UNDEARTAKE BASIC ESTIMATION AND COSTING FROM CONTRACT DOCUMENTS
CERTIFICATE II IN BUILDING AND CONSTRUCTION
(PATHWAY – PARAPROFESSIONAL)
30015
LEARNER’S GUIDE
BUILDING AND CONSTRUCTION
Undertake basic estimation and costing from contract documents

30015

Learner’s guide
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Welcome

Welcome to the learner’s guide for 30015 *Undertake basic estimation and costing from contract documents*. In this guide, you will be following the process required to estimate preliminaries, labour and materials and establish costs for a basic residential construction project.

Areas of explanation include:

- how to read contract documentation
- where to find information for estimating
- industry standards for calculations and estimating
- how to estimate and calculate costs
- how to apply overheads and profit margins.

Qualification overview

This unit of competency, 30015 *Undertake basic estimation and costing from contract documents*, forms part of Certificate II in Building and Construction (Pathway – Paraprofessional) and is aimed at people who are considering a paraprofessional career in the residential building industry (as opposed to the trade sector).

The course consists of 12 units of study and a period of work placement. These two components, study and work, will provide you with an introductory background to the paraprofessional side of the residential building industry.

To progress further in the industry, beyond this introductory level, you will then need to specialise in a particular field of study, such as building, estimating, scheduling, drafting or building design. Courses for these careers usually commence at Certificate IV level and progress through to diploma or even advanced diploma levels at a registered training provider who delivers these programs.

Some areas of study, such as architecture, interior design and construction management, can then be studied further at degree level at a university.
Unit overview

This unit of competency specifies the outcomes required to attain a basic understanding and application of construction estimating and costing related to residential buildings.

It is assumed that you will have basic prior knowledge of measurement and calculations and a good understanding of mathematics, especially how to calculate length, area and volume. You are not required to have prior knowledge of building and construction processes.

To help you understand the new things you’ll be learning in this unit, you should have completed 30011 Carry out basic measurements and calculations for residential buildings and know something about:

- drawings and specifications
- materials used in construction
- simple measurements and calculations.

Competence in this unit will be demonstrated by:

- successful completion of two written short-answer assessments
- estimation and costing of a basic construction project.

Unit summary

Some basic information for this unit of competency is provided here. You can find the full unit details at Annex A to this guide.

<table>
<thead>
<tr>
<th>Unit title</th>
<th>Undertake basic estimation and costing from contract documents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptor</strong></td>
<td>This unit of competency specifies the outcomes required to estimate preliminaries, labour and materials and establish costs for a basic construction project. It is limited to utilising standard contract documents, without a need to go on a worksite.</td>
</tr>
<tr>
<td><strong>Employability skills</strong></td>
<td>The following employability skills are an integral part of the delivery of this unit. They include: communication; teamwork; problem solving; initiative and enterprise; planning and organising; self-management; learning; and technology.</td>
</tr>
<tr>
<td><strong>Pre/co-requisite units</strong></td>
<td>Carry out basic measurement and calculations for residential buildings</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>This unit supports the attainment of basic understanding and application of construction estimating and costing related to residential buildings.</td>
</tr>
<tr>
<td>Element 1 Read and interpret contract documentation</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1.1 Identify contract documents related to the job or project</td>
<td></td>
</tr>
<tr>
<td>1.2 Collect relevant information for planning and preparation</td>
<td></td>
</tr>
<tr>
<td>1.3 Read and understand project plans and specifications</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element 2 Prepare for making estimations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Develop an appropriate summary costing sheet, with cost centres</td>
</tr>
<tr>
<td>2.2 Identify elements of works to be externally quoted</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element 3 Estimate labour and materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Identify and include Provisional and Prime Cost Sums in the residential building costs</td>
</tr>
<tr>
<td>3.2 Identify and include Preliminary cost items to be added</td>
</tr>
<tr>
<td>3.3 <em>Estimate</em> quantities of materials required for the project and set out in accordance with industry practice</td>
</tr>
<tr>
<td>3.4 Estimate unit quantities of labour for costing purposes for the project and set out in accordance with residential buildings industry practice</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element 4 Calculate costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Calculate materials, labour and cost allowances and set out in accordance with industry practice</td>
</tr>
<tr>
<td>4.2 Allocate costs to summary sheet cost centres</td>
</tr>
<tr>
<td>4.3 Calculate total job or project construction cost</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element 5 Apply overheads costs and margins</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Identify and apply typical residential building company overheads costs and charges</td>
</tr>
<tr>
<td>5.2 Apply a percentage profit margin in accordance with industry norms</td>
</tr>
<tr>
<td>5.3 Calculate total job or project price</td>
</tr>
<tr>
<td>5.4 Prepare a draft letter of quotation</td>
</tr>
</tbody>
</table>
Skills recognition and recognition of prior learning (RPL)

You are encouraged to discuss with your lecturer any previous courses or work experience in which you have participated so that it can be recognised. Evidence must be provided.

Resources

Required

Your lecturer will provide you with access to:

• construction plans
• a measuring tape
• activity sheets
• assessment papers
• cost guides
• contracts and specifications.

You will need to provide:

• an A4 notepad
• an A4 file for notes, handouts and other printed documents
• pens, pencils, eraser
• a USB thumb drive
• a scale rule of 300 mm with a main scale of 1:100
• a calculator.
Recommended

The resources that you need will depend on your specific trade area, but may include some of the following. Your lecturer will provide access to any of these required.

<table>
<thead>
<tr>
<th>Trade area</th>
<th>Resource</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varies with topic</td>
<td>Australian Standards®</td>
<td>SAI Global</td>
</tr>
<tr>
<td>Planning</td>
<td>Residential design codes for your state or territory</td>
<td>Your state or territory planning authority</td>
</tr>
</tbody>
</table>

Legislation

The following legislation and supporting documents can apply to buildings in the construction and residential building industries. These documents may be referred to during this unit. Your lecturer will refer to the latest version for your state or territory and provide access to any that are required.

- Building Act in your state or territory
- Building Regulations in your state or territory
- Occupational Health and Safety Act in your state or territory
- Occupational Health and Safety Regulations in your state or territory
- Health Regulations in your state or territory
- *Safe Design of Buildings and Structures* (code of practice)
Websites

- Australian Building Codes Board <www.abcb.gov.au>
- Australian Institute of Building <www.aib.org.au>
- Australian Institute of Quantity Surveyors <www.aiqs.com.au>
- Building Designers Australia <www.bdaa.com.au>
- Construction Training Fund <www.nolimits.com.au>
- Housing Industry Association <www.hia.com.au>
- Master Builders Australia <www.masterbuilders.com.au>
- SAI Global <www.saiglobal.com>

Common abbreviations

Throughout this guide you will come across some abbreviations. Below is a list of the most commonly used ones.

BCA     Building Code of Australia
GST     Goods and Services Tax
OHS     Occupational health and safety
PC      Prime costs
PS      Provisional sums
# Self-checklist

As you work through this guide you are advised to return to this checklist and record your progress. Where you understand something and think that you can perform it ‘easily’, congratulations. Where your response is ‘with help’, review the material in that section and/or discuss it with your lecturer or other learners in your group.

<table>
<thead>
<tr>
<th>30015 Undertake basic estimation and costing from contract documents</th>
<th>I understand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Element 1 Read and interpret contract documentation</strong></td>
<td></td>
</tr>
<tr>
<td>1.1 Identify contract documents related to the job or project</td>
<td>Easily</td>
</tr>
<tr>
<td>1.2 Collect relevant information for planning and preparation</td>
<td></td>
</tr>
<tr>
<td>1.3 Read and understand project plans and specifications</td>
<td></td>
</tr>
<tr>
<td><strong>Element 2 Prepare for making estimations</strong></td>
<td></td>
</tr>
<tr>
<td>2.1 Develop an appropriate summary costing sheet, with cost centres</td>
<td></td>
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<td></td>
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<tr>
<td>3.3 <em>Estimate</em> quantities of materials required for the project and set out in accordance with industry practice</td>
<td></td>
</tr>
<tr>
<td>3.4 Estimate unit quantities of labour for <em>costing</em> purposes for the project and set out in accordance with residential buildings industry practice</td>
<td></td>
</tr>
<tr>
<td>Element 4 Calculate costs</td>
<td>Easy</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------</td>
</tr>
<tr>
<td>4.1 Calculate <em>materials</em>, labour and cost allowances and set out in accordance with industry practice</td>
<td></td>
</tr>
<tr>
<td>4.2 Allocate costs to summary sheet cost centres</td>
<td></td>
</tr>
<tr>
<td>4.3 Calculate total job or project construction cost</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element 5 Apply overheads costs and margins</th>
<th>Easy</th>
<th>With help</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Identify and apply typical residential building company overheads costs and charges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2 Apply a percentage profit margin in accordance with industry norms</td>
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<td></td>
</tr>
<tr>
<td>5.3 Calculate total job or project price</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4 Prepare a draft letter of quotation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
About the icons

Note that not all icons may appear in this guide.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance criteria</strong></td>
<td>This icon indicates the performance criteria covered in a section. The performance criteria contribute to the elements of competency that you must demonstrate in your assessment.</td>
</tr>
<tr>
<td><strong>Activity</strong></td>
<td>This icon indicates that there is an activity for you to do.</td>
</tr>
<tr>
<td><strong>Computer-based activity</strong></td>
<td>This icon indicates that there is an activity for you to do on the computer.</td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
<td>This icon indicates that there will be a discussion, which could be with a partner, a group or the whole class.</td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td>This icon indicates that you are to do a research activity using the internet, texts, journals or other relevant sources to find out about something.</td>
</tr>
<tr>
<td><strong>Case study</strong></td>
<td>This icon indicates that there is a case study or scenario to read.</td>
</tr>
<tr>
<td><strong>Think</strong></td>
<td>This icon indicates that you should stop and think for a moment about the point being made or the question being asked.</td>
</tr>
<tr>
<td><strong>Assessment task</strong></td>
<td>This icon indicates that an activity or task is part of your assessment.</td>
</tr>
</tbody>
</table>
Undertake basic estimation and costing from contract documents
Section 1 – Reading and interpreting contract documentation

Introduction

Being able to accurately predict the cost of a construction project is extremely important. Builders and subcontractors need this information to make decisions about budgets and scheduling, and the owner needs the information to make decisions about the scope of the project or even whether to go ahead with it.

Estimating the cost (or ‘providing a cost estimate’) is a process of anticipating and calculating the labour, materials and other costs associated with construction.

Performance criteria

1.1 Identify contract documents related to the job or project
1.2 Collect relevant information for planning and preparation
1.3 Read and understand project plans and specifications

A cost estimate for a construction project must be as accurate as possible. Phrases like ‘ballpark figure’ or ‘rough estimate’ should never be used. The person doing the estimating and costing must take the time to consider all aspects and likely costs of the job, to produce an accurate cost estimate.

In this section you will learn about some of the common documentation required to accurately estimate costs, and how to get any other information you will need.
Relevant documents

To accurately estimate and provide costs for a construction project, a lot of extremely accurate information is required. Most of this information is contained in the contract documents related to the job or project.

The range of documents that may be required as part of contract information varies, due to the varying scope of work that builders or contractors may undertake, so you need to be able to identify which documents are required each project.

Insufficient documentation

It’s important to check with the client that their expectations and the scope of work are clearly defined in any plans and specifications that they may provide. Some clients may not be familiar with plans and technical documents, so the designer or builder will need to discuss the important aspects of the work to be performed and ensure that it is clearly documented.

If little or no documentation has been provided by the client, preparing the documentation may be part of the scope of work for the builder, who may need to draw or have drawn the plans and prepare the specifications and contract.

If insufficient documentation is provided for a construction project, this can lead to inaccurate estimates being provided and the job going over budget or time, causing problems for everyone involved.
A list of typical documents and an explanation of what each one contains is shown in Table 1.1.

<table>
<thead>
<tr>
<th>Type of document</th>
<th>What it contains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing</td>
<td>Plans, elevations and sections with enough detail for the scope of work to be accurately measured</td>
</tr>
<tr>
<td>Specification</td>
<td>A clear definition of the scope of the work, material selections and quality requirements</td>
</tr>
<tr>
<td></td>
<td>Provides additional information related to the drawings</td>
</tr>
<tr>
<td>Contract (or agreement to build)</td>
<td>The formal agreement about the project, including details of any special requirements</td>
</tr>
<tr>
<td>Soil report</td>
<td>A report by a geotechnical engineer about the type of soil on the site, how much weight it can support and how it will react to various conditions and moisture levels</td>
</tr>
<tr>
<td>Engineer’s report</td>
<td>Technical reports giving professional advice and opinions about any particular challenges involved with the structure or site</td>
</tr>
<tr>
<td>Site cost estimate</td>
<td>Estimated costs of getting the site ready for building, which may include things like excavation, demolition, tree removal and construction of retaining walls</td>
</tr>
<tr>
<td>Schedule of finishes</td>
<td>A complete list of the materials, types and colours to be used, such as paint colours, brick patterns and laminate styles</td>
</tr>
<tr>
<td>Schedule of prime cost allowances</td>
<td>A list of estimated costs for items that either had not been selected or whose prices were unknown at the time of making up the contract</td>
</tr>
<tr>
<td>Schedule of provisional sums</td>
<td>A list of estimated costs for carrying out particular parts of the work, which includes both the cost of the labour and the cost of the materials</td>
</tr>
<tr>
<td>Program</td>
<td>Details of any required start and finish dates</td>
</tr>
</tbody>
</table>

**Table 1.1: Typical documents related to a job or project and what they contain.**

The builder (sometimes called the ‘contractor’) should ensure that the contract documents supplied clearly include the scope of the work. If any information is not available or is not clear, it's important that notes are made for the relevant people, such as by highlighting something that’s a condition of a tender or quote or that needs to be followed up.
Activity 1.1 Documents for costing

List the documents that you consider to be essential when preparing a costing for a job, specific to your trade area or an area you are familiar with.

_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________

It is very important that the client and the builder both have a clear understanding of the work to be performed under the contract, to avoid misunderstandings and potential increases in cost.
### Activity 1.2 Factors affecting costing

List some of the factors that you think could affect the cost of a job. Record where and how you would find information about each one. Two have been done for you as examples.

<table>
<thead>
<tr>
<th>Factor that could affect a job</th>
<th>Where to find information about it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site access</td>
<td>Specifications</td>
</tr>
<tr>
<td>Time until completion</td>
<td>Details in the contract</td>
</tr>
</tbody>
</table>

...
Collecting planning information

When collecting information for the planning and preparation of estimates and costings, some of the information will be contained in the contract documents, but other information will need to be gathered from other sources.

Let’s take a look at some of the sources of information available.

Plans, drawings and contract documents

A plan is a diagram or graphical representation (drawing) of a site, building or object. It provides a view from above or through a horizontal section. Plans can include supporting documents such as engineering details for footings or slabs.

Plans include an enormous amount of information. An Australian Standard® is available that establishes the basic principles of drawings and outlines the correct terminology and abbreviations.

Plans are a part of most contracts. The building contract should always be checked to confirm which documents form the contract documents for the project. It’s also important that plans are carefully read, as they often contain important directions, such as that the builder must check all measurements on site, or notes for specific tradespeople.

The builder, as part of their training or work experience, will generally be familiar with construction drawings; however, they may only have focused on a particular area relevant to their usual work.

As a builder or contractor, it is important that you do not rely on others to gain an understanding of the requirements for all areas of work, particularly when quoting. You must be completely familiar with the entire project.
Specifications

A specification is a written document containing technical directions describing the type and quality of materials to be used and the standards required for the project or parts of the project.

Specifications deal with items that can’t be shown on plans or in schedules, and are normally presented in a format that follows the sequence of events and associated trades that occurs during construction.

As with plans, it is important to check which specification documents form part of the contract as many will include additional information or colour and material selections. These are usually included in a separate section called an addendum.

This is particularly true in the project housing field, where builders often use standard specifications for their products and then differentiate the contents for specific design changes based on client selections of colours, bricks, tiles and so on in an addendum.

It's important that the builder has a good understanding of the terms of the contract, as well as the supporting documents that form part of the contract.

In most states and territories, if a builder is contracting with the public and the job will cost more than a specified amount, the work may be covered under legislation specific to contracting in the construction industry. These laws may include how things such as provisional sums and prime costs (we will learn about these later in this unit) are calculated and adjusted, how variations are to be carried out and any warranty periods that may apply.
Site visit

Depending on the nature of the job or the trade involved, a site visit may be necessary in order to prepare an accurate estimate of the work involved.

If the contract is part of a larger project, or is an alteration or addition project, or if any unusual conditions apply to the required works, it’s wise to visit the site and consider important questions, such as the following.

- Is the site easily accessible (eg for concreters, can the truck reach the job, or for plasterers and bricklayers, is the house up a steep drive, and do they have to cart materials up)?
- Can materials be delivered onto the actual site (eg is approval required for verge delivery of materials)?
- Are the boundaries and the lot clearly identified? (Never rely on existing fences. Always check the contract for instructions about site identification.)
- Are datum points clearly identified and understood? (For earthwork requirements, are floor levels and required clearances for access to drains, sewers etc identified?)

Legal and regulatory requirements

Regardless of what the client may want, you must ensure that the work conforms to all legal and regulatory requirements. These requirements must be included in your costs, even if a competitor chooses not to do this.

Unfortunately, these important requirements are sometimes not carried out, because of ignorance. Some builders work on the assumption that ‘this is the way we have always done it’.
Construction codes and standards

The Building Code of Australia (BCA) is considered the Australian authority with respect to building standards and construction requirements. Australian Standards®, which detail requirements for most areas of construction, must also be met.

With greater consumer awareness and high expectations of quality nowadays, more builders are being called upon to fix earlier work – not only because it hasn’t been carried out to the accepted industry standard, but also because it hasn’t been carried out in accordance with the BCA.

As a class, discuss some of the legal and regulatory requirements and construction standards that might affect a basic construction project.

Local government requirements

Many local governments also have specific requirements that they impose through regulations, or at their discretion as policy. Some of these include:

- restricted hours when work may be carried out
- waste management requirements
- stormwater requirements
- approved materials or fixtures
- environmental requirements
- minimum performance requirements
- restrictive covenants.

Occupational health and safety requirements

In an effort to improve safety and reduce workplace accidents, in most states and territories it’s mandatory for people involved in the construction process to complete occupational health and safety (OHS) awareness training.

It’s important for you to be aware of the requirements in your region and to follow all legal obligations. The penalties can be high if accidents occur because safe working practices were not being carried out.

How might OHS requirements affect the building process and the overall cost?
### Activity 1.3 Meeting legal and regulatory requirements

1. Write a task you might undertake as a builder or as part of a trade, such as a general description of the brickwork to be done.

   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________

2. List the steps required to perform the task.

   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________

3. List any legal and regulatory requirements you might need to consider when costing the scope of work.

   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
Terminology

Estimation and costing involves some specific terms, so any discussion about it is likely to include a few unfamiliar words.

Activity 1.4 The language of estimation and costing

Discuss with the group any new words you have encountered while working through this section and what they mean.

Use the space below to record any more new words you come across and their meaning.


Plans and drawings

In the building industry, most of the information required by the people performing the work related to a construction project comes from project documentation. So it is critical to be able to understand and interpret plans, drawings, details and specifications correctly.

Plans and drawings are used to convey great amounts of technical information between the building’s designer and builder. This technical information must be able to be communicated without any misunderstanding, which can only happen if the technical language of plans and drawings is understood by everyone who uses them.

For this reason, the technical language of plans and drawings uses standardised drawing layouts, symbols and abbreviations, so that things look similar in any drawing. With study, practice and experience you’ll get to know and understand this language.
Users and uses of plans and drawings

When plans and drawings of a proposed building or structure have been prepared, many copies are made for the people who will use them, and they must all be able to understand the information contained in them.

Table 1.2 shows who might use plans and drawings, and for what purpose.

<table>
<thead>
<tr>
<th>User</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner/client</td>
<td>To see that the design is as they imagined it</td>
</tr>
<tr>
<td>Structural, electrical and mechanical engineers</td>
<td>To design their part of the structure</td>
</tr>
<tr>
<td>Council health and building surveyors</td>
<td>To make sure that the building conforms to building codes and council regulations</td>
</tr>
<tr>
<td>Council town planning officers</td>
<td>To make sure that the building conforms to council planning regulations</td>
</tr>
<tr>
<td>Financial institution officers</td>
<td>To decide whether approval for finance for construction will be given</td>
</tr>
<tr>
<td>Builder/estimator</td>
<td>To cost the building and to prepare a quote</td>
</tr>
<tr>
<td>Builder</td>
<td>To construct the building</td>
</tr>
<tr>
<td>Subcontractors such as concreters, bricklayers, electricians, tilers and painters</td>
<td>To prepare their quotes to carry out their part of the construction</td>
</tr>
<tr>
<td>Suppliers of prefabricated building components such as roof trusses, windows, air conditioning and heating</td>
<td>To calculate their prices for their part of the job</td>
</tr>
</tbody>
</table>

Table 1.2: Users and uses of drawings.
As you can see from this list, drawings are important documents for everyone, and should be treated carefully.

View the set of plans by Hopscotch Homes provided at Annex E to this guide. Examine the layout, symbols and abbreviations you see in the drawings. Discuss what the various parts of the plans mean, and make sure that you understand what they are telling you.

Try Activity 1.5 to check your knowledge about what is included in each drawing. You’ll need to refer to the set of plans by Hopscotch Homes provided at Annex E to this guide.
### Activity 1.5 Information on plans

In the table below, four types of drawings are listed across the top, and 11 items of information that can be found on these drawings are listed down the left-hand side. For each piece of information, decide which drawing it is shown on, and place a tick in the corresponding box. Some information appears on more than one drawing, so you may need more than one tick for those. The first one has been done as an example for you.

<table>
<thead>
<tr>
<th>Information</th>
<th>Site plan</th>
<th>Floor plan</th>
<th>Elevation</th>
<th>Electrical plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width of paths</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Overall width of building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height of windows</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of ceiling fans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of sink cupboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing trees</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width of windows</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitch (slope) of roof</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width of front door</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of WC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of light switches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 2 – Preparing to make estimations

Introduction

Estimating requires great attention to detail and careful recording of all measurements and costs. Overlooking anything can lead to unexpected expenses later. In this section you will learn how to develop an appropriate summary costing sheet for use when estimating, and how to identify the elements of work that need to be externally quoted.

Performance criteria

2.1 Develop an appropriate summary costing sheet, with cost centres
2.2 Identify elements of works to be externally quoted

Summary costing sheets

A summary costing sheet provides a total of the estimated costs for the entire job. It lists each trade activity separately, assigns a unique item number called a ‘cost centre’ to each one, and provides a total amount that the activity will cost.

In order to prepare a summary costing sheet, the project specification must be read together with the plans. The project specification normally identifies the trade activities in the order that the work will be carried out, starting with building preliminaries such as plans and permit fees, and finishing with site clean-up. This is helpful to avoid overlooking an item.

Each trade activity will be followed by information about the design requirements for the materials, products and method of construction to be used. This list of trade activities can be used to form the basis of the summary costing sheet.
Figure 2.1 shows an example of a summary costing sheet.

<table>
<thead>
<tr>
<th>Cost centre</th>
<th>Description</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>Preliminaries</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>Site works</td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>Termite protection</td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>Concrete</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>Reinforcement</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>Concrete labour</td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>Concrete sundries</td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>Bricks</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>Lintels</td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>Door jambs</td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>Bricklayers' hardware</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>Bricklayers' sand</td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>Bricklayers' labour</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>Timber joinery</td>
<td></td>
</tr>
<tr>
<td>260</td>
<td>Aluminium windows</td>
<td></td>
</tr>
<tr>
<td>270</td>
<td>Hire items</td>
<td></td>
</tr>
<tr>
<td>280</td>
<td>Floor timber</td>
<td></td>
</tr>
<tr>
<td>290</td>
<td>Framing timber</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>Floor framing timber</td>
<td></td>
</tr>
<tr>
<td>310</td>
<td>Wall framing</td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>Roof framing</td>
<td></td>
</tr>
<tr>
<td>330</td>
<td>Hardware</td>
<td></td>
</tr>
<tr>
<td>340</td>
<td>Metal fascia</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td>Framing carpenter</td>
<td></td>
</tr>
<tr>
<td>360</td>
<td>Roof cover</td>
<td></td>
</tr>
<tr>
<td>370</td>
<td>Plumbing</td>
<td></td>
</tr>
<tr>
<td>380</td>
<td>Electrical</td>
<td></td>
</tr>
<tr>
<td>390</td>
<td>Wall and ceiling linings</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>Solid plaster</td>
<td></td>
</tr>
<tr>
<td>410</td>
<td>Timber floor/mouldings</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td>Doors</td>
<td></td>
</tr>
<tr>
<td>430</td>
<td>Fixing hardware</td>
<td></td>
</tr>
<tr>
<td>440</td>
<td>Fixing carpenter</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td>Cupboards</td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>Sanitary ware</td>
<td></td>
</tr>
</tbody>
</table>

**Builder's total cost**

Figure 2.1: An example of a summary costing sheet.
Cost centres

You will see different ways of numbering the items used in different documentation. Some companies have a particular numbering system that they prefer, while others use estimating software that assigns the numbers automatically. However, within a single project, the numbers will be consistent across all the documentation. For example, if termite protection is cost centre 130 in the summary costing sheet, it will also be item number 130 in other documents used for that project.

Most of the cost centres will also include sub-items which relate to them. These might be numbered 0001, 0002, etc.
Undertake basic estimation and costing from contract documents

Activity 2.1 Summary costing sheet

Try creating your own summary costing sheet, using the Hopscotch Homes plans provided at Annex E to this guide.

1. Label the columns as shown in Figure 2.1.
2. Write a list of the trade activities that would be required on this project in the ‘Description’ column.
3. Assign a cost centre number to each activity.

You won’t need to assign estimated costs to the activities, so just label that column but leave it blank.
External quotes

Apart from materials and direct labour costs, which the builder will be responsible for, the project might also require some of the work to be carried out by others on a subcontract basis to the builder. Part of estimating will be obtaining prices for that work.

To do this, you need to identify which elements of the work will be done by subcontractors, and then get quotes.

Things to consider might include:

• time constraints
• defects liability
• inclusions and exclusions; for example, if obtaining a quote for painting a two-storey house, is the scaffolding included in the painter’s price, or are you required to provide it and therefore find out the price and include it?

It’s important to give very clear instructions when obtaining prices from other tradespeople, and you must carefully note any conditions included in their quote to you.

Prices from subcontractors are usually provided in one of two formats:

• a rate – such as a dollar amount per square metre
• a ‘supply and install’ quote – a set amount for the total job which includes labour and materials.
### Activity 2.2 External quotes

For each of the items listed below, decide whether you would receive a **rate** or a **supply and install quote** from a company.

Tick the correct column for each item. Two have been done for you as examples.

<table>
<thead>
<tr>
<th></th>
<th>Rate</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siteworks</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Site facilities – hire equipment</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Electrical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete slab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steel reinforcement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imported tiling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof trusses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame hardware</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal fascia/gutters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminium windows and doors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bricks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick sand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick hardware</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bricklayer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plumbing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External doors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen cupboards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vanity cupboards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen sinks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appliances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot water units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shower and bath fittings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceramic tiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall/floor tiles labour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Painting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site cleaner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete paving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fencing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof cover</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 3 – Estimating site overheads, labour and materials

Introduction

Once you have prepared for making estimations by setting up the summary costing sheet and identifying which elements of the project will be externally quoted, you can move on to estimating site overheads, labour and materials. You will also need to add amounts into the estimate to cover any items which have not yet been decided by the client.

Performance criteria

3.1 Identify and include Provisional and Prime Cost Sums in the residential building costs
3.2 Identify and include Preliminary cost items to be added
3.3 Estimate quantities of materials required for the project and set out in accordance with industry practice
3.4 Estimate unit quantities of labour for costing purposes for the project and set out in accordance with residential buildings industry practice

Provisional sums and prime costs

Sometimes there are details that aren’t certain at the time when the contract is created and signed – for example, it could be that the client hasn’t chosen a particular material or colour yet. Further into the project when the client makes those decisions, there needs to be an amount in the contract which will cover the cost.

Provisional sums and prime costs are amounts that are built into the contract to cover items that are not exactly known at the time of entering the contractual agreement.

*Provisional sums* (PSs) are amounts set aside for the supply and installation of goods and materials. Some typical examples of provisional sums are shown in Table 3.1 on the following page.
Provisional sums are necessary when the client’s final choice will affect the types of materials purchased and their installation costs. For example, the labour, materials and equipment required to create a small square of lawn with a line of small shrubs will be different from that required to install large trees in multiple curved garden beds surrounded by lawn.

### Activity 3.1 Provisional sums

List five other provisional sum items that might be included in a contract for a house.

1. 
2. 
3. 
4. 
5. 

### Table 3.1: Examples of provisional sums.

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial turf</td>
<td>$12 000</td>
</tr>
<tr>
<td>Kitchen cabinetwork</td>
<td>$55 000</td>
</tr>
<tr>
<td>Electrical light fittings</td>
<td>$15 000</td>
</tr>
<tr>
<td>Landscaping</td>
<td>$25 000</td>
</tr>
</tbody>
</table>
Prime costs (PCs) are amounts set aside for the supply of a material only. Some typical examples of prime costs are shown in Table 3.2.

<table>
<thead>
<tr>
<th>Material</th>
<th>Estimated cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door hardware</td>
<td>$6000</td>
</tr>
<tr>
<td>Wall tiles</td>
<td>$50 per m²</td>
</tr>
<tr>
<td>Floor tiles</td>
<td>$45 per m²</td>
</tr>
<tr>
<td>Brick paving</td>
<td>$38 per m²</td>
</tr>
</tbody>
</table>

Table 3.2: Examples of prime costs.

The builder will already have allowed for the installation of the material, including overheads and margin, within the contract price, so the prime cost relates to the material only. This is possible because, for example, the type of paving brick chosen is unlikely to have a huge impact on the overall cost of laying the bricks.

Activity 3.2 Prime costs

List five other prime cost items that might be included in a contract for a house.

1. 
2. 
3. 
4. 
5.
Site overheads

*Site overheads* (also called ‘preliminaries’) are general costs which are related to a particular project on a particular site, but which are not incorporated into one particular cost centre.

The reason that site overheads are sometimes called preliminaries is that many of the costs occur at the start of the project, but some are continuous or duration related, and some, such as site clean-up, occur at the end of the project. They often refer to things that are not covered by the subcontractors’ quotes but are costs incurred by the builder in relation to the project, and are necessary for the project’s proper performance and completion.

For example, a site toilet must be paid for and on site for the entire project, but is used by all trades, so it is applied to the site overheads cost centre. Another example of a site overhead would be a crane that is owned by the builder and might be used by a specific trade or group of trades, so the cost of having a crane on site is considered a site overhead rather than being assigned to a particular trade’s cost centre.

However, if the paving contractors have a compactor that they use for preparing the ground, this would not be considered a site overhead, because it is supplied and used by the pavers and so the cost will be included in the paving rate and assigned to the paving cost centre.
### Activity 3.3 Identifying site overheads

Which of the costs listed below would be a site overhead? Tick the ones that you think are site overheads.

<table>
<thead>
<tr>
<th>Cost</th>
<th>Site overhead?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance of building works</td>
<td></td>
</tr>
<tr>
<td>Petrol for the builder’s ute</td>
<td></td>
</tr>
<tr>
<td>Supervisor’s salary</td>
<td></td>
</tr>
<tr>
<td>Scaffold hired by builder for use by various trades</td>
<td></td>
</tr>
<tr>
<td>Crane owned by builder</td>
<td></td>
</tr>
<tr>
<td>Site shed for storage of materials</td>
<td></td>
</tr>
<tr>
<td>Formwork supplied by subcontractor</td>
<td></td>
</tr>
<tr>
<td>Garage for storage of builder’s equipment</td>
<td></td>
</tr>
<tr>
<td>Rubbish removal from site</td>
<td></td>
</tr>
<tr>
<td>Window cleaning at office</td>
<td></td>
</tr>
<tr>
<td>Daily lunch</td>
<td></td>
</tr>
</tbody>
</table>
Company overheads

Costs associated with running the building company, such as industry association membership fees, also need to be incorporated into the overall price but are not site overheads. These are called *company overheads*, and they’re added at the end of the estimating process. You will learn more about company overheads in Section 5.

### Activity 3.4 Calculating site overheads for site establishment

This activity is based on a project that your lecturer will describe to you.

As a class or in groups, discuss the requirements for the project and fill in the form below, indicating how many of each item will be needed and for how long. Use this information to calculate the rates and total costs for establishing the site.

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Weeks</th>
<th>Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Offices and sheds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting shed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting shed (large)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunchroom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site manager’s office</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site office</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architect’s office</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lined sheds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unlined sheds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Erection and dismantling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheds and offices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large sheds and offices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crane/forklift hire</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Special requirements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gantries, protective awnings, special shedding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sundry items – furniture, radiators, drinking fountain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot-water urns, pie warmers, ice machine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signboard: size m × m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total to summary</strong></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
</tbody>
</table>
When it comes to site overheads, there can be quite a long list! Some others that might apply to a residential building project include:

- water authority fees
- insurance
- site survey
- building set-out
- interior design fee
- council crossover fee
- engineer’s pile detail
- engineer’s site report clay areas
- two-storey labour contingency
- BCITF levy
- kerb deposit fee
- compaction test
- site repeg.
- kitchen design fee
- headworks
- tip fee contingency
- electricity connection usage
- shire building fee
- title search
- engineer’s footing detail
- elect dome allowance
- stormwater connection fee
- on-site sign allowance
- scaffold contingency
- maintenance contingency

Some of the items in the above list may be unfamiliar to you. As a class, discuss what sorts of things are covered by this list.

**Take-off sequencing**

‘Take-off’ is industry jargon for listing the things that you will need to calculate quantities for. When calculating quantities for a project, you should follow a set sequence to ensure that you don’t overlook anything. Generally, the sequence used aligns to that of the construction process.

It has been said that when you take off items to estimate quantities, you are ‘building the project in your head’. This is a very effective analogy, because take-off demands that you consider the contract requirements at each particular stage.

It is good to have a checklist that includes, for each trade area, all the possible items that could be used in the normal contract requirements, to prompt you to take off items and help you avoid overlooking anything.
Setting out take-off calculations

Let’s now move on to the setting out for take-offs. It is critical that the calculations be checked and understood. You should be neat, clearly show your working, use plenty of space and use appropriate headings. You will find many variations of take-off forms used in the industry, and you should choose one that best suits your needs.

Activity 3.5 Take-off brickwork

View the Sanderson Street plans provided at Annex E to this guide.
Use the take-off sheet on the next page to determine the metreage of external face brickwork to the house.
### TRADE – BRICKWORK

1. 110 mm face brickwork in leaf of cavity walls built in standard face bricks and 1:1:6 compo mortar including wall ties at 4 per m² and cleaning down on completion

### EXTERNAL LEAF OF CAVITY WALLS

<table>
<thead>
<tr>
<th>Perimeter</th>
<th>Height plus 2c</th>
</tr>
</thead>
</table>

### DDT - WINDOWS and DOORS

<table>
<thead>
<tr>
<th>Width</th>
<th>Height</th>
<th>Number of Courses</th>
<th>Number of Bricks</th>
</tr>
</thead>
<tbody>
<tr>
<td>870 mm</td>
<td>Entry</td>
<td>25 std courses</td>
<td>7.5 bricks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25 std courses</td>
</tr>
<tr>
<td>3610 mm</td>
<td>Living</td>
<td>15 std courses</td>
<td>5 bricks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14 std courses</td>
</tr>
<tr>
<td>6.5 bricks</td>
<td>Bed 2</td>
<td>14 std courses</td>
<td>2.5 bricks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14 std courses</td>
</tr>
<tr>
<td>10 bricks</td>
<td>Bed 1</td>
<td>23 std courses</td>
<td></td>
</tr>
</tbody>
</table>

Total external brick m² $
Estimating labour

The cost of labour is the cost to perform certain work, and is included in an estimate.

In most cases, independent contractors have a fixed rate for work that they perform, such as per square metre of roof constructed, per cubic metre of concrete laid, per square metre of ceiling or per linear metre of cornice fixed.

Labour is generally carried out by individuals or people working in teams. However, in a complex project or an unusual situation, it may be necessary for builders to employ other workers, either on an award or at an appropriate industry rate. If this happens, it is critical that thought is given to the number of people to be employed as well as to the numbers of hours to be worked, so as to keep expenses down.

Activity 3.6 The real cost of labour

What are the components that make up the real cost of labour? As a class, brainstorm and list as many items as you can.

How would the cost of labour be recorded on the estimate?
Section 4 – Calculating costs

Introduction

Once the correct items and activities for take-off have been identified, the quantities can be measured. These quantities can then have various rates applied to them, allowing the associated costs to be calculated.

Rates allow for material, labour and use of equipment. Often the rate is a 'composite' rate, which means that it includes the price of all components of the activity: the material, the labour and the equipment used to install the product or system.

In this section you will learn how to make calculations for quantities and costs and create a builder’s total cost.

Performance criteria

4.1 Calculate materials, labour and cost allowances and set out in accordance with industry practice
4.2 Allocate costs to summary sheet cost centres
4.3 Calculate total job or project construction cost
Estimating quantities and costs

The standard estimating sheet for calculating quantities and costs contains 10 columns. We can label these columns across the top with the following headings.

- Item number
- Multiples
- Dimensions
- Dimension result
- Description and other calculations
- Unit of measurement
- Quantity
- Rate
- Total
- Trade total

Activities 4.1 to 4.6 in this section will refer to the Sanderson Street plans provided at Annex E to this guide. You’ll use these house plans to determine the costs of the following trade activities to complete the project.

<table>
<thead>
<tr>
<th>Site overheads</th>
<th>Siteworks</th>
<th>Concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brickwork</td>
<td>Metalwork</td>
<td>Joinery</td>
</tr>
<tr>
<td>Roof carpentry</td>
<td>Plumbing</td>
<td>Roofing and roof plumbing</td>
</tr>
<tr>
<td>Electrical</td>
<td>Plastering</td>
<td>Ceilings</td>
</tr>
<tr>
<td>Tiling</td>
<td>Glasswork</td>
<td>Painting</td>
</tr>
</tbody>
</table>
This is not a definitive list – it would be different for each project – but these are the activities we’ll be using for the Sanderson Street project.

Once the costs for the individual trade activities have been completed, they can be totalled to determine the builder’s total cost.

### Activity 4.1 Siteworks calculations

Referring to the Sanderson Street plans at Annex E to this guide, calculate the quantities, rates and trade total for siteworks. The items have already been written for you.

<table>
<thead>
<tr>
<th>Item number</th>
<th>Multiples</th>
<th>Dimensions</th>
<th>Description and other calculations</th>
<th>Unit of measurement</th>
<th>Quantity</th>
<th>Rate</th>
<th>Total</th>
<th>Trade total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Site preparation including clearing and removal of topsoil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 m clearance</td>
<td>m&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>Sand pad 300 mm deep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 m clearance</td>
<td>m&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>Level, grade and compact sand pad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>m&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>Excavate 300 mm deep in sand for strip footings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>m&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>Termite treatment to buildings</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>m&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Activity 4.2 Items included in concrete

Discuss and then list the items that would be included in the trade section for concrete.

1. 
2. 
3. 
4. 
5. 
6. 
7.
### Activity 4.3 Concrete calculations

Referring to the Sanderson Street plans provided at Annex E to this guide, calculate the quantities, rates and trade total for concrete. You will need to write in the items, which you identified in Activity 4.2. Refer to Activity 4.1 for the layout.

<table>
<thead>
<tr>
<th>Item number</th>
<th>Multiples</th>
<th>Dimensions</th>
<th>Dimension result</th>
<th>Description and other calculations</th>
<th>Unit of measurement</th>
<th>Quantity</th>
<th>Rate</th>
<th>Total</th>
<th>Trade total</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Activity 4.4 Brickwork calculations

Referring to the Sanderson Street plans provided at Annex E to this guide, calculate the quantities, rates and trade total for brickwork. The items have already been written for you. Refer to Activity 4.1 for the layout.

<table>
<thead>
<tr>
<th>Item number</th>
<th>Multiples</th>
<th>Dimensions</th>
<th>Dimension result</th>
<th>Description and other calculations</th>
<th>Unit of measurement</th>
<th>Quantity</th>
<th>Rate</th>
<th>Total</th>
<th>Trade total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Face brick 110 mm wide to external wall of cavity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Perimeter
- Height plus 2 courses
- Deduct external openings
<table>
<thead>
<tr>
<th>Item number</th>
<th>Multiples</th>
<th>Dimensions</th>
<th>Dimension result</th>
<th>Description and other calculations</th>
<th>Unit of measurement</th>
<th>Quantity</th>
<th>Rate</th>
<th>Total</th>
<th>Trade total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Maxibrick 90 mm wide brick to internal walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perimeter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Height</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deduct external openings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Add dividing walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deduct internal openings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The last activity you will do is to calculate the quantities and costs for the plastering to the internal walls. When you make your measurements, remember that plaster is measured over openings to allow for the labour-intensive work of plastering any gaps (known as ‘reveals’).

### Activity 4.5 Plastering calculations

Referring to the Sanderson Street plans provided at Annex E to this guide, calculate the quantities, rates and trade total for plastering.

<table>
<thead>
<tr>
<th>Item number</th>
<th>Multiples</th>
<th>Dimensions</th>
<th>Dimension result</th>
<th>Description and other calculations</th>
<th>Unit of measurement</th>
<th>Quantity</th>
<th>Rate</th>
<th>Total</th>
<th>Trade total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Hardwall plaster 12 mm thick in two coats to internal brickwork</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cost guides

Once you have calculated amounts, you will need to estimate rates. Although with experience you may be able to make an estimate yourself, generally cost guides are used. These are published regularly and assist in determining building costs. For example, if the cost guide suggests that concrete will cost $250 per cubic metre, and your measurements suggest you will need 8 m³, you can estimate $2000 for the cost of concrete.

What factors can you think of that might make rates estimated using a cost guide inaccurate? What precautions should you take when using cost guides?

Your lecturer will provide you with cost rates for the items that you have measured during this session. The rates may be verbal, written on screen or written in a cost guide book. Whichever way you get these rates, calculate the costs for the items you measured.
Transferring costs to a summary costing sheet

Once the total costs for the trade activities have been calculated, they are transferred onto the summary costing sheet. As you learned in Section 2, the trade areas have been listed and allocated a cost code.

In the next activity you’ll transfer the total costs that you calculated using the Sanderson Street plans onto the summary costing sheet. Your lecturer may have had you calculate some of the other trade activities, or may provide you with costs for all the other cost centres.

Activity 4.6 Summary costing sheet

Transfer your trade totals from Activities 4.1, 4.3, 4.4 and 4.5 to the summary costing sheet. Then write in the costs for the other cost centres below, and add them all together to get the builder’s total cost.

<table>
<thead>
<tr>
<th>Cost centre</th>
<th>Description</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>Site overheads</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>Siteworks</td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>Concrete</td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>Brickwork</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>Metalwork</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>Timber joinery</td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>Roof carpentry</td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>Roof cover and plumbing</td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>Plumbing</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>Electrical</td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>Plastering</td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>Ceilings</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>Wall and floor tiling</td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>Glazing</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>Painting</td>
<td></td>
</tr>
</tbody>
</table>

**Builder’s total cost**
**Builder’s total cost**

As you’ve worked out by now, the builder’s total cost (also called the ‘total job cost’ or ‘total project construction cost’) is the total of all of the costs of building. Figure 4.1 shows the elements that make up the builder’s total cost. The client should never see the builder’s total cost, however, as the estimate is not yet complete. There are still company overheads and profit margins to be included.

![Diagram showing the components of the builder’s total cost](image-url)

*Figure 4.1: A diagram showing the components of the builder’s total cost.*
Section 5 – Applying overhead costs and margins

Introduction

In Section 4 you learned how to calculate the builder’s total cost, but this only covers the cost of construction. There are other elements to be added before a final cost can be calculated and given to the client.

In this section you’ll learn how to:

• apply overheads and profit margins
• calculate the final cost of a project
• present that in a letter of quotation to the client.

Performance criteria

5.1 Identify and apply typical residential building company overheads costs and charges
5.2 Apply a percentage profit margin in accordance with industry norms
5.3 Calculate total job or project price
5.4 Prepare a draft letter of quotation
Company overheads

Costs associated with running the building business (as opposed to costs associated with running a site) are called company overheads.

Company overheads are not necessarily affected by site conditions. They are the administrative costs of running the company – things like paying for the receptionist, leasing the office building, providing electricity for the offices, etc.

Usually the accountant (in consultation with the company directors) will advise a percentage to be added to the estimate to cover the company overheads. You may also hear these referred to as ‘on-costs’.

Activity 5.1 Company overhead costs and charges

Company overheads fall into several categories, as listed below. Two examples for each category have been provided for you. For each category, list at least one other overhead that you can think of.

<table>
<thead>
<tr>
<th>Category</th>
<th>Company overheads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business premises (office, garage, workshops, etc)</td>
<td>Rent, water rates</td>
</tr>
<tr>
<td>Staff and professional fees</td>
<td>Legal consultant, typist</td>
</tr>
<tr>
<td>General office and workshop equipment (includes expenses and depreciation of these items)</td>
<td>Drafting tables, postage</td>
</tr>
<tr>
<td>Transport</td>
<td>Office vehicle, parking fees</td>
</tr>
<tr>
<td>Finance</td>
<td>Taxes, bad debts</td>
</tr>
<tr>
<td>Public relations and advertising</td>
<td>Builders’ association fees, cost of display homes</td>
</tr>
<tr>
<td>Subscriptions and fees</td>
<td>Business name registration, subscription to daily newspaper</td>
</tr>
</tbody>
</table>
Profit margins

In Section 4 you learned that the builder’s total cost includes all of the costs of building.

Builders total cost = Site overheads + Direct costs (Materials + Labour + Plant and equipment + Subcontractors).

The profit on a project is the amount remaining after all costs have been met. It is estimated by adding an amount to the builder’s total cost, either as a percentage or as lump sum amount, based on the builder’s perception of market conditions. The amount will depend on:

• what competition exists
• the builder’s need for work
• the accuracy of the base estimate
• whether it makes an amount enough to make the job viable.

The estimator will not normally be responsible for assessing the profit, as this is a decision for the executives or senior management of the building company, and it may range anywhere from 5% to 20%.

Final cost

At this point the estimate is ready to be summarised and a final cost calculated. Your estimate should include:

• totals for all the trades
• the builder’s total cost
• a percentage for profit and company overheads.

Remember that the goods and services tax (GST) will need to be added to these amounts. In Australia, GST is charged on the supply of most goods and services at a rate of 10%.
This provides the final cost (also called the ‘total job price’ or ‘total project price’) for the estimate. Figure 5.1 shows the elements that make up the final cost.

![Diagram showing the components of the final cost](image)

Figure 5.1: A diagram showing the components of the final cost.

In Activity 5.2, you’re going to transfer the trade totals and your builder’s total cost from Activity 4.6 to a summary costing sheet, then add the builder’s profit and overheads that you came up with above, to create a subtotal. Finally you’ll add GST, and then calculate the final cost for the Sanderson Street project.

As a group, come up with a realistic percentage to use for the builder’s profit and overheads in Activity 5.2 on the following page.
## Activity 5.2 Final summary costing sheet

<table>
<thead>
<tr>
<th>Cost centre</th>
<th>Description</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>Site overheads</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>Siteworks</td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>Concrete</td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>Brickwork</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>Metalwork</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>Timber joinery</td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>Roof carpentry</td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>Roof cover and plumbing</td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>Plumbing</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>Electrical</td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>Plastering</td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>Ceilings</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>Wall and floor tiling</td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>Glazing</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>Painting</td>
<td></td>
</tr>
</tbody>
</table>

**Builder's total cost**

**Builder's profit and overheads (%)**

**Subtotal**

**Goods and services tax (%)**

**Final cost**
Letter of quotation

The final cost must be formally given to the client in a letter of quotation. The letter of quotation states the final cost and provides an invitation to proceed. It doesn’t give a comprehensive breakdown of the details, because at this stage the client may still be ‘shopping’ for their new home.

The letter stating the final cost should also include any conditions to your price. The quotation letter should state:

- which documentation the quotation is based on
- any discrepancies, including clauses for inclusion and exclusions for items that are unclear; for example, fencing and landscaping might be excluded, as the work is to be done by others.

An example of a letter of quotation is shown here.

Dear Mr and Mrs Agis,

As per the plans and specifications provided to our office on 27 July 2013, we are able to offer a quotation for the construction of your home. The total cost of $310 700 includes GST. Exclusions to this cost are fencing and landscaping.

Please contact our offices at your convenience to discuss this quotation.

Regards

Max Beauford

Builder
Activity 5.3 Writing a letter of quotation

Prepare a draft letter of quotation to the client for the Sanderson Street house you have estimated.
Undertake basic estimation and costing from contract documents
Section 6 – Summary

You have now completed the unit 30015 *Undertake basic estimation and costing from contract documents*, and should be able to follow the process required to estimate site overheads, labour and materials and establish costs for a basic residential construction project.

### Activity 6.1 Reflection on progress

Make a note below of the areas of knowledge that you now feel more confident about, and also any areas that you feel you would like to (or need to) find out more about, along with your strategy for how you will do that.

I feel confident about …

__________________________________________

__________________________________________

__________________________________________

I would like to know more about …

__________________________________________

__________________________________________

__________________________________________

I can learn more about the above by …

__________________________________________

__________________________________________

Thank you for participating in this unit. We wish you well for your future career path, whatever direction and career you choose.
Undertake basic estimation and costing from contract documents
Annex A – Unit details

<table>
<thead>
<tr>
<th>Unit title</th>
<th>Undertake basic estimation and costing from contract documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptor</td>
<td>This unit of competency specifies the outcomes required to estimate preliminaries, labour and materials and establish costs for a basic construction project. It is limited to utilising standard contract documents, without a need to go on a worksite.</td>
</tr>
<tr>
<td>Employability skills</td>
<td>The following employability skills are an integral part of the delivery of this unit. They include: communication; teamwork; problem solving; initiative and enterprise; planning and organising; self-management; learning; and technology.</td>
</tr>
<tr>
<td>Pre/co-requisite units</td>
<td>Carry out basic measurement and calculations for residential buildings</td>
</tr>
<tr>
<td>Application</td>
<td>This unit supports the attainment of basic understanding and application of construction estimating and costing related to residential buildings.</td>
</tr>
</tbody>
</table>

**Element 1 Read and interpret contract documentation**

1.1 Identify contract documents related to the job or project

1.2 Collect relevant information for planning and preparation

1.3 Read and understand project plans and specifications

**Element 2 Prepare for making estimations**

2.1 Develop an appropriate summary costing sheet, with cost centres

2.2 Identify elements of works to be externally quoted

**Element 3 Estimate labour and materials**

3.1 Identify and include Provisional and Prime Cost Sums in the residential building costs

3.2 Identify and include Preliminary cost items to be added

3.3 Estimate quantities of materials required for the project and set out in accordance with industry practice

3.4 Estimate unit quantities of labour for costing purposes for the project and set out in accordance with residential buildings industry practice
Element 4 Calculate costs

4.1 Calculate materials, labour and cost allowances and set out in accordance with industry practice

4.2 Allocate costs to summary sheet cost centres

4.3 Calculate total job or project construction cost

Element 5 Apply overheads costs and margins

5.1 Identify and apply typical residential building company overheads costs and charges

5.2 Apply a percentage profit margin in accordance with industry norms

5.3 Calculate total job or project price

5.4 Prepare a draft letter of quotation

Required skills and knowledge

This describes the essential skills and knowledge and the level required for this unit.

Essential knowledge

Understanding of:

- typical construction job preliminary costs
- provisional sums and prime cost items
- construction materials
- construction terminology
- costing techniques and procedures
- labour rates and overheads
- material sizes
- plans, specifications and drawings
- processes for calculating material requirements
- quality requirements
- implications of workplace and equipment safety requirements to costing/estimating
Essential skills

Ability to:

• determine requirements
• demonstrate clear and direct communication using questioning to identify and confirm requirements, share information, listen and understand
• follow instructions
• read and interpret documents from a variety of sources, drawings and specifications
• demonstrate numeracy skills to apply calculations
• demonstrate organisational skills including the ability to plan and set out work
• work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

Range statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

<table>
<thead>
<tr>
<th>Information includes:</th>
<th>Planning and preparation may include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• contract documentation</td>
<td>• gathering and basic analysis of project plans, specifications and contract documents</td>
</tr>
<tr>
<td>• enterprise costing systems</td>
<td>• gathering information about work site characteristics and specific job requirements</td>
</tr>
<tr>
<td>• instructions issued by authorised organisational or external personnel</td>
<td>• Enterprise costing systems</td>
</tr>
<tr>
<td>• manufacturer specifications and instructions where specified</td>
<td></td>
</tr>
<tr>
<td>• organisation work specifications and requirements</td>
<td></td>
</tr>
<tr>
<td>• plans and specifications</td>
<td></td>
</tr>
<tr>
<td>• relevant Australian standards</td>
<td></td>
</tr>
<tr>
<td>• safe work procedures related to carrying out basic estimation</td>
<td></td>
</tr>
<tr>
<td>• verbal or written and graphical instructions</td>
<td></td>
</tr>
<tr>
<td>• work schedules</td>
<td></td>
</tr>
</tbody>
</table>
### Undertake basic estimation and costing from contract documents

| Estimation and costing includes: | Preliminaries job costs  
|                                  | overhead allowances  
|                                  | profit margins  
|                                  | labour and materials  
|                                  | allowances for inflation  
|                                  | use of calculators and/or computers running appropriate software for estimating and calculating necessary details. |
| Quality requirements may include: | internal company quality policy and standards  
|                                  | manufacturer specifications, where specified  
|                                  | relevant regulations, including Australian standards  
|                                  | workplace operations and procedures. |
| Materials for estimation and job costing may include: | concrete  
|                                                   | bricks  
|                                                   | timber  
|                                                   | building elements, such as roof members, lining materials, prefabricated elements, boxed, drummed and tinned materials  
|                                                   | other sheet materials applicable to construction  
|                                                   | reconstituted timber products  
|                                                   | sand  
|                                                   | soil and aggregates  
|                                                   | mouldings  
|                                                   | paving  
|                                                   | plaster (solid and sheet) |
| Environmental requirements may include: | clean-up management  
|                                      | waste management |
Evidence guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this course.

### Critical aspects of assessment and evidence required to demonstrate this competency unit:

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant contract information,
- effectively use estimating equipment
- document and set out calculations from plans and specifications for a basic construction project
- estimate and cost a basic construction project, including:
  - estimate quantities of material and labour required for three elements of work
  - Identify typical construction company overheads
  - Prepare a written letter of quote

### Access and equity considerations:

Reasonable adjustment may be made to meet individual learner needs.

### Context of and specific resources for assessment:

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
### Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with work place tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice. A decision on competency should only be taken at the point when the assessor has complete confidence in the person’s demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
# Annex B – Learning plan

**Note:** Sessions are nominally two hours.

<table>
<thead>
<tr>
<th>Session</th>
<th>Performance criteria</th>
<th>Guide</th>
<th>Resources</th>
</tr>
</thead>
</table>
| 1       | 1.1, 1.2             | Section 1 – Reading and interpreting contract documentation  
Relevant documents  
• Activity 1.1  
• Activity 1.2  
Collecting planning information  
• Activity 1.3  
• Activity 1.4 | Learner’s guide |
| 2       | 1.3                  | Section 1 – Reading and interpreting contract documentation (continued)  
The language of plans and drawings  
Users and uses of plans and drawings  
• Activity 1.5 | Learner’s guide  
Hopscotch plans |
| 3       | 2.1, 2.2             | Section 2 – Preparing to make estimations  
Summary costing sheets  
• Activity 2.1  
External quotes  
• Activity 2.2 | Learner’s guide  
Hopscotch plans |
| 4       | 3.1, 3.2             | Section 3 – Estimating site overheads, labour and materials  
Provisional sums and prime costs  
• Activity 3.1  
• Activity 3.2 | Learner’s guide |
<table>
<thead>
<tr>
<th>Session</th>
<th>Performance criteria</th>
<th>Guide</th>
<th>Resources</th>
</tr>
</thead>
</table>
| 5       | 3.3                  | Section 3 – Estimating site overheads, labour and materials (continued)  
Site overheads  
• Activity 3.3  
• Activity 3.4 | Learner’s guide |
| 6       | 3.3                  | Section 3 – Estimating site overheads, labour and materials (continued)  
Take-off sequencing  
• Activity 3.5 | Learner’s guide  
Sanderson Street plans |
| 7       | 3.4                  | Section 3 – Estimating site overheads, labour and materials (continued)  
Estimating labour  
• Activity 3.6 | Learner’s guide |
| 8       |                      | **Assessment 1 due**  
(completed in class) | Learner’s guide |
| 9       | 4.1                  | Section 4 – Calculating costs  
Estimating quantities and costs  
• Activity 4.1  
• Activity 4.2  
• Activity 4.3  
• Activity 4.4  
• Activity 4.5 | Learner’s guide  
Sanderson Street plans |
| 10      | 4.1                  | Section 4 – Calculating costs (continued) | Learner’s guide  
Sanderson Street plans |
| 11      | 4.2, 4.3             | Section 4 – Calculating costs (continued)  
Transferring costs to a summary costing sheet  
• Activity 4.6 | Learner’s guide  
Sanderson Street plans |
<table>
<thead>
<tr>
<th>Session</th>
<th>Performance criteria</th>
<th>Guide</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>4.2, 4.3</td>
<td>Section 5 – Applying overhead costs and margins&lt;br&gt;Company overheads</td>
<td>Learner’s guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 5.1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>5.1, 5.2</td>
<td>Section 5 – Applying overhead costs and margins (continued)&lt;br&gt;Profit margins</td>
<td>Learner’s guide&lt;br&gt;Sanderson Street plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 5.2</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>5.3, 5.4</td>
<td>Section 5 – Applying overhead costs and margins (continued)&lt;br&gt;Letter of quotation</td>
<td>Learner’s guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 5.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Assessment 2 due</strong></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td><strong>Assessment 3 due</strong> (completed in class)</td>
<td>Learner’s guide</td>
</tr>
</tbody>
</table>
Undertake basic estimation and costing from contract documents

Annex B
Annex C – Assessment plan

You are required to demonstrate your competence in the elements of 30015 _Undertake basic estimation and costing from contract documents_ as listed in the unit details at Annex A by completing the three assessments.

<table>
<thead>
<tr>
<th>Due</th>
<th>Assessment</th>
<th>Elements</th>
</tr>
</thead>
</table>
| Session 8  
(completed in class) | Assessment 1 – Short-answer written test  
You are required to answer a series of short-answer questions. These are designed to check your knowledge of elements of estimating and costing. | 1, 2, 3, 4 |
| Session 14 | Assessment 2 – Estimating and costing a basic construction project  
Assessment 2 uses Activities 2.2, 3.1, 3.2, 3.4, 4.1, 4.3, 4.4, 4.5, 4.6, 5.1, 5.2 and 5.3 to provide evidence of your ability to estimate and cost a basic construction project. | 2, 3, 4, 5 |
| Session 15  
(completed in class) | Assessment 3 – Short-answer written test  
You are required to answer a series of short-answer questions. These are designed to check your knowledge of elements of estimating and costing. | 3, 4, 5 |

Individual learning and assessment needs

Everyone has different learning styles and needs. Please let your lecturer know if there is anything that may have an effect on your learning.

Results and appeals

There is a process to be followed should you wish to appeal the result of your assessment. Please ask your lecturer for more information about this.
Undertake basic estimation and costing from contract documents
Annex D – Assessments
Undertake basic estimation and costing from contract documents

Annex D

30015
Assessment 1 – Short-answer written test

Introduction

In this assessment you are required to answer a series of short-answer questions. These are designed to check your knowledge of elements of estimating and costing.

Requirements and format

This is an open-book assessment. You may refer to your learner’s guide if you wish. Write the answer to each question in the space provided below it. You should attempt all questions.

Materials and equipment

You will need a pen, pencil, notepaper for workings out, and calculator.

Due date

This assessment is due for completion in class in Session 8.
Undertake basic estimation and costing from contract documents

Annex D

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30015

Undertake basic estimation and costing from contract documents

Assessment 1 – Short-answer written test

Name ___________________________ Date ______________

I have received feedback on this assessment.

Signature ________________________ Date ______________

Assessor’s initials
Undertake basic estimation and costing from contract documents
Assessment 1 – Short-answer written test

1. List the documents that would form part of a contract.

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_________________________________________________________________________
b) 

Formula = 

Answer =
3. Calculate the area of the following two shapes.

a) 

Formula =

Gross area =

Deduction =

Answer =
b) 

Formula =

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Answer =

________________________________________________________________________
4. Calculate the surface area of the walls of Bed 2 in the part plan below. Assume the ceiling height is 2450, the door height is 2060 and the window height is 1810.

Formula =

Answer =
5. Calculate the volume of concrete required for the ground slab in the Hopscotch Home. Refer to the plans provided at Annex E to this guide.

Answer =

6. List five trades that could provide a supply and install quote to you as the builder.

________________________________________________________________________

________________________________________________________________________

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________________________________________________________________________
Assume that a subcontracted carpenter charges $8.50 per square metre for labour to lay flooring, and the flooring material costs $18.25 per square metre. Calculate the total cost of labour and materials to lay floors in the rooms listed below, as shown on the Hopscotch floor plan.

<table>
<thead>
<tr>
<th>Kitchen</th>
<th>Meals</th>
<th>Family</th>
<th>Games</th>
<th>Total</th>
</tr>
</thead>
</table>

End of Assessment 1
Undertake basic estimation and costing from contract documents
Assessment 2 – Estimating and costing a basic construction project

Introduction
In this assessment you are required to estimate and cost a basic construction project.

This assessment will be completed in class in Sessions 9 to 13, and will be composed of Activities 4.1, 4.3, 4.4, 4.5, 5.2 and 5.3. It must be submitted by the end of Session 14.

Requirements and format
The assessment must be submitted as an A4 word-processed document with a cover sheet and the marking guide (Annex F to this guide).

You must also submit copies of Activities 2.2, 3.1, 3.2, 3.4, 4.1, 4.3, 4.4, 4.5, 4.6, 5.1, 5.2 and 5.3.

Materials and equipment
You will need a pen, pencil, notepaper for workings out, and calculator.

Due date
This assessment is due in Session 14.
Undertake basic estimation and costing from contract documents
30015

Undertake basic estimation and costing from contract documents

Assessment 2 – Estimating and costing a basic construction project

Name ____________________________________ Date _____________

I have received feedback on this assessment.

Signature __________________________________ Date _____________

Assessor’s initials

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Undertake basic estimation and costing from contract documents

Annex D

30015
Assessment 3 – Short-answer written test

Introduction
In this assessment you are required to answer a series of short-answer questions. These are designed to check your knowledge of elements of estimating and costing.

Requirements and format
This is an open-book assessment. You may refer to your learner’s guide if you wish. Write the answer to each question in the space provided below it. You should attempt all questions.

Materials and equipment
You will need a pen, pencil, notepaper for workings out, and calculator.

Due date
This assessment is due for completion in class in Session 15.
Undertake basic estimation and costing from contract documents
30015

Undertake basic estimation and costing from contract documents

Assessment 3 – Short-answer written test

Name ___________________________ Date ______________

I have received feedback on this assessment.

Signature ________________________ Date ______________

Assessor’s initials
Undertake basic estimation and costing from contract documents
## Terminology

1. Define the following terms in relation to estimating and contracts.

   a) Estimate
   
   b) Cost
   
   c) Profit

## Costs

2. Define each of the following, and give an example of when each may be used.

   a) Provisional sum (PS)
b) Prime cost (PC)


3. Why are PS and PC used in contract documents?


3. Why are PS and PC used in contract documents?


Quantities

4. View the electrical plans for the Hopscotch Homes project provided at Annex E to this guide, and measure the required quantities of the items listed below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling light</td>
<td></td>
<td>Exhaust fan</td>
<td></td>
</tr>
<tr>
<td>Wall light</td>
<td></td>
<td>Smoke detector</td>
<td></td>
</tr>
<tr>
<td>Recessed light</td>
<td></td>
<td>Waterproof GPO</td>
<td></td>
</tr>
<tr>
<td>Fluorescent light</td>
<td></td>
<td>Telephone point</td>
<td></td>
</tr>
<tr>
<td>External light</td>
<td></td>
<td>Digital TV point</td>
<td></td>
</tr>
<tr>
<td>Single GPO</td>
<td></td>
<td>Conduit</td>
<td></td>
</tr>
<tr>
<td>Double GPO</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Classify each of the items below as either a site overhead or a company overhead. (Note that some items can be allocated to more than one category.) Give a reason for your choice.

<table>
<thead>
<tr>
<th>Item</th>
<th>Classification</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance of building works</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor vehicle insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor’s salary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scaffold hired by builder for use by various trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crane owned by builder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site shed for storage of materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formwork supplied by subcontractor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garage for storage of builder’s equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubbish removal from site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Window cleaning at office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBA membership fees</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. List three precautions that must be considered when using estimating rates from cost guide publications.

7. You have estimated the builders’ total cost for a home your company is to build. Assign a reasonable percentage of profit and overhead, then determine the final cost using the information shown below.

<table>
<thead>
<tr>
<th>Builder’s total cost</th>
<th>$34 5211</th>
</tr>
</thead>
<tbody>
<tr>
<td>Builder’s profit and overheads (%)</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
</tr>
<tr>
<td>Goods and services tax (%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>
8. Write a letter of quotation to the client to present the final cost you have calculated in question 7.

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End of Assessment 3
Annex E – Plans
Undertake basic estimation and costing from contract documents
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Undertake basic estimation and costing from contract documents
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Annex E

30015
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Annex E
Undertake basic estimation and costing from contract documents
Annex F – Marking guide
Undertake basic estimation and costing from contract documents
Assessment 2 – Estimate and cost a basic construction project – Marking guide

Instructions for learners
Tick the boxes on the left once you are happy with that aspect of your assessment and before you submit it.

Instructions for assessors
Place a cross in the boxes on the right only if the item is not acceptable or not competent.

This assessment will assess Elements 3, 4 and 5.

Presentation
- Overall neatness
- Assessment format correct
- A4 cover sheet
- Assessment submitted on time
- Marking guide attached

Submission contains
- Activity 4.1
- Activity 4.3
- Activity 4.4
- Activity 4.5
- Activity 5.2
- Activity 5.3
Undertake basic estimation and costing from contract documents

Note: Your assessor may provide specific notes on your submission as an alternative to completing the feedback section below.

Feedback: ...........................................................................................................................................
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Assessment successfully completed:  

Yes    /    No
LEARNER’S GUIDE

DESCRIPTION
This learner’s guide will take you through the process of estimating preliminaries, labour and materials, to establish costs for a basic construction project. It contains a mix of content and hands-on activities that support the unit 30015 Undertake basic estimation and costing from contract documents from Certificate II in Building and Construction (Pathway – Paraprofessional). The course, and this guide, focus on the skills and knowledge required to get your career started as a paraprofessional in the residential building industry.

The topics covered in this guide include how to:
• read and interpret contract documents
• develop and use a costing summary sheet
• establish work requiring external quotations
• estimate labour and materials required
• estimate the costs of various elements of the building project
• understand and apply items such as overhead and profit margins.

You will also learn how to prepare costing documentation. Assessment activities are also included.

EDITION
Edition 1, 2012
Unit and course codes updated 2014

COURSE/QUALIFICATION
Certificate II in Building and Construction (Pathway – Paraprofessional)

UNIT
30015 Undertake basic estimation and costing from contract documents

RELATED PRODUCTS
This resource is one of a series that covers all 12 units of the Certificate II in Building and Construction (Pathway – Paraprofessional) qualification. Please refer to our catalogue for more information.