Owner Builder Education Course (Tasmania)

Version 2 – 220314
© ABE Education Pty Ltd
<table>
<thead>
<tr>
<th>TOPIC 7 – PLANS DRAWINGS AND SPECIFICATIONS</th>
<th>91</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPIC 6 – DESIGN CONSIDERATIONS AND SUSTAINABLE BUILDING</td>
<td>77</td>
</tr>
<tr>
<td>Design criteria and standards of building work</td>
<td>77</td>
</tr>
<tr>
<td>Owner Builder Choices in Sustainable Building</td>
<td>78</td>
</tr>
<tr>
<td>Site Location, Orientation &amp; House Layout</td>
<td>79</td>
</tr>
<tr>
<td>Passive Solar Design</td>
<td>79</td>
</tr>
<tr>
<td>Thermal Considerations</td>
<td>80</td>
</tr>
<tr>
<td>Windows, Glazing &amp; Thermal Integrity</td>
<td>81</td>
</tr>
<tr>
<td>Heating/Cooling</td>
<td>82</td>
</tr>
<tr>
<td>Shading</td>
<td>83</td>
</tr>
<tr>
<td>Ventilation</td>
<td>84</td>
</tr>
<tr>
<td>Energy management</td>
<td>84</td>
</tr>
<tr>
<td>Lighting</td>
<td>86</td>
</tr>
<tr>
<td>Lighting Tips</td>
<td>86</td>
</tr>
<tr>
<td>Lighting Types</td>
<td>88</td>
</tr>
<tr>
<td>Solar Lighting</td>
<td>90</td>
</tr>
<tr>
<td>Solar Incentives</td>
<td>90</td>
</tr>
<tr>
<td>TOPIC 5 – ESTIMATING AND JOB COSTING</td>
<td>56</td>
</tr>
<tr>
<td>ESTIMATING</td>
<td>56</td>
</tr>
<tr>
<td>An outline of the Estimate</td>
<td>56</td>
</tr>
<tr>
<td>The components of Net Cost</td>
<td>56</td>
</tr>
<tr>
<td>Ordering Materials</td>
<td>58</td>
</tr>
<tr>
<td>Preliminary costs</td>
<td>59</td>
</tr>
<tr>
<td>The Builders Take Off</td>
<td>61</td>
</tr>
<tr>
<td>Subcontractor quotes</td>
<td>63</td>
</tr>
<tr>
<td>Checklist – Obtaining a quotation from a subcontractor or a supplier</td>
<td>66</td>
</tr>
<tr>
<td>The Goods and Services Tax (GST)</td>
<td>67</td>
</tr>
<tr>
<td>Deposits on building work and Progress Payments</td>
<td>67</td>
</tr>
<tr>
<td>Making progress payments</td>
<td>67</td>
</tr>
<tr>
<td>The “Security of Payment” Act</td>
<td>67</td>
</tr>
<tr>
<td>Taxation and Superannuation Guarantee for employees</td>
<td>68</td>
</tr>
<tr>
<td>DEVELOPING THE PROJECT CASH FLOW</td>
<td>69</td>
</tr>
<tr>
<td>Sections of a cash flow</td>
<td>69</td>
</tr>
<tr>
<td>The Project Cash Flow Projection</td>
<td>70</td>
</tr>
<tr>
<td>Example - Construction time take 16 weeks</td>
<td>71</td>
</tr>
<tr>
<td>Example – Projected Cash Outgoings</td>
<td>71</td>
</tr>
<tr>
<td>Construction Cash Flow</td>
<td>72</td>
</tr>
<tr>
<td>Job Costing</td>
<td>72</td>
</tr>
<tr>
<td>Example Job Costing Sheet</td>
<td>73</td>
</tr>
<tr>
<td>OBTAINING FINANCE</td>
<td>75</td>
</tr>
<tr>
<td>Applying for a bank loan</td>
<td>75</td>
</tr>
<tr>
<td>Valuations</td>
<td>76</td>
</tr>
<tr>
<td>Avoid cash-flow pitfalls</td>
<td>76</td>
</tr>
<tr>
<td>TOPIC 4 – CONTRACTS</td>
<td>48</td>
</tr>
<tr>
<td>The law</td>
<td>48</td>
</tr>
<tr>
<td>What is a Contract?</td>
<td>48</td>
</tr>
<tr>
<td>Features of a contract</td>
<td>49</td>
</tr>
<tr>
<td>Contracts entered by an owner builder</td>
<td>50</td>
</tr>
<tr>
<td>Contract documentation</td>
<td>51</td>
</tr>
<tr>
<td>Use the following checklist when signing a contract</td>
<td>53</td>
</tr>
<tr>
<td>Prime Cost Item (P.C)*</td>
<td>54</td>
</tr>
<tr>
<td>Tips: Before you sign</td>
<td>55</td>
</tr>
<tr>
<td>Contract purchase</td>
<td>55</td>
</tr>
<tr>
<td>Contract Disputes</td>
<td>55</td>
</tr>
</tbody>
</table>
TOPIC 8 – MANAGING YOUR PROJECT ................................................................. 101

Managing the Site .......................................................................................... 101
Personnel ........................................................................................................ 101
Equipment ...................................................................................................... 101
Materials ........................................................................................................ 101
Seven ways to succeed as a project manager .............................................. 102
Seven ways to fail as a project manager ...................................................... 103

COMMUNICATION ..................................................................................... 105
Have a communication plan ........................................................................ 105
Reasons for poor or incorrect interpretation .............................................. 105
Causes of Communication Barriers ............................................................. 105

NEGOTIATION .............................................................................................. 106
Negotiation Defined ..................................................................................... 106
Strategies of the negotiation process .......................................................... 106
Win-Lose Strategy ...................................................................................... 107
Lose-Win Strategy ...................................................................................... 107
Lose-Lose Strategy ...................................................................................... 107
Any of the above 4 ...................................................................................... 107

DISPUTES AND CONFLICT ....................................................................... 108
Avoiding the Dispute .................................................................................... 108
Four stages to Conflict Resolution ............................................................. 109
1. Identify the problem ................................................................................ 109
2. Generate solutions to the problem ....................................................... 109
3. Develop an action plan ......................................................................... 110
4. Ensure follow up ................................................................................... 110

PROJECT MANAGEMENT FUNCTIONS .................................................. 111
Project management steps ........................................................................... 111
Preparing project schedules ...................................................................... 111
Allocating project resources ....................................................................... 111
Supervising Implementation ....................................................................... 112

PLANNING .................................................................................................... 112
Plans/Specifications ...................................................................................... 112
Schedule ....................................................................................................... 112
Orders ........................................................................................................... 113
Records.......................................................................................................... 113
Construction Planning ............................................................................... 113
Establish a Plan ......................................................................................... 113
Types of programming techniques ............................................................ 114
Bar Charts ................................................................................................... 119
The Programming Process ......................................................................... 119
Progress monitoring and reporting ............................................................. 123
Fine tuning the planning process ............................................................... 124
Processing job changes .............................................................................. 125
Extensions of Time ....................................................................................... 126

DILAPIDATION REPORT .......................................................................... 127
Dilapidation Report on Existing Services & Conditions ......................................................... 128
Condition & descriptions ........................................................................................................ 128

**TOPIC 9 – INSURANCE** ........................................................................................................ 129
Failure to obtain the correct insurance .................................................................................. 129
Types of insurance .................................................................................................................. 129
Workers Compensation Insurance ......................................................................................... 130
Public Liability Insurance ...................................................................................................... 131
Construction Insurance (also called Contract Works Insurance) ............................................ 132
Other types of insurance ......................................................................................................... 133
Insurance Providers ................................................................................................................. 134

**GLOSSARY OF BUILDING TERMS** ...................................................................................... 137
Building Contract ...................................................................................................................... 137
FOREWORD

Becoming an owner builder is very rewarding. Each year thousands of people become owner builders, some to build a new dream home and others to renovate. Instead of the more traditional method of engaging a licensed builder, they decide to do undertake the project themselves.

In 2011 renovations hit $35 billion worth of work compared to $31 billion in 2010 (HIA chief economist Harley Dale), and to $22 billion in 2002. The Construction Forecasting Council expect the renovation market to double over the next 5 years, with a record demand for kitchen and bathroom renovations as these are the most effective in adding value to a property.

Renovations can be put down to the increased asset value of houses, the high cost of changing houses in stamp duty, agent’s commission, legal fees, hugely increased building costs and the popularity of TV home makeover programs.

Whilst home ownership has long been part of the Australian dream, for many people actually building their own home is an even greater part of that dream. Building or renovating can be considered is one of the single greatest investments an individual can make, however it does come with considerable risk for someone without the adequate building knowledge and experience to start building their own home.

Many owner builders go into a project naively and do not comprehend the large task and responsibility they are taking on. In addition to this, the house needs to be built safely, as often, workplace health and safety is a major issue for owner builders. All homes also need to be constructed in accordance with the Building Code of Australia and related Australian Standards.

The ABE Education Tasmanian owner builder course is designed to provide comprehensive and practical information to owner builders, and to reduce the Workplace Health and Safety risks often faced by owner builders. All topics have been developed with the assistance and advice of a number of industry experts and regulatory authorities. Topics consist of basic management skills, as well as some technical understanding, including:

- Knowing how to read and interpret detailed one dimensional architectural plans, which are scaled.
- Ensuring that plans and specifications fit your requirements and budget before you submit to council.
- Obtaining an up-to-date survey defining the site boundaries either during or after completing works
- Calculating the cost of labour and materials for the total project before commencing
- Researching and sourcing contractors/ materials and interpreting quotations, well in advance of being required on-site.
- Being familiar with workers’ compensation public liability and other building related insurances
- Providing a safe working environment on your property in accordance with Work Health & Safety and Workplace Standards Tasmania requirements.
- Preparing individual contracts covering the various sub-contract works for each trade before they commence.
- Supervising and co-ordinating the construction, dealing with any disputes and determining what is defective building work, which often involves trawling through various codes, specifications and council documents or seeking expert advice.
- Dealing with progress claims and understanding the value of sub-contractors’ work as it is completed.
- Understanding and meeting your obligations with regard to GST and ABN tax requirements.
- Dealing with the council, building surveyors, engineers, consultants and obtaining ‘as-built’ certification for various trades (e.g. building and plumbing permits, waterproofing and glazing certificates).
- Obtaining an Occupancy Permit from a building surveyor prior to occupancy
- Obtaining a Certificate of Completion for completed works.

The course is designed to be completed via an online Learning Management System (LMS) called Moodle, from the comfort of one’s home or office and from any location with an active internet connection. You are required to read through all topics contained in this document before undertaking an assessment to test your knowledge of the key aspects of being an owner builder.

The assessment component of the course comprises of a number of questioning techniques including:

- Multiple choice (1 correct answer)
- Multi choice (multiple correct answers)
- Short answer
- Fill in the gaps
- Match-type
- Scenario – based

As a valued student, please do not hesitate to provide any feedback or suggestions about the course.

Remember that being an owner builder requires a considerable sacrifice of your time and a high degree of planning but turning your building/renovating dream into reality can be a truly satisfying and rewarding experience. It is worthwhile getting passionate and committed about the process.
INTRODUCTION

The Tasmanian Building Act 2000 which commenced on July 1 2004 included a major reform; the introduction of a system for the accreditation of building practitioners as a means of ensuring that those involved in the design, construction and assessment of buildings are appropriately qualified, insured and accountable.

These provisions do not prevent genuine owner builders from constructing their own buildings and Section 23A of the Building Act 2000 highlighted below, shows that owner builders are specifically exempt from the accreditation requirements. However in all other respects, owner builders are bound by the provisions of the Act and are expected to meet all its requirements.

**Section 23A Persons to be accredited for certain work**

(1) A person must not manage, carry out or enter into a contract to manage or carry out the work of a building practitioner in connection with building work which requires a building permit, and the cost of which exceeds $5,000, unless the person is –
   (a) accredited under this Part in the relevant category and class as specified in the scheme; or
   (b) a building practitioner, being a body corporate or partnership, that complies with section 25; or
   (c) an owner builder registered under section 30D; or
   (d) exempt from accreditation under subsection (2).

Penalty: In the case of –
   (a) a natural person, a fine not exceeding 250 penalty units; or
   (b) a body corporate, a fine not exceeding 750 penalty units.

(2) The following persons are exempt from accreditation:
   (a) a person engaged or employed by a building practitioner body corporate or partnership that complies with section 25, or an accredited building practitioner or a registered owner builder, to carry out building work on their behalf;
   (b) a plumber carrying out or managing the replacement of roof decking which requires a building permit;
   (c) a plumber carrying out or managing a class of plumbing work that requires a building permit and is prescribed work under the Occupational Licensing Act 2005;
   (d) a person carrying out or managing electrical work which is prescribed work under the Occupational Licensing Act 2005 and requires a building permit.

The provisions relating to owner builders are designed to:

- enable a reasonable outcome for genuine owner builders who intend to build on their own land;
- reduce the number of builders (in the business of building) falsely claiming to be building their own home in order to avoid the mandatory insurance and accreditation provisions of the Building Act 2000;
- protect consumers by ensuring that non-accredited persons who are in the business of building do not persuade unsuspecting clients to become “owner builders”.
STEPS TO BECOMING AN OWNER BUILDER

STEP 1
Speak to your local council and determine whether you require a planning permit

STEP 2
Complete the Owner builder Course with an approved provider

STEP 3
Engage an accredited building designer or architect to produce the plans and specifications for your project. You will need to show this to your building surveyor.

STEP 4
Engage a building surveyor

STEP 5
Take the following to your building surveyor:

- Final plans of proposed building work
- Owner builder course Statement of Completion
- Construction Induction (White Card)
- Signed Owner builder Application (Form 40)
- Evidence of land ownership (or contract for purchase)

The building surveyor will submit your application for registration to be an owner builder. The Registration Certificate will confirm your status to act as an Owner builder

You will be issued with the Director’s Registration Certificate and a Certificate of Likely Compliance from the building surveyor

STEP 6
Apply for Building and Plumbing Permits from your Council (Permit Authority)

STEP 7
Provide a Start Work notification to the building surveyor and receive their authorisation to start work.

STEP 8
Commence your owner builder project
WHAT IS AN OWNER BUILDER?

An owner builder is an individual (or a group of individuals) who intends to carry out building work and hold owner builder registration for that particular work. Corporations are not allowed to be registered as owner builders.

Owner builder building work is carried out subject to mandatory inspections at various stages by an accredited building surveyor who has statutory duties under the Building Act 2000 to ensure that all building work complies with the Act.

An owner builder must complete the building to the same standards as that of an accredited builder. Before the building surveyor can issue an occupancy permit and a certificate of final inspection they will inspect and ensure the work is compliant with the standards of the Act and the building permit

Under Section 3 of the Act, “owner builder” means:

(a) a natural person who is registered under Section 30D* to manage or carry out work on a Class 1-9 building*; and 
(b) an owner who manages or carries out building work on a Class 10 building;

* More information on section 30D and the types of building class are provided later on in the topic.

Building Classification

The Building Code of Australia (BCA) is a national uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia. It is produced and maintained by the Australian Building Codes Board. The BCA provides a classification Scheme which relates to the entire building industry.

The following table shows the types of building work and their corresponding classification: (Note – in Tasmania an owner builder can construct or perform work on any Class of building).
BUILDING CODE OF AUSTRALIA (BCA)

<table>
<thead>
<tr>
<th>Building Class</th>
<th>Type of Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1a</td>
<td>House, including single dwelling, as well as attached dwellings such as a row of houses, terrace house, town house or villa unit, separated by a fire-resisting wall</td>
</tr>
<tr>
<td>Class 1b</td>
<td>Small guest house, tourist accommodation cabins (four or more)</td>
</tr>
<tr>
<td>Class 2</td>
<td>Sole occupancy units located one above the other e.g. multistorey apartments</td>
</tr>
<tr>
<td>Class 3</td>
<td>Short term residential building, hotel or motel</td>
</tr>
<tr>
<td>Class 4</td>
<td>Caretaker’s flat (associated with a commercial building)</td>
</tr>
<tr>
<td>Class 5</td>
<td>Building used for professional or commercial purposes such as an office</td>
</tr>
<tr>
<td>Class 6</td>
<td>Shop or other building for the sale of goods by retail or supply or services</td>
</tr>
<tr>
<td>Class 7a</td>
<td>Carpark</td>
</tr>
<tr>
<td>Class 7b</td>
<td>Building for storage or display of goods or produce by wholesale</td>
</tr>
<tr>
<td>Class 8</td>
<td>Factory or laboratory</td>
</tr>
<tr>
<td>Class 9</td>
<td>Health care(9a) or Assembly building (9b) or Aged care (9c)</td>
</tr>
<tr>
<td>Class 10</td>
<td>Non-habitable buildings such as carport, garages or shed, or a bushfire shelter; structures such as fences, free-standing walls or swimming pools and the like</td>
</tr>
</tbody>
</table>

If you are unsure which Class your building falls into, ask your building surveyor for advice.

Types of Owner builder work

Registered owner builder work may include the carrying out or managing the following types of building work, which requires a building permit and where the estimated cost of the works exceeds $5,000:

- new building work, including a new dwelling (Class 1a);
- renovations or alterations;
- extensions and additions;
- removing or altering load bearing walls;
- works that may involve a change of use of the premises, e.g. converting a shop into a residence, or converting a garage into habitable space such as a bedroom;
- building a deck;
- work on a commercial building is also permitted

There are no restrictions on the general types of building/construction work that can be carried out by an owner builder. An owner builder can carry out most types of building or construction work such as bricklaying, carpentry, metal roofing, gyprock (plasterboard) fixing, concreting and tiling. All works done by an owner builder must comply with the Building Code of Australia (BCA).
Registration of Owner Builder Work

Owner builder work that requires Registration

Section 30A of the Act, requires owners to be registered as an owner builder to undertake building work. If you are the owner of the land or building where building work is, or intended to be carried out or managed by you, then you must be registered as an owner builder in the following situations –

(a) the work requires a building permit; and
(b) the estimated cost of the work exceeds $5 000; and
(c) the work is on a Class 1-9 building, other than a Class 7b farm building.

Example: Building work on a Class 1b tourist cabin with an estimated cost of $20 000 that needs a building permit is a type of work that needs the owner to be registered as an owner builder before you can apply for a building permit and start work.

Note: If the land or building is jointly owned, all the owners must apply for registration as an owner builder.

Owner builders can build a building of any Classification – meaning they are not restricted to dwellings. For example they can construct an office, shop, or packing shed on a farm.

Persons intending to become an owner builder must arrange with their building surveyor to obtain an Owner builder Registration Certificate from the Director of Building Control. The Director of Building Control maintains details of persons who have been registered as owner builders in Tasmania.

Eligibility

The Building Act requires intending owner builders to meet certain conditions to be eligible for registrations.

You are only eligible to apply for registration as an owner builder if –

- You are the owner, or joint owner of the particular land or building; and
- You intend to carry out or manage the building work or intend to have it managed on your behalf by another joint owner; and
- Your building work:
  - Requires a building permit; and
  - Has an estimated cost which exceeds $5 000; and
  - Is a Class 1-9 building, and not a 7b farm building; and
- You are not carrying on the business of building; and
- You have not (other than as an accredited builder) carried out 2 building projects of any classification (except Class 10 or Class 7b farm buildings) in the last 10 years (not including buildings prior to 1 July 2004); and
You have successfully completed an approved owner builder training course and obtained a white card within the 12 month period prior to your application for registration as an owner builder.

**Note:** If an application is made by more than one person, only one person needs to successfully complete the approved training course. This should be the person who will be responsible for carrying out or managing the building work.

It is your responsibility to check that you can satisfy all of these conditions and are eligible to act as an owner builder before you go too far with your project. An owner builder often has the expectation that there will be some financial saving, but if you assume that you will be able to act as an owner builder when you are not eligible to do so there could be undesirable implications for the success of your project both in financial and practical terms.

**Don’t be conned**

You should be wary of a builder who suggests you obtain an owner builder Registration Certificate while they do all the building work for you.

Some non-accredited people claiming knowledge of building, and even some accredited builders have offered their services to prospective home owners on condition that the owner poses as an owner builder on the permit application. They offer promises of cost savings but what they are really offering can be a ploy where the builder is shirking responsibility, is unlicensed, or is unable to get the necessary insurance.

**Owner builder work exempt from Registration**

An owner may also carry out the following types of work; however they do not need to be registered as an owner builder by the Director.

- Any work on Class 10 buildings or structures, no matter what the cost. This includes:
  - building retaining walls or fences (Class 10);
  - freestanding garages, carports, and domestic sheds (Class 10);
  - swimming pools and pool fences (Class 10);
- A farm building that is a Class 7b building (warehouse/shed) to be used farming/horticultural purposes, e.g. hay shed, farm equipment shed.
- Any building work less than $5 000 in cost (cost of labour and materials)
- Any work that does not require a building permit

**Note:** The owner will still need a building permit from the local council for Class 10 (unless exempt from a permit) and Class 7b types of work

If you intend to perform a type of work that does **NOT** need Registration you should apply directly to the Building Surveyor for a Certificate of Likely Compliance and then to the council for building and plumbing permits.
Owner builder Restrictions

An owner builder Registration Certificate is not an Accredited Builder’s Licence. It may only be used for particular projects.

Restrictions on the work of owner builders are enforced in every state and territory of Australia. These limitations on owner builders reinforce the owner builder category as being separate from Accredited Building Practitioners who are allowed by law to carry on a business of constructing buildings. The owner builder provisions will not prevent genuine owner builders from building, for example the construction or adding to their own home.

Restriction on the work performed

Even as a registered owner builder you are not allowed to perform any work that requires a special occupational licence including:

- Plumbing (including roof plumbing)
- Electrical work
- Gas fitting and air conditioning
- Asbestos removal except for exempt amounts
- You must not remove more than 10m2 of asbestos.
- Only a licensed asbestos removalist can do large asbestos removal jobs (i.e. removal of sheet asbestos of a size more than 10m2).

Owner builders can be prosecuted if work which should be carried out by a licensed contractor is carried out by the owner builder. The owner builder can also be prosecuted if they employ or cause work to be done, which is licensed work (for example electrical and plumbing work) and this work is carried out by an unlicensed person without the appropriate occupational licence.

Waterproofing

Waterproofing of wet areas is a part of construction that is known to have had a high rate of failure with problems caused by water penetrating into walls/ floors etc. Although waterproofing is not restricted under an owner builder permit, ABE Education strongly recommends that only appropriate contractors who have knowledge of application of waterproofing materials, undertake work in these areas.

Construction or work on two or more buildings

The definition of “owner builder” in section 3 of the Building Act provides that an owner builder is allowed to build two (2) buildings of any Classification within any ten (10) year period after the Building Act commenced on 1 July 2004.

There is therefore a restriction of 2 buildings in each 10 years that a person can construct, add to or alter as an owner builder (e.g. building a new room as an owner builder on an existing building). The two buildings in 10 years restriction for owner builders does not apply to any Class 10 buildings or to Class 7b farm buildings.
Additions to previous owner builder building work

An owner builder can carry out any number of alterations, extensions and additions to buildings on land they own, but only in relation to the two buildings they have previously constructed (or previously altered) in a ten year period, for which they were registered.

The first owner builder building or the first alteration to an existing building counts towards the total of two projects in ten years. However further alterations and additions to a building, which is already counted as one of their owner builder buildings, does not count as an additional owner builder project.

Enforcement on restrictions

The Director of Building Control maintains a database register of owner builders which records the names and details of every owner builder and monitors their building activities and this is continuously checked. “Owner builders” who attempt to construct more than two buildings in ten years will be prosecuted. This is to protect consumers against “speculative builders” or opportunistic developers who have no accreditation and insurance and are operating a building business simply through buying and selling land.

Persons who sign the Owner-Builder Registration Application and provide false or misleading information will also be prosecuted.

To enforce the restrictions on owner builders the Director of Building Control monitors the owner builder database and an owner builder will not be able to obtain a Certificate of Likely Compliance from their building surveyor unless their building surveyor has obtained an owner builder Registration Number Certificate from the Director.

Other prosecutable offences

In order to avoid legal action, construction must be in accordance with the Building Code of Australia and the building permit granted for that work.

It is an offence under the Building Act 2000 if an owner builder starts work or permits any work under their control to commence before:

- Engaging the services of a Building Surveyor
- Obtaining Registration for work over $5,000 that needs a building permit
- Obtaining a Certificate of Likely Compliance from a building surveyor
- Obtaining planning, building and plumbing permits
- Notifying the building surveyor that they are ready to start work and receiving their authorisation accordingly.

It is also an offence under the Building Act 2000 that a person, in providing any information, statement, report or document:

- provide it knowing it to be false or misleading; or
- omit any matter knowing that without that matter the information, statement, report or document is false or misleading

Other prosecutable Offences may include:

- maintaining a building site that is unsafe for workers;
- causing environmental nuisances or hazards (dust, noise, dirt on roads)
Responsibility as the builder for Latent Defects

In addition to the above, an owner builder has a responsibility for latent defects for a period of up to ten (10) years; this ten year period starts from the date the occupancy permit was granted. Since they were the responsible builder the owner builder may be sued for damages in a civil action. This liability can extend to subsequent owners of the building, even if the owner builder did not have a contractual relationship with them.

The Building Act 2000 section 12(1) sets out the duties of owners under the Act:

(1) The owner of a building who authorises building work in respect of the building, so far as is reasonably practicable, is to ensure that –
   (a) any person engaged to carry out the building work and associated building work is an accredited building practitioner if so required under this Act; and
   (b) correct information is provided to any person engaged to carry out the building work and associated building work; and
   (c) the building or land on which the building work is to be carried out is clearly identifiable; and
   (d) provisions for the protection of adjoining property are carried out in accordance with this Act; and
   (e) the building is not occupied until an occupancy permit has been issued; and
   (f) sufficient information is supplied to the next owner for that owner to maintain the building in accordance with this Act.

(2) An owner who engages a person to carry out any plumbing work is to ensure, so far as is reasonably practicable, that the person is a plumber if so required under the Occupational Licensing Act 2005.

(3) An owner who engages a person to design plumbing work is to ensure, so far as is reasonably practicable, that the person is –
   (a) an accredited building practitioner; or
   (b) a plumber.

(4) The owner of a building, so far as is reasonably practicable, is to ensure that the building is used and maintained for the intended purpose in accordance with this Act.

Note: Occupancy during building work will depend on individual circumstances and should be determined by the local council or building surveyor. There are general guidelines to follow, but it is ultimately up to discretion of the local council.

Owner Builder Expectation and Responsibilities

Under current Tasmanian building legislation, an owner builder is expected to perform no differently from an accredited builder and to take responsibility for the organisation of labour, the sourcing of material, payment of employees and sub-contractors, income tax, workers compensation, public liability, Work Health and Safety (WHS) and achieving a standard of building that satisfies the performance requirements of the Building Code of Australia and the relevant standards.

Glossary of Building Terms - Definition

‘Defect’: – fault or deviation from the intended condition of a material, assembly, or component.
Role and Responsibility

As an owner builder, you are the responsible builder. You are not able to engage another builder as the responsible party as this would defeat the purpose of being an owner builder. You can engage contractors to work for you. You will need to manage or undertake all tasks normally completed by the builder. This could include the following, but would not necessarily be limited to:

General management and legalities

- Directly engaging a building surveyor.
- Obtaining all necessary approvals of the building surveyor, the council and other authorities.
- Overseeing and supervising all tradespeople.
- Managing the building site.
- Providing a safe work environment that complies with legal requirements.
- Warranting that the work and materials will be fit for the purpose and that the work results in a dwelling fit for occupation.
- Ensuring that the financial, taxation and insurance requirements of the building work are met and fully comply with all laws.

Definition:

‘Construction management’— the administration and management of building construction involving tenders, co-ordinating and monitoring of construction activities, plant and equipment and may also involve consultation or direction to design and building and other consultants during the design and construction stages.
- Hold a construction induction White card training qualification**
- Being aware of your obligations under the *Workers Rehabilitation and Compensation Act 1988* and *Work Health and Safety Act 2012*.
- Ensuring any specialist contractor engaged is appropriately licensed and insured to do the work contracted for (e.g. electrical or plumbing)
- Adhering to legislation and regulations.

**Project administration**

- Set out the project.
- Ordering and purchasing material
- Erect the hoarding and/or fencing
- Site clearance and preparation.
- Negotiate with and engaging tradespersons
- Negotiating prices, ordering and arranging delivery of materials and supplies.
- Provide the basic safety requirements e.g.: PPE, Signage, First Aid etc
- Provide the necessary security measures.
- Provide the storage containers and amenities (depending on the size and type of construction.
- Arrange the temporary services – for example telephone, electricity, gas, water etc.
- Preparing and administering the sub contractors terms and conditions.
- Pay the trade/sub contractors.
- Coordinate the building inspections by the building surveyor.
- Scheduling/Coordinating the works
- Keeping the site safe and clean.
- Learning the building jargon.
- Attending to any short fall in deliveries immediately.
- Controlling the changes created by weather conditions.
- Administering the GST/PAYG withholding compliance.
- Solving problems, delays etc.
- Writing contracts that protect you, and are binding on the sub contractors, suppliers etc

These responsibilities will be addressed throughout your course.

**Note:** By choosing to be an owner builder, you forego the benefits of using an Accredited Building Practitioner and you are responsible when selecting people to carry out work on your behalf.
Your dream home can become a nightmare if you do not plan correctly!

Distressing tales abound of people who embarked on an owner-builder program or purchased what was labelled a “kit home” hoping to realise their dream home, only to meet with some degree of failure or financial loss.

Being an owner builder takes organisation, self-motivation, communication skills and lots of free time. This means that an owner builder must be prepared to spend a significant part of their time at the site looking and being aware of what has happened and what is about to happen.

Research, administration, organisation and communication skills are just as important as technical building skills for the owner builder.

To avoid potential problems intending owner builders need to consider the following:

- Many owner builders lack basic skills, direction and experience. Consider the level of your confidence and ability, as the best-laid plans do go astray. It would be unwise to undertake tasks you do not feel confident about.
- Relationships can be seriously tested before and during the construction process.
- Building a house is a very time consuming and labour intensive task and needs a great deal of forward planning.
- Lending institutions may shy away from owner builders as they often lack the expertise and full knowledge of the commitment they are about to undertake, and may not have adequate project management and budgeting skills.

Degree of involvement

When people say they intend to be an “owner builder”, this may mean different things to different people. Some people may wish to be more directly involved with the physical construction of the project, whilst others only want to project manage the job by coordination and contracting roles usually undertaken by a builder. Think carefully about the role you will undertake.

The intending owner builder should consider their family’s needs. The role of an owner builder is demanding, especially if you have a full time job and a family to support and think about. A building program will need the full support and co-operation of your partner and family.
As an owner builder you have decided to take on all the tasks that a builder must do to complete a successful project. You must allocate time almost every day to visit the site and keep activities on schedule, check WHS requirements, order materials, visit suppliers and hardware stores and make phone calls to remind tradesmen to advise you of delays or revised site timing schedules.

Calculate the absolute amount of time available you can spare on the project. The cost of time spent on the project must be measured against money lost as foregone business earnings for time spent at your place of employment or with your family.

Unless you are confident that you can meet all of these and other competing requirements, you should seriously reconsider whether you should be an owner builder.

The Pros and cons

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit margins for licensed builders typically range from 10 - 20% so there is the potential for substantial savings.</td>
<td>Builders have access to trade discounts from 2.5 - 15% and also to readily available and willing subcontractors and usually achieve a much faster completion time than can owner builders.</td>
</tr>
<tr>
<td>Savings may be made if you undertake the labouring and non-specialist work yourself, such as carpentry, metal roofing, plastering, concreting and tiling. You may be able to negotiate discounts on materials, fittings and appliances with suppliers particularly with cash, but this will take time and effort.</td>
<td>Builders have mandatory insurance – e.g. a builder will have Contract Works Insurance; an architect or building designer will have Professional Indemnity Insurance.</td>
</tr>
<tr>
<td>As an owner builder you can control the quality of the finished works, provided you have an understanding of good building practice, and you have more control of the cost savings for works that you decide you cannot afford. You can also delay non-essential works such as landscaping or expensive light fittings.</td>
<td>Negotiating discounts on materials, fittings and appliance with suppliers is extremely time consuming. You will need to obtain multiple quotations for each trade well in advance of it being required on your project. You must then check and compare the quotations in respect to comparable materials and specifications, and also scope the contractors availability.</td>
</tr>
<tr>
<td>The rewards at the end of all the hard work can outweigh the pain in some cases, due to the added value (capital gain) to your own home. This can be one of the best forms of tax free investments. Great joy can be achieved through an improved life style whether it is a more liveable living room, a dream kitchen or creating a well landscaped garden.</td>
<td>Owner builder jobs take considerably longer to complete their projects and if you move out during renovations (highly recommended for substantial works) the extra cost of rental accommodation can be quite large and should be factored into your budget.</td>
</tr>
</tbody>
</table>
The Building Act 2000 introduced a system of Accredited Building Practitioners, and this has many advantages to offer consumers. If you are not ready to become an owner builder, do not take on the worry when there are technically competent builders who will take on the duties and obligations required under the Act for the proposed building work. Accredited Building Practitioners are equipped to provide all of these services and take all the responsibility for the construction and ongoing satisfactory performance for your home.

**Accreditation check of a Building Practitioner**

The names and details of all the practitioners who are accredited are found on Director of Building Control’s Register, available on the Workplace Standards Tasmania website.

[Building Practitioner Search](#)

Do the sums before you start and ask yourself if any saving you will make is worth the time and responsibility it will take. As an owner builder you are guaranteeing the work you undertake.
# OWNER BUILDER PRELIMINARY CHECKLIST

The following list is not exhaustive nor necessarily in the correct order. It should be used as a guide only.

<table>
<thead>
<tr>
<th>Item no</th>
<th>Description of Task</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Set up bank account for project</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Complete Owner builder &amp; Construction induction White card Course</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Prepare detailed budget for project</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Obtain preliminary finance approval</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Design/select house plan (must be from an accredited designer)</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Obtain site survey and contour plan</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Provide design brief and final sketch to an accredited designer</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Choose a Building Surveyor</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Obtain soil test and foundation report</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Obtain engineer’s drawings</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Complete working drawings</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Prepare copies for tender/quotes</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Prepare budget estimates for Trade Contractors</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Compile specifications for tenders</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Call prices from Trade Contractors</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Finalise construction schedule (RDO’s &amp; Public Holidays marked)</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Insurances Workcover</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Public Liability</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Contractors All Risks</td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Personal Sickness/Accident</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Sight, record and file Trade Contractors insurance details</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Check Trade Contractors Licenses with Licensing Authority</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Sign contracts with Trade Contractors</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Finalise Work Method Statements from Trade Contractors</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Finalise Construction Workplace Plan for project</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Confirm account details with suppliers</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Confirm starting dates with Trade Contractors – amend construction schedule if required</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Make arrangements (and pay deposits) for temporary services</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Finalise budget for project</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Finalise Site Diary from Project start date</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Send commencement notification to lender (if applicable)</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Arrange for design of on-site wastewater management system for unsewered area (special plumbing permit required)</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Set out building, check (and recheck)</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>Take completed plans to building surveyor assessment for a Certificate of Likely Compliance</td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>Obtain owner builder registration through building surveyor</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>Apply for building and plumbing permits (including special plumbing</td>
<td></td>
</tr>
</tbody>
</table>
CONCLUSION OF TOPIC 1

Becoming an owner builder can be very rewarding however it is important that you are completely aware of your obligations and duties as an owner builder. The rest of the Study Guide will address various aspects of owner builder activities to assist you in completing your project successfully.

Please proceed to Topic 1 quiz on Moodle
TOPIC 2 – THE REGULATORY AUTHORITIES, PERMITS AND CERTIFICATES

There are various authorities who have jurisdiction over owner builders in Tasmania. Some provide approval and permits, whilst others establish a process for maintaining control and ensuring owner builder work is conducted to an acceptable standard.

The most common areas of authority control are:

- Director of Building Control (for owner builder registration)
- Building surveyor
- Local council/Permit authority
  - Planning and building departments
  - Approved waste water management systems (non-sewered areas)
  - Private water supply
  - Storm water drainage
  - Road access
- Water and Sewer Corporation authority (reticulated water and sewered areas) (Southern Water, Ben Lomond Water, Cradle Mountain Water)
- Electricity and gas reticulation network operators e.g. Aurora Energy, TAS Gas

As well as dealing with the above authorities, you will be required to apply for a number of permits and obtain certificates to ensure your owner builder work is in line with the requirements of the authorities. The permits and certificates which you should be aware of include:

- Owner builder registration certificate
- Certificate of Likely Compliance
- Planning permit
- Building permit
- Plumbing and special plumbing permits
- Authorisation to start building work
- Mandatory inspection notifications
- Occupancy permit
- Final inspection and completion certificate
<table>
<thead>
<tr>
<th>PERMIT/CERTIFICATE</th>
<th>ISSUING BODY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner Builder Registration</td>
<td>Director of Building Control</td>
</tr>
<tr>
<td>Certificate of Certifiable works (Water and sewerage connections)</td>
<td>Regional water and sewerage corporations</td>
</tr>
<tr>
<td>Certificate of Likely Compliance</td>
<td>Building surveyor</td>
</tr>
<tr>
<td>Planning Permit</td>
<td>Local council planning departments</td>
</tr>
<tr>
<td>Building Permit</td>
<td>Local council building permit authority</td>
</tr>
<tr>
<td>Plumbing and Special Plumbing Permits</td>
<td>Local council plumbing permit authority</td>
</tr>
<tr>
<td>Building Start Work Notification and authorisation</td>
<td>Notification is provided by the owner builder to building surveyor who then issues the authorisation.</td>
</tr>
<tr>
<td>Occupancy Permit</td>
<td>The building surveyor</td>
</tr>
<tr>
<td>Certificate of Final Inspection</td>
<td>The building surveyor</td>
</tr>
<tr>
<td>Certificate of Completion - Building</td>
<td>Local council building permit authority</td>
</tr>
<tr>
<td>Certificate of Completion - Plumbing</td>
<td>Local council plumbing permit authority</td>
</tr>
</tbody>
</table>

**DIRECTOR OF BUILDING CONTROL AND BUILDING SURVEYOR**

The Director of Building Control has responsibility for maintaining the building legislation (*Building Act 2000* and *Building Regulations 2004*) and is responsible for the owner builder registration, and accreditation of building practitioners.

As an owner builder you will not be liaising directly with the Director of Building Control. Instead you must engage the services of an accredited building surveyor who will act as your agent with the Director for the lodgement of your owner builder application and certificate of registration.

**BUILDING SURVEYOR**

A building surveyor is an accredited professional responsible for assessing building work to ensure it results in a building which is not only habitable, but also accessible, energy efficient and safe. Your building surveyor should have expert knowledge of building legislation, codes and standards to supervise building work and ensure it complies with the *Building Act 2000*.

The building surveyor will be responsible for a range of critical tasks throughout the duration of your project; from approving building plans, liaising with other professionals, providing advice, and most importantly inspect the construction from the placement of foundation to completion.
Appointing a building surveyor

It is therefore important that you think carefully about how you will choose your building surveyor. When appointing, you may choose:

(a) A private building surveyor  
(b) A council employed building surveyor. (Note that only some Tasmanian councils offer the services of a building surveyor for new work)

The private certification of building surveyors has enabled competition in the industry allowing, owner builder’s to engage a building surveyors of your choice. Importantly, once appointed the building surveyor will conduct all inspections and approvals relating to your project and cannot be dismissed by the owner builder.

⚠️ Note: A Building Surveyor is not the same as a Land Surveyor. A Land Surveyor is responsible for land surveying work.

A building surveyor is the certifier and inspector of building work.
Responsibilities of a building surveyor

The following chart outlines the responsibilities of the building surveyor from project commencement to completion.

1. Seek confirmation that a person is eligible to act as an owner builder. The following is reviewed to determine whether you are eligible:
   - Final plans of proposed building work
   - Owner builder and white card Training Course Statement of Completion
   - Signed Owner builder Application
   - Evidence of land ownership (or contract for purchase)

2. Ensure that the design is in accordance with the Building Act 2000 and the Building Code of Australia

3. Ensure all required documents are submitted and requesting appropriate additional information (if required)

4. Issue a Certificate of Likely Compliance

5. Receive the Start Work Notification from the owner builder and give their authorisation to start work under section 87 of the Building Act

6. Inspect all works at mandatory notification stages and at any other time.

7. Issue the occupancy permit and certificates of Final Inspection:
   - An Occupancy Permit indicates that the building is suitable for occupancy. A building must not be occupied until an occupancy permit is issued.
   - A Certificate of Completion (building work) is issued by the Permit Authority (local government) when it receives the Certificate of Final Inspection from the building surveyor.
Certificate of likely compliance

An owner builder will need to be registered and is required to obtain a certificate of likely compliance from a building surveyor, if they intend to carry out any commercial or domestic work (class 1-9 – see Building Classifications on page 8), that requires a building permit and is over $5 000. This includes any extensions and renovations. The certificate of Likely Compliance will be required before a building permit can be issued.

As noted above, your building surveyor will assess your documentation, apply to the Director of Building Control, and if your application for owner builder Registration complies with the provisions of the Act, a Certificate of Likely compliance will be issued along with a Registration certificate and number.

Steps to obtaining a certificate of likely compliance

Step 1: Provide the following documentation to your building surveyor and advise them of your intent to become an owner builder

- Completed site plans and building design from an accredited building designer
- Owner builder registration application (all land owners must apply)
- Owner builder training Statement of Completion
- The address of the proposed building work.
- Contract of sale (if you are buying the land you intend to build on)
- If the land is held in a maiden name please provide a copy of your marriage certificate.

Step 2: Your building surveyor will seek registration by the Director of Building Control for you to be an owner builder. The eligibility is assessed based on

- Ownership or proof of purchase of land
- The applicant’s owner builder building history. The applicant must not have already built two owner builder buildings in the past 10 years.

Step 3: Your building surveyor will then receive a Certificate of Registration within 14 days from the Director confirming your status as a registered owner builder. If registered, the building surveyor will issue your Certificate of Likely Compliance which will also include the owner builder Registration Number provided by the Director of Building Control.

Matters which your building surveyor will consider when issuing your Certificate of Likely include;

- The likelihood that the proposed work, when completed will comply with the Building Code of Australia, as well as other Acts and Regulations governing owner builder work
- Design aspects, such as the capability of the building to receive adequate ventilation, lighting and general safety of the design
- Whether the building is equipped with proper sanitary facilities
- Adequacy of fire protection measures in place
- Energy efficiency requirements
- Disability access for commercial buildings
The Building Surveyor may also request a ‘Certificate of Others’ to be provided by experts such as an engineer where some aspect of the design requires specialist knowledge; examples include structural design calculations, or an assessment of the energy efficiency of the design.

**Note:** You will not liaise directly with, and should not send your documentation directly to the Director of Building Control. The application process occurs through your building surveyor who will manage all administrative processes.

**Time periods for consideration of permit applications**

The building surveyor has 21 days to grant your Certificate of Likely Compliance from the day of receiving your request for a certificate or a period agreed between the applicant and the building surveyor.

For all time periods refer to the Director’s Specified List available on the WST website

[Directors Specified List](#)

**Enforcement by the Director of Building Control**

In order to enforce restrictions on owner builders, the Director will record the owner builder application, including names, date of birth, Registration Number and details of the project into a register. This allows them to monitor the owner builder’s building activity, ensuring owner builders do not construct more than two buildings in the prescribed ten year period. Those who attempt to do so will not receive registration.

**Note:** All information kept by the Director of Building Control is used and maintained in accordance with principles of the *Personal Information Protection Act 2004.*
LOCAL COUNCIL AND PERMIT AUTHORITY

Each municipal council is required under the Building Act 2000 to appoint an authorised person or body as a Permit Authority to receive and process applications for permits to carry out building work and assess and issue plumbing permits.

The role of the Permit Authority is to enquire into certain matters before a building permit is issued, such as road access, and plumbing permits for water, sewerage and storm water disposal and a special plumbing permit for on-site waste water management systems. The Permit Authority will also assess the proposal in terms of its compliance with any relevant planning conditions and any other relevant legislation.

The municipal council has a duty under the Building Act 2000, as far as is reasonably practicable, to ensure that the owners of property are informed of their duties under the Act in relation to building work or plumbing work and in maintaining and using buildings. The council can assist the owner builder with information on matters such as planning, environmental health, landslips, contaminated land and flood prone land.

It is advisable to contact the council planning and building departments before the plans are prepared.

Planning Permits

As an owner builder, it is important that you check with your local council for Planning Permit requirements (also known as Development Application) under the council’s Planning Scheme. This is different from a building permit and is concerned with permitted building uses within a municipality and local restrictions that may be applied to position, height, colours and other building features.

You should do this step early on in the process, as approvals may take some time and may affect the details of the design of your building. The building designer you engage for your project should advise you on planning matters and prepare appropriate documentation for a planning application on your behalf.

Tip: It is a wise precaution to obtain your Planning Approval before the preparation of final building plans. Planning conditions may affect what you can build on your land.

Building Permits

Once you have received your Certificate of Likely compliance you can apply for your building permit from your local council Permit Authority. You will be required to include various documents with your application. Such documentation is listed below under Application for Building and Plumbing Permits to the Permit Authority.

When applying for a building permit you will also be required to pay fees. These fees consist of a council permit fee, a building levy fee and a construction industry training levy fee. The council fees vary from council to council. The building levy fee is charged at the rate of $1 per $1000 cost of the building work if over $12,000. The cost is the market cost of labour and materials from a building contract, or as determined by the building surveyor engaged for the work in the case of an owner builder project. The training levy is charged at $2 per $1000 cost of the work.
Differences between the Building Permit and the Planning Permit processes

<table>
<thead>
<tr>
<th>Planning Permit</th>
<th>Building Permit</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Planning Permit process:</td>
<td>The Building Permit process:</td>
</tr>
<tr>
<td>• Regulates the use and development of land by assessing proposals against council planning schemes and the State’s planning legislation</td>
<td>• Regulates the construction, alteration and demolition of buildings by assessing proposed buildings and structures and alteration work against the requirements of the Building Code of Australia (BCA)</td>
</tr>
<tr>
<td>• Examines the impact of the proposed development or use on the surrounding area</td>
<td>• Building Permits focus on the proposed structure and its safety, health and amenity.</td>
</tr>
</tbody>
</table>

Plumbing and Special Plumbing Applications

Whilst a building surveyor is qualified to deal with technical building issues, you will need to refer matters relating to plumbing permits directly to the Permit Authority who deal will all plumbing matters under the Building Act 2000 and Plumbing Regulations 2004. Application for plumbing permits is normally made at the same time as the building permit application.

You will require plumbing permits for the installation of plumbing and drainage. All such work must comply with the standards of plumbing work set out in the Tasmanian Plumbing Code (TPC). Special Plumbing permits may also be if the building is in a rural (e.g. non-sewered) area if an on-site wastewater management system is to be installed, such as septic tank or a ‘packaged’ treatment plant. Many councils also have by-laws in relation to connecting to sewers and maintenance of on-site wastewater management systems.

The Plumbing Permit process is concerned with ensuring that:

• Proposed plumbing is likely to comply with the Act, Regulations and the Tasmanian Plumbing Code
• Sanitary drainage is capable of being drained to a sewerage system or on-site wastewater management system.
• Adequate hot and cold water supply is in the proposal
• Adequate stormwater installation is provided to the buildings and their surrounding
• Adequate fire-fighting water supply is proposed.
Application for building and plumbing permits to the Permit Authority

When applying for permits, you will be required to complete the approved Form No 2 – Application for Building Permit.

You will also be required to provide numerous documents listed under Schedule 2 of the Director’s Specified List. These include (and the number of copies to council):

- Certificate of Title, Schedule and Plan (1);
- Site plans (3);
- Architectural Plans (3)
- Outline Plan and procedure of demolition works if applicable (3)
- Details of proposed work for the protection of persons or property (3)
- Certificate of Likely Compliance (3)
- All documents referred to on the Certificate of Likely Compliance (3)
- A certificate for certifiable work (building) if required under the Water and Sewerage Industry Act 2008.

The council Permit Authority will be able to tell you which documents are required.

For a complete list of the documents you require when applying for a Plumbing or Special Plumbing Permit, see Schedule 2 of the Director’s Specified List.

Director’s Specified List

Time periods for consideration of permit applications

The Permit Authority must grant a permit within 7 days of receiving an application for a Building Permit, or 14 days after receiving an application for a Plumbing Permit; or else a period agreed between the applicant and the Permit Authority.

For all time periods refer to the Director’s Specified List available on the WST website www.wst.tas.gov.au/building

Start work notification and authorisation

Once you have received all relevant permits, it is your responsibility to notify your building surveyor before you start work on the site, outlining what work will be carried out. This is done by means of Approved Form 39 – Building Start Work Notice, either in writing or by verbal advice. You must then receive the authorisation of the building surveyor before starting work.

Staged inspections

Staged inspections will be carried out by your building surveyor, as notified on the building permit. The purpose of these inspections is to determine whether the various stages of construction are being completed in accordance to the permit documents. You are responsible for informing your building surveyor when the notifiable stages have been reached. If during any inspection, defective work is found, the building surveyor has the authority to request that such defective work be removed and replaced.
Typical inspection notification stages are *prior to*:

- Covering in of foundations;
- Pouring structural concrete, including footings and floor slabs construction;
- Cladding or building in the structural framework;
- Prior to occupancy
- Completion of the building work.

The Permit Authority inspects plumbing work after notification by the plumber. Typical inspection notification stages prescribed for plumbing work are *prior to*:

- Covering in of plumbing work;
- Commissioning work that requires a special plumbing permit;
- Stormwater and sewerage drains;
- Final inspection on completion.

**Occupancy Permit**

If on inspection prior to occupancy (the owner must apply on Form 4), the building surveyor determines that the building is fit to be occupied, you may apply for an Occupancy Permit to be issued. You must not occupy the building before the permit is issued.

**Final inspection**

Once the building surveyor has completed all inspections, a Certificate of Final Inspection will be issued. A copy of this is sent to the Permit Authority.

**Certificates of Completion**

When the Permit Authority receives a copy of the Certificate of Final Inspection, they will issue a Certificate of Completion. You will receive a Certificate of Completion (Building Work) and a Certificate of Completion (Plumbing work) if applicable. Once this is received, your building project is officially complete.

**Forms and Permit applications**

Below is a list of forms which you may require, or may receive, throughout the duration of your project. This is not an exhaustive list and your building surveyor should advise whether other forms are required. The forms are available from the Council Permit Authority or from your building surveyor.

- Form 2 – Application for Building Permit
- Form 3 – Application for Plumbing Permit
- Form 3A – Application for Special Plumbing Permit
- Form 4 – Application for Occupancy Permit
- Form 18 – Building Permit
- Form 19 – Plumbing Permit
- Form 20A – Special Plumbing Permit
- Form 12 - Certificate of Final Inspection
- Form 20 - Certificate of Completion (Building Work)
- Form 21 - Certificate of Completion (Plumbing work)
- Form 39 – Building Start Work Notice.
Appeals against decisions or conditions

The Building Act provides opportunities for an owner to appeal a decision or a condition of a Building Surveyor or of the Permit Authority or General Manager of a council. An appeal may also be lodged if one of these parties fails to make a decision within the required time. Appeals under the Building Act are made to the Resource Management and Planning Appeal Tribunal (RMPAT).

Design considerations for permit application

As noted earlier, you will be required to have your design plans assessed by your building surveyor to ensure compliance with the Building Act 2000. Generally, a final set of design documents are submitted to cover the requirements of all approvals that must be applied for, including planning, building and plumbing permits.

Owner builders cannot be the responsible designer for their project and must use the services of an accredited architect or building designer.

Changes to the approved design

Once permits have been issued, the Building Act 2000 requires that all work must be carried out according to the building permit. However, it is not uncommon for owner builders to make changes to the design after the permit has been granted, or once building work has commenced. Unauthorised or impromptu design changes could leave the owner builder with a house that is less valuable than they expected.

In particular, changes to elements which have a significant impact on energy efficiency. These include changing the position and size of windows, the glazing type and light fittings. It is a compulsory requirement that all new dwellings and extensions comply with the appropriate Star-rated energy efficiency requirement,

Decreasing energy efficiency of the completed project will also decrease the overall value of your home. When the energy performance of a house improves by one star, its market value may increase by about three per cent. Governments have also proposed requiring owners of existing homes to disclose energy, water and greenhouse performance information when selling or leasing. An underperforming house may be less attractive and fetch a lower price.

Additionally, changes resulting in non-compliance with the building permit, and the Building Act 2000, will result in the owner builder receiving a notice or direction from the building surveyor requiring them to rectify that work.

Owner builders who used an accredited designer should consult with that designer to ensure that any modifications of those plans will comply with the building permit and the Act. An owner builder may carry out work that departs from the Certificate of Likely Compliance that was issued by their building surveyor, but only if:

- The building surveyor gives their consent for the changes; and
- If the proposed changes affect any matters in section 71 of the Act (this includes any relevant provisions of the Building Act 2000 or the Building Regulations 2004) then the variation will also need the consent of the council’s Permit Authority.
The Tasmanian Heritage Register

Another factor which is taken into account when applying for your development or building application is whether the property you are building or renovating is of historic cultural heritage significance.

The Tasmanian Heritage Register is a register of those places in Tasmania that are of historic cultural heritage significance. These places are important to Tasmania and Tasmanians because of their contribution to our culture and society. They are also important as part of the cultural fabric of the State that is so much a part of our tourism industry. The Tasmanian Heritage Council maintains the Register under the Historic Cultural Heritage Act 1995.

Being on the Heritage Register will have little or no effect on most property owners. All that being on the Register means is that the issue of the significance of the place will be considered when the time comes for any modifications to be made to the property. This will be considered as part of any normal building or development applications that are lodged with the local council.

The Historic Cultural Heritage Act does not restrict the owner’s use of a registered property so long as the use does not require modifications to the significant elements of the property. However, many people mistakenly assume that they can undertake alterations and repairs to buildings on the Heritage Register, without obtaining the relevant permission. A planning permit (from your local council) is required for any proposed “development” which includes external alteration or decoration, but not general maintenance.

If your building is included in the heritage register of the local council’s planning scheme, your application for a permit will be “notified” (advertised) before the council reaches its decision whether to grant or refuse the planning permit. Council will assess the application against the provisions of the relevant planning scheme, so it is useful to be familiar with the scheme’s requirements before you begin.

The council may refuse your application or may set conditions with which you must comply. You may appeal the council’s decision to the Resource Management and Planning Appeal Tribunal. It is rare that the Heritage Council refuses an application. Sometimes it imposes conditions of approval designed to preserve the heritage values of the place. The Heritage Council has had much success with property owners who sought its advice prior to lodging a works application.

The penalties for unauthorised or illegal work are severe, however the Heritage Council would like to be able to resolve issues that are causing real problems to owners by way of discussion and mediation, rather than by conflict and objection.

If you are thinking of doing some work on a registered property, it is advised that you consider contacting one of the Tasmanian Heritage Council Heritage Professionals for free on-site advice on heritage and conservation issues.

Tasmanian Heritage Council

For more information you can contact the Tasmanian Heritage Council on (03) 6233 2037 or email enquiries@heritage.tas.gov.au

Please proceed to Topic 2 quiz on Moodle
TOPIC 3 – THE PROFESSIONALS

CONSULTANTS

Before you begin your project and also during your project, you may require the assistance of individuals with specialised knowledge. In some cases you will be legally obligated to engage someone for specific types of work, such as electrical, plumbing and asbestos work.

The consultants that owner builders might need to engage include the following:

- Architect/building designer
- Valuer
- Land Surveyor
- Engineers
  1. Structural Engineer
  2. Electrical Engineer
  3. Mechanical Engineer
  4. Hydraulic Engineer
  5. Geo-Technical Engineer
- Tradespeople
  1. Electrician
  2. Plumber
  3. Gas-fitter
  4. Asbestos removalist

Architect or a building designer

An owner builder must use an accredited building designer or architect. An Architect is a person who is qualified to practice architecture including the design of buildings and administration of building contracts. An accredited Architect or Building Designer will offer a design and documentation service for a fee. The documents should normally contain drawings and specifications suitable for all steps from permit applications to site construction. In addition the architect or designer can be engaged to carry out a contract administration during the execution of the work and advise on which quotes to accept. They may also advise the client on when progress payments are due and take care of running the project (but not perform the role of builder). This would be less likely to occur in an owner built project.

There is a reluctance to engage an architect mainly due to the cost and the concept that they are only engaged for large and complex commercial projects. It is considered that houses are generally built to conventional standards. However not all owner builders consider the conventional mode of building. A majority of owner builders want to build a residence that expresses their own life style and personality. An architect/building designer is able to convert those ideas into drawings/plans and specifications that can be approved by the relevant authority.

Tip: An accredited architect or building designer can help to bring together a design to suit your budget.
The **Building Act 2000** sets out the duties of a designer: -

**Duties of designers**

13. A designer is to ensure that –

(a) he or she acts only within the area of his or her competence; and

(b) so far as is reasonably practicable –

(i) the design of the building or plumbing work is in accordance with the standards and requirements of this Act; and

(ii) the documentation relating to the design includes sufficient information for the assessment of the work in accordance with this Act; and

(iii) the documentation relating to the design is sufficiently detailed for a builder or a plumber to carry out the work in accordance with the documents and this Act.

You will require properly drafted plans and plans with specifications which provide a full account of the work to be performed. This will save disputes and unnecessary direction, supervision and verbal instructions to contractors or tradespeople.

**Valuer**

Valuers are required to be registered by a Valuers’ Registration Board in all States and may be engaged directly by owner builders who wish to put an independent value on to residential unimproved or improved property when considering a purchase.

The Institute of Valuers in each Australian State will assist owner builders with lists of valuers who are skilled in the particular area of valuation required.

**Registered Land Surveyor**

A land surveyor is a professionally trained person who selects measurements to be made of land or buildings and the method of making them, with a view to accurate boundary definition, recording of topographic detail (location, size and features) and sets these out on an identification Survey plan.

Surveying before and/or after construction will help ensure that the works are in compliance with the approved site plan.

Under the **Building Act 2000** it is a duty of the owner to identify the property boundaries and a duty of the builder to set out the building in relation to those boundaries. As an owner builder you will have both these responsibilities.
Surveyors may be engaged on up to three occasions:

1. Boundary survey; on purchase of the property, to ascertain the location of site boundaries, possible encroachments. This survey may be widened to include:
   - a tree location survey
   - a contour (ground levels) survey and site datum
   - services survey

2. Building set out survey; to position the building alignments, boundaries. This survey can be a benefit for steep or awkward sites in locating critical corners.

3. Check survey; this is only required to ensure side boundary and frontage setbacks have not been accidentally encroached upon during construction.

Engineers

Structural engineers

A structural engineer is engaged to design, document and possibly supervise particularly critical structural components. The most common areas are:

1. The design of steel and concrete beams, particularly over large spans or openings.
2. The design of suspended reinforced concrete floor and roof slabs, particularly those on upper floors and with critical design details such as cantilevered balconies and upper floor spa tubs.
3. Timber frame design
4. Masonry wall design

Before removing any internal walls always consult a structural engineer to determine if any walls are load bearing (for instance carrying roof or ceiling framing).

Geo-Technical Engineers

Geo-technical engineers investigate the substrata of land to be developed. They are also responsible for the investigation of the composition of site soils, the classification, consolidation, strength, the flow of water through them, and the active and passive pressures in them. They ascertain significant information about bearing capacities, stability and subsurface water tables which is often required before design of structures on difficult sites can commence. Some areas of Tasmania have been declared to be statutory Landslip Areas and geo-technical advice is needed for any building work in those landslip areas.

Building Services Engineer

Consulting electrical/mechanical engineers are usually engaged for commercial and industrial projects, however when complex electrical and/or mechanical ventilation installations or energy management systems (e.g.: central air conditioning systems) are required, then consideration should be given to engaging an engineer.
Hydraulic Engineers

Hydraulic engineers are involved with the design of fluid movement systems and complex water/sewerage/drainage systems.

Tradespeople (sub-contractors)

Throughout your project you may require the services of tradespeople to assist you in completing the work.

The term tradesperson may include:

- Electricians
- Plumbers
- Gasfitters
- Bricklayers
- Carpenters
- Roof Tilers
- Plasterers
- Tilers
- Painters
- Wet area waterproofing contractors

In some circumstances, you will be legally required to engage licensed tradespeople such as electricians, plumbers, gasfitters and asbestos removalists if you require such work to be undertaken. Such tradespeople will require a current occupational licence to carry out work in a particular field in the home building industry.

As previously noted ABE Education also strongly recommend that owner builders only engage waterproofing contractors to complete all wet area waterproofing as this area of construction is known to have had a high rate of defects.

Electricians

Electricians are typically responsible for the installation of all electrical metering, switchboards and cabling, the fit out of all light and power points and connection of any built in electrical appliance. Many electrical contractors will install TV, telephone & data cabling.

Electrical installations usually consist of two basic stages;

1. Cable rough-in which is usually completed after floor\’ wall framing and roof are installed and prior to wall and floor finishes installation. This is usually the last opportunity to get your wiring needs done prior installation of wall finishes.
2. Fit out completed after all wall and floor finishes (such as tiling) are finished but usually prior to painting.

Note: Electrical safety regulations in all Australian States and Territories specify that only licensed electrical workers may carry out electrical work.
You should never attempt your own electrical work as this is dangerous and illegal. Always call a licensed electrical contractor and check their licence before the work is performed. Remember that all electrical contractors must be licensed by the Occupational Licensing Unit, a division of the Department of Justice. You can therefore verify your electrician’s details by contacting the licensing authority.

**Things to remember**

- Take care doing building work - do you really know what's behind the wall you’re about to drill into?
- Keep electrical appliances away from water. Mixing water with electricity can be fatal.
- Safety switches are not a substitute for maintenance. If you have a suspect appliance, either have it repaired by a licensed electrical contractor or throw it out - it’s not worth the risk.
- If you find damaged electrical equipment, only licensed electrical contractors should carry out repairs.
- Long leads and extension cords used on a building site must comply with the relevant Australian Standard.

**Electrician Quote**

Prior to obtaining electrical contractor quotations it is important to clearly establish all of your electrical needs including number, location and type power points, light switches, dimmers, and light fittings including garden also any TV, telephone, Hi Fi and data cabling needs and draw these out on an architectural plan (called an electrical layout diagram) so that the contractor knows precisely where they are required.

Some lighting shops now provide design assistance for lighting layouts and once done will provide a quotation to supply these fittings. Determining the power requirements of any electrical oven or other high load equipment is also important.

**Metallic Foil Type Insulation in ceiling spaces**

Owner builders need to be aware of the risks associated with metallic foil insulation in ceilings. When it is not installed properly, foil insulation can cause the roof space to become live with electricity. This is a danger to workers installing the insulation and individuals stepping into the roof space. In some cases, gutters and fixtures around the home may also carry the electrical current if the insulation is not installed properly. Use of foil insulation over ceiling joists or beneath rafters in homes can also conceal structural faults and make it almost impossible for inspectors to find potential electrical, or plumbing problems.

Care should also be taken when conductive foil is used to insulate walls. If you own a home with foil insulation in the ceiling and need to access your ceiling space, turn your power of at the main switch-board. Use a torch and contact a licensed electrical contractor for an inspection to determine any electrical issues. For more information contact:

Electricity Standards and Safety  
Phone: 1300 366 322  
Email: wstinfo@justice.tas.gov.au  
www.wst.tas.gov.au
Connection to power supply

If you are constructing a new home which requires connection to the power supply, you will be required to contact Aurora Energy group at least 10 business days before you require the connection. Be aware that they will require access and that you should have obtained from your electrician, the all-clear for the connection to take place.

You may need to contact them earlier if you require a new connection to the distribution network or will have difficulty accessing your property. If you need to have your connection completed quicker, you may contact them using their online form or by calling 1300 132 045.

If electrical supply to your premises involves the construction of new lines or substations, call Aurora on 1300 137 008 to negotiate and agree on a date for connection. You may also visit the Aurora website and search for ‘Residential New Supply’.

Plumbers and gasfitters

Gas Fitter

Gas fitting includes the supply and installation of the gas service to various fittings, including stop cocks, main cocks, pressure limiting valves, bayonet fittings etc.

Plumber

Plumbing work will include the supply and installation of hot and cold water services. Plumbers are responsible for the installation of all sewer, stormwater and water services and for the installation of various taps and other plumbing fittings. They are responsible for the installation of roof drainage and sometimes metal roofing.

In accordance with the Occupational Licensing Act 2005, owner builders are not permitted to carry out any plumbing or gas-fitting work. All plumbing work, including design and installation must only be carried out by a Registered Plumber or a Registered Gas-Fitter where required.

For general information about gas installation, visit the Workplace Standards website.

Workplace Standards Tasmania - Gas

Note: A building practitioner accredited in the category of Building Services Designer can also design classes of plumbing work.

Check that the tradesperson you are going to use is a Registered Plumber or Gas-Fitter by asking to see the plumber, gas fitter or electrician’s licence card.
Plumbing Quote

When obtaining plumbing quotations it is important to establish precisely what taps and prime cost items are to be installed and who is to supply them.

Tiler

Tilers install tiling and grouting and sometimes waterproof membranes. This may include tiling to bathrooms, laundries, kitchens, patios, and swimming pools.

Tiler Quote

It is best to try and get a fixed price quote, which requires a clear description of what is to be done (e.g. the area of tiles including skirtings and splash backs) plus a description of what tile is to be used (e.g. small glass mosaic or large vitrified tiles).

Waterproofer

This is a critical building activity. It includes the installation of all wet area waterproof membranes (such as bathroom, laundry, planters and balcony). Any area in your home which has a water supply is deemed a ‘wet area’.

You should always engage an experienced waterproofer as the type of membrane used for waterproofing is of utmost importance. There are numerous other considerations which an owner builder will generally not be familiar with, including:

- Membranes should not be applied to ‘green’ slabs/walls unless measures are taken
- The waterproofing of screed to reduce calcification
- Appropriate measures to be taken when working with floor to wall joints
- Appropriate measures to be taken when working with taps and mixers (high risk of leaks)
- The appropriate cure time for membranes to prevent emulsification
- Compatibility of membrane and tile glues

Waterproofing Quote

Always get a fixed price quote, which requires a clear description of what is to be done (e.g. the area of flooring and walls that are to be waterproof) including a description of precisely what type of waterproof membrane system is to be used, the associated warranty and a confirmation that all works will be in accordance with A.S 3740 – 2004.

Tip: If you engage a specialist waterproofing contractor, ask if they have a waterproofing qualification...

Roof tiler/Roofer

This includes the supply and fixing of roof coverings, such as tile, metal and slate.
Carpenter

Carpenters are typically responsible for installation of timber floor, wall and roof framing, timber flooring and fit out including installation including skirtings, architraves and doors. Carpenters often specialize in either framing based or fit out type work, so it is always best to ask first depending on what you require.

**Carpenter Quote**

Carpenter It is best to try and get a fixed price quote, which requires a clear description of what is to be done together with an hourly rate for those items that may not be included. Where timber is to be painted you should ask your carpenter to fill all fixing holes ready for the painter as most do not.

Bricklayer

Bricklayers are responsible for laying of brickwork or concrete block work, inclusive of sub floor vents, weep holes, sill, cavity flashings and the placing of brick ties.

⚠️ Note: In coastal areas special rust resistant brick ties must be used.

**Bricklayer Quote**

Prior to obtaining bricklaying contractor quotations it is important to establish how many bricks, flashings, brick ties and damp proof courses and sub floor vents will be required.

Concreter

Concreter typically are responsible for the installation of formwork, reinforcement for concrete slabs and footings, plastic vapour barriers beneath slabs and the pouring and finishing of concrete.

**Concreter Quote**

When obtaining concreter quotations it is important to establish who is to supply the reinforcement, plastic vapour barriers and concrete and what surface finishes are required. It is generally a better idea to request that the concreter supply these materials as they usually are very experienced in ordering the correct quantity and getting them delivered in a timely manner.

Plasterer

There include dry plasterers who install gypsum plaster wall linings (e.g. plasterboard or ‘gyprock’) and renderers who apply a cementitious render over a substrate.
Painter and decorator

The painter supplies and applies paints and acrylic renders to internal and external surfaces. Quotations should note the type of surface being painted. Staining and polishing and other special treatments should be defined. Wall papering should be measured, clearly noting the type of paper and whether lining paper is required.

**Painter Quote**

When obtaining painting quotes (particularly for older homes) it is essential that you get a clear description of the amount of preparation work allowed for (e.g. dent filling, sealing and paint removal) the type of paint to be used and (e.g. penetrating sealer binder on kalsomine based walls), the number of coats allowed for.

Finding tradespeople (sub-contractors)

Finding sub-contractors can be quite time consuming. However, many will agree that the amount of time spent on selecting the appropriate sub-contractor will in the long run, save untold problems. Having access to quality and customer focused subcontractors can be an owner builder’s greatest assets.

There is occupational licensing for electricians, plumbers, gasfitters and asbestos removalists. For other trades ask for references from owners for whom they have worked. You could also try the following:

- Ask people for their personal recommendations.
- Ask other people in the industry.
- Ask the relevant industry association for a list of names.
- Try visiting new building sites to check which subcontractors are working
- Look for advertisements on television, radio, in home buyer magazines or the local newspaper.
- Look in the Yellow Pages under ‘Building contractors’ and under the various types of trade categories.

Finding a good and reliable subcontractor is best carried out well ahead of time before you require their services. You will find that once you need your sub-contractor you will be at your busiest and unable to devote the necessary time required to make an informed decision.

**Standards for hiring tradespeople**

*Source: The Guide to Best Practice – Module 10 – Department of Industry Science & Tourism*

Some important factors to consider when hiring tradespeople

**Financial stability:** Take time to establish how long the subcontractor has been in business: The longer in business the more likely they can satisfy this criterion. Ensure they give permission to check credit references and suppliers.

**Construction skills:** Satisfy yourself that the subcontractor has the necessary construction skills to complete the task to a high standard.

**Business skills:** Evaluate their business skills through their past record and through checking references thoroughly.
Attitude to service and quality: Again follow up references and speak to customers to determine the quality and timeliness of the subcontractor's work to date. Check their ability to be polite and responsive with customers.

Meeting legal and administrative requirements: Do they accept and use appropriate contract documentation? Do they have necessary insurance policies such as workers compensation and public liability?

Commitment to improvement: Find out if the subcontractor is actively applying the latest innovations and practices in their particular field.

Availability of equipment: Do they have the necessary equipment to complete the task and is it maintained properly? Try to visit sites where subcontractors are working and see how they are performing.

Hiring and obtaining quotes

Sub-contractors let out their services either by:

- a price or quote for a pre-determined amount of work, which can cover materials and labour necessary for the job; or
- a cost plus deal; a set rate per hour of involvement with or without the materials.

Most tradespeople provide a tendered price or fixed quote, so the owner builder knows the work will cost a fixed sum.

Quote for work

Tip: Obtain at least two or three detailed written quotes from tradespeople, based on exactly the same description of the scope of work.

Obtaining several quotes allows you to get comparative prices. Compare quotes carefully to ensure that each contains details of the same work and materials. You can do this by ensuring sufficient detailed information is provided about the project. If possible provide drawings and job specifications and at the very least describe the qualitative requirements of materials and workmanship for the project.

Do not always accept the cheapest quote as you need to weigh material content and labour and ability of the contractor to competently fulfil obligations. A low quote will not necessarily mean the lowest overall job cost. If the work is defective and requires repairing or ordering of new material, the seemingly low quote is one that can end up costing your project a considerable amount of money.

Examine the quotes carefully to ensure that they cover everything that you want. Should the quote be acceptable – ask for three references of completed work available for inspection and a contact for a job currently underway.
Note: It is absolutely essential that if you are getting prices from more than one subcontractor and that you give the same instructions to all subcontractors so that the price you receive is comparative. If there is any ambiguity concerning the job tasks and materials required or information is vague, subcontractors will be inclined to adjust their quotes upwards to cover the unknown.

More information on obtaining quotes is discussed in Topic 5 – Estimating and Job costing

15 Important questions to ask your sub-contractors;

1. Do you hold any qualifications or licences, and what is your contractor’s licence number (if applicable)?
2. Do you belong to a building or trade association?
3. Where can I see recent examples of your work?
4. What other jobs do you have going at the moment?
5. Are you familiar with the work that I want done and are you capable of doing the work competently?
6. Who will supervise the work?
7. When could you start?
8. How long do you think it will take?
9. Can you give us an estimate of the cost of the job?
10. How much deposit do you need?
11. What are the terms of payment and at what stage?
12. What sort of contract will be used?
13. Do you have insurance such as Workers Compensation or Public Liability? (Ask for copies of insurance certificates.)
14. What happens if the work is defective?
15. Who cleans the site?
TOPIC 3 – CONCLUSION

A building project requires that one person must be in charge of management and coordination and they must have a plan of action. An experienced builder has spent a lifetime perfecting job flow, costing and building site management. By comparison an owner builder may be inexperienced and may make many mistakes. Problems may arise, such as a tradesperson unable to perform a particular task on a scheduled date, materials not delivered on time, bad weather, orders partly filled, and so the schedule must be flexible. A common problem is the lack of support from tradespeople, as they prioritise their workload with established or accredited builders. This is because the builder gives them on-going work, whereas the owner builder project is a one-off job. Selecting tradespersons is a time consuming process as many may not show up to give a quote.

- Select people you feel you may be able to work with.
- Ask what sort of lead time they require.
- Keep in touch to tell them when they are going to be needed (e.g. one month before work starts).
- Make sure materials are on site ready for use when they arrive.
- Be realistic about your expectations of the progress.
- Be wary of paying for a stage too early until satisfied the required work is completed properly.

Planning and scheduling sub-contractor work will be covered in detail in Topic 8 – Managing your project.

Please proceed to Topic 3 quiz on Moodle
TOPIC 4 – CONTRACTS

The complexity of building programs requires a carefully detailed contract. A good contract is the foundation stone of successful building or renovation and can save major grief later in the project, so getting it right upfront is very important. People often begin building without a written contract and when everything goes pear-shaped and costs/time escalate out of control, they need to resort to expensive mediation or litigation to get some redress.

**Tip:** Include a clean-up clause for each contractor so that they are responsible for their own rubbish removal.

The law

The law governing contracts is the Australian Consumer Law (ACL). On January 1, 2011, the national consumer law commenced. It is a cooperative reform conducted by the Australian, State and Territory governments, through the Ministerial Council on Consumer Affairs (MCCA) and replaces previous Commonwealth, State and Territory consumer protection legislation. For this reason *The Trade Practices Act 1974* has been replaced with the *Competition and Consumer Act 2010*.

In Tasmania building contracts are subject to the provisions of the *Housing Indemnity Act 1992*.

[Australian Consumer Law]

What is a Contract?

A contract is a *legally binding* agreement between two or more people or companies (called 'the parties'). It is an agreement that the parties intend to be legally binding - or that they would have intended to be legally binding if they had stopped to think about it. A contract is made when promises are exchanged to do something in exchange for something, for example, to supply goods or services for payment of a specified sum of money.

Each party to a contract is legally obliged to carry out her or his part of the bargain and a party who fails to do so is in *breach of contract*. A court can require that person to put things right either by fulfilling the contract (called 'performance') or paying compensation for any loss (called 'damages').

As an owner builder, obtaining a written contract for all works will clearly define the rights and responsibilities of both parties. The contract spells out the terms of engagement of both parties and will bind the owner builder and their subcontractor or tradesperson on a clear understanding of what exactly their respective responsibilities will be.
Features of a contract

**Terms**

A contract will consist of the following two types of terms:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Express Terms</strong></td>
<td>These terms are spelled out in the contract. They are clearly written or mentioned and both parties are aware of them. These terms include all the terms listed in the contract.</td>
</tr>
<tr>
<td></td>
<td>It is also possible for oral statements to form part of the express terms of a contract. For example: If an intelligent bystander, listening to your discussions would have thought that a party was giving their word that the statement was true, it can be a term of the contract. If it turns out to be false, they may be in breach and liable to pay damages.</td>
</tr>
<tr>
<td><strong>Implied Terms</strong></td>
<td>These terms may never be mentioned but still form part of the contract. They are implied by the circumstances. Most terms that are implied by the common law are now stated in legislation such as the Australian Consumer Laws which provide for certain basic terms to be part of the contract. These terms are known as statute implied terms.</td>
</tr>
</tbody>
</table>

In relation to contracts between sub-contractors and the owner builder, some implied terms may include:

- The contractor warrants that the work will be performed in a proper and workman-like manner and in accordance with the plans and specifications.
- All materials will be suitable for the purpose and new unless specified.
- The work will be done under and will comply with the Building Act 2000 or any other law.
- The work will be done with due diligence and within the time stated in the contract or within a reasonable time, if no completion is agreed.
- If the work involves construction of a dwelling, the work will result in a dwelling which is fit for occupation as a dwelling.
- The work and materials used will be reasonably fit for the purpose or result which you made known to the tradesperson so as to show that you rely on the tradesperson’s skill and judgement.
- That the contractor will be given possession of the site within a reasonable time.
- That instructions, decisions and certificates will be given to the contractor within a reasonable time;
- That progress payments will be made on long-term contracts.
Legally binding contracts

In order for a contract to be legally binding, it must consist of the following three indefinable features.

1. An agreement between the parties to do or to refrain from doing certain things.
2. An intention to make the agreement legally binding.
3. An exchange of value, known as consideration.

Agreement: Agreement occurs when one person accepts the other's offer. Agreement can occur through verbal negotiations or through the exchange of letters in which the parties agree on something. However, in order to reach agreement, there is often an exchange of counter-offers. Any counter-offer cancels out (rejects) the previous offer. It is then up to the other person whether they want to accept the counter-offer, making a contract, or not.

During the negotiations numerous offers may be exchanged. A party may at some point argue that a definite contract exists. If you are not sure whether a contract was made, or if you are in dispute with the other person over just what was agreed, seek legal advice. In deciding whether a contract was made, the court will look at all the circumstances. Evidence of money passing between them or of some expense being incurred would suggest a contract.

Note: A contract becomes legally binding the moment the acceptance is communicated.

Intention: For there to be a legally enforceable contract, the parties must have intended to enter into a legally binding agreement. This intention is seldom stated, but is usually inferred from the circumstances surrounding the agreement.

Consideration: Making a contract involves an exchange of something of value to each party. Most often, one person pays money to another and in return gains a benefit, such as goods or services. Whatever is given (or paid) is called consideration. The presence of consideration is usually the difference between a 'commercial' contract and an agreement between friends or family members which is not meant to be legally binding. The presence of consideration indicates an intention that an agreement is legally binding. A one-sided arrangement in which one person gets a benefit at the other's expense (such as in the giving of a gift) will not usually be a contract.

However, although the law demands that on each side the price must be of some real value, what is paid by one need not be comparable in value to what the other party is giving. So there can still be a contract, for example, where a person leases a house to a friend for a nominal rent. As long as there is an exchange of some kind the courts will usually enforce the contract.

Contracts entered by an owner builder

Although contracts do not have to be written down to be legally binding, it is important that any contract an owner builder enters into with a sub-contract be in writing. Such contracts are of special importance, usually involve a considerable sum of money, and will greatly assist in case of any future disputes.
A lawyer can prepare contracts for you, and advise you about your obligations and any pitfalls. The written agreement can be helpful in case of a dispute, in proving that there was a contract, and just what was agreed. Without a written agreement, if the dispute has to go to court, the court will only have each party's word to assist it in working out what happened.

Although written contracts are generally easier to prove in court it is also important to note that there are some agreements which will not be legally enforceable, even if written down and signed. These include agreements where there was no consideration, or agreements to do things that are illegal.

**Contract documentation**

**Tender Documentation and Purpose**

As well as providing an explicit description of the subject matter, every written contract must define exactly the rights and obligations of the parties. With building contracts virtually each project is more or less unique and therefore requires a special technical description - this can take the form of drawings, specifications and schedules detailing the work to be undertaken.

The legal rights and obligations of the owner builder and the sub-contractors, however, remain unaltered as between projects, and consequently can be clearly defined in a standard document, suitable for a great variety of projects. The great advantage of such a standard set of conditions covering rights and obligations is that they apply throughout the industry, thereby simplifying legal proceedings. A written contract therefore comprises a number of documents.

**The General Conditions of Contract**

These define the legal rights and obligations of the parties, and may be described as the rules and regulations under which the contract will be performed. They set the pattern for the administration of the contract.

Topics covered vary in detail, but the basic requirements include the nature of the contract, the definition and interpretation of terms used, securities and insurances required, subcontract provisions, the sub-contractor’s rights and responsibilities, the owner builder’s obligations and rights, provisions regarding order and supervision of the work, arrangements for variations to the contract work, extensions of time, method and time for payment, retention money, alteration of the contract price with changes in basic costs of labour and materials, procedures on default or bankruptcy, and settlement of disputes.

**Special Conditions**

Any set of standard general conditions will require supplementation or modification from time to time to suit particular projects. These supplementary and modified conditions may, in some cases, be found as annexures to the standard general conditions, or they may be incorporated in a special section of the specification. They cover such matters as the time allowed for the execution of the contract, the damages payable for late completion, the defects liability period following completion, any unusual administrative arrangements and so on.

Such special conditions must be prepared individually for each project, or for each area covering several projects. They are in effect simply an extension of the general conditions of contract.
The Drawings

These are a pictorial representation of the project, showing the extent of the works to be done under the contract. They should be clear, simple and complete. As much detail commensurate with clarity should be provided, with legible and adequate dimensions; as far as possible they should be fully completed working drawings.

Accuracy is essential. The drawings are indispensable to conveying the owner builder’s requirements to the Builder or sub-contractor; the better their quality and completeness the less likely will be disputes and misunderstandings. They should therefore portray all the site information known to the owner at the time. They are the only illustrations of the owner’s requirements.

The drawings must be read in conjunction with the specification. If any discrepancy exists between them, then there should be a formal mechanism for resolution of that ambiguity. Drawings and specifications should form part of the contract and be annexed to it.

The drawings should clearly show the method of construction, as opposed to only a reference to the BCA. A professional builder may be able to fully interpret a BCA or Australian Standards reference, but an owner would be advised to request that a diagram is included in the plans. For example rather than window flashing to AS/NZS 2904, the reference is accompanied by for example figure 3.5.3.4 (of the BCA), if there is the appropriate diagram.

Under the Building Act 2000 it is the accredited building designer’s duty to provide plans suitable for assessment by the building surveyor and suitable for construction by the builder – you the owner builder.

The Specification

This document sets out the technical requirements of the work. It is a direct explanation of the drawings, and with them serves three purposes; first, as a full description of the project, so that bids may be properly compiled; second, as a mandatory requirement for materials and quality of workmanship during construction; and third, as legal evidence in the event of litigation. The specification is therefore a most important document and must be prepared individually for each project.

The specifications should be made in clear, concise and simple phraseology, intelligible to foremen and tradesmen, so that there is no doubt what is required or prohibited. Either the method or the result, but not both, should be specified. Requirements should always be mandatory, but alternative provisions may be given when necessary. Above all, the wording must be explicit, and specific to the particular project.

The Bill of Quantities or Schedule of Rates

This is really an appendix to the specification. It lists the quantities of the various classes of work to be done, and is therefore of great value to contractor preparing a bid. However, it must be clearly understood that (unless they are guaranteed by the owner), the estimated quantities provided do not form part of the contract.

Apart from its use in preparation for a bid, the Bill of quantities or Schedule of Rates has two other uses: it forms the basis for valuation of variations and extra work, and it facilitates computation of progress payments. It is therefore generally provided, and must be compiled as accurately as possible so as not to be misleading. Nevertheless, most contracts permit adjustments to be made to the Contract Price for major errors in quantities.
Use the following checklist when signing a contract

When signing a contract ensure it contains and addresses the following:

☑ The contract is in plain English, legible and includes definitions of key terms;
☑ Names and addresses of the owner builder and the contractor are included;
☑ Location of the building or description of the land such as a lot plan number;
☑ The name on the builder’s or tradesperson’s contractor licence card and the licence number (if applicable)
☑ A sufficient description of the work to be carried out including any plans and specifications for the work. To tie the plans with the contract they must all be signed, “This is the plan referred to in our Building Contract dated…”
☑ Special details and drawings of items like kitchen cupboards, stair details, wardrobes, etc should also be signed;
☑ Written specifications should detail types of style of finishes, tap ware, doors etc. Include detailed finishes (e.g. number of coats of paint);
☑ If the contract includes footing and slabs, the contractor has obtained soil test data or geotechnical information
☑ The start and finish dates are stated. In calculating the finish date provision should be made for types of delay such as inclement weather and non working days.
☑ Where there is a reasonable likelihood that the delays may affect the time required to carry out the building work the contractor must state the number of days the contractor has allowed for each type of delay;
☑ If the start date is unknown, the contract should state;
  o how the start date is to be decided; and
  o the number of days required to finish the work; and
  o that the work will start as soon as possible;
☑ Any “variations” (changes made to the work to be done under the contract) whether initiated by the subcontractor or the owner builder must be fully detailed in writing, and must be supported by the plans and specifications where these are required for the work. Variations form part of the contract documentation. More information on variations is provided in Topic 8 – Managing the work.
Definition:

**Provisional Sums**
A provisional sum is included in a contract where the Proprietor has been unable to finalise a specific detail or material and sets a figure that the Builder is to include in the Contract Sum. During the progress of the Works the Proprietor, or Superintendent, will issue instructions to the Builder in respect of the works covered by the provisional sum.

Definition:

**Prime Cost Item (P.C)**
A monetary allowance for net trade price of articles (supply only) of a tentative nature at the time of tender. Articles may be completely stated (brand, type, quality, etc) or left for the selection by the Client or Architect.
**Tips: Before you sign**

- Ensure that progress payments listed on the contract are for work actually done and not time on the job.
- Make sure the dollar value placed on each stage of work is realistic.
- Get more information about insurance.
- Be clear about the duration of warranties or a maintenance period.
- Discuss anything you don't understand with the contractor or tradesperson.
- Do not sign if you're unhappy as you have the right to request changes to the draft contract.

**Contract purchase**

Standard Contracts are available for purchase from professional bodies and industry associations. There is also an Australian Standard contract.

**Note:** It is essential that you should obtain independent legal advice for further details on contractual matters, or the meaning of specific provisions of a particular contract.

**Contract Disputes**

In Tasmania there are no “cooling off periods” for building contracts and no building contracts dispute tribunal. Disputes may have to be settled by arbitration or legal action, so it is wise to try to avoid problems before they arise.

**Note:** Be aware that from January 1 2013, the Work Health and Safety Laws will come into effect.

**Please proceed to Topic 4 quiz on Moodle**
TOPIC 5 – ESTIMATING AND JOB COSTING

Correctly estimating the costs of your building project before you commence is essential to a successful project. Significant cost overruns are very common, so never assume that your design will come below your stated budget.

One of the most common problems for owner builders is that they underestimate the total project cost, which can result in inadequate finances to finish the project.

Most lending authorities require a detailed budget supported by individual quotations and presented in a formal neat manner inclusive of all anticipated costs.

ESTIMATING

Adapted from The Australian Institute of Building Code of Estimating Practice for Building Work – Third Edition

“Estimating” is the technical process of predicting costs of construction.

An outline of the Estimate

It has been said that an owner builder requires only five resources. These are often referred to as the 5 M's:

- Money
- Material
- Men or Labour
- Machines or plant and scaffold or equipment
- Method and management.

The owner builder provides the first “M” in return for the provision by the sub-contractors of the remaining four.

The estimate then should be the prediction of the total net cost of these four resources consumed in the proposed construction.

In estimating, these four resources are referred to as the four components of net cost and are generally further separated into direct or indirect costs.

The components of Net Cost

Direct Costs

- Materials
- Men or labour
- Machines or plant and scaffold

Indirect Costs

- Method and management
- Overheads or on-costs
The owner builder is therefore required to list, price and total all the components of net cost of the project. This sounds simple enough, but can in fact be a gigantic task and a confusing one if the sequential steps are not carefully planned and understood to avoid the chaos, omission or duplication which can so easily creep into figure work.

The estimate is therefore subdivided into an orderly sequence of sections and subsections which, when brought together, will completely cover every aspect of cost involved. An estimate to larger works, for which bills of quantities are provided, is generally subdivided into trade areas and each trade is further divided into the various items of work within that trade.

The manner in which contractors intend to perform the work themselves or sublet the work, will influence their build-up of the estimate, for the task of estimating is really shared by all involved in the contract, and the degree of figure work required of the main contractor will vary from trade to trade.

Example - Carpentry

The contractor will provide all materials, wages, labour, plant and scaffold, hence his estimate to this trade will be fairly involved and will include the following steps:

1. Take quantities of all materials required
2. Price materials
3. Estimate hours of labour
4. Establish hourly cost rate of carpenter
5. Price labour
6. List items of plant and scaffold and duration
7. Obtain charge-out of hire rates
8. Price plant and scaffold
9. Sum price of all components to establish total net direct costs to carpentry

Example – Bricklaying

To the trade of bricklaying, the builder will provide all the materials, use a team of subcontract bricklayers providing labour, plant and scaffold at agreed rates and a subcontract brick cleaner. This trade estimate must include the following steps:

1. Take quantities of all materials required
2. Price materials
3. Apply subcontract rates to labour, plant and scaffold
4. Apply subcontract rates to brick cleaning
5. Sum all costs to establish total net direct costs to brickwork.

You can apply this approach to each trade or section of work. The total of these direct costs of the contractors and subcontractors’ costs to the bricks and mortar of the job is sometimes referred to as the body of the estimate.
Ordering Materials

The control of materials can be twofold. First the owner builder is required to order the materials direct from the supplier and arrange for the delivery to the site. Alternatively, the contractor is required to supply the materials as part of a supply-and-fix contract.

When supply-and-fix contractors are used the ordering and delivery of the materials is the responsibility of the contractor and the owner builder does not have to be concerned with the quantity of the material ordered, except if the contract is on a cost-plus basis. When a cost-plus contract is negotiated with a contractor, owner builders should be careful that any material purchased under the contract is purchased for the best price from the supplier and passed on to the owner builder at the best price by the contractor.

To gain control over the materials used on the project owner builders should:

1. **Separate the materials** to be used on the project into two categories:
   - Those supplied by the owner builder.
   - Those supplied by supply-and-fix contractors.

2. **Carefully estimate the quantities of materials** that the owner builder is responsible to purchase, check with suppliers to make sure that the method used is compatible with their methods and quantities, i.e.: timber is only sold in multiples of 300 mm. In most areas it could cost a lot more money if this fact is not understood.

3. **Group all materials** that can be purchased from the same supply source, i.e.: scantling timber, fixing timber, hardware and the like.

4. **Get at least two prices for each group** of materials from selected suppliers so that you have already eliminated quality variables and can choose the lowest price. It is very difficult to compare two prices where there are both quality and quantity variables to take into account.

5. **Tabulate all material quantities** and material groups and shown preliminary estimates and quotations. As the project proceeds show a running total of the positive or negative state of the materials purchase account.

   **Note** the advance warning suppliers need to assemble and despatch orders and make sure this advanced warning is given. Owner builders do not want either late or early deliveries.

6. **Note the best discount and credit terms** that are available from the suppliers and attempt to gain the most advantageous position.

7. **Compare all delivery dockets** with the load delivered to check against shortfalls in delivery, and then check the delivery docket carefully against the invoice to avoid over-charging.

   **Tip:** Take care when asked for full payment in advance. Check whether this is an industry norm for that type of supplier. For example, brick companies commonly want 100 percent before delivery. Otherwise, pay only the minimum that is required and as close to the final delivery date as possible.
Preliminary costs

Preliminary costs are indirect costs. All projects undertaken have a number of preliminary requirements to allow the project to proceed in an orderly and manageable manner.

These may include setting down all of the items associated with the start up of the project such as:

- Building fee such as a building permit fee and the building levy payment
- Road opening fee
- Council Security deposit

Temporary supply costs for:

- Water
- Electricity
- Telephone
- Hoardings
- Site sheds
- Security fences
- Surveyors fees
- Setting out costs
- Temporary access etc.

You can use the table below to determine the total costs of preliminaries to your project.
<table>
<thead>
<tr>
<th><strong>Prelims &amp; Site Expenses</strong></th>
<th><strong>Hours</strong></th>
<th><strong>Cost</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Council fees on plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Council hoarding fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Council road crossing fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site preparation including clearing, excavation and fill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric light and power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water connection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity connection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone connection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitary service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade refuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheds &amp; Storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fences &amp; hoardings and protection of adjacent properties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice boards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant &amp; equipment hire including scaffolding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fees to surveyor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site or foundation testing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handling sundry materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interim site cleaning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety precautions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory fees and subscriptions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Site Consumables</strong></th>
<th><strong>Cost</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasives</td>
<td></td>
</tr>
<tr>
<td>Cleaning materials</td>
<td></td>
</tr>
<tr>
<td>Filler</td>
<td></td>
</tr>
<tr>
<td>First aid supplies</td>
<td></td>
</tr>
<tr>
<td>Fixing materials (nails, screws, etc.)</td>
<td></td>
</tr>
<tr>
<td>Explosive powered tool supplies</td>
<td></td>
</tr>
<tr>
<td>Adhesives</td>
<td></td>
</tr>
<tr>
<td>Protective</td>
<td></td>
</tr>
<tr>
<td>Protective clothing</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
</tr>
</tbody>
</table>
Tip: When obtaining an estimate you must clearly identify and advise on a number of pertinent items within the scope of works.

- The full extent of the work
- The type of fittings to be installed or finishes to be achieved
- Special requirements by approving authorities
- Who will supply hoisting and scaffolding for the works?
- What is the general construction program?
- Any other matters that will affect the pricing of the work.

The Builders Take Off

Source: Basic Building Measurement – Paul Marsden

To obtain adequate quotes for comparison and complete your estimate, you will be required to complete what is known as a “Builders Take Off”. The Builder’s Take Off consists of four basic elements, which allows for application of rates to result in a price. These basic elements are:

1. **Item No** or letter
2. **Description** of the item/activity or process including the calculation
3. **The unit of measurement** applied to the particular item/activity or process
4. **The actual quantity** measured

Each section of the “Take Off” should have a heading relevant to the Trade or process to be carried out. These sections are generally listed in the same order, as the work would be carried out.

Under each of these headings finer detail is given to each and every item/activity or process to be carried out and can be broken down into individual areas for example particular rooms like kitchen, bathroom and bedroom areas.

**Example: Concrete**

<table>
<thead>
<tr>
<th>Item (1)</th>
<th>Description (2)</th>
<th>Unit (3)</th>
<th>Qty (4)</th>
<th>Rate</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Supply, place and finish 20 MPa concrete to 0.6 x 0.4 strip footings in ground in brick courses to required levels.</td>
<td>M³</td>
<td>4.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.0 x 6.0 + 4.0 + 6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 20 x 0.6 x 0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 4.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The traditional method of measuring quantities is to manually write the entire take off figures on standard ruled quantity surveying paper. However there are now many computerised methods which can be employed. Where the Take Off is done manually or using computerised methods, the measurement principles involved should be the same.
The paper is in fact divided into six columns:

1. **ITEM**: Used for the description reference;
2. **DESCRIPTION**: Used for the billing
3. **UNIT**: Used for the filling unit
4. **QUANTITY**: Used for the billed quantity
5. **RATE**: is used for the estimated unit rate (i.e. cost per billing unit)
6. This is a **money** column.

<table>
<thead>
<tr>
<th>Item (1)</th>
<th>Description (2)</th>
<th>Unit (3)</th>
<th>Qty (4)</th>
<th>Rate (5)</th>
<th>$ (6)</th>
<th>c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The second column, **“DESCRIPTION”** is subdivided into five vertical sub-columns which are used for the measurement process.

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor (1)</td>
</tr>
<tr>
<td>Take-Off Figures (2)</td>
</tr>
<tr>
<td>Extensions (3)</td>
</tr>
<tr>
<td>Location (4)</td>
</tr>
<tr>
<td>Sidecasts (5)</td>
</tr>
</tbody>
</table>

You should also clearly note your project name, trade and page number on the top right hand corner. This is important as it acts as a control to avoid missing or misplaced pages and confusion with other projects. It is essential that this information is filled in on every sheet when measuring and quantities.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>RATE</th>
<th>$</th>
<th>c</th>
</tr>
</thead>
</table>

Example

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>RATE</th>
<th>$</th>
<th>c</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Supply, place and finish, 20 MPA Concrete to 0.6 x 0.4 strip footings inground stepped in brick courses (etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/4.0</td>
<td>8.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/6.0</td>
<td>12.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.0 x 0.6 x 0.4</td>
<td>4.8</td>
<td>4.8</td>
<td>$135</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Basic Building Measurement – Paul Marsden
Having prepared a “Take Off” for the project, the Owner Builder should be in a position to clearly define the amount and type of work to be performed. This will be particularly handy if a good proportion of work in the building industry is carried out on a sub-contract basis.

A simple written request setting out the details of the work is preferred to a phone conversation discussing the work to be executed. The request should define the nature of the work and give sufficient detail to allow the sub-contractor to prepare a price for the work. This approach allows quotations for the same work to be better compared and adjudicated.

Example – Request price for slab on ground work

A typical request for a price for slab on ground work could contain the following information.

- The site has been brought to trim level.
- Allow for setting out the slab with the Builder.
- Allow for the supply and erection of all necessary formwork.
- Allow for the supply and placement of all reinforcement and the vapour barrier. Reo. to be approved by Engineer.
- Plumbing work to be co-ordinated with the owner builder and Plumber.
- Allow for the supply and placement of concrete (20 Mpa 80mm slump) and include for surface finish (steel trowel).
- Allow for concrete curing.

This above information clearly establishes the basis for the preparation of a subcontract price.

Subcontractor quotes

It is absolutely essential the quotation is accurately and professionally prepared. You will need to confirm with the subcontractors and suppliers that all the prices you have obtained are firm. Check several times.

The information provided to you in the quotation is not only meant to inform you how much it will cost to carry out the works, it should also include as much detail as possible to protect the sub-contractor.

Tip: Check the starting and completion times. Are they realistic? Can they make a reasonable guarantee the works can be completed in that time?

Remember to include the site details, drawing/specification numbers if applicable. There should be as much detail of the scope of work as possible.
Content of the quotation

The way a quotation is presented can say a lot about the way the sub-contractor will do business.

A well drafted quotation should include the following basic information and features:

1. Quote Number
2. Business Name and address of Sub Contractor. e.g. logo letterhead, pre-printed forms.
3. Contact names and telephone numbers, licence numbers of the Sub Contractor.
4. Full names and address of person receiving the quotation along with a contact name and position.
5. Reference to (where provided):
   (i) Drawing Numbers
   (ii) Specification Reference Numbers (if applicable)
   (iii) Tender Name/Numbers (if applicable)
6. Reference to scope of works:
   (i) eg Construct a 3 bedroom brick veneer (style number or name if applicable)
   (ii) (state site) on Lot..........Pleasant Place, Dreamsville
7. The full quotation price on first page, showing it in figures and words, and if GST is inclusive or separate (it is always wise to show the GST amount separate eg. $135,000
   (i) GST $13,500
   (ii) Total Price $148,500
8. Outline of inclusions – as detailed as possible.
10. List of conditions, for example
    (i) Safety provisions and conditions
    (ii) Removal of debris
11. List of Prime Cost items.
12. Information relating to the deposit if and when it is required.
13. Fees associated with amended drawings etc.
14. A payment schedule and how/when payment is expected to be paid.
15. Variations – (where it applies) a set out of the terms and conditions relating to the process of variations and the method of paying the variations.
16. The name of the contract they intend to use.

DO NOT allow the contractor to note on the quotation “in accordance with contract terms or conditions” – at this point you do not have the contract and would not know what the terms and conditions are. Ask for the terms and conditions to be explained or set out in detail OR ask for a copy of the contract they wish to use.

17. A validity date – How long is the price valid for - it is recommended that an actual date rather than 14/30 days be stated. An actual date does not allow for any confusion relating to what are working days or calendar days.
18. Any customer conditions e.g. Access to your site after hours, during construction, safety issues, inspections, etc.
19. Your ability to pay e.g. confirmation from lending body – if it is applicable
20. An attached acceptance form.
ACCEPTANCE FORM

I/we..............................................................................................................................................

.......................................................................................................................................................

Accept the terms and conditions set out in quotation number...........dated...........

To ............................................................................................................................................... (scope of work)

.......................................................................................................................................................

.......................................................................................................................................................

At ............................................................................................................................................... (address of site)

.......................................................................................................................................................

.......................................................................................................................................................

For the sum of $...........................................................................................................(figures)

............................................................................................................................................... (words)

Signed ........................................................................ Date ...............................................................

Print name .................................................................................................................................

Signed ........................................................................ Date ...............................................................

Print name .................................................................................................................................

Witness name .............................................................................................................................

Signature ......................................................................................................................................

Date ...............................................................................................................................................


### Checklist – Obtaining a quotation from a subcontractor or a supplier

<table>
<thead>
<tr>
<th>Description</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quote Number</strong></td>
<td></td>
</tr>
<tr>
<td>Reference to:</td>
<td></td>
</tr>
<tr>
<td>Drawing Number:</td>
<td></td>
</tr>
<tr>
<td>Specification Reference:</td>
<td></td>
</tr>
<tr>
<td>Tender Number (If applicable):</td>
<td></td>
</tr>
<tr>
<td><strong>Reference to Scope of Work:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Full Quotation Price in words and figures</strong></td>
<td></td>
</tr>
<tr>
<td>GST shown separately (If not what is the break-up of the figures)</td>
<td></td>
</tr>
<tr>
<td>$ (Price) $ $ (GST) $ $ (Total)</td>
<td></td>
</tr>
<tr>
<td>Inclusions – details provided</td>
<td></td>
</tr>
<tr>
<td>Exclusions – details provided</td>
<td></td>
</tr>
<tr>
<td>P.C’s Included (where applicable)</td>
<td></td>
</tr>
<tr>
<td>Deposit to commence provided (if required)</td>
<td></td>
</tr>
<tr>
<td>Conditions of the deposit - is it refundable?</td>
<td></td>
</tr>
<tr>
<td>Yes  No  Not Applicable</td>
<td></td>
</tr>
<tr>
<td>Payment schedule - how and when is payment expected?</td>
<td></td>
</tr>
<tr>
<td>Is there provision for Variations</td>
<td></td>
</tr>
<tr>
<td>Yes  No  Not Applicable</td>
<td></td>
</tr>
<tr>
<td>If Yes what are the provisions:</td>
<td></td>
</tr>
<tr>
<td>What are the payment conditions for variations?</td>
<td></td>
</tr>
<tr>
<td>Name and Type of Contract</td>
<td></td>
</tr>
<tr>
<td>How long is the Quote valid for:</td>
<td></td>
</tr>
<tr>
<td>Are there any special conditions</td>
<td></td>
</tr>
<tr>
<td>Yes  No  Not Applicable</td>
<td></td>
</tr>
<tr>
<td>If yes what are the conditions:</td>
<td></td>
</tr>
<tr>
<td>Do you have to provide proof of ownership of the property?</td>
<td></td>
</tr>
<tr>
<td>Do you have to provide confirmation from a lending body that you are able to pay?</td>
<td></td>
</tr>
<tr>
<td>Do you have to sign an acceptance form?</td>
<td></td>
</tr>
</tbody>
</table>
The Goods and Services Tax (GST)

The following applies in relation to obtaining quotes with Goods and Services Tax (GST).

- Subcontract prices should be submitted “net”, i.e. exclusive of GST, with the 10 percent shown separately as a percentage of the contract price.
- Individual prices used in the tender should not include GST. This will enable you to build up a final quotation price and add 10 percent GST on your final price.
- Educate your subcontractors to provide a trade price plus GST.

Example Tender – Electrician

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical work</td>
<td>$21,100</td>
</tr>
<tr>
<td>Overhead/profits</td>
<td>$2,100 (Not always shown separately)</td>
</tr>
<tr>
<td>Total</td>
<td>$23,200 (This is the price to include when pricing your job)</td>
</tr>
<tr>
<td>Plus GST (10%)</td>
<td>$2,320</td>
</tr>
<tr>
<td>Total Subcontract Tender</td>
<td>$25,520</td>
</tr>
</tbody>
</table>

Deposits on building work and Progress Payments

Deposits paid to contractors are regulated by the Housing Indemnity Act 1992. The maximum level of deposit that a builder can demand is a deposit of 10% for building work valued at less than $20,000. Only 3% can be charged for building work valued at more than $20,000. Progress payments should not exceed the value of the work performed.

Making progress payments

Tip: If using a sub-contractor or tradespersons to do works, avoid making payments in full until you are satisfied that the job is complete.

If work is poor or incomplete you may have trouble getting your money back. The contract should have a schedule specifying the payments so do not pay any money upfront other than deposits listed in the contract. Payment is made when that stage is actually completed in full, and if applicable, passed in full by the building surveyor. An owner builder is, however, responsible for paying sub-contractors without delay when their work is completed.

The “Security of Payment” Act

Every day in Tasmania owner builders enter into contracts for the carrying out of building work or the supply of services and materials with building contractors, sub-contractors, suppliers and consultants. Sometimes disputes arise and owner builders may decide to withhold payment.
The Building and Construction Security of Payment Act 2009 (BCISPA) deals with disputes about payment. The Act applies to owner builders, as they are the responsible builder.

- It applies to all contracts (written or oral) in relation to any building work or services for that work or the supply of building materials.
- It creates a statutory right for contractors and sub-contractors to suspend work (under certain circumstances) for the non-payment of progress claims.
- It establishes a quick and informal adjudication process for the interim resolution of payment disputes. The adjudication process determines the amount of payment owed immediately, without affecting the rights of parties to have disputes determined later through litigation.
- If a respondent owner builder does not respond to a claim within 10 business days, they will lose the opportunity to provide additional information to an adjudicator in response to that claim.
- The significance of not providing a response to a claim should not be underestimated. In most cases, not responding to a claim in the proper manner and within 10 business days, results in the claimant being awarded the full amount claimed.

If you find yourself in a dispute over payment for services or goods, Workplace Standards Tasmania has produced a guide “Information for respondents” that explain the processes.

**Taxation and Superannuation Guarantee for employees**

As an employer, the owner builder may be liable for payments of tax and superannuation for the wages paid to employees and subcontractors during the building project. To clarify your obligations for tax, please contact the Australian Taxation Office or visit their website.

[Australian Taxation Office](https://www.ato.gov.au)
DEVELOPING THE PROJECT CASH FLOW

Cash flow projections are an integral part of project planning. Many projects run out of money, because they are under-financed as the owner builder underestimates the amount of money needed to complete the project.

By doing a cash flow projection, you are trying to establish the cash needs of the project over a period of time. Only by having some idea of when draw downs (your cash injections - money deposited into the projects account) occur can you properly plan the use of those funds over the timeframe of the project.

The Cash Flow Chart is the owner builder’s number one weapon in protection from extending past their financial capabilities of the project.

Sections of a cash flow

A typical cash flow consists of the following:

**Total Income:** (Your Cash Injections) Total income of the project over the timeframe the project is expected to run.

**Direct Costs:** These are costs incurred and include such items as labour, freight, materials, subcontractors etc.

**Indirect Costs:** These are the costs of the project that support the project. For instance the costs of telephone, rent, electricity, insurance, stationery, general administration costs. They can be substantial for any project and can be often ignored or seriously under estimated by the owner builder.

*Role of each section of the cash flow*

The role of the different sections present a clear and definitive account of the incomes and costs incurred on the project over a period of time. By separating each section in this way, you can gauge where costs are likely to arise.
Example Layout of Cash Flow

<table>
<thead>
<tr>
<th>Details</th>
<th>Month</th>
<th>Month</th>
<th>Month</th>
<th>Month</th>
<th>Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Direct Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Cost of Goods Sold)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Indirect Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project overheads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fees, Insurances etc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Outgoings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bal Carried Fwd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Outgoings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Balance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Project Cash Flow Projection

The same cash flow format can be used to set up a cash flow projection for a particular project. First you must determine when each trade will carry out and complete the works. The Topic Bar Charts/Scheduling in *Topic 8 - Project Management* will assist you to determine the timing of each trade activity.

Following is an example of a construction schedule for a three bedroom home. The same method can be used to schedule your project. The main points to remember when scheduling work:

$\text{Always break tasks down first. For Example: List all tasks that will take place in the course of the construction (not necessarily in order at first). Ensure that you have not left any trades out.}$

$\text{List tasks by each trade and then beside them list materials required for that trade to complete their section of the works. This may include other trades. For example: Bricklayer will include possibly the Brick-cleaner. You may choose to set the Brick-cleaner as a separate item.}$

$\text{Try and keep tasks in time groups of the work that can be completed in each 4 weeks and in order of Construction.}$
Example - Construction time take 16 weeks

<table>
<thead>
<tr>
<th>First 4 Weeks</th>
<th>Next 4 Weeks</th>
<th>Next 4 Weeks</th>
<th>Next 4 Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Council Application</td>
<td>Roof Tile Delivery</td>
<td>Gyprocker</td>
<td>Painting Internal</td>
</tr>
<tr>
<td>Preliminary Costs</td>
<td>Roof Tilers</td>
<td>Fixout Timbers</td>
<td>Plumbers Fit-Off</td>
</tr>
<tr>
<td>Survey Block</td>
<td>Bricks Delivered</td>
<td>Fixout Carpenter</td>
<td>Electrical Fit-Off</td>
</tr>
<tr>
<td>Excavation</td>
<td>Bricklayer Hardware</td>
<td>Fixing Hardware</td>
<td>Shower Screen/s</td>
</tr>
<tr>
<td>Drainage To Slab</td>
<td>Bricklayers</td>
<td>Kitchen Installed</td>
<td>Door Hardware</td>
</tr>
<tr>
<td>Concrete Slab</td>
<td>Lock Up Materials</td>
<td>Wet Seal</td>
<td>Carpenter Fix-Off</td>
</tr>
<tr>
<td>Frame &amp; Trusses</td>
<td>Lock Up Carpenter</td>
<td>Floor/Wall Tiles</td>
<td>P.C Items</td>
</tr>
<tr>
<td>Frame Carpenter</td>
<td>Garage Door S &amp; Fix</td>
<td>Floor/Wall Tiler</td>
<td>Internal Clean</td>
</tr>
<tr>
<td>Windows</td>
<td>Plumbing Rough In</td>
<td>Painting External</td>
<td>Final Pest Control</td>
</tr>
<tr>
<td>Fascia Gutter</td>
<td>Electrical Rough In</td>
<td>Bath, Tub &amp; Vanities</td>
<td>Final Site Clean</td>
</tr>
<tr>
<td>Structural Steel</td>
<td>Check Survey</td>
<td>1st Site Clean</td>
<td>Sundries</td>
</tr>
<tr>
<td></td>
<td>Brick Cleaner</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Once the works schedule has been completed the builder can proceed to create a cost breakdown for each four weeks.

**Note:** This cost breakdown does not cover the same time frame as areas of the "construction schedule" as there are variables to be considered, such as, materials that could have been ordered, delivered and used in one month, but will not be utilised until the following month.

The total of all the 4 week periods are added together to arrive at the total construction cost. Now that you have a clear indication of work that will be completed each month you are able to calculate when you will need ‘draw downs’ into the account from your own resources or the finance company to supplement the cash flow.

You should try to structure the income of the project so as to cover the costs when they fall due as, each stage is completed.

**Example – Projected Cash Outgoings**

Note – The figures shown below are purely an example and do not reflect the true costs of construction OR the actual timeframe of the construction.
Construction Cash Flow

Using the example shown on the previous page, a Construction Cash Flow could look like this.

<table>
<thead>
<tr>
<th>Month 1</th>
<th>Month 2</th>
<th>Month 3</th>
<th>Month 4</th>
<th>Month 5</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surplus C/Fwd</td>
<td>Nil</td>
<td>~ 2003</td>
<td>2050</td>
<td>3555</td>
<td>3909</td>
</tr>
<tr>
<td>Income Draw</td>
<td>25000</td>
<td>40000</td>
<td>22000</td>
<td>25000</td>
<td>8000</td>
</tr>
<tr>
<td>Cash On Hand</td>
<td>25000</td>
<td>42003</td>
<td>24050</td>
<td>28555</td>
<td>11909</td>
</tr>
<tr>
<td>Outgoings</td>
<td>22997</td>
<td>39953</td>
<td>20495</td>
<td>24646</td>
<td>10043</td>
</tr>
<tr>
<td>Total</td>
<td>22997</td>
<td>39953</td>
<td>20495</td>
<td>24646</td>
<td>10043</td>
</tr>
<tr>
<td>Surplus + or (-)</td>
<td>2003</td>
<td>–</td>
<td>2050</td>
<td>3555</td>
<td>3909</td>
</tr>
</tbody>
</table>

This Cash Flow Chart sample only shows one house over a construction period of 16 weeks and an outgoing cycle of 20 weeks.

**Note:** the use of a contingency figure built into the cash flow. This allows room for unforeseen costs and variances.

There is no allowance for rain or any other hold ups in the calculations and many would say that because of this the cash flow chart will be out of date within a short time. This would be true if the construction schedule was not constantly updated.

Simply moving the income and expenditure line totals forward by the number of weeks the delay has caused, you now have an updated Cash Flow.

The Cash Flow Chart is the window to the project and from it you can obtain the following information.

- The Monthly Costs
- The Monthly Income
- The Cash on Hand

**Job Costing**

Reviewing the costs and the cash flow regularly is critical. The information gained from a job costing analysis is vital.

**Tips:**

- **Do not wait** until the job is finished to start costing. Cost the job as each section is completed.
- Compare the variance to your budget.
- Explore the reasons for over runs; is it related to labour, material costs, bad weather or a variation? Could it have been avoided? How can it be improved during the next section of the project?
- Keep a running record of the costs associated with each section of the project.
- Consider setting up job costing sheets for each section or trade related to the project.
Example Job Costing Sheet

JOB DETAILS .................................................. TRADE ..................................................
.................................................................................. BUDGET COST ..................................

SUB CONTRACTOR/SUPPLIERS NAME .................................................................

TRADE COMMENCEMENT DATE ....................................................................

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>LABOUR</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Ref.</td>
<td>Total</td>
</tr>
<tr>
<td>Date</td>
<td>Ref.</td>
<td>Total</td>
</tr>
</tbody>
</table>

TOTAL       $       $       $       $

Ref. = The invoice number/Supplier Name  W/E = Week Ending or Date

Variance (if applicable) .................................................................................

Comments.....................................................................................................

If you choose to develop a job costing sheet for each section or trade on your project, you will be able to compare these sheets to the original Cash Flow Projection.

COMPARISON OF ACTUAL COSTS AGAINST ORIGINAL BUDGET - EXAMPLE

<table>
<thead>
<tr>
<th>MONTH</th>
<th>BUDGET</th>
<th>ACTUAL</th>
<th>MONTH</th>
<th>COST</th>
<th>ACTUAL</th>
<th>MONTH</th>
<th>COST</th>
<th>ACTUAL</th>
<th>MONTH</th>
<th>COST</th>
<th>ACTUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: © Book to Book, Business Training Pty Ltd
To compare, enter the actual costs against each budgeted amount. Compare the actual costs against the budgeted figure:

- Are there savings?
- Are there overruns?
- Do you need to control the costs in the next section?
- Will you be required to draw down more money?
- Have you underestimated your costs?

**Tip:** If there are savings, keep it mind that you may need it further down the track so do not just spend it. Remember that the overall savings could be utilised in higher quality fittings, landscaping etc.
OBTAINING FINANCE

The owner builder must be able to back the cost of their building work and most will need to borrow money. Many first homeowners have high expectations regardless of whether they can afford a large house with all “top of the range” appliances. However owner builders should not over commit to a large mortgage with the constant worry that a rise in interest rates will see them lose their dream home. When approaching your bank or financial institution for a loan to build they will usually require the name of the builder, however as you are going to build it yourself as an owner builder consider the following issues.

- Are you experienced enough to complete the project within budget?
- Is the house able to be sold if you run out of money before completion?

As the financial institution needs security on your home or proposed building project, the answer to these questions will affect the amount that is obtainable from these institutions.

The more experienced you are the better chance you have of getting a loan. As you wish to build as an owner builder, be warned, most lending institutions will only advance 50% of the value of the home to an owner builder.

If you had engaged an accredited building practitioner you may be able to borrow as much as 95% of the total build costs.

Applying for a bank loan

Not all financial institutions will lend to owner builders. Those that do will want to see a clear and realistic proposal and the types of information they may wish to see will include:

- a list of the applicant’s assets (property owned) and their liabilities;
- details of their cost of living;
- the applicant’s ability to make a financial contribution to the project.

Go to the interview prepared with the right information, as the financial institution will want to look at hard facts about the design costs and drawings, detailed cost estimate of the project and verification of the building permit. Lenders claim that major problems encountered with owner builders is the cost blow-out - an underestimation of cost and overestimation of their own funds. The financial body may insist that a fixed percentage of the estimated total cost be set aside to cover unexpected contingencies. Applications are based on merit and funds granted will need to be made available at pre-determined stages of the construction activity. Consider applying for extra funding as a contingency reserve that you could draw on if there were cost overruns at final stages.

Tip: When deciding how much to borrow, also give some thought to whether interest rates are likely to rise, thus increasing your repayments and also the money you will need to spend on furnishings, driveway, fences and landscaping.
Valuations

When you are building your own home organising finance is a complex task and the lender must be able to determine the final value of the completed property. When arranging a valuation, the lender will generally require the following information:

- as an owner builder, an estimate of construction costs, or if using a sub-contractor, a contract, tender or quote; and
- a written schedule of progress payments, to show how much money you will need as you build and works the owner intends to complete for each stage. This will assist the lender in assessing your cash flow;
- council approved plans and specifications and any conditions of approval. The Certificate of Likely Compliance may be also required;
- written details of work that is to be carried out by you as an owner builder, friends, family or subcontractors. This should include all trades. Highlight any works to be carried out at no cost by you or at a discounted rate by you or your family and friends. You will also need to supply a complete costing of works to be subcontracted to qualified tradespeople and copies of written quotes to be provided.

If doing the actual building work yourself, the lender will also require:

- written details of where you intend to buy the building materials, the credit terms available and copies of any trade labour cost quotes already arranged;
- evidence of your savings required to fund construction; a program of the stages when the lender will be requested to release the loan funds.

Construction programs and schedules will be discussed in Section 8 – Managing the work

Avoid cash-flow pitfalls

- Many owner builders spend what savings they have on the wrong items at the wrong time and when a valuer inspects the property on behalf of a lender, they cannot recommend a further progress payments.
- All lending institutions advance loan funds through progress payments during the course of construction. Generally speaking, four progress payments are made. However, the lender will only advance funds as a percentage against completed work done; i.e. permanent construction improvements. The valuer cannot take into consideration frames and trusses, for example, purchased at a sale, if they are stored in the garage and not erected on the building site.
- The owner builder then has no funds to pay the tradesman to erect those materials and now has a lender that will not advance funds to replenish money already spent, as the value is not in completed fixed work. This creates a cash flow dilemma and a stalemate and all work is stopped on the job while interest is still accruing daily with a monthly interest payment to be made.

Please proceed to Topic 5 quiz on Moodle
TOPIC 6 – DESIGN CONSIDERATIONS AND SUSTAINABLE BUILDING

Please note that the videos provided in this topic were produced by Your Home.

Design criteria and standards of building work

5-star Energy Efficiency

The 5 star energy rating efficiency requirements for the construction or alteration of houses have been in place in Tasmania since January 1 2010. The 5 star requirements apply to all class 1 buildings (detached houses or units) and class 10 buildings (non-habitable outbuildings) that have a conditioned spaced (heated or cooled). The 5 star requirements are equivalent to the Building Code of Australia (BCA) 2009 requirements under the Nationwide House Energy Rating Scheme.

Your building surveyor will assess your designs against the Deemed to Satisfy requirements of the Building Code of Australia to ensure they meet the mandated requirements for 5 star building. A 6-star Energy Efficiency will be a requirement in Tasmania from 1 May 2013.

Role of the designer in creating efficient design

Remember that as an owner builder, you must use an accredited builder designer or architect. They will be required to prepare designs in accordance with the Building Code of Australia (BCA). The BCA addresses the technical provisions for the design and construction of buildings and structures in all states and territories. It is a complex technical performance based document that requires a high level of technical expertise to interpret. It is produced in two volumes:

- Volume 1 (commercial buildings), and
- Volume 2 (domestic buildings).

The BCA covers issues such as:

- classification
- structure;
- lighting
- ventilation
- fire safety;
- Sanitary facilities
- access and egress;
- services and equipment;
- health and amenity in buildings;
- energy efficiency.

The Building Act 2000 adopts the BCA as the technical standard that applies to all building work in Tasmania.

You can purchase copies of the BCA and the Guide to the BCA (printed, compact disk or online) can be ordered via the Australian Building Codes Board On-Line Shop: https://services.abcb.gov.au/abcishop/. Copies of the BCA are available at State Library of Tasmania reference libraries in every Tasmanian city.
The final design must suit the site on which it is to be built. Some of the factors which the designer will need to take into consideration will include:

- Key areas such as building fabric, glazing, building sealing and services
- Insulation to meet R-Values
- Positioning and orientation of building for maximum solar benefit;
- Effect of the land contour on floors - split level, suspended or concrete slab on ground; (excessive slope often means higher building costs);
- The various material and construction alternatives;
- Compliance with the local planning scheme boundary setback limits;
- General compliance with the local planning scheme;

Some of these will be looked at later in this section.

**New 6-star Energy Efficiency**

The 5-star energy standards increased to 6-stars from May 1 2013. The new 6 star provisions will require more stringency around insulation and glazing, water and space heaters.

The below topics will provide advice on how energy efficiency can be achieved.

**Owner Builder Choices in Sustainable Building**

Whilst the 6-star requirement sets the minimum standards, there is still considerable scope as an owner builder, to build your home incorporating design features and energy smart choices to exceed the minimum energy efficiency standards.

A Commonwealth Government website [Your Home](http://www.yourhome.gov.au) is a valuable resource consisting of a suite of technical guide materials and tools developed to encourage the design, construction or renovation of homes to be comfortable, healthy and more environmentally sustainable.

Heat always tries to move from warmer to colder areas - for example, in summer from the hot outside to the cool inside of your home, or in winter from the inside out. You can greatly increase the energy efficiency of a home, reduce energy bills and make it more comfortable by limiting the amount of heat that enters or leaves and this can be achieved by energy smart design.

There are some critical factors which need to be considered as part of an energy smart design:-

- Site Location, Orientation & House Layout
- Passive Solar Design – to reduce heating and cooling needs
- Thermal Consideration
  - Windows and glazing
  - Insulation
  - Shading
  - Ventilation
- Household appliances
- Lighting
Site Location, Orientation & House Layout

When extensively renovating or building a new home, the right design and selection of building materials can take advantage of the sun and prevailing winds, to help regulate indoor temperatures. Ideally, the house will prevent or remove excessive heat gains in summer, whilst allowing and storing the sun's energy in winter.

Home Positioning video

Fundamental Orientation design considerations are:-

1. Room temperatures will vary depending on how much they're exposed to sun and wind. Plan your home so that the sun from the north-east to the north-west is available to one of the long sides of the house, which should incorporate the living areas such as Family/Living rooms, Kitchen and courtyard, to take maximum advantage of the winter sun, called solar access.

2. Bedrooms should be on the southern side to take advantage of prevailing breezes and laundries, bathrooms or store rooms on the western or southern sides.

3. North and west-facing windows should incorporate high performance glass (e.g. low E-type facing outwards) whilst east and south-facing windows might incorporate double glazing.

Home Orientation video

Passive Solar Design

Energy-efficient house design enables the home to trap heat in winter, whilst breezes and shading, keep it cool in summer, resulting in a more comfortable home and reduced energy costs.

Thermal Mass is the amount of potential heat storage capacity available in a given assembly or system. It is an important factor in achieving an energy efficient home.

Materials such as brick, concrete, mud and stone take a long-time to heat up and cool down because they have a high thermal mass. When the principles of thermal mass are used correctly in energy smart house design, it will allow the sun to shine into the house in winter so that the heavy materials can absorb the sun's heat and in the evening slowly release it, keeping temperatures more stable. In summer it will absorb excess heat during the day to reduce overheating and release it at night when the temperature is cooler.

Concrete floor slabs laid on the ground either bare or tiled can prevent wide temperature variations, particularly in north-facing rooms in summer, and store the sun's energy in winter to warm the house in the evening. Correctly positioned fireplaces and walls can also provide thermal mass. Roof tiles have a greater thermal mass than do metal roofs and therefore take more time to cool down. The same applies to full brick external walls compared to reverse brick veneer, insulated brick veneer and timber framed external walls.

Thermal Mass video
It is far more preferable to have a light-coloured roof and external walls because dark colours absorb more summer heat, however light colours can cause glare problems.

If the house has a metal roof and/or incorporates painted external walls, then you should consider using ceramic based insulated paints as these can significantly improve the thermal resistance and insulated properties.

**Thermal Considerations**

**Insulation**

Insulated ceilings and walls significantly reduce the heat flow between the outside and the inside of your home, keeping it warmer in winter and cooler in summer.

Correctly installed insulation has the potential to save up to 20-30% on heating and cooling costs when the ceilings are insulated and a further 15-20% if external walls are also insulated. In summer, up to 35% of the heat in your house enters through an un-insulated ceiling, while 15-25% comes in through un-insulated walls depending on orientation.

Insulating the ceiling should be the number one priority, but to make the most of insulation in summer, it’s essential to provide shading for east, north and west-facing windows – otherwise your house can heat up like an oven.

The BCA stipulates the mandatory minimum energy efficiency requirements ‘by the Climate Zones’.

If even 5% of an area of wall or ceiling is left un-insulated, some 50% of the potential benefits could be lost, so it’s important to correctly install it.

Reflective foil type insulation (often called sarking) correctly installed under the roofing and external wall cladding, such as Fibre cement and weatherboards, can significantly reduce unwanted heat gain within the roof space and house in summer, and assist in preventing heat loss in winter – it can also reduce condensation if a “breather type” product is used. Poorly taped joints, tears and holes in the product, can cause significant leakages.

Condensation problems have become more evident in recent years mainly because buildings are more tightly sealed to prevent heat loss. Particular attention needs to be taken in the design and construction specifications to avoid these problems. Owners also need to understand that buildings still need to be ventilated to remove moist air.

If the house incorporates suspended and unenclosed timber floors you must use under-floor insulation, as these areas can allow significant heat loss and cold air entry.

[Home Insulation video]

**Building Fabric**

The below table depicts a summary of the BCA deemed-to-satisfy energy efficiency requirements for the building Fabric.
It is possible to use a combination of insulation materials such as bulk insulation, foil (RFL/RBM), etc with various R-values to achieve the BCA specified overall R value.

Ventilation video

Remember to always seek advice from high-quality professional insulation installer and always refer to the WST guide to 5 Star.

**Windows, Glazing & Thermal Integrity**

Windows provide very little insulation and are responsible for some of the greatest heat losses and gains in a house, for example single glass windows without curtains have an R-value of only 0.17.

It is very important to have the right sized windows, with high performance glazing, within thermally broken frames, and placed in the correct location, to allow the winter sun in and to keep summer sun out, creating effective cross-ventilation (see Ventilation). Windows fitted with lined tight fitting blinds, curtains and pelmets help reduce heat loss.

A new window rating system which includes both glass and frame is being introduced by the Australian Fenestration Rating Council **AFRC**. **AFRC**’s role is to provide independent verification of product performance. It will develop, administer and approve the only uniform, independent, comparative rating and labelling system for the energy performance of windows, doors, skylights and attachment products. Their goal is to provide fair, accurate, and reliable energy performance ratings.

**Glazing**

Glazing is one of the most important aspects in windows when it comes to the following provisions:

- Heat loss or gain

<table>
<thead>
<tr>
<th>Building Fabric</th>
<th>Total R-Value required</th>
<th>R-Value of required* Insulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zone 7</td>
<td>Zone 8</td>
</tr>
<tr>
<td>Roof—Tiled (unventilated roof)</td>
<td>4.3</td>
<td>4.8</td>
</tr>
<tr>
<td>Roof—Metal roof (unventilated roof)</td>
<td>4.3</td>
<td>4.8</td>
</tr>
<tr>
<td>Walls—Weatherboard</td>
<td>2.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Walls—Brick veneer</td>
<td>2.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Walls—Cavity brick</td>
<td>2.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Walls—Cement or metal sheet</td>
<td>2.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Floor—Timber (Suspended &amp; unenclosed)</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Floor—Concrete (Suspended &amp; unenclosed)</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Floor—Timber (Suspended &amp; enclosed)</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Floor—Concrete (Suspended &amp; enclosed)</td>
<td>1.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>
Lighting

Glazing contributes significantly to the energy efficiency of a house. Assessing the method of glazing is done by comparing the proposed glazing against the allowances for conductance and solar heat gain. This will take into account glazing area, glazing thermal performance, solar orientation and external shading. A Glazing Calculator (for the BCA 2009) has been produced by the ABCB and can be downloaded from their web site at www.abcb.gov.au.

Heating/Cooling

The performance of a window is measured using a number of variables. The common variables that are used to give an indication of the window performance in relation to heating and cooling effects are the U-value and Solar Heat Gain Coefficient.

**Insulating Value (U-value)**

The overall heat transfer coefficient, or U-value, is the reciprocal of the sum of all resistances of the individual parts of the element, or the overall thermal resistance, and is expressed in the SI unit watt per square metre kelvin (W/m2.K). It is the inverse of the commonly used R-value. (i.e. $R$-value = $1/U$-value).

The insulating properties of a window are the most important consideration in a home that has high heating requirements. The generic performance ranking of glass products from highest to lowest U-value is: monolithic glass laminated glass and laminated glass with an exposed low-emissivity (low-e) coating followed by double glazed units. Altering the air space and the use of reflective or low-e coated glass can further improve the performance of a double glazed unit.

**Solar Heat Gain (SHGC)**

The Solar Heat Gain Coefficient is a measure of the heat gained through a window.

This value is a ratio and hence a dimensionless number between 0 and 1. The lower this value the lower the heat gained through the window and hence the lower the cooling loads on the building.

This measure is a factor considered in a building where the cooling requirement is predominant.

For buildings in mixed climates, i.e. those that require significant heating and cooling, both the insulating and solar heat gain properties of the window should be considered.
**Air Infiltration**

This is a measure of how much air can pass through the seals of a closed window. The lower this value, the better sealed the window is.

Windows are also used to provide ventilation. Louvre windows can be used to provide large openable areas for cross ventilation.

**Natural Lighting**

The amount of light transmitted through a window has an influence on the interior lighting requirements of a building. The measure of light transmitted through a product is known as the visible light transmittance. The higher this value, the more light that is let into the interior of the building. When considering the visible light transmittance, the potential for glare due to high direct light transmittance should be considered and can be significantly reduced by tainting.

[Home Glazing video]

**Shading**

High summer sun should be prevented from entering through the windows and this can be achieved through a variety of means. For instance on the northern side of the house, the eaves overhang should be about 65 degrees above horizontal. This is measured from the lowest point of the window glass to the outside edge of guttering, allowing the lower winter sun to enter and keep out the high summer sun. Western and eastern windows should be kept to a minimum and preferably fitted with adjustable external shading, for summer, whilst north facing windows can be shaded using trees or shrubs. These will need to be deciduous to allow winter sun to penetrate.

External shading (such as trees or bushes, eaves, awnings or shutters) is more efficient than internal (such as blinds or curtains) for preventing heat gain.

A clever method for west facing G.F elevations would be to use 90% UV shade cloth on eaves, or veranda mounted curtain wire system, set up like an external curtain using eyelets and curtain rings so that it can be removed in winter.

[Example shade cloth curtain]

[Home Shading video]
Ventilation

Various appliances such as air-conditioners or fans can be used to create an artificial breeze, but correct house ventilation design can take advantage of natural breezes, for free. Air is needed to move through your home, in summer, to provide fresh air and to cool and ventilate the house interior. It also increases the evaporation of perspiration, making you feel cooler.

An energy smart house design will include correctly positioned windows and doors, which take advantage of the sites prevailing natural breezes.

Windows and doors should be aligned so as to allow daytime and cool evening breezes to flow through the house creating effective cross-ventilation, which allows the house to cool down for the next day. Windows in opposite walls are better than a single window in just one. You should keep windows closed during hot summer days and open them in the evening once it’s started to cool down. Correctly positioned trees and bushes can help channel breezes towards your house.

Energy management

Most Australian households spend a large sum of money on energy bills every year. However there are measures which can assist you in reducing the cost of bills. Before purchasing new appliances, spend some time researching the product, ensuring that ‘energy efficiency’ is always kept in mind, as this will save you money in the long run.

Finding energy efficient appliances

The task of finding the most energy efficient appliances and hot water heaters has been made a whole lot easier since the launch of E3 Equipment, Energy and Efficiency in March 2004. The E3 program involves representatives drawn from all jurisdictions in Australia and New Zealand.

A joint Australian and New Zealand Government initiative called Equipment Energy Efficiency Program (E3), allows you to compare a full range of models of air-conditions, clothes dryers, dishwashers, refrigerators, hot water services, etc. with detailed specifications to find the most energy efficient product to suit your needs.

Smart Meter Energy Saving

It is highly recommended that Smart meters are installed as this will assist to conserve energy, provide opportunities to sell electricity into the grid; establish gross feed-in tariffs for producers of electricity made using benign renewable fuels.

To get the maximum benefit from your smart electricity meters aim to set your washing machine, clothes dryer, dishwasher and say pool pump/ filter to operate during the cheaper ‘shoulder’ or off peak periods. Use cold water only when washing clothes.
**Ceiling fans**

Ceiling fans should be considered as a real alternative to air conditioning, in a well-ventilated energy smart home, because at less than $0.02c/hour average running cost you could run almost fifty fans for the same cost as a 5Hp A/C system and they are much less expensive to purchase.

In rooms with high ceilings ceiling fans can considerably reduce the heating and improve thermal comfort by circulating the warm air from the top of the space.

**Gas Assisted Solar Hot Water Heaters**

If you have a gas assisted solar hot water heater, ensure this is located no further than 2 meters from the point of greatest usage (usually the bathroom), as this minimises heat loss, saves water, and reduces the cost of installation.

![Gas boosted solar hot water heater](image)

**Note:** You will be required to have your plumber install heat traps and insulated piping to hot water services and central heating water systems. All heating and cooling ductwork must also be insulated, however ductwork within a conditioned space need not be provided with insulation.

**Heat pumps (Air-conditioners)**

Energy efficiency is more readily achieved if you propose to use the top 6 star rated inverter style air conditioning systems.

**Tip:** Visit [E3 Equipment Energy Efficiency](#) for all tested and most energy efficient air-conditioners. Inverter type A/C systems are significantly cheaper to run and you should aim to
get the most energy efficient models available. Remember to only cool or heat what you need to.
Air-conditioners work by removing moisture from indoor air (humidity), which is then condensed to water and the amount of water generated by an A/C unit is considerable.

**Lighting**

Careful selection of lamps and fittings can cut your energy costs for lighting by more than half. The higher the wattage of a lamp, the higher the running cost.

The following table shows the comparative costs of a few forms of lighting.

<table>
<thead>
<tr>
<th></th>
<th>20 watt compact fluorescent</th>
<th>65 watt quartz halogen(^1) MR16 low voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running costs(^2) (8000 hours(^3))</td>
<td>$16</td>
<td>$52</td>
</tr>
<tr>
<td>Purchase cost(^3)</td>
<td>$10 - $15</td>
<td>$9</td>
</tr>
<tr>
<td>Average life</td>
<td>8000 Hours</td>
<td>1000 – 6000 Hours</td>
</tr>
<tr>
<td>Total costs (8000 hours)</td>
<td>$26 - $31</td>
<td>$72</td>
</tr>
</tbody>
</table>

(1) Includes power consumed by the transformer
(2) Running costs are based on the general tariff as at December 2001
(3) There are 8760 hours in a year, therefore a compact fluorescent light used for 4 hours a day should last for over 5 years. Approximate retail cost

**Lighting Tips**

- Use T5 & T8 fluorescent lighting in rooms where the light is on for long periods.
- If using quartz halogen - Low Voltage fittings, there can be a substantial energy saving by using electronic transformers. The electronic transformer can decrease the energy used by 10 to 15 watts per fitting and therefore also decrease the heat produced. Another benefit of electronic transformers is that the lamp is ‘soft started’ which reduces voltage surges to the lamp and therefore maximises lamp life. Note: Quartz halogen light sources, 5% over voltage supply halves the lamp life and 5% under voltage doubles the lamp life as a rule of thumb.
- Avoid using multiple globe fittings or down lights particularly those switched from single switches, as they are an inefficient form of lighting
- Avoid using down lights for general lighting as by the nature of the term ‘down light’ they do shine the light down and therefore many more are needed (a number are needed to light a room) and they can lead to heat loss through the holes in the ceiling and significantly diminish the effectiveness of ceiling insulation as holes have to be cut around their openings. The most effective way to use this light source is for accent lighting rather than general lighting.
- Be aware when using Halogen recessed low voltage lights as up to 70% of the heat is emitted through the back of the fitting into the roof void above the gaps and around the light. The fitting penetration and ceiling insulation above, allow leakages and lower energy efficiency. Appropriate heat proof shrouds can now be installed over most recessed light fittings, which allow ceiling insulation to be installed right-up to the light fitting and reduce air leakage (Efficiency Matrix).
• Avoid having several lights activated by one switch and install dimmers where possible. When having multiple switches and dimmers in an area, it gives you greater flexibility in the moods you can create and minimises your power consumption.

• Make good use of natural light, particularly from north facing windows.

• Do not leave outdoor lights on all night or during the day - use timers or movement sensors.

• Dimmers reduce greenhouse gas emissions as they reduce light output and also extend lamp life.

• Use the lowest wattage light needed to adequately light up an area and this is especially true of low voltage IRC lights where 20watt globes are recommended as adequate. 1 x 20W low voltage IRC lamp gives about the same light output as a 60W incandescent globe. However, remember that these lamps are usually in a down light, so selection of your light fittings and how the light is dispersed is of great importance. When using a light fitting that gives general light, for example an Oyster light, the light is emitted in all directions giving the impression that there is more light in a space, especially when the light is on the vertical surfaces (walls). If using down lights, make sure that the light is shining on the walls so you can minimise the ‘cave’ feeling.

• Use task or special purpose lighting to supplement general lighting wherever possible.

• Keep lights and fittings clean. Dusty or dirty globes and fittings can reduce light output by up to 50%.

• Compact fluorescent bulbs burn as brightly as incandescent bulbs but they require less power to do so. Each compact fluorescent light bulb you install can save you $50 over the life of the bulb. For example 1 x 18W Compact fluorescent lamp = approximately 1 x 100W incandescent globe in light output.

• 12V Halogen lights do not provide a good spread of light (which is why they are best suited for spotlights or highlights, accent lighting) and several may be required to adequately light a room.


**Lighting Types**

The following lighting types have been listed in order of efficiency.

**Triphosphor Fluorescent T5 & T8 lamps**

Electronic Triphosphor T5 & T8 fluorescent lamps are the most energy efficient form of lighting and feature higher light output for the same ultra-low energy consumption as standard fluorescents, with a lower rate of light loss with age. They have the added benefit of immediate start up and can be dimmed by electronic dimmers. T5 & T8 lamps typically last 10,000-15,000 hours and are available in tube or circular shaped lamps. However, you will need to purchase the complete light fitting and they are best suited to general lighting applications where performance and high colour rendering capabilities are important.

**Light Emitting Diodes (LED’s)**

LED light globes are the second most energy efficient form of lighting and have an average power usage of 3 watts and the lamps typically last a minimum of 10,000 hours but cannot be dimmed. These globes can be interchanged with standard low voltage halogen globes however they provide less light and are far more directional. Typical globe cost is > $35, which is quite expensive although their cost will reduce in the future. If replacing low voltage halogen lamps with LED’s in say a 5m * 4m room, which might have No4 50 watt halogen (=200 watts total) consider installing No8 -10 * 3 watt LED’s (=24-30 watts total) instead. LED technology has some way to go yet before acceptable light intensity levels and lamp operating hours are reached because currently they are quite expensive, have relatively low light levels and replacement warranties are not always honoured.

**Compact Fluorescent lamps**

Compact Fluorescent lights are the third most energy efficient form of lighting. Typical globe cost is $12-$18, but they are much cheaper to run - compact fluorescent light bulbs can save you $50 per bulb over the life of the bulb. Lamps typically last a minimum of 8,000 – 16,000 hours, which is an average of ten times longer than incandescent bulbs. Compact Fluorescent light bulbs are designed to fit into conventional light sockets (bayonet and Edison screw fittings). They are ideal for rooms where lighting is required for long periods of time, such as in the living room or kitchen. However, they are not recommended for rooms where the lights are frequently turned on and off, such as in a bathroom, as this reduces their lifespan. Dimmers cannot be used on compact fluorescent lights and they have a fairly slow start up time.

**Tubular fluorescent lamps**

Also known as tube lights (available as straight or circular tubes), tubular fluorescent lamps are also very energy efficient. They are more expensive to buy but cheap to run and last from 8000 to 16000 hours. They are ideal for kitchens, garages and workshops. Dimmers cannot be used on fluorescent lights and they have a fairly slow start up time.
**Infra-Red Colour (IRC) lamps**

Halogen Low Voltage ES (IRC) lamps cost approx. $9 each and are up to 30% more economical than standard halogen lamps as a result of a special coating on the lamp bulb (IRC = Infra-Red Coating).

Their outstanding feature is the increased luminous efficiency - i.e. the same amount of light is produced using less power, therefore saving energy. They also cut down on air conditioning costs, because the lower power consumption (for the same amount of light produced) generates less heat, and therefore reduces the cooling requirement.

All halogen low voltage ES (IRC) lamps provide an extremely high level of light intensity and colour constancy over their entire life of up to 5,000 hours.

For existing light installations where you might have 50watt low voltage halogen lamps installed, you can simply swap them with 35watt IRC lamps and save money and reduce heat load. In new installations using IRC lamps, you need fewer power packs in comparison with an installation using standard halogen lamps - another way in which you save money. A GE IRC 35w lamp has a power consumption of about 37w (including transformer) and produces about 1000lm, so its efficiency is about 27 lm/w (Lumens per watt), and a 50w (non ES/IRC) lamp is about 18lm/w.

Visit Osram [Energy Saver Calculator](#)

**Halogen**

There are 2 type of halogen ‘families of lamps’ commonly used they are 240V Halogen and 12V (Low voltage Halogen). There are many different varieties of these lamps available also depending on your need. 12V Halogen lights are twice as energy efficient as standard incandescent globes. 240v Halogen reflector lamps are lucky to be above about 12lm/w and will probably be banned in the next 2-3 years as incandescent lamps have been. They are more expensive to buy but last up to 6000 hours (they require a transformer).

However, as they are generally used in ‘down light’ form they provide a beam of light, and are more suited to accent lighting rather than general lighting as several would be needed to adequately light a room. They are best suited for task lighting such as over a kitchen bench or highlighting features such as a painting on the wall.

Buy good quality globes with max 20Watt rating. Halogen globes give off considerable heat and as mentioned earlier up to 70% goes through the back of the fitting so be mindful of the application. Standard halogen globes are inefficient and in the short to medium term you should try and purchase U.V treated halogen, which are much more efficient but cost approx. $13globe.
Solar Lighting

Solar lighting can be useful when lighting is required at a great distance from electrical supply e.g. especially good for driveways, gardens as a low level of light at night in outdoors areas is adequate. Solar lights produce electricity via a solar panel during daylight hours and store it in a battery for use at night. They provide up to eight hours of lighting if installed in a sunny location, and are available from solar equipment retailers and specialised lighting stores.

Home Solar video

Solar Incentives

Previous Government grant and rebate systems have been replaced by two main financial incentives. There is no longer a means testing for eligibility.

1. Feed-in tariffs

This is the rate you’re paid for electricity that grid-connected panels contribute to the local network. The most important distinction is whether you’ll receive a “gross” or “net” feed-in tariff (FIT). The former is much more valuable to households, though it does require installing a new electricity meter.

Electricity generated by a solar power system in Tasmania up to 3kW capacity is credited by Aurora Energy at the same rate as the applicable supply tariff. For systems larger than 3kW, you’ll need to contact Aurora for applicable feed-rates.

2. Small-scale Technology Certificates (STCs)

Under the Federal Government’s Solar Credits Scheme, eligible households receive money for small-scale technology certificates (STCs) created by their PV systems. STCs were formerly known as renewable energy certificates (RECs). The government uses these certificates as evidence of Australia’s contribution towards our renewable energy targets.

STCs are available for solar and heat pump installations across Australia, and can be combined with other State and Federal rebates.

The price you get will depend on how you choose to sell your STCs.

For more information on STCs, visit the Clean Energy Regulator webpage.

Clean Energy Regulator

Please proceed to Topic 6 quiz on Moodle
TOPIC 7 – PLANS DRAWINGS AND SPECIFICATIONS

Note: Owner builders must use an accredited building designer or architect.

This section provides general advice on interpretation of architectural plans.

DRAWINGS & SPECIFICATIONS

The drawings and specifications are designed to convey what you intend your completed project to look like. All drawings must be legible and accurate and should always be prepared with the realisation that they are legal documents.

Two types of drawings can be used for the owner builder project

1. Design or sketch drawings that set down ideas on room relationships, room sizes, the orientation of the house, the stylistic treatment of the house, colour schemes, possible furniture layout and landscaping ideas.

2. Working drawings or construction drawings that show the finalised design. They indicate the exact arrangement of spaces, their sizes, the materials of construction and specific details so as to enable the building of the house.

Some architects and building designers will also provide 3D computer views that enable you to “walk through” the finished building.

Sketch Plans (Concept)

Sketch plans may be a freehand black and white sketch (and often is, in the first instance) or a fully coloured drawing. In any case, the very first requirement is simplicity. It should show clearly the basic planning layout and areas, and sufficient information only to describe broadly such things as:

- General Construction
- Sizes of Rooms
- Aspect (position of North Points)
- Relationship to boundaries or adjacent buildings etc.
- Possible layout of major plant or furniture etc.

Detailed Drawings

The drawings have to be produced in a size that is called scaled drawings. The architect/building designer employs a great many abbreviations and symbolic representations of the many materials and details necessary. Symbols are used to represent much of the information in connection with materials, windows, doors, bathroom fixtures, walls, footings and floors.

Several different types of drawings are required. The drawings are prepared in such a way that each of them shows this information in a standardised manner.

By looking at these drawings in conjunction with each other we are able to understand the overall three dimensional form of the design and how its parts relate to each other.
**Plans**

The plan is a view looking down on an object. In building drawings, many types of plans are used, but they are all drawn as though looking down on to the subject being drawn. A floor plan is drawn as though a view of the floor of the building is being drawn, with sections taken through the walls, doors and windows etc. A roof plan is a drawing of the roof as though viewed from a point above. The object of the plan is to show the proposed layout of the rooms, and often the placing of furniture and the major fittings.

**Example: Plan**

![Plan Diagram](image)

**Elevation views**

An elevation is best described as a side view, looking flat on to the side of a building or other object. It may be a “front” or a “side” elevation, depending on the view being taken. On building drawings elevations are usually referred to by the aspect to which they face (e.g. North Elevation, South-east Elevation etc).

The elevations show the appearance of the building. Elevations are often replaced by perspective drawings which may be simple diagrammatic illustrations or complex works of art. Look at one after the other, the four sides of an existing house. Elevation views allow us to see how the exterior sides of a house will appear after all the structural work has been completed.

**Example: Elevation view**

![Elevation Diagram](image)
Section views

A section is a drawing set out as though a view is being taken cut through a portion of the building, or other object. In most cases elevation and plan views cannot show sufficient information to enable a builder or tradesman to see exactly how the various structural parts of the house are to be built or assembled. The section shows the size and thickness of structural members and relationships between spaces. For example, it shows the height from the ground to the floor, the height between the floor and the ceiling, and how the roof is to be constructed.

Working drawings must also be kept as legible as possible, but they must contain appreciably more information than the sketch plan. They must contain sufficient information for the builder to set out the building from them and in conjunction with the Specification, must give adequate detail for preparation of a tender.

The following list is a brief summary of the items to be included in the plans of a typical working drawing.

- Dimensions (sizes, figured in millimetres)
- Room names (and room numbers, if necessary)
- Floor finishes
- Built-in cupboards and other fittings
- Plumbing fixtures
- Downpipe positions
- Roof lines (if no separate roof plan)
- Section lines
- Door swings and window positions
- Door and window numbers (if required)

Example: Section view
Scales

The process of drawing large objects such as the parts of a house to a proportionate size which can be contained on handy size sheets of paper is called drawing to scale. The small drawings must be in exact proportion to the actual size of the house they represent. On most drawings the scale used makes the drawings 1/50th or 1/100th the original size. This means that instead of drawing something one metre long it is drawn 1/50th or 1/100th of a metre long. The finished drawing looks exactly like the full sized object.

The scales in most common use are as follows:

<table>
<thead>
<tr>
<th>Location or locality drawings</th>
<th>1:2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Plans</td>
<td>1:500  1:200</td>
</tr>
<tr>
<td>Plan views</td>
<td>1:200  1:100  1:50  1:20</td>
</tr>
<tr>
<td>Elevations</td>
<td>1:200  1:100  1:50  1:20</td>
</tr>
<tr>
<td>Sections</td>
<td>1:200  1:100  1:50  1:20</td>
</tr>
<tr>
<td>Detail drawings</td>
<td>1:10   1:5    1:2    1:1 full size</td>
</tr>
</tbody>
</table>

In the construction industry it is normal to produce drawings for houses at a scale of 1:100, possibly 1:500.

Contents of drawings

Survey Plan

(a) Existing site and surroundings.
(b) Position of major natural features, trees, ponds, rock outcrops.
(c) Sufficient spot levels and contour lines related to a specified datum (height above sea level).
(d) Dimensions of boundaries.
(e) Position of roadways, easements; existing drains and possibly service mains.

Site Plan

(a) Outline of site boundaries showing location of proposed building
(b) Position of boundary setbacks.
(c) Depths, where they may occur.
(d) New roads and pathways
(e) Soil and surface water drains, complete with pipe sizes
(f) Service runs from the house to mains.
(g) Location of utility services (sewer, water, gas, electricity)
(h) The point of connection of those services to the house itself
(i) Indication of banking and cutting and areas for depositing and spreading surplus soil.
(j) New levels on the site in connection with the new house.
(k) Landscaping. Note, if the site is undulating or steep, section should be added to show principle areas of cutting and filling.

They may also include:

(a) Real property description and lot number, etc.
(b) North direction indicated
(c) Street position and owners" name
(d) Contours and levels
(e) Driveway.
**Floor Plan**

(a) Dimensions of overall brickwork, stud framing and room sizes to rough stud frames. Trim openings of all windows and doors. Space allowance for refrigerator and white goods. Wardrobe depths. Location and spacing of all columns and veranda posts.
(b) Roof and eave lines as dashed lines
(c) Doors and windows to have a legend reference describing the details of each.
(d) Internal dimensions so far as necessary to establish positions of internal walls or fittings
(e) Thickness of walls
(f) Door swings
(g) Windows
(h) Location of fittings and fixtures
(i) Names on all rooms
(j) Floor finishes
(k) Position of stairs and number of stair treads

**Sections and Elevations**

(a) Elevations of all parts of the building.
(b) Size and shape of openings.
(c) External finishes.
(d) New and old ground levels showing cut and fill
(e) Position of floor level, ceiling level
(f) Positions of all windows and doors
(g) Heights of ceilings, doors and windows above the floor surface can be marked here.
(h) Dashed lines indicating positions of external wall bracing (optional on elevations but good practice).
(i) Dashed lines indicating natural ground lines (this will enable more accurate calculating of materials below floor level).
(j) Roof and wall claddings and finish.
(k) Types of glass selected for specific windows and doors.
(l) Roof vents, air conditioning units, and solar H.W.S locations

**Other Plans**

The below plans are used where requested or for more complex houses.

**Footing Plan**

(a) Width and depth of all footings to wall, piers, stanchions.
(b) Location of footing system
(c) Position and levels of drains and gulleys close to footings
(d) Walls above footings with thickness noted.

**Roof Plan**

(b) Shape of roof
(c) Slopes of levels
(d) Types of coverings
(e) Falls to gutters and gutters
(f) Roof lights
(g) Possible type of construction. Note, on simple houses the roof plan is super imposed over the floor plan
Services plan

(a) Electrical layout
(b) Plumbing and internal drainage layouts.
(c) Air-conditioning or other mechanical services.

Note – on simpler houses the electrical layout and plumbing layouts are superimposed on the floor plan.

Bracing Plan

(a) The wind load kilo Newton force required and the values provided in each direction.
(b) All bracing clearly lined with a legend if necessary referring to each bracing type.
(c) This plan can also contain the location and type of each tie-down anchor.

Cross Sections

(a) These views should be taken through the highest and widest points of the dwelling and should reveal details or facts which are otherwise concealed. The more this drawing reveals the less disputes are encountered with subcontractors and owners. Where necessary, additional sections may be required should the structure greatly differ in other cross sections.
(b) Ceiling and door heights can be applied here as well as wall lining types.

Tips for using & reading plans

(a) Attach a set of plans to a panel of ply or hardboard and keep it out of the sun on-site during construction. Consider plastic lamination.
(b) When alterations are made during construction be sure to mark these clearly on the plans.
(c) Always take measurements from the marked dimensions not by scaling off the plan.
(d) Room dimensions are always taken from the rough stud edge.
(e) Broken lines on internal walls indicate bracing walls.
(f) Broken lines on the foundation plan represent the footing width.
(g) Ground lines are indicated on elevations to reveal the amount of subfloor materials required and as a footing construction guide. If a construction method or fastening is not marked on the plans or specifications, check with manufacturer’s instructions.

Note: The following example of a typical house plan refers to termite management which is not necessary for Tasmania.
SPECIFICATIONS

A specification sets out the technical requirements of the work. It is a direct explanation of the drawings, and with them serves three purposes:

1. First, as a full and detailed description of the project, so that bids (quotes/prices) may be properly compiled.
2. Second, as a mandatory requirement for materials and quality of workmanship during construction; and
3. Third, as legal evidence in the event of litigation. The specification is therefore a most important document and must be prepared individually for each project.

A specification may comprise at least three or four parts:

1. General Clauses covering the scope of the work, any special conditions, design criteria, and the like;
2. Materials, including tests;
3. Construction workmanship and tests;
4. Machinery and commissioning tests.

In each part the sections of work are dealt with in some predetermined sequence. Generally it is convenient to follow the approximate sequence of the work itself, so that one begins with preliminary items, site preparation, excavation, etc., and finishes with painting, site restoration and cleaning up.

In each case there will be a place for the use of some standard specifications, as well as for particular requirements applicable pre-eminently to the particular project in hand. In all cases it will be necessary to decide whether to specify method or performance.

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material specifications</td>
<td>These cover the type and quality of each material required in the project together with its treatment and testing by the supplier.</td>
</tr>
<tr>
<td>Workmanship specifications</td>
<td>These cover the use of these materials in the project, their fabrication into the structure, the method and order of their installation, the quality of labour to be employed, the standard of workmanship required, and the tolerances permitted.</td>
</tr>
<tr>
<td>Machinery specifications</td>
<td>These cover the capacity, performance, and operation of all permanent plant to be installed under the contract, and the commissioning tests necessary to demonstrate its adequacy.</td>
</tr>
<tr>
<td>Design specifications</td>
<td>These are necessary when structural or other engineering design forms part of any contract. Hence the full criteria governing the design and safety of the works should be precisely defined, together with the owner’s requirements for submission of detailed specifications, and so on.</td>
</tr>
</tbody>
</table>
Reference to Standards

Whatever the category of specification, standard codes of practice and a multiplicity of materials specifications published by the various governmental, standards authorities and materials suppliers are of great assistance. They are incorporated into the project specifications by reference only, thus reducing the volume of the document.

Note: The tender drawings for any construction project should preferably be completed before any attempt is made to draft the specification or to take off quantities, so as to avoid conflict or ambiguity between them.

It should set out very concisely and clearly the obligations of the subcontractor to do, or to refrain from doing, those things which are respectively desirable or undesirable for the successful and satisfactory execution of the work.

NATSPEC

NATSPEC is the trading name of Construction Information Systems Limited.

NATSPEC, founded in 1975, is a not-for-profit organisation that is owned by the design, build, construct and property industry through professional associations and government property groups. It is impartial and is not involved in advocacy or policy development. NATSPEC’s major service is the comprehensive national specification system endorsed by government and professional bodies. The specification is for all building structures with specialist packages for architects, interior designers, landscape architects, structural engineers, service engineers and domestic owners.

NATSPEC’s aims are to provide economies of scale for its shareholders and to improve the quality of construction in Australia via the provision of information, tools, products and services.

Please proceed to Topic 7 quiz on Moodle
TOPIC 8 – MANAGING YOUR PROJECT

Managing the Site

Building operations require a mixture of the following:

- Skilled personnel
- Materials
- Machinery

The three factors above put together can be quite volatile unless careful planning and administration is undertaken, both before and during the building operations. As the works progress, elements of the following will appear on site at various stages.

**Personnel**  
Sub Contractors, Labourers

**Equipment**  
Machinery (moving) Cranes, Hoists, Conveyors. Fixed (static) Scaffolding, Platforms, Signs, Hoardings, Barricades

**Materials**  
To be incorporated into the works. Timber, Steel, Bricks etc and Rubble to be removed from site.

Someone has to assume responsibility for administering the complete operation, including the daily running of the site. This responsibility rests with you the owner builder.

As the owner builder you are responsible for everything that happens on your site.
Seven ways to succeed as a project manager
Source: Project Management 10 Minute Guide – Jeff Davidson Publisher - Macmillan USA

Now that you have a firm understanding of the kinds of issues that befall a project manager, (you – the owner builder) let’s look at seven ways in particular that project managers can succeed, followed by seven ways that project managers can fail.

1. Learn to use project management tools effectively

Such a variety of wonderful project managing software tools exist today that it is foolhardy to proceed in a project of any type of complexity without having a rudimentary understanding of available software tools, if not an intermediate to advanced understanding of them. Project Management tools today can be of such enormous aid that they can mean the difference between a project succeeding or failing.

2. Be able to give and receive criticism

Giving criticism effectively is not easy. There is a fine line between upsetting a team member’s day and offering constructive feedback that will help the team member and help the project. Likewise, the ability to receive criticism is crucial for project managers.

As the old saying goes, it is easy to avoid criticism: Say nothing, do nothing, and be nothing. If you are going to move mountains, you are going to have to accept a little flack.

3. Be receptive to new procedures

You don’t know everything, and thank goodness. Team members, other project managers, and those who authorise the project to begin with can provide valuable input, including new directions and new procedures. Be open to them, because you just might find a way to slash $20,000 and three months off of your project cost.

4. Manage your time well

If you personally are not organised, dawdle on low-level issues, and find yourself perpetually racing the clock, how are you going to manage your project, a project team, and achieve the desired outcome on time and on budget?

5. Be effective at conducting meetings

Meetings are a necessary evil in the event of completing projects, with the exception of solo projects.

6. Hone your Decision Making Skills

As an owner builder you won’t have the luxury of sitting on the fence for very long in relation to issues crucial to the success of your project. Moreover, your staff looks to you for yes, no, left, and right decisions. If you waffle here and there, you are giving the signal that you are not really in control. As with other things in project management, decision making is a skill that can be learned. However, the chances are high that you already have the decision-making capability that you need. It is why you were chosen to manage this project to begin with. It is also why you have been able to achieve what you have in your career up to this point.

Tip: Trusting yourself is a vital component to effective project management

7. Maintain a sense of Humour
Stuff is going to go wrong, things are going to happen out of the blue, the weird, and the wonderful are going to pass your way. You have to maintain a sense of humour so that you don’t do damage to your health, to your team, to your organisation, and to the project itself. Sometimes, not always, the best response to a breakdown is to simply let out a good laugh. Take a walk, stretch, renew yourself, and then come back and figure out what you are going to do next.

**Seven ways to fail as a project manager**

1. **Fail to address issues immediately**

Two members of your project team can’t stand each other and cooperation is vital to the success of the project. As project manager, you must address the issue head on. Either find a way that they can work together professionally, if not amicably, or modify roles and assignments. Whatever you do, don’t let the issue linger. It will only come back to haunt you further along.

2. **Reschedule too often**

As the project develops, you can certainly change due dates, assignments, and schedules. Recognise though, that there is a cost every time you make a change, and if you ask your troops to keep up with too many changes you are inviting mistakes, missed deadlines, confusion and possibly hidden resentment.

3. **Be content with reaching milestones on time, but ignore quality.**

Too often, project managers in the heat of battle, focused on completing the project on time and within budget, don’t focus sufficiently on the quality of work done. A series of milestones that you reach with less than desired quality work adds up to a project that misses the mark.

4. **Too much focus on project administration and not enough on project management**

In this high tech era with all manner of sophisticated project management software, it is too easy to fall in love with project administration. Making sure that equipment arrives, money is allocated, and assignments are doled out to the neglect of the project management, taking in the big picture of what the team is up against, where they are heading and what they are trying to accomplish.

5. **Micromanage rather than manage**

This is reflected in the project manager who plays his cards close to his chest, and retains most of the tasks himself, or at least the ones he deems to be crucial, rather than delegating. The fact that you have staff implies that there are many tasks and responsibilities that you should not be handling.

**Tip:** Micro-managing isn’t pretty. The most able managers know when to share responsibilities with others and to keep focused on the big picture.

6. **Adapt new tools too readily**
If you are managing a project for the first time and counting on a tool that you have not used before, you are incurring a double risk. Here’s how it works. Managing a project for the first time is a single risk. Using a project tool for the first time is a single risk. Both levels of risk are acceptable. You can be a first-time project manager using tools that you are familiar with, or you can be a veteran project manager using tools for the first time. However, it is unacceptable to be a first time project manager using project tools for the first time.

**Note:** The degree to which a project or portions of a project are in jeopardy of not being completed on time and on budget, and, most importantly, the probability that the desired outcome will not be achieved.

7. **Monitor project progress intermittently**

Just as a ship that is off course one degree at the start of a voyage ends up missing the destination by a thousand miles, so too a slight deviation in course in the early rounds of your project can result in having to do double or triple time to get back on track. Hence, monitoring progress is a project-long responsibility. It is important at the outset for the reasons just mentioned, and it is important in mid and late stages to avoid last minute surprises.
COMMUNICATION

Have a communication plan

Poor communication is a major source of conflict so give this serious attention before you start the project work. Ask yourself:

- Who needs to know?
- What do they need to know?
- How much do they need to know?
- How often must they be informed?

Reasons for poor or incorrect interpretation

Mannerisms

Bad habits or mannerisms distract and may even be annoying. Our hands are perhaps the greatest offenders. We fidget with pens, rulers, papers or any other available object. We rub our hands together or cross our arms, or continually flex our fingers. Some mannerisms are verbal. We continually say ‘Ahh’, ‘Um’, ‘OK’ etc. We cough or tap our feet.

Good communicators take steps to identify them and overcome them.

Incorrect use of the Voice

The voice is a very effective and useful tool if used correctly, and serves several purposes. The tone in particular can show friendliness or encouragement. It can be used to ridicule, frighten, threaten or show interest or sincerity. The voice can be used to show emphasis, knowledge of the subject, or lack of understanding. Alter the tone and pitch of the voice. Speak strongly to show emphasis, softer and questioning to create thought. Be firm to guide the listener back if they are off the track. Change the tone as often as the situation demands. Nothing is more boring than to listen to a speaker who talks with a monotone sound.

Poor Eyeballing

Eyeballing is simply eye contact. It should be a natural action to look at people when we speak to them, but few speakers do it. It is such an important part of communicating and fulfils so many functions, that entire lessons have been prepared and delivered on the aspect of communication alone.

- It gains control.
- It gives feedback.
- It is used as emphasis on key points.
- It indicates and helps maintain interest.
- It creates, for the sender, respect from the receivers.

Coupled with careful use of the voice, eyeballing is an exceptionally powerful tool of communicating. A stern look of just a few seconds, together with a slight slowing or pause of the voice will usually regain control from an individual who is becoming disruptive. Watching carefully for facial expressions on the listener will give feedback on interest, or understanding of the topic. A frown from someone may indicate the message was not understood.

Causes of Communication Barriers

Effective communication often passes unnoticed whereas poor communication is obvious. The complete message and its meaning are distorted or interrupted. Some of the factors that cause communication barriers are:

- Inappropriate choice of words
- Inappropriate channel
- Inappropriate message
- Receiver inattention
- Lack of courtesy by the sender or the receiver
- Non-verbal communication that does not support the words
- Poor layout and presentation
- Poor timing
- Inadequate feedback.

**NEGOTIATION**

**Negotiation Defined**

Negotiation is a process that requires two or more people with a common or conflicting interest who have a need to resolve an issue or business transaction. Negotiation is the process of reaching an agreement. This process may include competition, collaboration, compromise, the need to accommodate or to walk away at any stage of the process. In the initial stages of negotiation, it is necessary to have clear objectives to achieve the optimum results. Planning the objectives and having an understanding of the negotiation process, its scope and boundaries will help you achieve the desired outcomes.

**Strategies of the negotiation process**

Throughout the negotiation process the needs of both parties are essential. To achieve optimum results a level of honesty is essential. Honesty builds trust, manipulation or coercion creates an atmosphere of mistrust. It is vital to maintain a level playing field by treating each other as an equal. The effectiveness of the negotiation will be shown in the outcome and may not always end in agreement. Consider the differences between the following three strategies.

1. Win-Win Strategy
2. Win-Lose or Lose-Win Strategy
3. Lose-Lose Strategy

Each strategy has a different result. In the first both parties win, in the second one wins and one loses and in the third both parties lose.
<table>
<thead>
<tr>
<th>Strategy</th>
<th>Outcome</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Win-Win Strategy</td>
<td>Collaboration</td>
<td>A win-win strategy occurs when both parties are satisfied with the settlement negotiated.</td>
</tr>
<tr>
<td>Win-Lose Strategy</td>
<td>Competition</td>
<td>A win-lose/lose win situation is created when one party is satisfied and one is dissatisfied.</td>
</tr>
<tr>
<td>Lose-Win Strategy</td>
<td>Accommodation</td>
<td>A win-lose/lose win situation is created when one party is satisfied and one is dissatisfied.</td>
</tr>
<tr>
<td>Lose-Lose Strategy</td>
<td>Withdrawal or avoidance</td>
<td>The lose-lose situation is created when neither of the parties are willing or able to compromise.</td>
</tr>
<tr>
<td>Any of the above 4</td>
<td>Compromise</td>
<td></td>
</tr>
</tbody>
</table>

**FOCUSING NEGOTIATION STYLES**

- **Collaboration**
  - Win-Win
- **Accommodation**
  - Lose-Win
- **Point of Compromise**
- **Walk Away**
  - Lose-Lose
- **Competition**
  - Win-Lose
DISPUTES AND CONFLICT

As noted earlier, in Tasmania there are no "cooling off periods" for building contracts and no building contracts dispute tribunal. Disputes may have to be settled by arbitration or legal action, so it is wise to try to avoid problems before they arise.

As an owner builder is the builder you cannot access assistance from any government agencies for resolving consumer disputes. Legal advice should be obtained.

Avoiding the Dispute

The role of the Owner Builder necessitates the development of a new set of people skills. These skills need to focus on communication as the basis for identifying, and avoiding conflict.

Conflict

Source: Construction Management Induction Program – Module 1 Interpersonal Communicating Skills for Construction Managers. Extract from Topic Managing Conflict. – Construction Property Services Industry Skills Council (CPSISC) WELL Program – in Association with BMA Consulting.

Every relationship that we have contains an element of conflict. Conflict can occur whenever the actions of one person or group frustrate, or are perceived to frustrate, the actions or goal achievement of another. The main causes of conflict include:

- Misunderstandings - especially concerning messages, roles, responsibilities and tasks.
- Personality clashes.
- Differences in goals.
- Sub-standard performances or quality.
- Differences over methods to be used.
- Problems relating to areas of responsibility.
- Lack of cooperation.
- Problems relating to areas of authority.
- Individual differences.
- Competition for limited resources.
- Non-compliance with rules and policies.
- Competing schedules.
- Pressing deadlines and project management concerns.

Today it is generally thought that it is not so much conflict that breaks down effective working relationships, but the destructive nature of some conflict and the inability to effectively manage it.

Distinguishing between the destructive or constructive nature of conflict is important. Conflict in itself is healthy and can generate change and creativity.
Conflict can be positive when it:

- Helps to open up discussion of an issue.
- Results in problems being solved.
- Increases the level of individual involvement and interest in an issue.
- Improves communication between people.
- Releases emotions that have been stored up.
- Helps people to develop their abilities.
- Continues to surface without resolution.

Conflict can be negative when it:

- Diverts people from dealing with the really important issues.
- Creates feelings of dissatisfaction among the people involved.
- Leads to individuals and groups becoming insular and uncooperative.
- Leads to avoidance or distraction from work, the real issue or topic.

Another way to look at conflict is to consider some examples of where it stems from a more practical and personal level such as:

- Personality differences, e.g. between team members or staff and supervisors
- Value differences, e.g. differences between peers or team members on the importance of certain values over others, differences over how people should be treated, recreation or break time considerations, disagreement over the way people are treated to get results.
- Perceptual differences, e.g. not seeing an issue the same way or not agreeing on a product or solution.
- Differences in objectives, e.g. project priorities and timelines.
- Competition for limited resources, e.g. competing priorities for subcontractors, equipment use etc.
- Interdependence or reliance on other people, sites or work areas.
- Role pressures, e.g. having to play the tough guy when you don’t really want to needing to impose limits, pressure of expectations of those above you or clients to perform and to get the team performing better.

Four stages to Conflict Resolution

There are four stages or steps you can use to identify, manage and resolve conflict. These are listed below.

1. Identify the problem

When describing the problem to the other party you could say, “I have a problem I would like to talk to you about”. When you do state the problem to the other person describe it in terms of:

- The behaviour that has occurred.
- The consequence of the behaviour.
- How you feel about the problem.

You should not accuse the other person or put them down when describing the problem to them. You should, though, persist until you feel the other person has received your message.

2. Generate solutions to the problem
Request that you both meet to discuss solutions to the problem. At the meeting encourage the other person to express opinions and solutions. Rather than hitting them with the big picture all at once, an idea might be to approach the problem in bite size chunks. Focus particularly on the here and now, not dredging up old issues or unrelated issues at the same time. It is counter-productive to do so. This step is particularly useful especially if you have not yet established a close working relationship with the person. Focus on things that you share in common such as mutual goals. This will act as a good starting point to ensure you both get the result that you want.

3. Develop an action plan

Check that the other person understands the solution as you understand it. Make sure you both agree to, and support the plan. Do not assume everyone knows how to work out the details for implementing the plan. All parties should be aware of their responsibilities and should agree on how the decision will be monitored. When conflict exists for a client or workplace it can often be within a crisis context which further complicates the ability to see solutions.

4. Ensure follow up

This monitoring could be as simple as attendance at another meeting. You should also be flexible enough to change the plan if required. When time pressures are not a problem and when everyone wants a solution to a particular problem, then the problem solving or collaborative method of conflict resolution should satisfy the concerns of everyone. It will not only meet the goal requirements of all parties but it will ensure you maintain effective working relationships.
PROJECT MANAGEMENT FUNCTIONS

Project management steps

The steps necessary in the management of a project will usually include:

1. Defining the objectives to be attained.
2. Determining the steps to be taken to reach those objectives.
3. Preparing a schedule of times and resources.
4. Allocating personnel and resources as necessary.
5. Supervising implementation of the work.
6. Reviewing the results achieved to confirm that they are satisfactory and taking any necessary corrective action.

Plan the project so that no more resources are utilised than strictly necessary to reach the next stage. That is, it should be possible to cancel the project economically at any stage should a decision be made not to proceed.

Preparing project schedules

The activities required in the planning and scheduling of a project include:

1. Preparing a program of the work to be completed.
2. Preparing a schedule of the activities necessary.
3. Determining any significant time constraints.
4. Establishing cashflow predictions where applicable.
5. Preparing personnel and resource schedules.
6. Modifying the initial plan to optimise the use of resources, the project cashflow, capitalised interest charges and to take into account any constraints.
7. Preparing a refined schedule of activities.
8. Establishing a flowchart of information to record who is to be advised of what.

Preparing a construction schedule and flowchart is covered later in this topic.

Allocating project resources

The resources required on a project are determined from the programming and scheduling stage described above. Providing the necessary resources may require:

1. Arranging finance and reviewing resources with regard to the revised schedule of work.
2. Preparing specifications, drawings and other technical documentation as necessary.
3. Arranging for the quotation and supply of goods and services.
4. Arranging for the transport, storage, delivery and installation of plant and equipment.
Supervising Implementation

The implementation of the project may require:

1. Arranging for a monitoring system to be established to monitor progress against program.
2. Arranging for a monitoring system to be established to monitor costs against the budget.
3. Arranging for a quality assurance or quality control system to be established to ensure that the quality of work is satisfactory.
4. Arranging for a follow-up and expediting system to be established to identify and expedite delayed work.
5. Arranging for a reporting system to be established to provide progress reports as appropriate.
6. Arranging for any statutory approvals to be obtained.
7. Providing for risk analysis, risk abatement and risk transfer as far as this is economically justified.
8. Ensuring that all insurances provisions have been allowed for.
9. Providing directions for the execution of the work.

PLANNING

Good planning begins with the following:

- Developing a positive attitude to managing self and time.
- Establishing clear goals.
- Setting the right priorities.
- Analysing your use of time.
- Planning work on a regular basis.
- Scheduling your work.
- Controlling interruptions.
- Running effective meetings.
- Delegating work.
- Conquering procrastination.
- Developing time management strategies as part of a team.

As soon as you set foot on site as the owner builder supervising the site there is an air of expectancy that it is going to be an awesome task. Make the assumption that you are inexperienced and there will be some hiccups not to mention the disruption to your household.

Note: The quickest way to get into trouble is not to plan the job thoroughly.

Plans/Specifications

- Be thorough with the detail in your plans and specifications.
- Make all the necessary selections prior to commencement.
- Agree to all variations prior to commencement of any works in writing.

Schedule
• Make up a working schedule.
• List sequence of events.
• Time line.
• Projected cash requirements.
• Projected income.

Orders

• Order all materials with an expected delivery date. (Mark date to be confirmed).
• Book all of your sub-contractors according to your schedule, (date to be confirmed).
• Make up a call forward sheet.

Records

• Keep your job diary (day book, site diary) up to date.
• Record all wet days, and expect an extension of time from contractors even if you are in front of your schedule.
• Record all accidents, no matter how trivial.
• Record all site instructions, to you and from you – keep copies.
• Do not do variations without them being in writing and approved.

Photographs

Take photographs of the existing dwelling and gardens prior to commencement. Be particular and photograph faults and irregularities in the existing structure. Do not forget to get photos of the neighbours’ house, their fences and paths, paying particular attention to irregularities.

Take internal shots looking particularly for cracks, and sagging lintels, broken windows. Make a copy of these photos for the neighbours/client. Take photos during construction and at completion. These will serve not only as a record for you and your brag book, OR if there is a dispute.

Written Records

Make written notes of all irregularities and faults you see prior to commencement, keep a copy in your job file. Record any damage to the footpaths, road and nature strip. Advise council.

This record could be in the form of a Dilapidation Report. This is discussed below in this topic.

Construction Planning

Your supervision role will require you to be able to communicate on a technical level with the elements of each trade throughout the process of construction and may require you to make decisions that affect other trades based on the information as you understand it.

From the commencement of the project, you as the owner builder, would normally be presented with a package of information, and if the project has been won perhaps by competitive tender, these may be referred to as the ‘Contract Documents’.
These documents would include the following:

- Drawings: Architectural, Engineering – Structural, Mechanical, Hydraulic
- Specifications
- Consent approvals
- Consultant Reports
- Contract Conditions

All of the above items would contain different pieces of information pertaining to the objectives for the project. As the owner builder for the project, you are responsible for the collection of this information that may include the following:

- Project time frame
- Material requirements
- Labour requirements
- Equipment requirements
- Operational constraints
- Regulatory requirements

This data may then be used to develop strategies to be employed throughout the construction process to eliminate or minimise their effect.

**Establish a Plan**

Another one of the duties that an owner builder would be responsible for is establishing the “Construction Plan”.

In developing a plan we usually adopt simplistic approaches and rely on diagrammatical charts, graphs and sketch drawings to predict the expected outcomes for the project. The charts most commonly used in this process are known as “Gantt” or “Bar” charts, they usually are constructed based on the time frame allocated for each of the trades involved throughout the construction process, indicating order of precedence of trades activity and process.

The construction plan must be realistic and achievable, which will require some key considerations such as the provision of:

- Adequate time to complete each activity or process
- Adequate and acceptable material to complete the task
- Adequate and suitably qualified people to complete the task
- Financial capability to provide the resources required

The “Plan” usually follows the sequence of works conducted throughout the project and is commonly known as the “Trade Order”.

Overleaf is an example of a construction checklist.
CONSTRUCTION CHECKLIST

Clients
Name: 
Phone (H): (B): 
Clients Address: 
Post Code: 
Contract Date: / / Target Completion Date: / / Actual Completion Date: / / 
Council Inspector: 
Phone: B/Permit No: 
Notes: 

<table>
<thead>
<tr>
<th>STAGE</th>
<th>SITE ACTION</th>
<th>COMPLETE DATE</th>
<th>ACTION</th>
<th>FORWARD PLAN</th>
<th>DATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRELIMINARIES/Floor Level</td>
<td>Book</td>
<td>Site Preparation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Preliminaries</td>
<td>Concretor</td>
<td>Carpenter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey/BM</td>
<td>Bricklayer Bottom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Release WC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>Bin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Storage</td>
<td>Fill Sand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WC</td>
<td>Steel Reinforcing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Site Preparation</td>
<td>Clear</td>
<td>Release</td>
<td>Stage 1 Items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavate</td>
<td>Bricks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piers</td>
<td>Structural Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHECK</td>
<td>Book</td>
<td>Inspections</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Footings/Slab</td>
<td>- Council/Footings</td>
<td>- Engineer</td>
<td>- Lending Authority</td>
<td>- Surveyor</td>
<td>- Building Line</td>
</tr>
<tr>
<td>Check Profiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check Conduits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check Drains</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check Pest Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Surveyor</td>
<td>Bricklayer, Top</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check Survey if req’d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**INSPECTIONS/FOOT’GS</td>
<td>- Plumber</td>
<td>- Electrician</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verify Approval Before Proceeding</td>
<td>Notify</td>
<td>Shortages, Damages</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAGE</td>
<td>SITE ACTION</td>
<td>COMPLETE DATE</td>
<td>ACTION</td>
<td>FORWARD PLAN</td>
<td>DATES</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------</td>
<td>---------------</td>
<td>--------</td>
<td>--------------</td>
<td>-------</td>
</tr>
<tr>
<td>5. Pour</td>
<td>Release</td>
<td></td>
<td>- Surv’r Eaves, Gut</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROGRESS CLAIM NO.1</td>
<td></td>
<td>- Roofing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Bottom Brickwork</td>
<td>- Check Dimensions</td>
<td></td>
<td>- Brick’s Hardware</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHECK</td>
<td></td>
<td>- Sand</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Framing/Floor &amp; Walls</td>
<td>Book</td>
<td>- Stage 2 Items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Stage 1 Delivery</td>
<td>Book L/Auth.Inspect for</td>
<td></td>
<td>Payment No.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Surveyor</td>
<td>Book Internal Linings</td>
<td></td>
<td>Kitchen Cupboards</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Floor Level Certificate</td>
<td></td>
<td>Stairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Carpenter</td>
<td>Wet Areas Flashing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B &amp; J</td>
<td>Book</td>
<td>Inspections</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Floor</td>
<td></td>
<td>- Council/Frame</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frame &amp; Roof</td>
<td></td>
<td>- Lending Authority</td>
<td>for Payment No.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fascia Board</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Windows</td>
<td>Book</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHECK</td>
<td>Book</td>
<td>Drainer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROGRESS CLAIM NO.2</td>
<td>Release</td>
<td>Garage Doors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Surveyor, Gutter</td>
<td>Internal Linings</td>
<td></td>
<td>Kitchen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOCK UP</td>
<td></td>
<td></td>
<td>Stairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. External Clad/Bricks</td>
<td>Book Ceramic Tiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tiler</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Roofer</td>
<td></td>
<td></td>
<td>Inspection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Brick Clean</td>
<td></td>
<td></td>
<td>- Council/Flashing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Electrician Rough In</td>
<td>Book Painter</td>
<td></td>
<td>Painter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Plumber Rough In</td>
<td>L/Auth Inspect for</td>
<td></td>
<td>payment No.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAGE</td>
<td>SITE ACTION</td>
<td>COMPLETE DATE TARGET</td>
<td>ACTION FORWARD PLAN</td>
<td>DATES BOOKED REQ'D REC'D</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------</td>
<td>-----------------------</td>
<td>---------------------</td>
<td>--------------------------</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Carpenter</td>
<td></td>
<td>Glazier/SS/Mirrors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>External Fix</td>
<td></td>
<td>Plumber</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ready for Inspection</td>
<td></td>
<td>Electrician</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INSPECTIONS/FRAME</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verify Approval Before Proceeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRAINAGE</td>
<td></td>
<td></td>
<td>Release Shower Screens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Drainer</td>
<td></td>
<td>Mirrors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sewer Drainage</td>
<td></td>
<td>Wardrobe Walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Septic / TA</td>
<td></td>
<td>Concretor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stormwater</td>
<td></td>
<td>Final Inspections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LININGS &amp; FIT-OUT</td>
<td></td>
<td></td>
<td>Lending Auth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Int. Lining/kitchens</td>
<td></td>
<td>BA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROGRESS CLAIM NO.4</td>
<td></td>
<td></td>
<td>Floor Sander</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Wet Area Flashing</td>
<td></td>
<td>Yard Clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INSPECTIONS/FLASHING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verify Approval Before Proceeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Garage Doors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Pavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Carpenter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fit-Out &amp; Lock Up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHECK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTERNAL FINISHES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Joiner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vanities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Yard Clean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAGE</td>
<td>SITE ACTION</td>
<td>COMPLETE DATE</td>
<td>ACTION</td>
<td>FORWARD PLAN</td>
<td>DATES</td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
<td>---------------</td>
<td>--------</td>
<td>--------------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TARGET</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Plumber, Fit Wastes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Ceramic Tiler</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Glazier</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Plumber, Finish Off</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Plaster, Patch &amp; Sand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Painter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPLETION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Electrician, Finish Off</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Concretor, External</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>Carpenter, Final</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHECK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>PRE-Final, Owner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>Floor sander</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>Cleaner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>External</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INSPECTIONS FINAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lending Authority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Council</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Owner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHECK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>Hand Over</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FINAL CLAIM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Types of programming techniques

Bar Chart Programming

The simplest type of programming tool, useful for small and short term projects, is the bar chart. With this technique the various activities on a project are listed on the vertical axis of the chart while the horizontal axis comprises the time base. A solid horizontal bar is drawn on the chart representing the time for each particular activity.

As with all programming tools it is essential that realistic estimates of time be employed. Bar charts are particularly useful for planning simple projects, for summarising detailed information derived from network planning, and for recording progress on the work. Since they are readily understood, bar charts simplify communication and understanding of the overall project. The disadvantages of bar charts is that they do not show dependency relationships, i.e. what depends upon what, they do not show the critical path and they are cumbersome to change since any alteration has to consider both sequence and timing of the activities.

Bar Charts

When the drawings for a building project have been completed, it is helpful to present it in a format which is easily understood and may be used by all personnel on a building job.

Bar Charts are drawn up with the activities shown down the left-hand side and the time periods shown horizontally. Often the activities are shown only as a number or coded letters but most often by the full name of the activity.

Times to complete each activity are shown by means of bars, which may be open or coloured in. Often the bar charts are coloured in to show the work completed to that date also indicating the percentage of work completed, this allows the actual progress of the job to be compared to the scheduled program.

For larger projects there is more than one bar chart. There is a chart for each section of the project and a master program is drawn up to co-ordinate all sections of the job.

A typical bar chart, as shown in our example, should include:

- Expected start, duration and completion dates
- A method of controlling or monitoring the progress

This can be achieved in the suggestions listed below:

- Colouring in the bars
- Drawing parallel bars
- Coloured pins
- Highlight markers etc.
There is no set design of a bar chart; however a chart should include the minimum information as set out below:

- Project name
- Time scale (e.g. daily, weekly, monthly etc)
- Dates
- Activity description (in order of progress on site)
- Activity to activity which supports each other or is dependent on each other.
- Method of showing the time elapsed
- Method of recording the progress of each activity
- Completion date (contract date/established date of completion)

In the second example a chart is drawn up using the method of working days only, omitting weekends yet showing all holidays. The time estimated to complete a specific activity or trade on the site is marked in either line or box section (see third example), starting from when the activity starts to when it is finished.

Using an example of three activities or trades which must be carried out in sequence, and the duration times are:

- Trade/Activity A, 1 day
- Trade/Activity B, 1 day
- Trade/Activity C, 2 days

This would be shown on the chart as our third example demonstrates.

This shows quite clearly how work should progress. Note that the lines of dependency/support show the interrelationship of the trades, for example...

- Trade B cannot commence until Trade A has been completed.
- Likewise Trade C follows Trade B.

Taking the example further, if the project has been running for three weeks (15 working days) and the bar chart has been used to monitor progress then it may look like the fourth example shown on the following pages.

The information may be extracted from the bar chart includes.

- Activity A should be complete, and is complete;
- Activity B should be complete, and is complete;
- Activity C should be complete, and is complete;
- Activity D should be complete, and is complete;
- Activity E should be complete, and is complete;
- Activity F should be complete, and is complete;
- Activity G is only 60% complete but should be complete;
- therefore, as Activity G is on the critical path the project may be seen to be behind by two working days

The job of the site foreman/supervisor is now to determine what action needs to be taken to bring the project back on schedule.
Tip: To be realistic a construction program is only as good as:

- The initial intent of the planners
- The accuracy of information available
- The knowledge of the contract drawings & documents
- The experience of the team
- The number of updates that the program undergoes
- The lines of communication.

### Example 1

<table>
<thead>
<tr>
<th>Time Schedule</th>
<th>MONTH</th>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
<th>SEPT</th>
<th>OCT</th>
<th>NOVEMBER</th>
<th>DECEMBER</th>
<th>JANUARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATION</td>
<td>DATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>CLEAR &amp; LEVEL SITE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>EXCAVATE FOR FOOTING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>CONCRETE FLOORING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>CONCRETE FRAME</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>EXTERIOR BRICKWORK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>ROOF CONSTRUCTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>ROOF PLUMBING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- [ ] Scheduled Work
- [ ] Percentage of Work Completed
- [ ] Actual Time Worked
### Example 2
**PROJECT NAME**

<table>
<thead>
<tr>
<th>Date</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>A</td>
<td>Establishment Site</td>
<td>B</td>
<td>Set Out</td>
<td>C</td>
<td>Footings</td>
<td>D</td>
<td>Drains</td>
<td>E</td>
<td>Brickwork</td>
<td>F</td>
<td>Bearers &amp; Joists</td>
<td>G</td>
<td>Wall Frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Example 3
**PROJECT NAME**

<table>
<thead>
<tr>
<th>Date</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>A</td>
<td>Establishment Site</td>
<td>B</td>
<td>Set Out</td>
<td>C</td>
<td>Footings</td>
<td>D</td>
<td>Drains</td>
<td>E</td>
<td>Brickwork</td>
<td>F</td>
<td>Bearers &amp; Joists</td>
<td>G</td>
<td>Wall Frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Example 4
**PROJECT NAME**

<table>
<thead>
<tr>
<th>Date</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>A</td>
<td>Establishment Site</td>
<td>B</td>
<td>Set Out</td>
<td>C</td>
<td>Footings</td>
<td>D</td>
<td>Drains</td>
<td>E</td>
<td>Brickwork</td>
<td>F</td>
<td>Bearers &amp; Joists</td>
<td>G</td>
<td>Wall Frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Short Term Construction Programme**

<table>
<thead>
<tr>
<th>Project</th>
<th>Project No.</th>
<th>Program No.</th>
<th>Prepared by</th>
<th>Date Prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Duration of activity

---

© ABE Education
The Programming Process

The programming process on a project may include:

1. **Planning** refers to activities and resources and includes decisions on the relation and sequence of activities. Planning should:
   
   (a) Identify the required selection of work-method.
   (b) Identify the order of work to be adopted.
   (c) Assist to optimise the work procedure overall.

2. **Estimating** the time required to complete each activity or group of activities.

3. **Scheduling** involves determining the timing of the operations making up the project and of the overall project completion time. Scheduling depends on accurate planning, i.e. determination of work-methods.

4. **Monitoring**, includes assessing the current situation on the project, comparing it with what was expected, and deciding on corrective action;

5. **Rescheduling** where necessary to allow for changes in conditions affecting the program of the work;

6. **Controlling** requires execution of corrective action to bring the work back onto program.

**Progress monitoring and reporting**

Progress monitoring and reporting is essential on any project except perhaps the very smallest contracts. Progress monitoring is generally carried out against a program of work, usually presented as either a bar chart or a critical path diagram. Often, actual progress is marked up on the program so that an original program and a work-as-executed program are conveniently shown on the one presentation.
**Fine tuning the planning process**

From the acceptance of the project the Project Manager will need to take the conceptual Bar Chart and identify the components of each trade section into activity based segments. This process is the first step in Construction Scheduling.

Once the activities have been identified, the next step is to clearly establish the sequencing of the activities in each trade section. Concurrently, with the sequencing the third step is to match the time frame of the segmented steps with the overall time frame outlined in the conceptual Bar Chart.

The fourth step is to link the activities of each trade section with those of other trade sections in an attempt to inter-link the processes. The final step is to link the required delivery time of the material / activity or process with the lead up time required to make it happen to affect “just in time” delivery.

The benefits achieved by implementing the Construction Scheduling process can be identified as:

- Project time efficiencies
- Project cost efficiencies
- Effective resource management
- Effective Cash Flow management

A strict regime should be set in developing the Construction Schedule, however it must be clearly understood that at some stage throughout the building process a level of flexibility must be available to allow for changes in the Project.
Processing job changes

The Nature of Job Changes

“Job changes” is a general term covering any change to the nature of a contract. It covers:

1. Changes to the way work is executed, generally described as “variations”.
2. Scope changes requiring additional work or obligations over and above those quoted for a tender, generally described as “extras”.
3. Reductions in workscope, often described as “negative variations” or credit variations.
4. Changes to the program of work.
5. Changes to the conditions under which the work is carried out, including changes to site conditions, and changes in accessibility.
6. Changes made necessary due to failures by the principal contractor/owner manager.
7. Changes to the sequence of work.
8. Acceleration of the contract program.
9. Prolongation of the contract program.
10. Combinations of change to the work sequence with acceleration or prolongation.

When there are any changes to the contract, or to the conditions under which the contract is executed, these must be recorded by the site supervisor. You should examine claims for variations critically and require detailed substantiation from the sub contractor. Even where additional variations have been incurred you should check the contractual responsibility before approving payment. Claims for additional work should be received as soon as it is possible to quantify them, rather than leaving them until the end of the contract.

Mechanism for approving job changes

The mechanism for processing job changes should be agreed between yourself and the sub contractor as early as possible, preferably at the coordination meeting at commencement of the contract. Items to be resolved may include:

1. The person nominated to direct changes.
2. The mechanics of executing variations, extras and changes to the contract program.
3. Time bar restrictions and any limitations on giving notice and advising of claims.
4. The time of variation to critical items which may delay the sub contractor or in other ways disrupt the program of work.

All notices in regard to job changes must be issued in strict accordance with the conditions of contract. Generally these include specific requirements as to timing and the need to advise that they are issued under a specific contract clause. For the owner builder the receipt of a proper notice provides advice that there could be an impact upon the cost, or timing, (or both) of the contract.
Extensions of Time

Extensions of time are the most common change of program on contracts. The following apply:

1. The implications of extensions of time will depend on the conditions of contract employed as well as on the situation at the time.
2. The types of event that may form the basis of an extension of time claim are commonly listed in the contract conditions. In theory, only those events nominated justify an extension of time.
3. As with other job changes, a contract is usually forbidden to change or extend the program of work without the permission of the owner.
4. Applications for time extensions must be formally submitted, usually following a set format as defined in the contract.
5. Time bars usually apply. Should a sub contractor fail to apply for an extension of time within the time bar period, it loses its right to the time extension.
6. You must respond to applications for time extensions within a reasonable time.
7. Whether the sub contractor is entitled to additional costs as well as time extensions will depend upon the conditions of contract as well as on the circumstances.
8. All changes of program must be analysed carefully to determine their cost implications.
DILAPIDATION REPORT

A dilapidation report is a conditional inspection and report, with photographs, of a building or property that is undertaken prior to works commencing on an adjoining property. The proposed works can include a new unit building (particularly if there are underground garages), alterations to a retaining wall, road works, underground tunnelling or demolition. An initial inspection and report is undertaken prior to works commencing so that any cracking and/or damage is documented. A final inspection is undertaken on completion of the works and any changes are documented so that remedial works can be undertaken. Councils can request that a dilapidation report cover areas outside of a building site such as footpaths, kerbing and condition of the road as they are a Council asset and any damage must be repaired.

If a dilapidation report is not undertaken then it is difficult to verify if damage occurred during construction of the adjoining property. This often leads to frustration and a potential damages claim.

A dilapidation report also is not a defect report as it is not required to identify actual defects within a building. A defect report is a separate and more intrusive specialized report that identifies defects such as dampness, damage and inadequate or non-compliant construction.

An independent qualified person is to undertake the inspection and reporting. This allows the expert to accurately document the condition of a building and not have any bias towards the owner or the developer. Sufficient colour copies of the report are to be made available.

All reports are to identify the type of construction and type of cracks or damage that is found on a property as well as the building. This includes movement in driveways, deflections in walls, cracks to brickwork and concrete.
Dilapidation Report on Existing Services & Conditions

STREET NO __________ LOT NO. __________
STREET: __________________________________________
SUBURB: ___________________________________________________________________________________

- Prepare a list of the existing services and adjoining properties prior to commencing any works.
- Take photos where necessary to identify existing conditions - highlight any and all existing damages or poor condition of the properties and services.
- It is always best to have an independent inspector e.g. Consulting Engineer to inspect and sign this report.
- Include a Site Plan and mark where the services, special conditions etc appear on the block and adjoining properties.

<table>
<thead>
<tr>
<th>DETAILS</th>
<th>PROJECT PROPERTY</th>
<th>ADJOINING PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Trees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fencing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerb &amp; Gutters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Footpaths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Poles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Lines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telecom Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-axial Cables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus Stops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retaining Walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underpinning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Hydrant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Attachments | 1 | 3 | 5 | 2 | 4 | 6 |

Inspecting Officer: ..........................................................
Signature: ...........................................................................
Date: ......................

Please proceed to Topic 8 quiz on Moodle
TOPIC 9 – INSURANCE

It is almost unheard of for an accredited builder to commence any construction project without a comprehensive insurance package in place to protect their legal and financial interests. Yet some owner builders start their projects without proper insurance even though the legal and financial risks they face are often greater than that of a builder.

Owner-builders face a unique set of risks and responsibilities, and insurance is essential. However, poor insurance can leave you nearly as exposed as having no insurance at all. It is therefore important to obtain insurance before commencing your project.

Note: The minimum insurance requirement for owner builders is workers compensation and public liability insurance.

Visit Allrisk Pty Ltd who can provide detailed professional advice and quotations on all your project insurance needs. Contact: Ph 1300 255 747, website or email

Failure to obtain the correct insurance

Failure to obtain adequate insurance cover could jeopardise your owner builder project. If you decide not to insure, the risk of potential loss is much greater, than for example, not having car insurance. A substantial loss on uninsured building works would cause financial ruin to most owner builders.

Insurance is a necessary safeguard for you, as well as for the loan institution that is backing the project with finance. If finance is being obtained through a lending authority, they will require evidence of a Construction and Public Liability Policy before they will release any funds. Without it, you may not be able to obtain the finance you need for your project.

Types of insurance

The three key types of insurance, which all owner builders should consider:

- Workers compensation
- Public liability
- Construction Insurance

It is important to seek advice from an insurance agent or broker if you are unsure which insurance you require for your project.

Note: You will be required to provide the details of your insurance, including the names of the insurance providers, policy number and expiry date prior to starting work.
Workers Compensation Insurance

Under the *Workers Rehabilitation and Compensation Act 1988* it is compulsory for every employer to have a current workers compensation policy. Owner builders, who engage labour to assist in the construction on their owner builder project, become the “employer” of their “workers” and incur the legal requirement to insure their workers.

Under certain circumstances contractors engaged by the owner builder may be regarded, at law, to be employees for the purposes of workers compensation. *Workers Compensation Insurance* is therefore required by law if an owner builder employs “workers” within the definition of the Workers Rehabilitation and Compensation Act 1988 (see below). Under section 97 of that Act, owner builders are treated in law the same as any other “employer” including accredited builders.

Workers can include labourers on site who are paid wages, and any sub-contractors employed may also be deemed to be a worker of that owner builder.

Workers Compensation Insurance will provide coverage if a worker is injured in an accident whilst working on your project as it could become your responsibility to fund all medical expenses and loss of wages. These expenses could continue on for years. The final cost to the owner builder can be ruinous.

*Workers Rehabilitation and Compensation Act 1988*

Section 3 of the Act defines a “Worker” as:

---

**Definition from the Act**

"**Worker**" means –

Section 3 of the Act defines “worker” as:

any person who has

- entered into, or works under, a contract of service or training agreement with an employer, whether by way of manual labour, clerical work or otherwise, and whether the contract is express or implied, or is oral or in writing; and
- any person or class of persons taken to be a worker for the purposes of this Act –
- and when used in relation to a person who has been injured and is dead, includes the legal personal representatives or dependants of that person or other person to whom or for whose benefit compensation is payable;

**A contractor is not a worker if;**

- The contract for the work is made between you and the contractor’s limited liability company or properly constituted partnership; or
- The contractor employs any workers in relation to the contract, or the contractor sublets all or part of the contracted work; or
- The contractor is a tradesperson conducting a business in a recognised trade, and the nature of contracted work is in that trade; or
- The contractor, who may be a sole trader, is shown carrying out an independent business in his or her own name or under a business name.
Owner builders will need to closely examine the proposed relationship with the persons working on their building project to decide whether it is one of a contract for services or employment. If in doubt consult an insurance expert.

For your own protection, in addition to you as an owner builder being properly insured, also check that each contractor, tradesperson and/or consultants employed to work on the property have the appropriate insurance. Obtain confirmation of their insurance covers, such as a certificate of currency from an insurance company, or a photocopy of the policy itself and ensure the insurance and the supplied certificates are current.

Workers Compensation insurance is obtainable from some licensed WorkCover insurers or from any Owner builder insurance specialist for a relatively small cost. Below are the WorkCover details:

Phone Number: 1300 776 572

**Implications**

When the insurance is required, and if it is not obtained, an owner builder may be prosecuted for breaching the law. If found guilty of the offence, they could be liable to be fined up to $50,000, as well as an amount equal to the premium that the employer would have paid if insurance had been taken out, including any common law costs, if their workers are injured.

**Note:** Home owners doing extensions or renovations may find that their normal domestic workers compensation insurance policy does not cover building work. Additionally, the home-owner’s house and contents insurance may neither cover the people working on the site, nor the new building work.

If the owner builder is certain that at no time during construction no workers would be employed then Worker’s Compensation insurance is **not** needed.

**Public Liability Insurance**

Public liability insurance is not mandatory for an owner builder but starting any building work without public liability insurance is a very risky way to manage your affairs. It is highly recommended that you investigate being covered by this insurance. Usually lending authorities will require this insurance as part of their loan/fund release policy.

Public Liability needs to be put in place **BEFORE** construction starts

Public Liability Insurance covers third party injury and property damage that occurs during the period of the policy. Building sites are dangerous places. There is also a danger to neighbours or people using the street while materials are being delivered.

Public Liability Insurance is to protect an owner builder against claims from members of the public for damages. It would include cover for such things as a member of the public falling over materials or into an excavation. Property damage would include damage to your neighbour’s property (house, car, etc) caused by works.
Public Liability claims involving construction sites will usually be directed at the builder (in this case the owner builder), but in some cases the contractor may also have been negligent and can be jointly liable. In this case both insurance policies will jointly respond.

It is therefore also vital that your contractors also hold their own Public Liability insurance. Some insurers state that their policy “includes subcontractors” however if you read the fine print you’ll usually see that this only refers to where you have entered into a written contract with the contractor agreeing that you will indemnify them for their negligence. It is recommended that you avoid entering into this type of contract, and to subsequently ensure that the contractors hold their own insurance.

**Obtaining Public Liability insurance**

An owner builder will not usually be able to purchase Public Liability Cover by itself and will almost always get it as a construction insurance combined policy (i.e. Public Liability + Contract Works).

A minimum cover of $5 million (recommended cover of $10 million) generally covers against third party personal injury and property damage that occurs as a result of negligence as deemed by law during the building project.

Some home and contents policies may provide a limited (automatic) extended coverage for renovation works, often up to a maximum works value of approx $20,000, which is quite limited. You must always advise your insurer in writing of your intention to renovate or extend and seek confirmation of exactly what coverage you have.

If your insurer does not provide adequate coverage then you should consider obtaining separate Construction and Public Liability insurances and put them in place BEFORE you commence construction.

**Implications**

If the owner builder does not have Public Liability insurance they may face the risk of common law negligence claims for damages or personal injury. Note that many household insurance products do not cater for new building work – so check with your insurer before starting building.

If an owner builder does not want to take out Public Liability insurance, they may write ‘not required’ on the Form 34 Statement.

**Construction Insurance (also called Contract Works Insurance)**

Construction (or contract works) Insurance generally protects you against the risks encountered during construction. A builder’s contract works policy covers the main risks during construction: malicious damage, theft, vandalism, fire, storm, wind and water damage. Some policies also include the costs of demolition of damaged work and professional fees in the event of a major claim.

The policies vary considerably so always check what is specifically covered. If your project is a renovation it is wise to purchase a policy that also provides cover for damage to the existing structure and/or contents, removal of debris, and professional fees (architects, engineers) in the event of a major claim.
These insurances generally commence on the date specified on the proposal form and conclude on the issue of the Occupation Certificate (or Certificate of Completion), completion of the works, occupation of the property or expiry of the policy period, whichever is the earlier.

Be aware that many domestic house and contents insurance policies do not cover building work and will only apply once the work is finished and the building surveyor and the Permit Authority have issued the necessary completion certificates. This is particularly important if an owner builder is making an alteration to an existing building, as some policies may not cover the existing building during the construction period either.

Other types of insurance

**Income protection insurance**

Income protection insurance is considered critical for owner builders. It is a means of protecting yourself financially if you have an accident, become injured or are too ill to work. Some income protection policies will provide up to 75% of your income each month until you are able to return to work. Income protection will give you piece of mind and can go a long way in protecting you and your family from any major financial impact, should you become injured during your project and unable to work for a period of time.

**Key person insurance**

Key person insurance is a policy for sickness or death that will guarantee repayment of the loan should you meet with illness or accident. It is a policy to cover the whole loan amount to ensure that the project is completed by employing a professional building practitioner to complete the job in case of death or permanent incapacity of the owner builder.

**Voluntary Workers Cover**

No public liability policies will cover your own personal injury. Friends and family who are helping on your project can also have great difficulty making Public Liability claims if they are injured. For this reason it is recommended that you take out a voluntary workers policy, which covers replacement of lost income in the event that you, your nominated spouse, and/or your volunteers are injured on the project site. This is typically available at a very small price.

**Burglary Insurance**

Burglary insurance should be carried on that portion of your contents, which is easily removed and constitutes a significant potential loss. Burglary insurance not only covers stolen property but it also covers damage done by burglars to premises and contents arising from forcible entry.

**Fire and Property Insurances**

Fire and property insurance provides coverage against losses stemming from destruction of real property, such as buildings, and personal property, such as machines, furniture, fittings and goods. The term fire insurance has a much wider meaning than simply insuring property against damage by fire or lightning. Other risks which can be covered in a fire policy include damage caused by:
Aircraft Explosions
Storm and tempest
Riots, strikes and vandalism
Impact by vehicles, horses or cattle

Water
Flood
Earthquake
Eclectic current (fusion)

Tools, Plant, Equipment

Policies for such items are usually purpose written to the agreed cover required. You should be aware of whether you purchase:

- A replacement value or depreciated value policy.
- Locked premises or vehicle warranties and conditions
- Location limits such as site only or Australia wide.

Other optional insurances

- General Property
- Partnership Insurance
- Product Liability
- Loss of Profits
- Plate Glass
- Document Insurance
- Cash
- Home Warranty Insurance
- Goods in Transit
- Machinery Motor
- Vehicle – Comprehensive/Third Party Property

Insurance Providers

Currently the point of contact between the insurance consumer and the insurance market will be by one of three different groups.

- Insurance Companies (the underwriters)
- Insurance Agents
- Registered Insurance Brokers.

Insurance Companies

The Insurance Company (or underwriter) is the company that accepts the premium for any risk to be insured and is the one that actually pays in the case of any claim being made. In essence, all premiums are “pooled” so that if one of the contributors suffers a loss, the payment of the claim comes out of the pooled premium.
There are in excess of 160 registered Insurance Companies within Australia, all of whom provide various types of insurance policies to the public. Whilst there will be slight variations between companies in the scope of cover provided under their various policies, the policies sold to the public are usually standard policies for that company and not necessarily designed for a particular business or industry.

**Insurance Agents**

Agents are, as their name implies, agents for the insurance company they represent and at law they are deemed to act on behalf of the insurance company and not the purchaser of insurance. The product sold by this agent on behalf of the insurance company is usually the standard product available through that company.

The insurance company is legally responsible for the actions of his agent, so action taken against any agent usually transfer to the company.

It may however, be difficult to obtain owner builder Insurance from Insurance Agents or Insurance Companies as many do not provide this type of insurance directly to owner builders. It is usually best to find a company which specialises in owner builder insurance. An insurance broker may be able to help you find a company which specialises in owner builder insurance.

**Insurance Broker**

A broker is an independent insurance specialist who is not an agent of any insurance company and at law is deemed to act on behalf of the client who is insuring. Brokers, unlike insurance agents, can place business with the insurance company they believe can provide the best cover at a rate competitive with that available on the market.

The fundamental difference between an insurance agent and a broker is that, a Broker is obliged both by law and in practice to act in the best interests of his client. An agent is required to act in the best interest of the insurance company he represents. The insurance company itself ultimately acts to maximise the return to its shareholders.

Visit Allrisk Pty Ltd who can provide detailed professional advice and quotations on all your project insurances needs. Contact: Ph 1300 255 747, website or email
Questions to ask your insurance providers

- What is the minimum coverage of a Public Liability policy? e.g. "$5 million";
- Does the policy cover the demolition costs in the event of a major loss?
- Is adjacent property protection available with a contractor’s policy?
- Does the policy cover existing structures on the property? Prior to starting building work you should advise your house and contents insurer, as your existing policy might only cover minor renovation projects;
- Does the policy cover the owner-builder against negligence claims from contractors or tradesmen killed or severely injured on the work site?
- If works have already commenced, is it still possible to obtain insurance?
- Is the insured value, the owner builder construction price, or the full replacement value in the case of a total loss? You may want to ask this question, but remember that the construction policies always work on the replacement value and NOT the cost of the construction.

Please proceed to Topic 9 quiz on Moodle
GLOSSARY OF BUILDING TERMS

Accredited building practitioner
A natural person accredited under the Building Act 2000 to contract for, carry out, or manage building work over $5,000 that needs a building permit. Categories include builder, designer, building surveyor.

Agent
A person who acts on behalf of the owner, for example to apply for a building permit. Their authority to act should be evidenced in writing.

Architect
A category of accredited designer with an unlimited scope of work.

BCA (Building Code of Australia)
Building Code of Australia, the legal technical standards for all building work in Tasmania. Published as volumes 1 and 2 of the National Construction Code.

Building Act
The Building Act 2000 is the legislation that governs the standards of building and plumbing work in Tasmania and also provides for accreditation of practitioners and the registration of OB.

Building Contract
The document or articles of agreement and general conditions binding two or more parties together, including any drawings or specifications etc. A contract can be written or verbal.

Building Designer
A category of accredited designer who can design residential buildings and some commercial buildings.

Building Permit
Authority granted by the permit authority to build certain works on particular land.

Building Surveyor
A category of accredited building practitioner, who assesses and certifies plans, does inspections and grants an occupancy permit for a building.

Certificate of Likely Compliance
A certificate issued by an accredited building surveyor after assessment of plans. If granted it means that they believe that the work, if constructed in accordance with those plans and in a proper manner, is likely to comply with all relevant requirements of the BCA.

Class of a building
Refers to the classification system under the Building Code of Australia. There are 10 main classes and some sub-classes of buildings.

Construction Induction training
A requirement for mandatory health and safety training on construction sites under the work health and safety legislation.

Construction management
The administration and management of building construction involving tenders, co-ordinating and monitoring of construction activities, plant and equipment and may also involve consultation or direction to design and building and other consultants during the design and construction stages.
Defect
Fault or deviation from the intended condition of a material, assembly, or component.

Director of Building Control
A statutory officer appointed under the Building act 2000 responsible for accreditation of building practitioners, registration of owner builders, and audit and compliance activities.

Land surveyor a practitioner who measures and surveys land.

Owner (of land or a building)
Defined under section 3 of the Building Act 2000 and includes, the legal title holder, a life tenant, a long lessee or any other person holding a prescribed interest in a building or land. It is the owner(s) who apply for owner builder registration and also may be the applicant for a building and plumbing permits.

Owner builder
- a person registered by the Director under the Building Act 2000 or
- an owner who does work of the type that is exempt from registration e.g; work under $5000.

Permit Authority
A person or body under the Building Act who grants building or plumbing permits. Appointed by the local council.

Planning/ development permit
Authority of the council to use land in a certain manner or to carry out development

Plumbing Permit
Authority granted by the permit authority to carry out certain plumbing works on particular land

RMPAT (Resource Management and Planning Appeal Tribunal)
A Statutory tribunal that hears appeals under the Building Act 2000.

Thermal Mass
Thermal Mass is the amount of potential heat storage capacity available in a given assembly or system. It is an important factor in achieving an energy efficient home.

White card
Issued by WST as evidence of successful completion of the Construction Induction training

Workplace Standards Tasmania (WST)
Workplace Standards Tasmania, part of the Justice Department. Responsible for accreditation functions under the Building Act 2000, occupational licensing, workplace health and safety, electrical and gas standards, and many other regulatory functions.