

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management



Overview

This unit is about assessing project information and selecting methods which meet technical project criteria. It is also about analysing the sequential programming of activities and confirming alterations and developing a monitoring system for the works programme.

You will need to assess project information and obtain more information where required. You will need to identify, evaluate and select methods which meet technical and project criteria. You will also need to analyse and quantify the selected methods for their activity content and review method statements to ensure that they are accurate and acceptable for the people involved.

You will need to prepare a draft work programme which includes calculations of resources needed for major activities. You will also need to evaluate alternative methods and resources to meet project requirements and obtain advice and clarification where resources are not available. You will need to analyse the sequential programming of activities against external factors and resources to meet project requirements. You will then need to ensure that programmes and schedules of activities are consistent with the complexities of the project. You will also need to confirm any alternations made to the works programme and develop a monitoring system for it.

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management

Performance criteria

You must be able to:

Evaluate, review and select work methods

- P1 assess the available **project information** accurately and summarise it to enable decisions on **production**, installation and work methods to be made
- P2 obtain more information from **other sources** in cases where the available **project information** is insufficient
- P3 **identify** and evaluate the possible **work methods** against relevant **technical** and **project criteria** and select those which best meet the **criteria**
- P4 **analyse** the **method** which has been selected for its activity content and quantify it accurately
- P5 propose the selected **method** to decision makers
- P6 review method statements to ensure that they are accurate, clear, concise and acceptable to all the people involved

Evaluate project programme

You must be able to:

- P7 identify major activities, calculate the **resources** needed and identify their sources from the **project information** available and prepare a draft work **programme**
- P8 evaluate alternative methods, **resources** and systems, in order to select the optimum solution to meet **project requirements**
- P9 obtain **clarification and advice** where the **resources** needed are not available
- P10 **analyse** the sequential programming of activities against **project requirements** and the requirements of significant **external factors** and necessary **resources**
- P11 ensure that the produced **programmes and schedules** of planned activities are consistent with the complexity of the project
- P12 confirm alterations to the works **programme** which will meet changed circumstances or offer cost and time benefits, calculate the savings accurately and justify them to decision makers
- P13 develop a **system for monitoring and recording** the works **programme**, implement it and use the results to improve future production and planning

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management

Knowledge and understanding

You need to know and understand:

Evaluate, review and select work methods

- K1 how and why to assess the available **project information** accurately (analysis)
- K2 how to summarise **project information** to enable decisions on **production**, installation and work methods to be made (application)
- K3 how to obtain more information from **other sources** in cases where the available **project information** is insufficient (application)
- K4 what to **identify** as the possible **work methods** against relevant **technical** and **project criteria** and select those which best meet the **criteria** (understanding)
- K5 how and why to evaluate the possible **work methods** against relevant **technical** and **project criteria** and select those which best meet the **criteria** (evaluation)
- K6 how and why to **analyse** the **method** which has been selected for its activity content and quantify it accurately (analysis)
- K7 how and why to propose the selected **method** to decision makers (synthesis)
- K8 how and why to review method statements to ensure that they are accurate, clear, concise and acceptable to all the people involved (analysis)

Evaluate project programme

You need to know and understand:

- K9 what to identify as major activities from the **project information** (understanding)
- K10 how to calculate the **resources** needed for major activities (application)
- K11 what to identify as the sources of resources from the **project information** available (understanding)
- K12 how to prepare a draft work **programme** (application)
- K13 how and why to evaluate alternative methods, **resources** and systems, in order to select the optimum solution to meet **project requirements** (evaluation)
- K14 how to obtain **clarification and advice** where the **resources** needed are not available (application)
- K15 how and why to **analyse** the sequential programming of activities against **project requirements** and the requirements of significant **external factors** and necessary **resources** (analysis)

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management

- K16 how to ensure that the produced **programmes and schedules** of planned activities are consistent with the complexity of the project (application)
- K17 how to confirm alterations to the works **programme** which will meet changed circumstances or offer cost and time benefits (application)
- K18 how to calculate the savings accurately from alternations to the works programmes (application)
- K19 how to justify the savings from alterations to the works programmes to decision makers (evaluation)
- K20 how and why to develop a **system for monitoring and recording the works programme** (synthesis)
- K21 how to implement a **system for monitoring and recording the works programme** and use the results to improve future production and planning (application)
- K22 how to use the results from the **system for monitoring and recording the works programme** to improve future production and planning (application)

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management

Scope/range

Evaluate, review and select work methods

- 1 Project information:
 - 1.1 conditions and obligations of contract
 - 1.2 bills of quantities
 - 1.3 specifications
 - 1.4 information (digital models, documents, drawings, graphical and non-graphical electronic data files)
 - 1.5 health, safety and welfare plans
 - 1.6 environmental plan
 - 1.7 time-scales
 - 1.8 risk
- 2 Production, installation and work methods:
 - 2.1 sequencing and integration of work operations
 - 2.2 organisation and use of resources (people, plant, materials, finance)
 - 2.3 construction and installation techniques
 - 2.4 temporary works
 - 2.5 prefabrication and standardisation
 - 2.6 handling operations
 - 2.7 materials recovery & waste management
 - 2.8 supply chain management
 - 2.9 health, safety and welfare
 - 2.10 impact on programming processes & workforce of new materials and technologies
- 3 Other sources:
 - 3.1 consultant
 - 3.2 contractors
 - 3.3 sub-contractors
 - 3.4 suppliers
 - 3.5 statutory and regulatory authorities

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management

- 3.6 technical literature
- 3.7 trade literature
- 3.8 organisational expertise
- 4 Identify work methods:
 - 4.1 standard procedures
 - 4.2 investigative research
- 5 Technical criteria:
 - 5.1 materials & component performance & availability
 - 5.2 structural forms
 - 5.3 physical conditions and environmental factors
 - 5.4 health, safety and welfare
 - 5.5 fire protection
 - 5.6 access
 - 5.7 plant, equipment & people availability
 - 5.8 traffic generation and management
 - 5.9 waste and sustainability
 - 5.10 weather conditions
 - 5.11 energy and low carbon efficiency
 - 5.12 buildability
 - 5.13 protection of archaeological and historically valuable resources
 - 5.14 demolition
- 6 Project criteria:
 - 6.1 cost benefit
 - 6.2 value engineering
 - 6.3 conformity to statutory requirements
 - 6.4 phsed occupancy
 - 6.5 facility/asset management requirements
 - 6.6 contract requirements in terms of time, quantity and quality
 - 6.7 environmental considerations

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management

- 6.8 defined services
- 6.9 impact on occupiers and near neighbours
- 6.10 community benefits, including skills and training
- 6.11 third party obligations
- 6.12 other related programmes
- 6.13 supply lead times
- 6.14 industry performance
- 6.15 benchmarking
- 7 Analyse - using:
 - 7.1 method study
 - 7.2 production analysis
 - 7.3 feedback from similar projects
 - 7.4 Building Information Modelling

Evaluate project programme

- 8 Resources:
 - 8.1 cash flow
 - 8.2 people
 - 8.3 consultants
 - 8.4 plant and equipment
 - 8.5 materials and components
 - 8.6 contractors
 - 8.7 sub-contractors
- 9 Project information:
 - 9.1 conditions and obligations of contract
 - 9.2 bills of quantities
 - 9.3 specifications
 - 9.4 information (digital models, documents, drawings & graphical and non-graphical electronic data files)
 - 9.5 health, safety and welfare plans
 - 9.6 environmental plan

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management

- 9.7 timescales
- 9.8 risk
- 10 Programmes and schedules:
 - 10.1 digital timeline model
 - 10.2 bar charts
 - 10.3 flow charts
 - 10.4 critical path
 - 10.5 line of balance
 - 10.6 time chainage
 - 10.7 action lists
 - 10.8 method statements
 - 10.9 check costs
 - 10.10 control systems
 - 10.11 as built programme
- 11 Clarification and advice:
 - 11.1 the client/client's representative
 - 11.2 consultants
 - 11.3 project team partners
 - 11.4 industry research
 - 11.5 technical publications
 - 11.6 trade literature
 - 11.7 experts, including experienced craftspeople and suppliers
- 12 Analyse - using:
 - 12.1 method study
 - 12.2 production analysis
 - 12.3 Building Information Modelling
- 13 Project requirements:
 - 13.1 contract conditions
 - 13.2 defined responsibilities

COSCCOMO14 - SQA Unit Code FM6W 04

Evaluate work methods and programme in construction contracting operations management

- 13.3 contract programme stipulations
- 13.4 statutory consent
- 13.5 Building Control notification
- 13.6 third party obligations
- 13.7 organisation and use of resources
- 13.8 health and safety requirements
- 13.9 quantities
- 13.10 energy and low carbon efficiency
- 13.11 protection of archaeological and historically valuable resources
- 13.12 skills and training development
- 14 External factors:
 - 14.1 other related programmes
 - 14.2 supply lead times
 - 14.3 contingencies
 - 14.4 special working conditions
 - 14.5 impact on occupiers and near neighbours
 - 14.6 weather conditions
 - 14.7 statutory limitations
 - 14.8 site conditions
 - 14.9 off-site manufacture and on-site assembly
- 15 System for monitoring and recording:
 - 15.1 manual
 - 15.2 electronic

COSCCOMO14 - SQA Unit Code FM6W 04

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