

## Unit 44: Economics and Finance in Construction and Civil Engineering

Unit code: L/600/0452

QCF Level: 3

Credit value: 10

Guided learning hours: 60

### Unit aim

This unit aims to enable learners to understand the economic principles that underpin construction activities and to use and apply cost planning and control techniques. Learners will develop an understanding of the basic economic issues that are encountered in the construction sector, the problems a developer can face, and the decisions that need to be made before work can start on a construction site. Consideration will be given to the financial and economic impact of good design and site practice in terms of sustainability and the impact on life cycle costing on a project.

### Learning outcomes and assessment criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

| Learning outcomes   | Assessment criteria  |
|---|--|
| 1 Understand the economic principles that underpin construction projects          | 1.1 explain the economic principles that underpin construction projects  |
|   | 1.2 review the main markets within the construction industry   |
| 2 Know the economic resources required to complete a typical construction project | 2.1 describe the four main economic resources that are needed for a construction project                         |
| 3 Understand how to plan and control construction costs                           | 3.1 explain the reasons for cost planning and the techniques that are available to control costs in construction |
|   | 3.2 prepare a cost budget for a construction project from historical cost data                                   |
| 4 Be able to produce a feasibility study for a small construction project         | 4.1 carry out a feasibility study for a small construction project   |

## Unit content

---

### **1 Understand the economic principles that underpin construction projects**

*Economic principles:* supply; demand; markets

*Supply:* definition; factors affecting supply; supply curves; changes in supply

*Demand:* definition; factors affecting demand; demand curves; changes in demand; demand elasticity

*Markets:* determination of the market equilibrium; shortages, scarcity and their effect on price; price determination; changes in price; opportunity costs; consumer choice; price mechanism; the four Ws (where, what, why and when); the relationship between project price, costs (including overhead costs) and profit; the impact of government policy

### **2 Understand foundation design and construction**

*Subsoil investigation:* site survey and subsoil investigation (regional geology, lithology, ground water); recording and interpretation of results; classification of soils; foundation design

*Foundation design:* principles of design; factors affecting choice of foundations (strip, pad, raft and pile foundations); structural requirements; effects of and precautions against subsoil shrinkage; ground heave; differential settlement

*Methods:* excavation; construction

*Excavation:* excavation up to five metres depth; water elimination; ground improvement; temporary supports in trenches and associated health and safety issues; various types of excavation and earth moving plant

*Construction:* construction techniques used for strip, pad, raft, pile and beam foundations; selection of materials; economic implications of methods used; plant requirements; health and safety issues; environmental issues; legislative constraints

### **2 Know the economic resources required to complete a typical construction project**

*Economic resources:* land; capital and finance; labour; entrepreneurialism

*Land:* types; factors affecting price; factors affecting availability; location; brownfield; Greenfield

*Capital and finance:* definition; specific capital; share capital; capital goods; EU finance; mortgages; venture capital; bank loans; directors' loan accounts; lottery funding; retained profits

*Labour:* demographics of the working population; factors affecting availability; mobility of labour; factors affecting labour efficiency; the quality of labour; skills; incentives

*Entrepreneurialism:* entrepreneur as risk taker; land developers; property developers; private investors; need for knowledge and foresight of the market.

### **3 Understand how to plan and control construction costs**

*Cost control:* history of cost control; need for cost control; main aims and objectives; budgeting; comparison of schemes; cost, price and value; building cost price indices

*Cost planning:* reasons for cost planning; cost value engineering; budgeting; scheme appraisal; profit; sources of finance; techniques eg elemental, comparative, approximate quantities, cash flow forecasts, the key components of a budget for a given project

*Cost control techniques:* standard techniques (eg cost value reconciliation, valuations, financial statements and reports, real time costings, s-curves, coding data, resource allocated bar charts, costing stages of construction); types of contract eg Joint Contracts Tribunal (JCT) standard forms, fixed or fluctuating price, design and build; effect of each on costs; how costs are divided between materials, labour and plant/equipment; calculation and monitoring of resources

*Budget:* preparation of preliminary estimates; land purchase price; cost of units; elements; measured; design costs; construction costs; potential profit/loss

### **4 Be able to produce a feasibility study for a small construction project**

*Feasibility study:* factors relevant to a practical exercise on a given situation eg comparison of new scheme against historical project, floor areas, volumes, elements, price indices, factors affecting decision to proceed, interest rates, availability of finance, land availability, market, break-even point, cost of borrowing, planning restrictions, brownfield sites, redevelopment grants, EU grants, enterprise and action zones; the impact of sustainability on life cycle cost