaluating the appropriateness and implications of proposed contractual amendments.

Corporate recovery and insolvency

Reference no. T020

Description of competency in context of this sector

This competency covers the involvement and actions of a quantity surveyor when insolvency occurs on a construction project. Candidates should have an awareness of the processes and procedures that can apply when a party to a contract becomes insolvent and what help and support a quantity surveyor can give to the various parties involved, including the insolvency practitioner. They must have a thorough understanding of the how insolvency has affected their project and the legal and contractual position of the parties involved.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the role of them Chartered Surveyor in corporate recovery and insolvency situations.

Examples of knowledge comprised within this level are:

- The principles of the different insolvency procedures, such as liquidation, administration, receivership and company voluntary arrangement
- How standard form contracts deal with insolvency
- The nature of an insolvency practitioner's role and his expectations as a client
- How a quantity surveyor might support an insolvency practitioner.

Level 2

Demonstrate an understanding of the various types of appointment that can be made to administer/ manage the affairs of insolvent and potentially insolvent companies and individuals.

Examples of activities and knowledge comprised within this level are:

- Undertaking valuations and notional final accounts in relation to an insolvency on a project
- Taking action to facilitate the completion of a project where insolvency has occurred
- Undertaking work in support of an insolvency practitioner.

Level 3

Provide evidence of reasoned advice, prepare and present reports on the property assets of insolvent companies and individuals and/or in the administration of Fixed Charge Receivership appointments.

Examples of activities and knowledge comprised within this level are:

- Giving reasoned advice to a contracted party on how to proceed following the insolvency of the other party to the contract
- Giving reasoned advice to a client on how to proceed to complete a project following an insolvency.

Design economics and cost planning

Reference no. T022

Description of competency in context of this sector

This competency covers the impact of design and other factors on cost throughout the life of the building and the control of cost during the pre-contract stage. Candidates should have an awareness of how design decisions and construction processes impact on construction and operational costs. They must have a thorough understanding of techniques used to manage and control costs pre-contract.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the main factors that affect design economics over the whole life of a building. Demonstrate knowledge and understanding of how cost planning assists in the financial control of projects during the design development stage.

Examples of knowledge comprised within this level are:

- The main factors that affect design economics over the whole life of the building including capital and life cycle costs
- How cost planning assists in the financial control of projects during the design development stage
- The various stages of cost planning
- Sources of cost data
- Adjustments that may be required for factors including location, specification, time and market forces.

Level 2

Apply your knowledge to the cost management of design development on a project from feasibility to design completion. Prepare and submit cost data to in-house and/or external data collection agencies.

Examples of activities and knowledge comprised within this level are:

- Producing estimates and cost plans
- Carrying out life cycle costing exercises
- Applying value engineering processes
- Preparing cost reports
- Preparing and submitting cost data to in-house and/or external data collection agencies
- Quantifying risk.

Level 3

Give strategic and reasoned advice, including the preparation and presentation of reports with reference to cost, time, quality and build ability. Advise on various market factors and trends in construction costs. Comment on accuracy and risk.

Examples of activities and knowledge comprised within this level are:

- Preparing and presenting reports with reference to cost, time, quality and build ability, including qualifications and exclusions
- Evaluating building design efficiency
- Assessing/evaluating market factors and trends in construction costs
- Analysing the accuracy of predicted cost using benchmarking techniques
- Interrogating historical cost data
- Using value and risk management techniques.

Due diligence

Reference no. T025

Description of competency in context of this sector

This competency covers the due diligence work and/or fund monitoring on construction projects. It may also cover the duties of quantity surveyors monitoring the financial management of management style contracts. Candidates should have an awareness of the areas of concern for funders and clients within a project and the techniques used in the forensic interrogation and monitoring of those areas. They must have a thorough understanding of the techniques used on their projects.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge of the techniques used for cost, quality and time related forensic examination in your area of practice.

Examples of knowledge comprised within this level are:

- The main areas of risk for a funder/client
- The process of analysing contract documentation
- How to interrogate pricing data in relation to development appraisals, cash flows, construction costs and risk allowances
- Techniques for assessing suitability of programmes
- Relevant statutory approvals, such as planning and building control
- How to monitor interim payments and planned progress.

Level 2

Apply your knowledge of cost, quality and time related forensic examination in your area of practice.

Examples of activities and knowledge comprised within this level are:

- Reviewing development appraisals
- Reviewing specialist reports and checking statutory and other approvals
- Analysing the suitability of procurement strategies and contract documentation, including third party rights issues and insurances
- Interrogating pricing data in relation to development appraisals, cash flows, construction costs and risk allowances
- Establishing suitability of project programmes, quality control procedures and health and safety arrangements
- Checking suitability and appointments of project team
- Analysing project and construction risks
- Reviewing interim valuations for draw-down
- Monitoring progress against planned programmes
- Reviewing final accounts.

Level 3

Provide evidence of reasoned advice and report to clients on cost, quality and time related forensic examination in your area of practice.

Examples of activities and knowledge comprised within this level are:

- Checking compliance with loan agreements and agreements to lease
- Delivering reports to the funder/client on time, cost and quality matters covered by your monitoring activities
- Giving advice to the funder/client on suitable action to be taken in respect of issues identified by your monitoring activities.

Insurance

Reference no. T045

Description of competency in context of this sector

This competency covers specific insurance provisions related to property and development. Candidates should be aware of how insurance is used to deal with risk in development. They should have a detailed understanding of the contractual requirements under the various standard forms of contract.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the principles and practices of insurance in relation to your area of practice.

Examples of knowledge comprised within this level are:

- The insurance provisions within the standard forms of contract
- Specific insurance mechanisms such as joint names, subrogation, net contribution clauses, in the aggregate, each and every event and excess provisions
- Specialist insurances such as performance bonds, professional indemnity and retention bonds.

Level 2

Apply your knowledge and/or be involved with the insurance of construction and/or property related matters.

Examples of activities and knowledge comprised within this level are:

- Developing specialist knowledge in areas such as asbestos and terrorism
- Compiling cost data for an insurance claim
- Compiling cost data for a fire insurance valuation.

Level 3

Demonstrate a thorough understanding of the regulations and practice governing the insurance of construction and/or property related matters.

Examples of activities and knowledge comprised within this level are:

- Reporting on cost impact of insurance claims to loss adjustor
- Reporting on re-construction costs for fire insurance valuations
- Advising clients on trends in the construction insurance market
- Advising on how insurances can be used to mitigate risk.

Procurement and tendering

Reference no. T062

Description of competency in context of this sector

This competency covers how a project is structured and delivered in terms of risk allocation and contractual relationships and how tendering processes are used to establish a contract price. Candidates should have a clear understanding of the different types of procurement and tendering commonly used and the advantages and disadvantages of each to the parties involved. They should have a detailed working knowledge of the procurement routes and tendering procedures used on their projects.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the main types of procurement. Demonstrate knowledge and understanding of the tendering and negotiation processes involved in procurement.

Examples of knowledge comprised within this level are:

- The main types of procurement used in both the public and private sectors, both nationally and internationally
- Tendering and negotiation processes involved in procurement
- Ancillary processes such as partnering and framework agreements
- Codes of practice and procedures commonly used.

Level 2

Apply your knowledge to the implementation of the procurement routes selected for your projects and to carrying out tendering and negotiation processes relevant to them.

Examples of activities and knowledge comprised within this level are:

- Implementing procurement routes such as traditional, design and build, management forms, term and serial contracting and other types
- Producing and/or compiling tender documentation such as letter of invitation, form of tender, health and safety documentation, design documentation and contractual details (Please note: pricing documents are covered under the Quantification and costing of construction works)
- Carrying out of tendering and negotiation processes such as single and two stage tendering, the use of codes of practice and electronic tendering.

Level 3

Give reasoned advice on the appropriateness of various procurement routes. Manage the tendering and negotiation process and present reports on the outcome.

Examples of activities and knowledge comprised within this level are:

- Evaluating the appropriateness of various procurement routes
- Managing the tendering and negotiation process
- Preparing procurement and tendering reports.

Programming and planning

Reference no. T063

Description of competency in context of this sector

This competency covers a surveyor's involvement with the programming and planning of construction projects. Candidates should have an awareness of the various principles, techniques and issues that relate to the programming and planning of projects generally. They must have a thorough understanding of how these principles and techniques have been used and how specific issues have been dealt with on their projects.

Examples of likely knowledge, skills and experience at each level

Level 1

Describe the principals of financial and programme monitoring of projects, including planning techniques such as Gantt charts etc. Demonstrate knowledge of the various types of programmes and schedules commonly used on projects.

Examples of knowledge comprised within this level are:

- Understand the need for pre-contract planning and programming techniques
- Different planning techniques eg Gantt Charts, Network Analysis and Critical Path Analysis etc
- The principles of how a programme is affected by change
- The need for good programming when forecasting accurately materials, man-power, machinery and money
- The use of planning and programming when forecasting expenditure
- The importance of a project or a contract programme when used together with different forms of contract.

Level 2

Assess, interpret and report on the programme control of projects.

Examples of activities and knowledge comprised within this level are:

- Formulating and reporting on a project programme for different construction projects using planning techniques
- Reporting the client's financial forecast expenditure of a project using planning techniques
- Calculating a critical path network analysis and/or PERT network analysis as appropriate to determine the longest path
- Identifying the impact of contractual provisions on the effective planning of projects.

Level 3

Provide evidence of reasoned advice on, or implement the principals of, executive programme control of projects. Your advice should demonstrate a good understanding of planning techniques (pert diagrams, network analysis/critical path methods).

Examples of activities and knowledge comprised within this level are:

- Interpreting the effectiveness of a project programme
- Providing reasoned advice on the financial planning of construction projects (eg a client/developer might have a particular way of funding a project, either fully financed or generating finance from sales in phase one to finance later phases. This would give rise to very different strategies affecting both the timing and the cost of a project)
- Analysing and advising on the possible outcomes in the event of a strategy change eg financing provisions, time of construction, scope changes
- Advising on a project programme when determining different procurement options.

Project feasibility analysis

Reference no. T066

Description of competency in context of this sector

This competency covers the financial aspects of feasibility studies and development appraisals. Candidates should be aware of the various elements of a feasibility study and development appraisal and the factors that can affect them. They should have a detailed understanding of the techniques used to assess financial viability.

Examples of likely knowledge, skills and experience at each level

Level 1

Describe the feasibility study process, including the financial and town planning aspects associated with a development appraisal.

Examples of knowledge comprised within this level are:

- Understand the process of carrying out a development appraisal using techniques such as residual valuation
- Understand the various financial elements of a development appraisal such as land and construction costs, fees, finance costs, value or income stream and profit
- Awareness of the impact of nonfinancial factors such as town planning on an appraisal
- Understand the basic principals of techniques used in association with development appraisals such as value management, value engineering, life cycle and whole life costing and risk management.

Level 2

Apply the techniques used in value management/value engineering, life cycle/whole life costing and risk assessment, together with a balance sheet analysis.

Examples of activities and knowledge comprised within this level are:

- Providing cost data for a development appraisal, particularly in respect of construction costs
- Understanding how financial data might be obtained for elements of a development appraisal (other than construction costs), for example land and financing costs, fees, taxation, property valuation, income stream and profit
- Carrying out life cycle cost exercises in relation to an appraisal
- Being involved in value and risk management exercises in relation to an appraisal.

Level 3

Initiate and monitor a feasibility study. Advise on the economics of design, on the use of value management and value engineering techniques and on how to undertake a full risk and balance sheet analysis.

Examples of activities and knowledge comprised within this level are:

- Carrying out an appraisal; reporting and advising on the outcome
- Advising on the impact of costs associated with the various elements of the appraisal on the overall viability.

Project finance [control and reporting]

Reference no. T067

Description of competency in context of this sector

This competency covers the effective cost control of construction projects during the construction phase. Candidates should be aware of the principles of controlling and reporting costs on any construction project. They should have a detailed understanding of the control and reporting processes used on their projects (please note: for surveyors working in contracting this competency covers externally issued cost advice and reports).

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the effective control of costs during a project. Demonstrate understanding of the legal and contractual constraints and the effect of time and quality on the cost of a project.

Examples of knowledge comprised within this level are:

- The effective control of costs during the construction phase of a project
- The legal and contractual constraints on the cost of a project such as changes in building legislation and design risk allocation
- The reporting and forecasting of costs during the construction phase
- The principles of contingencies/risk allowances.

Level 2

Apply your knowledge to the management of project costs. This should include the preparation and presentation of financial reports on the performance of a project at appropriate intervals, to provide effective forecasting of costs, risks and their financial implications.

Examples of activities and knowledge comprised within this level are:

- Managing project costs during the construction phase
- Reporting and forecasting costs for different procurement routes and client types
- Using cashflows in financial management
- Managing provisional sums/ contingencies/risk allowances.

Level 3

Advise on strategies and procedures to control predicted expenditure in line with a budget.

Examples of activities and knowledge comprised within this level are:

- Implementing change control procedures within the contract
- Establishing reporting regimes/protocols
- Using risk management and analysis techniques.

Quantification and costing [of construction works]

Reference no. T074

Description of competency in context of this sector

This competency covers the measurement and definition of construction works in order to value and control costs. Candidates should have an awareness of the various methods of quantifying and pricing construction works used throughout a project. They must have a thorough understanding of the specific methods used on their projects.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of the principles of quantification and costing of construction works as a basis for the financial management of contracts.

Examples of knowledge comprised within this level are:

- The quantification of construction works (including both measurement and definition)
- The various standard methods of measurement
- The costing of construction works
- The measurement of buildings and structures to agreed standards.

Level 2

Apply your knowledge to the quantification and costing of construction works, including the use of appropriate standard methods of measurement and forms of cost analysis. Carrying out measurement and costing of works at all stages of the construction process.

Examples of activities and knowledge comprised within this level are:

- Quantifying construction works at the various stages of a project
- Producing pricing documents such as bills of quantities, schedules of activities/works, schedules of rates or contract sum analyses.
- Carrying out the costing of construction works by methods such as tendered rates, quotations or dayworks.

Level 3

Advise on appropriate methods of quantification and costing for specific projects. Take responsibility for the preparing and issuing pricing documents. Price or analyse such documents. Give advice on and/or supervise the valuation of construction works throughout a project.

Examples of activities and knowledge comprised within this level are:

- Advising on appropriate methods of measurement and costing
- Selecting of appropriate pricing documents
- Negotiating and agreeing the valuation of construction works at various stages of the project such as the contract sum, construction and final account.

Risk management

Reference no. T077

Description of competency in context of this sector

This competency covers the management of risk on construction projects. Candidates should be aware of the benefits to be gained and the techniques and processes used to manage risk. They should have a detailed understanding of how risk is dealt with on their projects.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate your knowledge and understanding of the nature of risk and, in particular, of the risks associated with your area of business/practice.

Examples of knowledge comprised within this level are:

- The principles of risk management
- How the various procurement routes deal with risk
- Mitigation strategies
- The techniques used to quantify risk
- The effect of risk on programme and cost.

Level 2

Apply your knowledge to carry out risk assessments taking into account all relevant factors. Understand the application of the various methods and techniques used to measure risk.

Examples of activities and knowledge comprised within this level are:

- Contributing towards the identification of risk
- Identifying who owns the risk in relation to the chosen procurement route on your project
- Contributing towards strategies to mitigate risk
- Contributing data towards the quantification of risk
- Considering the effect of risk on programme and management cost specific to their project.

Level 3

Provide evidence of reasoned advice and implement systems to manage risk by competent management in relation to specific projects.

Examples of activities and knowledge comprised within this level are:

- Advising on the appropriate procurement route in relation to the client's attitude to risk
- Recognising and advising on the appropriate methodologies and approach to risk on a project
- Taking ownership of the risk register and advising on appropriate risk mitigation strategies
- Applying techniques to quantify risk and advising client's on the appropriate level of contingency.

Sustainability

Reference no. M009

Description of competency in context of this sector

This competency covers the role of the quantity surveyor in dealing with the impact of sustainability issues on development and construction. Candidates should have an awareness of the various ways in which sustainability can impact on development and construction. They must have a thorough understanding of the impact made by sustainability on their projects and have been involved with the financial management of that impact.

Examples of likely knowledge, skills and experience at each level

Level 1

Demonstrate knowledge and understanding of why and how sustainability seeks to balance economic, environmental and social objectives at global, national and local levels in the context of land, property and the built environment.

Examples of knowledge comprised within this level are:

- The principles of sustainability within development and the construction process
- The relationship between property and the environment
- How national and international legislation, regulations and taxation relating to sustainability affect construction
- Criteria by which sustainability is measured in relation to finished buildings
- The principles of how design, technology and construction processes can contribute to sustainable building
- The principles of material resource efficiency within the supply chain
- Design considerations – site, location, building form, materials, lighting, ventilation, heating, water and drainage.

Level 2

Provide evidence of the practical application of sustainability appropriate to your area of practice, and of awareness of the circumstances in which specialist advice is necessary.

Examples of activities and knowledge comprised within this level are:

- Carrying out capital cost and value engineering exercises to determine the impact of sustainability issues on design and construction processes
- Carrying out life cycle cost exercises which take account of sustainability issues
- Understanding the measures undertaken by governments and international bodies to encourage the reduction of the environmental impact of development
- Planning guidance, sustainability checklists
- Focus on energy – EU Directive on Energy Performance of Buildings or National equivalent
- Renewable energy options – photovoltaics, wind turbines, biomass, central heating and power (CHP), ground source heating, thermal mass.

Level 3

Provide evidence of reasoned advice given to clients and others on the policy, law and best practice of sustainability in your area of practice.

Examples of activities and knowledge comprised within this level are:

- Giving reasoned advice to your client and members of the project team on the financial impact of sustainability on a project
- Giving reasoned advice on the application of environmental law and policy
- Interpreting environmental reports and giving reasoned advice on the financial impact and programme implications on a project
- Giving advice on sustainable material selection and how performance baselines can be estimated
- Sustainable valuation, triple bottom line, economic, social and environmental considerations, short-medium- long term impacts.
- Hard and soft valuation issues, health, well-being and Productivity.

Supplemental Guidance

Additional Guidance for the APC QS Pathway

Section 1 – Profile of a newly qualified chartered quantity surveyor

This section sets out, as a minimum, the areas in which a newly qualified chartered quantity surveyor will have gained knowledge and experience during their time on the APC.

The APC gives a clear definition of the areas and levels of technical competence required of a QS candidate. Because each candidate's journey to achieving the competencies will be unique, the definitions and examples take a generic approach that could be applied anywhere in the industry. So, what in detail should an individual candidate have knowledge of or have experienced on their unique journey to professional competence?

This profile aims to help all those involved with the APC process understand and interpret the APC core competencies for the QS pathway. It should be read in conjunction with the QS pathway core competencies definitions.

Section 2 – Selecting of optional competencies

In addition to the core competencies, candidates are required to choose two other competencies at level 2. These must be selected from the closed list of competencies for the quantity surveying pathway. This section will help candidates with the selection of these optional competencies.

Section 3 – Study check list

In this section the competencies are broken down into a check list of topics to help candidates make sure they have covered everything that is appropriate to their journey through the pathway. The list is not meant to be prescriptive. It is not comprehensive, nor must a candidate necessarily cover every topic. This section is an aide-mémoire only.

NOTE: In the case of doubt the competency definitions in this pathway guide will always take priority.

This supplemental guidance is intended to assist all candidates worldwide. The examples given in Section 1 and the topics listed in Section 3 often refer to UK practice. Candidates in other world regions should interpret these in relation to practices in their region.

Section 1

Profile of a newly qualified chartered quantity surveyor

The following profile sets out in elements the work of a quantity surveyor. The elements are then broken down into components. The elements do not match exactly the core competency titles in the pathway guide, but are referenced to them. This is because the core competencies span a number of elements.

APC QS candidates will need to gain knowledge and experience in all of the following elements.

Elements

- Estimating
- Cost planning
- Procurement
- Tendering
- Contract selection
- Contract procedures
- Post contract cost control OR Commercial management of contracts
- Quantification of works
- Construction technology

Every effort should be made to do this. In the final assessment candidates will be expected to have a depth of knowledge in the areas of their experience, but also a breadth of knowledge across all of the following profile. The APC recognises that candidates might work in a specific sector (water utility, residential, education), or for a particular type of client (commercial developer, government department, airport operator), or in one geographical region (UK, USA, UAE). What is important is that candidates cover the following profile within their sector(s) and for their client(s) in their region. They should always have an awareness that things might be done differently in other sectors or in the industry at large within their region.

Where their sector or client does things in a specific way, candidates should be aware of the industry norm. However, in some of the components within the elements, such as value management or life cycle costing, it may not be possible to obtain adequate or any experience. Equally a candidate is unlikely to experience all types of procurement and might not experience every type of tendering. In all of these cases candidates will need to undertake additional private study and try to make contact with someone who has experience in the area to lift their knowledge to the required level of competency.

Element

Estimating

Components

This covers the preparation and reporting of cost estimates at the different stages of design. It includes an understanding of:

- The purpose of cost estimating
- The different types of cost estimate such as feasibility, budget or pre-tender estimates
- The basis of an estimate, such as functional unit rate, elemental, detailed quantities
- The components of an estimate
- Sources, use and adjustment of data
- Benchmarking techniques
- Reporting cost estimates
- The difference between a cost estimate, a cost plan and a cost analysis

It also includes:

- Calculating unit rates for items from first principles
- Base dates
- Construction and tender inflation
- Location factors
- Site/location specific conditions (e.g. ground conditions and site constraints)
- Programme
- Sustainability requirements
- Professional and statutory fees
- Preliminaries and overheads and profit
- Risk allowances
- Inclusions and exclusions

Core Competency

TO22 – Design economics and cost planning

TO74 – Quantification and costing of construction works

Element

Estimating Level 1

Components

Candidates should have an understanding of all of the main components of estimating as listed above.

Action

Knowing

Estimating Level 2

Candidates should have experience in the preparation of a cost estimate. Ideally they will have experienced all of the components listed above.

They should have measured building work items, compiled unit rates and compiled the final cost estimate report, which is presented to the client and members of the project team.

Where they have not experienced a component they should have a detailed practical understanding of how that component works.

For example:

A candidate might have compiled feasibility estimates on a functional unit or elemental basis, but not have undertaken a pre-tender estimate (PTE). They should still understand how to carry out a PTE in practice.

Doing

Estimating Level 3

Ideally candidates should have presented an estimate to a client and members of the project team in a manner which clearly articulates the key aspects of the estimate. They should also have responded to an interrogation of the estimate by the team.

However, if they have not had the opportunity to do this they should be able to demonstrate a detailed understanding of the requirements.

Advising

Element

Cost planning

Components

This covers an understanding of the cost planning process from setting the client's budget to design completion. It involves preparing, issuing and presenting cost plans at the different stages of design. It includes an understanding of:

- The purpose of cost planning
- Setting a budget
- The components of a cost plan
- The terminology used including cost limit, cost target, functional element, element unit quantity and rate
- Measurement rules relating to cost planning
- Sources of data
- Benchmarking techniques
- Use of value management, value engineering and life cycle costing techniques
- Factors affecting the cost efficiency of a design, e.g. wall / floor ratio and storey heights
- Reporting of cost plans

It also includes:

- All items listed under the estimating element
- Design stages

Core Competency

TO22 – Design economics and cost planning

TO74 – Quantification and costing of construction works

Element

Cost planning Level 1

Components

Candidates should have an understanding of all of the main components of cost planning as listed above.

Action

Knowing

Cost planning Level 2

Ideally candidates should have experience of the entire cost planning process and should have been involved with producing a cost plan.

They should have participated in the setting of a budget, developing a cost plan, benchmarking a design, monitoring design development against a cost plan, managing risk, value engineering elements and evaluating life cycle costs. They should also have prepared the final document for presentation to the client and the project team.

Where they have not experienced a component they should have a detailed practical understanding of how that component works.

For example:

A candidate might have joined the cost planning process after the budget had been set and the outline cost plan completed. Their work was to monitor the design and produce further cost plans, managing risk and value engineering the design where necessary. The candidate should still understand how budgets are set and how an outline cost plan is developed and benchmarked.

Note: It is not considered that the measurement of elements alone will be sufficient to meet the requirements.

Knowing

Cost planning Level 3

Candidates should have presented a cost plan to the client and members of the project team in a manner which clearly articulates the key aspects of the document. They should then have taken the team through the process of interrogating the cost plan and engineering the design/project to meet the budget.

However, if they have not had the opportunity to do this they should be able to demonstrate a detailed understanding of the components such that they could undertake this process.

Advising

Element

Procurement

Components

This covers developing a procurement strategy and includes giving advice on the most appropriate procurement route to be adopted, covering in particular:

- Traditional
- Design and Build
- Management contracting and construction management
- Serial / term contracting
- Partnering

In relation to this, it includes the detailed consideration of how the following factors influence the selection of the procurement route:

- Contractual relationships
- Roles and responsibilities of the parties
- Time certainty, quick start or earliest finish
- Cost certainty, cost control, competition, or demonstration of value for money
- Quality management
- Change management

•Risk allocation and management It should be noted that the use of the most appropriate contract(s) to suit the chosen procurement route is covered separately under Contract selection, whilst the implementation of the tendering process through to appointment of the contractor is covered separately under Tendering.

Core Competency

TO62 – Procurement and tendering

Element

Procurement Level 1

Components

Candidates should have an understanding of all the main components listed above as they represent the most common procurement methods used in the industry.

Action

Knowing

Procurement Level 2

Candidates should have experience of the selection of a procurement route on a single project, or as part of a series of projects and should have given consideration to all of the above components in making that selection. Candidates should be aware of the variances under each of the procurement routes above, e.g. develop and construct under the design and build route.

Doing

It is unlikely that a candidate will have direct experience of all of the main procurement routes used in the industry. Where they have experience of just one or two routes they should have an awareness of how all of the other types of procurement work in practice. They should also be aware of how a procurement route might be adapted for use in different situations.

For example:

If a candidate has only worked on design and build procurement, they should still have an understanding of how the other procurement routes work.

Procurement Level 3

Ideally candidates should have given advice direct to a client or project team on the selection of a procurement route.

Advising

However, if they have not had the opportunity to do this they should be able to demonstrate a detailed depth of understanding of the components listed above such that they could give reasoned and practical advice

Element

Tendering

Components

This covers the implementation of a chosen procurement route through to the selection of the contractor/supplier and the establishment of a basis for contract.

It includes:

- Single stage tendering
- Two stage tendering
- Negotiated tenders

In particular it covers:

- Compiling a tender list and pre-qualification
- Preparation of tender documentation
- Issuing tender documents, including e tendering
- Management of the process during the tender period
- Tender opening procedures
- Evaluation of tenders
- Dealing with errors and qualifications
- Compiling a tender report

In carrying out the above, this will also include an understanding of:

- Rules of tendering - codes of practice or procedure
- Regulations governing the client
- Public sector regulations
- EU or other international regulations (as they apply to the candidate's world region)

It should be noted that the choice of procurement route is covered separately under Procurement and use of the most appropriate contract(s) to suit the chosen procurement route is covered separately under Contract selection. Also, it should be noted that the production of pricing documentation is covered under Quantification.

Core Competency

T062 – Procurement and tendering

Element

Tendering Level 1

Components

Candidates should have an understanding of all of the main components listed above, as they represent the most common methods of tendering.

Action

Knowing

Tendering Level 2

Candidates should have experience of the complete tendering process, from compiling the tender list through to the appointment of the contractor/supplier. Ideally they will have experienced different types of tendering, such as single and two-stage.

However, where a candidate has experienced only one type of tendering they should have an awareness of how the components listed above work in other situations.

For example:

A candidate might have experience of single stage selective tendering, but they should also understand how the other forms of tendering work.

A candidate might have experience of negotiating with a contractor taken from a framework. They should also understand the tendering processes that formed the framework.

A candidate might have been brought into the tendering process to put together the tender documents, after the tender list had been established. The candidate should still understand how contractors are pre-qualified and tender lists compiled.

Doing

Components Level 3

Ideally candidates should have given advice direct to the client on the selection of contractors for the tender list and then ultimately the recommendation to the client on which contractor to appoint.

However, if they have not had the opportunity to do this they should be able to demonstrate a detailed depth of understanding of the components listed above such that they could give reasoned and practical advice.

Advising

Element

Contract selection

Components

This covers giving advice on the most appropriate form of contract to be used. This involves main, sub and package contracts from the standard suites of contract commonly used in the industry within the candidate's particular geographical region.

It also includes a general knowledge of how the main contracts work in respect of:

- Roles and responsibilities of the parties
- Pricing options
- Risk allocation
- Client specific considerations on selection

It should be noted that the selection of the most appropriate procurement route is covered separately under Procurement, whilst the implementation of the tendering process is covered separately under Tendering. The detailed application of these contracts is covered under Contract procedures.

Core Competency

TO17 – Contract practice

TO62 – Procurement and tendering

Element	Components	Action
Contract selection Level 1	Candidates should have an understanding of the forms of contract commonly used in the industry, together with the main components listed above.	Knowing
Contract selection Level 2	<p>Candidates should have been involved with the selection of a suitable contract for a procurement route.</p> <p>Where a candidate has not been directly involved with this process they should thoroughly investigate how the form of contract was selected on the project(s) they have worked on.</p>	Doing
Contract selection Level 3	<p>Ideally candidates should have given advice direct to the client and their legal advisors on the selection of the most appropriate form of contract.</p> <p>A candidate is unlikely to have experience of working with all of the various forms of contract available in their sector, but they should have sufficient awareness of those that are available so that they can consider all possibilities and give informed advice to their client or the project team.</p>	Advising

Element

Contract procedures

Components

This covers the establishment of construction contracts and the mechanisms that are typically found within them. In particular it involves the understanding of these mechanisms and how they impact on the work of a quantity surveyor.

It covers:

Establishing a contract:

- Basic contract law
- Current contract legislation
- Common standard forms of contract and sub-contract in use
- Contract documentation
- Letters of intent
- Third party rights

Contract mechanisms:

- Roles of the parties under the contract
- Conflict avoidance and dispute resolution
- Contractor designed works
- Sub-contracting
- Payment provisions
- Change procedures
- Bonds / Parent company guarantees
- Insurances
- Retention – including retention bonds
- Liquidated (and ascertained) damages
- Claims – extensions of time, acceleration, loss and expense
- Early possession and phasing
- Termination of contract and insolvency
- Contract completion
- Final accounts
- Defects / rectification

It should be noted that the selection of the most appropriate contract(s) to suit a chosen procurement route is covered separately under Contract selection.

Core Competency

T017 – Contract practice

Element

Contract procedures Level 1

Components

Candidates should have knowledge of all the main components listed above, as they represent the most common contract procedures used in the industry.

In particular they should have a thorough knowledge of how these components work within the contract(s) used on the candidate's project(s).

Action

Knowing

Contract procedures Level 2

Candidates should have experienced as many of the above components as possible, in relation to the contract(s) they have been involved with. Where they have not experienced a component they should have a strong theoretical knowledge of both the contractual and the practical procedures involved.

Ideally a candidate should have experience of a number of different forms of contract. However, where their experience is on only one form, they should have a thorough understanding of all of the components as they relate to that form.

Where a candidate's experience relates only to a bespoke form of contract they should have a detailed knowledge of the standard form on which the bespoke form is based, or if it is not based on a standard form, then on at least one of the major standard forms commonly used in the industry.

For example:

A candidate might not have worked on a project where a letter of intent was used, or a claim for loss and expense was made, but they should still have knowledge of these components.

A candidate might not have experienced insolvency of a contractor on a project, but they should have knowledge of the provisions within the contract(s) used on their project(s) and what they as the project QS would do in the event of insolvency.

A candidate might not have worked with a contract that provides for the use of liquidated (and ascertained) damages, but they should still know about them and how they work in other commonly used contracts.

Where the bespoke form is not based on any standard form, they should pick a major commonly used form and ensure they have a thorough understanding of how it works.

Doing

Contract procedures Level 3

Candidates should have given advice to a client or the project team on the selection or implementation of at least some of the above components.

However, where they have not had the opportunity to do this they should be able to demonstrate a detailed depth of understanding of the components listed above such that they could give reasoned and practical advice.

Advising

Element

Post contract cost control
(For surveyors working in a consulting environment in either the public or private sector)

Components

This covers the financial management of a project during the construction phase (generally the post contract phase). It covers cost control procedures and reporting.

In particular:

- Forecasting and cash flows
- Managing change control procedures
- Valuing change
- Expenditure of provisional and prime cost sums
- Expenditure of contingencies
- Carrying out interim valuations
- Managing risk
- Value engineering
- Dealing with claims
- Authentication of actual costs
- Reporting regimes and protocols
- Final accounts

It should be noted that an understanding of the basic contract mechanisms relating to the above is covered separately under Contract procedures.

This element deals with the practicalities of implementing and managing these mechanisms.

Note: the measurement and pricing of works is covered under the quantification element.

Core Competency

T17 - Contract practice

TO67 – Project financial control and reporting

T074 – Quantification and costing of construction works

Element

**Post contract
cost control
Level 1**

Components

Candidates should have knowledge of all the main components listed above as they represent the most common procedures used in the industry.

Action

Knowing

**Post contract
cost control
Level 2**

Candidates should have experienced as many of the above components as possible, in relation to the contract(s) they have been involved with. Where they have not experienced a component they should have a strong theoretical knowledge of the practical procedures involved.

Doing

For example:

A candidate might have worked exclusively on projects where there was very little change instructed, all of which had costs agreed in advance. They still need to be aware of the potential problems with managing change on projects. They need to know what steps they might take to prevent such problems arising.

A candidate might not have had to produce a cash flow for a project, but they should still understand how this would be done.

A candidate might not have worked on a project where risk management has been implemented, but they should still understand how the process works and how they would report changes to the risk register in their cost reports.

**Post contract
cost control
Level 3**

Candidates should have given advice to a client or the project team on the selection or implementation of at least some of the above components to demonstrate a detailed depth of understanding of the components listed above such that they could give reasoned and practical advice.

Advising

Element

Commercial management of contracts (For surveyors working in a commercial or contracting environment)

(This might also apply to surveyors working in management contracting and construction management)

Components

This covers the commercial management of contracts where the surveyor is working on the contracting or sub-contracting side of the profession, or where they are involved in fee based contracting such as construction management or management contracting. It includes:

- Handover of estimate and setting up of the construction budget
- Cash flow forecasting
- Financial management of supply chain, including: procurement, interim payments, valuation of change, ascertainment of loss and expense, agreement of final accounts
- Administration of sub-contract and supplier agreements
- Cost evaluation of alternative design and construction processes including value engineering
- Reconciliation of value and cost
- Cost to completion forecasting and reporting
- Managing contingency and risk
- Alternative profit recognition conventions (current / final margin basis)
- Preparation of information for internal / external audit
- Internal and external cost reporting
- Forecasted final account projections

Core Competency

T010 - Commercial management of construction

T17 - Contract practice

Element

**Commercial
management
of contracts
Level 1**

Components

Candidates should have knowledge of all the main components listed above as they represent the most common procedures used in the industry.

Action

Knowing

**Commercial
management of
contracts
Level 2**

Candidates should have experienced as many of the above components as possible, in relation to the contract(s) they have been involved with. Where they have not experienced a component they should have a strong theoretical knowledge of the practical procedures involved.

Doing

For example:

A candidate might have carried out cost value reconciliation for part of their project but not all of it. They will need to investigate how the remainder of the project is dealt with so that they have a thorough understanding of this component.

They might only have experienced financial management of the supply chain, but they should still be aware of how cost value reconciliation is carried out and its use in preparing monthly accounts at either project or business level.

**Commercial
management
of contracts
Level 3**

Ideally candidates should have given advice on suitable commercial management procedures. They should be able to compare and contrast different techniques and their relevance to a given project. If they have not had an opportunity to do this they should be able to demonstrate a depth of understanding of the components listed above, sufficient to be able to give advice on a specific project.

Advising

Element

Quantification of works

Components

This covers the measurement of works for the purpose of:

- Preparing estimates and cost plans
- Producing tender and contract documentation, such as elemental sum analyses, schedules of works, bills of quantities
- Valuing works for interim payments, change and final accounts

It includes understanding:

- The purpose of measurement
- The need for a standardised approach to measuring
- Measurement rules
- Different ways in which floor areas can be measured and reported
- Build-up of unit rates and prices from first principles, i.e. labour, plant, materials, etc.
- Build-up of costs in respect of preliminaries – note that merely applying a percentage addition is not sufficient
- Quantification of overheads and profit
- Quantification of risk and calculation of a risk allowance
- Forecasting tender and construction inflation

It also includes an understanding of the importance of the description that accompanies any numeric data and having a knowledge of the different categories of measurement, such as:

- Floor Area
- Functional Unit
- Elemental
- Composite quantities
- Detailed quantities

Core Competency

TO22 – Design economics and cost planning

TO74 – Quantification and costing of construction works

Element

**Quantification
of works
Level 1**

Components

Candidates should have an understanding of the reasons for measuring construction work and the rules of measurement commonly used in the industry. They should also understand the different approaches used and their application to measuring work.

Action

Knowing

**Quantification
of works
Level 2**

Candidates should have experience of measuring construction work for the purpose of preparing cost estimates, cost plans, tender/contract pricing documents and valuing change.

Doing

For example:

A candidate might not have been involved with the preparation of a bill of quantities, but they should have been involved with producing some sort of pricing document, whether it is a schedule of works or an elemental analysis.

**Quantification
of works
Level 3**

Ideally candidates should be able to demonstrate that they are capable of explaining approaches to measurement and when they should be used, to clients and project team members.

Advising

Element

Construction technology

Components

This covers an understanding of design and construction technology and methodology. It is considered that an understanding of this is essential in order to appreciate its effect on the cost of a project and to be able to quantify works in order to manage costs.

This will typically include the following:

- Demolition and site preparation
- Foundation systems and substructures
- Superstructures, such as frames or bridges
- Building envelopes, such as external walls and roofs
- Internal structures, such as partitions and doors
- Finishes, fixtures and fittings
- Services installations, including underground drainage and transportation systems
- External works and landscaping
- Road, pavement and rail track works
- Major earthworks and tunnelling

In respect of all the above, it will also include the particular impact of the following on the methods of construction and materials selected

- Building Regulations or Codes and other related legislation
- Sustainability requirements

Core Competency

TO13 – Construction technology and environmental services

Element

**Construction
technology
Level 1**

Components

Candidates should have a basic understanding of all the main components listed above as they represent the most common elements that make up buildings/structures.

Action

Knowing

**Construction
technology
Level 2**

Candidates should have experience of all of the components listed above as they relate to their work in respect of estimating, production of pricing documents, compilation of tender and contract documents, interim valuations, valuing change and compiling final accounts.

Doing

Where a candidate has not experienced a component they should have an understanding of how that component works in respect of their sector.

For example:

A candidate might only have worked on one type of substructure, but they should be aware of other solutions.

A candidate working on low rise residential projects might never have been involved with a structural frame. However, they should still understand the basic principles of how a frame works.

**Construction
technology
Level 3**

Ideally candidates should have advised clients on elements of the design where the selection of particular methods of construction and or materials have had a significant impact on the cost. This should also have considered practical alternatives to that specified by the professional team.

Advising

However, if they have not had the opportunity to do this they should be able to demonstrate a detailed understanding of the components listed above such that they could give reasoned and practical advice.

Section 2

Selecting optional competencies

Selecting optional competencies

In addition to the core competencies, candidates are required to choose two other competencies at level 2.

These must be selected from the closed list of competencies for the quantity surveying pathway. The following is a guide to the selection of optional competencies.

What the guides say

The APC requirements and competencies guide states:

“It is important that you give careful thought to your choice and combination of competencies. Your choice will inevitably reflect the work you do in your day-to-day environment (driven by the needs of your clients/employer). Your choice and combination of competencies will be a reflection of your judgment. At the final assessment interview, the assessors will take these choices into account. They will expect you to present a sensible and realistic choice that reflects the skills needed to fulfill the normal role of a surveyor in your field of practice.”

Making your choice

You should discuss your likely workload with your supervisor and/or counsellor before selecting the competencies. They can advise you, but the final choice is yours.

BEWARE! Do not bend the definition of a competency to fit your work or invent a story that stretches an assessor's view of the competency beyond what might be considered reasonable.

You can change your optional competencies at any time up to final assessment. When you first select a competency it will be with the expectation of gaining experience in that area. If however, the expected experience does not materialise, you can change the competency to match your actual experience.

Capital allowances – T008

Candidates selecting this competency must fully understand the subject. Extracting contract cost data to populate forms provided by an accountant is not enough. Whilst this activity might provide suitable experience, candidates will need to do background reading to understand the subject in a broader context.

Commercial management of construction – T010

If a candidate has selected Design Economics and Cost Planning as a core competency, they can select this as an optional competency. The candidate will need to have had experience in a contracting or commercial environment, perhaps on a seconded basis.

Conflict avoidance, management and dispute resolution procedures – M006

This is a mandatory competency to level 1. All candidates should be aware of how conflict is avoided on projects as well as formal dispute resolution procedures. Candidates selecting this competency should have had some involvement with formal dispute resolution procedures, or an increased depth of knowledge on the subject.

Contract administration – T016

This competency requires candidates to have an understanding of all aspects of construction contracts and how they are administered. Quantity surveying candidates might gain experience in this competency when acting as an assistant to, or as the employer's agent on a design and build contract. They should not however use this competency as a duplication of T017 Contract practice.

Section 2 continued

Selecting optional competencies

Corporate recovery and insolvency – T020

Candidates should select this competency if they have been involved in dealing with insolvency on one of their projects. They will be expected to understand the various ways in which insolvency can be dealt with by an insolvency practitioner and how a quantity surveyor can assist.

Design economics and cost planning – T022

If a candidate has selected Commercial Management of Construction as a core competency, they can select this as an optional competency. The candidate will need to have had experience of estimating in the context of setting budgets and of cost planning activities as they are carried out in a consulting environment.

Due Diligence – T025

This competency should be selected by candidates who have carried out a due diligence exercise whilst acting as a fund/project monitor, or in a monitoring capacity on projects using management forms of procurement.

Insurance – T045

All candidates will be expected to have an understanding of the insurance provisions on their projects. Candidates selecting this competency should have a deeper understanding of insurance matters generally and have been involved with an insurance claim or have dealt with a loss adjuster.

Programming and planning – T063

Candidates selecting this competency should have had involvement with the programming or scheduling of work. Candidates working in a contracting environment are most likely to gain experience in this competency. Candidates working in private practice may engage with this competency when working in the role of employer's agent, when analysing preliminaries or dealing with claims.

Project feasibility analysis – T066

Candidates selecting this competency should have been involved with feasibility studies or development appraisals and should understand how all aspects of these exercises work.

Risk management – T077

In addition to a general understanding of how risk is dealt with in construction, candidates selecting this competency should have been involved with formal risk management processes on a project. They should be able to carry out a quantitative risk analysis as part of the overall risk management process.

Sustainability – M009

This is a mandatory competency to level 1. In addition to a general awareness of sustainability issues in construction, candidates selecting this competency should have some further specialist knowledge or experience in this subject.

They should have had experience in the costing of sustainability.

Section 3

Study check list

Study check list

In this section the competencies are broken down into a list of topics to help candidates make sure they have covered everything that is appropriate to their journey through the pathway competencies. The lists are not meant to be prescriptive. They are not comprehensive, nor must a candidate necessarily cover every topic. The lists are an aide-mémoire only.

Law – There is no mandatory legal competency. Any legal, legislative or case law matters have been absorbed into the individual mandatory, core and optional competencies. Candidates should be aware that they must consider how the law in their world region impacts on each of the individual competencies.

This list is not exhaustive.

Generally:

You should be reading articles in current copies of:

- RICS/SCSI Quantity Surveying ezines
- RICS Business and Construction Journal
- RICS/SCSI news e-mails
- Other construction and property journals
- Quality newspapers

MANDATORY COMPETENCIES

Accounting principles and procedures (M001) – Level 1

- Balance sheets / profit and loss account
- Taxation
- Revenue and capital expenditure
- Cash flows
- Auditing
- Ratio analysis
- Credit control
- Profitability
- Insolvency
- Legislation

Business planning (M002) – Level 1

- Legislation
- Types of business – Partnerships, Limited companies, Limited Liability Partnerships (LLP)
- Short/long term strategies
- Market analysis
- Five year plans
- Objectives – markets, clients, turnover, staffing, acquisitions
- Resourcing – recruitment, training, financing, accommodation
- SWOT analysis
- Human resources
- Data management
- Administration
- Health and safety
- Equality
- Legislation

Client care (M003) – Level 2

- Appointment documents
- Fees
- Prequalification Questionnaires (PQQ)
- Invitation to Tender (ITT)
- Complaints procedures
- Insurance
- Understanding client objectives
- Establishing client's brief
- Site investigation
- Feasibility studies
- Procurement reports
- Project programme
- Communication strategy
- Key Performance Indicators
- Stakeholder management

Communication and negotiation (M004) – Level 2

Oral communication:

- Phone calls
- Reporting at meetings
- Facilitating/chairing meeting
- Client and bid presentations
- Staff presentations
- Contractor/consultant interviews
- Public speaking at seminars etc
- Listening skills

Written/graphical communication:

- Letters, memos and emails
- Report writing
- Programming
- Using drawn information – checking scales and revisions
- Using CAD documents
- Using BIM (Building Information Modeling)

Negotiation:

- Establishing objectives
- Setting strategy
- Collecting and presenting evidence
- Confirmation of agreement

Section 3 continued

Study check list

Ethics, rules of conduct and professionalism (M005) – Level 3

- RICS Rules of Conduct (for firms and individuals)
- Conduct befitting a chartered surveyor
- Registration of firms
- Complaints procedure
- Conflicts of interest
- Gifts
- Professional Indemnity Insurance
- Client accounts
- Regulation
- Disciplinary procedures
- Lifelong learning - CPD
- Current RICS/SCSI structure
- Faculties
- Current RICS/SCSI issues and initiatives

Conflict avoidance, management and dispute resolution procedures (M006) – Level 1

See Optional competencies

Data management (M007) – Level 1

- BCIS / BMI or other external sources
- Employer's in-house cost data storage and filing
- Pricing books
- Elemental analysis
- Data base use generally
- Business management systems
- Scheduling
- Libraries
- Storage of project data
- Building Information Modelling (BIM)
- Project intranets and extranets
- Appropriate legislation dictating the storage and sharing of information

Health and safety (M008) – Level 2

Personal health and safety at work – RICS publication 'Surveying Safely' Personal safety procedures when visiting a construction site Common health and safety risks in construction Health and safety legislation:

- Generally
- At work
- Construction specific
- Sector specific
- Client specific
- Asbestos and other hazardous materials

Sustainability (M009) – Level 1

See Optional competencies

Diversity, inclusion and team working (M010) – Level 1

- Equality
- Understand the role of team members
- Appointing the project team
- Relationships with other team members
- Communicating with other team members
- Partnering and collaborative working
- RACI matrix
- Strategic alliance
- Supply chain management
- Legislation on selecting project teams
- Accountability and responsibility

Inclusive environments – Level 1

- Recognising diverse user needs in respect of age, gender, ability, ethnicity, religion, etc.
- Equality legislation
- Planning legislation and requirements
- Building regulations and codes
- Accessibility
- Visual clarity
- Audibility systems
- Employment law
- Impact of health and safety regulations
- Corporate policy
- Ethical considerations as opposed to legal requirements

For senior professional route:

Leadership – SP001 Level 2

- Self management
- Leadership styles
- Organizing
- Planning techniques
- Setting goals
- Decision making
- Communication
- Negotiation
- Supervision

Managing people – SP002 Level 2

- Recruitment
- Appraisals
- Personnel development
- Incentive schemes
- Communication
- Employment law
- Employment policy
- Human rights legislation

Section 3 continued

Study check list

Managing resources (excluding human resources) – SP003 Level 2

- Data communication systems
- Stationery
- Secretarial / administration support services
- Space planning
- Facilities management

CORE COMPETENCIES

Commercial management of construction (T010) – Level 3

- Estimating
- Establishing budgets
- Cash flows
- Reporting financial progress against budget
- Procurement of labour
- Procurement of plant and materials
- Procurement of sub-contracts
- Financial management of supply chain
- Financial management of multiple projects

Contract practice (T017) – Level 3

- Principles of contract law
- Legislation
- Current case-law – look out for cases reported in journals
- Standard forms of main and sub contract
- Roles & responsibilities of parties – Client, Contract Administrator / Employer's Agent / Project manager / Engineer, Contractor, Sub-contractors, Quantity Surveyor
- Assignment / Novation
- Third party rights - Legislation / Collateral Warranties
- Letters of intent – Comfort letters / Consent to spend /

Recognition of contract

- Performance security - Bonds / Parent Company Guarantees
- Insurances
- Advance payments
- Interim valuations and payment provisions
- Materials on/off site
- Fluctuations
- Retention – retention bonds
- Change procedures
- Valuing change - variations / compensation events
- Extensions of time
- Claims / Loss and Expense
- Dispute avoidance and resolution
- Named / Nominated subcontractors

- Sectional Completion / Partial Possession
- Design Portions / Performance specified works
- Determination
- Final Accounts
- Completion
- Liquidated and Ascertained Damages
- Defects rectification period

Construction technology and environmental services (T013) – Level 3

Construction technology

- Substructures – basements, types of piling, etc.
- Superstructures
- Comparison of concrete / steel frames
- Floor structures
- External walls, windows and doors
- Cladding / glazing
- Roof structures and coverings
- Partitioning systems and doors
- Finishes and fixtures
- Hard and soft landscaping
- Engineering structures
- Bridges
- Tunnels
- Roads
- Railways
- Waterways
- Sea defences
- Earthworks
- Sewage treatment plants
- Processing plant
- Services technology
- Electrical systems
- Mechanical systems
- internal / external drainage
- Mains services
- Air-conditioning / ventilation systems
- Fire safety systems
- Security systems
- Environmental systems and controls
- Data systems
- Building types and other structures
- Building regulations and codes
- Planning legislation and procedures
- Party wall issues / rights of light
- Dangerous / banned substances – asbestos etc
- Pre-fabrication
- Disability legislation

Section 3 continued

Study check list

Design economics and cost planning (T022) – Level 3

- Economics of design - site density, wall / floor ratio, storey heights, room sizes, lettable / non-lettable
- Sources of cost data - BCIS / in-house database / other external sources
- Inflation (tender / construction)
- Location factors, regional variations
- Currency fluctuations
- Estimating
- Cost Plans
- Cost Planning
- Life cycle costing - capital / running costs / replacement
- Value Engineering
- Value Management
- Risk Management and Analysis (contingency)
- State of the construction market
- State of the economy generally – locally and globally
- Interest rates

Procurement and tendering (T062) – Level 3

Types of procurement:

- Traditional
- Design and Build
- Management Contracting
- Construction Management
- Measured Term
- Serial contracting

Financial basis:

- Lump sum
- Re-measured
- Reimbursable
- Target cost
- Guaranteed or Agreed Maximum Price

Tendering:

- Standard rules of tendering – codes of practice, practice notes
- Single / two-stage tendering – competitive / negotiated
- Compilation of tender lists – pre-qualifying contractors
- Compilation of tender documents
- Tender analysis
- Tender reports
- Partnering – project and strategic
- Private Finance Initiative - PFI
- Public Private Partnership – PPP
- Prime contracting
- Best Value
- Whole life costing

- Supply Chain Management
- Lean Construction
- Key Performance Indicators - KPI

Project finance (control and reporting) (T067) – Level 3

- Post contract cost control
- Change control procedures
- Change control forms
- Cost reporting
- Final accounts
- Loss and expense
- Risk management
- Cash flows
- Value engineering
- Benchmarking / Best value

Quantification and costing of construction works (T074) – Level 3

Methods of measurement

- SCS/RICS Code of Measuring Practice

Preparation of pricing documents

- Tender documents generally
- Bill of quantity
- Schedule of works
- Schedule of rates
- Provisional Sums / Prime Cost Sums

Analysis of price

- Tender returns
- Guaranteed / Agreed Maximum Price
- Target cost - Pain / Gain mechanisms
- Loss and expense
- Preliminaries
- Dayworks

Valuation of works

- Interim valuations
- Valuing change
- Loss and expense
- Final account
- Reporting on cost
- Tender report
- Correcting errors in tenders
- Post contract financial reporting

Section 3 continued

Study check list

OPTIONAL COMPETENCIES

Capital allowances (T008)

- Current legislation
- Capital and revenue expenditure
- Taxation
- Capital Allowances legislation
- Claiming capital allowances
- Plant and machinery
- Industrial buildings
- Hotels
- Research and development
- Enterprise zones
- First year allowances
- Enhanced capital allowances

Commercial management of construction (T010)

(If not selected as a Core competency – see above)

Conflict avoidance, management and dispute resolution procedures (M006)

- How standard forms of contract deal with conflict avoidance and dispute resolution
- Conflict avoidance
- Partnering
- Negotiation
- Mediation
- Conciliation
- Adjudication
- Arbitration
- Pre-action Protocol
- Litigation
- Expert Witness
- Independent Expert Determination

Contract administration (T016)

- Standard forms of Contract
- Roles and responsibilities of parties -client, contractors, designers, Q.S
- Role and responsibilities of person administering the contract – e.g. CA, Architect, EA, PM, Engineer etc.
- Co-ordination of parties
- Design co-ordination
- Planning and building regulatory controls
- Health & Safety – CDM
- Monitoring progress
- Monitoring quality
- Insurances
- Bonds / Parent Company Guarantees

- Third party rights
- Payment provisions
- Change procedures
- Sectional Completion / Partial Possession
- Nominated / Named Subcontractors
- Extensions of time / loss and expense
- Materials on / off site
- Determination
- Liquidated and ascertained damages
- Completion
- Defects / rectification period

Corporate recovery and insolvency (T020)

- Types of Insolvency
- Bankruptcy
- Individual voluntary arrangement
- Liquidation
- Administrative receivership / Fixed charge receivership
- Company voluntary arrangement
- Role of the QS if insolvency occurs
- Termination and suspension of contracts
- Assignment / novation
- Ownership of material and plant
- Bonds and guarantees
- Set-off
- RICS Information Paper on Construction Insolvency

Design economics and cost planning (T022)

(If not selected as a Core competency – see above)

Due Diligence (T025)

- Project monitoring on management style contracts
- Fund monitoring
- Feasibility study
- Planning and building regulatory control
- Suitability of team
- Suitability of procurement route
- Tendering
- Contractual arrangements
- Third party rights
- Suitability of programme
- Cash flows
- Interim payments
- Draw-down
- Final accounts
- Risk

Section 3 continued

Study check list

Insurance (T045)

- Professional Indemnity Insurance
 - Generally and RICS/SCSI requirements
- Indemnifying the employer
- Third-party liability – persons and property
- Insurance of the works – joint names
- Subrogation
- Non-negligence insurance
- Setting level of cover
- In the aggregate / each and every event
- Excess
- Net contribution clause
- Performance bonds
- Fire insurance valuations

Programming and planning (T063)

- Project programming
- Multi-project programming
- Flow diagrams
- Activity schedules
- Gant charts
- Critical path
- Key milestones
- Float
- Cash flows
- Progress monitoring
- Project handbook
- Project Execution Plans - PEP
- Establishing team
- Roles and responsibilities
- Commissioning/handover procedure
- Close-out reports

Project feasibility analysis (T066)

- Appraisal methods
- Residual value
- Value / income
- Valuation of property / rental values
- RICS Red Book
- Costs
- Land acquisition
- Construction costs
- Fees
- Finance costs
- Taxation, grants, capital allowances
- Profitability
- Planning

Risk management (T077)

- Workshops
- Identification
- Register
- Management plan
- Mitigation
- QS contribution to risk management
- Risk analysis
- Probability and impact
- Expected Monetary Value - EMV
- Monte Carlo Simulation
- Central Limit Theory – CLT
- Route Mean Square - RMS
- Contingency

Sustainability (M009)

- Sustainable development / construction
- National and international regulations
- Environmental assessment methods – e.g. LEED, BREEAM etc.
- Building Regulations and Codes
- Contaminated land
- Waste management
- Recyclable materials
- Sustainable materials
- Building environmental management systems
- Water conservation
- Energy generation
- Energy conservation

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