



UNDERSTANDING THE BUILT ENVIRONMENT

Notes: Part 1

ABSTRACT

If you want to succeed in this particular subject, and have a great background knowledge of all things Construction this is the perfect set of notes for you. In this document, it includes the first half of the semesters' lecture notes- in particularly highlighting key points for the exam. The set of writing style used is basic for people without a construction background to easily comprehend.

Bachelor of Design

Week 1, Lecture 1b ~ The Construction Industry

The traditional framework for analysing this industry is divided into segments of residential buildings, non-residential buildings and engineering construction.

This includes:

- Planning
- Regulation
- Design
- Manufacture
- Fabrication
- Erection
- Maintenance

Construction Industry Characteristics:

- o The physical nature of the product
- o Normally manufactured on the construction site
- o Projects are typically one-off designs
- o Design separated from the manufacturing process
- o Produces investment rather than consumer goods
- o Activities affected by inclement weather
- o Small number of large firms and large number of small firms
- o Small firms concentrate on repair and maintenance

National and financial importance:

- Vital part of the nation's economy – approximately 8% of GDP
- Construction industry is highly important- all industries interact for building/maintaining physical assets
- Approximately 338,225 firms (2013-14)
- Employs approximately 1million people (8% of the workforce)
- Critical to attracting investment in new resource and manufacturing projects

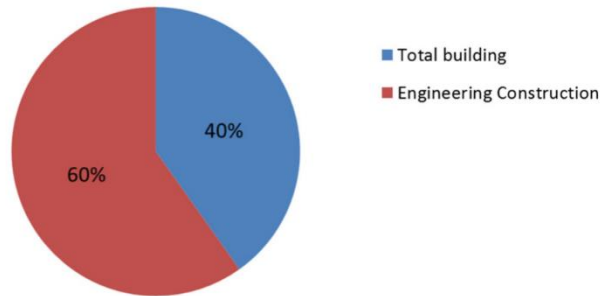
Multiplier effect:

For every \$1M of output:

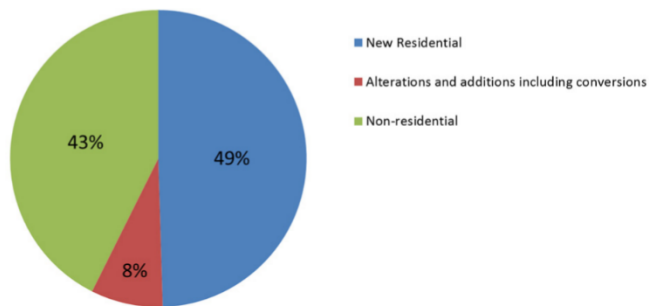
- 9 additional construction jobs created
- 7 additional manufacturing jobs created
- Additional jobs in other industries too
- Other economic output increases by a further \$2.9M

Why is output increasing over time?

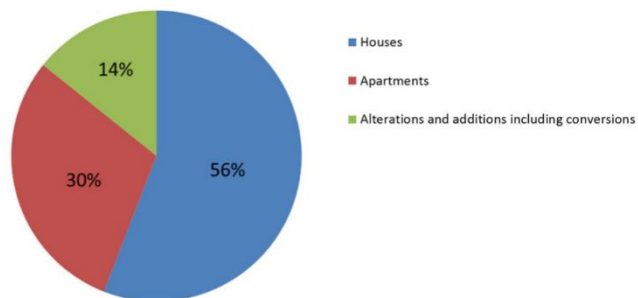
- Population is increasing globally
- Greatest population growth is in USA, Japan, China and Germany



Source: ABS 8755.0 Construction Work Done, Australia, 2013



Source: ABS 8752.0 Building Activity, Australia, 2013



Source: ABS 8752.0 Building Activity, Australia, 2013

Week 2, Lecture 1 ~ The Building Industry

The building industry:

- Residential building
- Non-residential building
- The labour force

Residential building	Non-residential building	Engineering construction
Houses	Retail/wholesale	Roads
Apartments	Offices	Rail, ports and harbours
Major alterations and additions	Industrial	Electricity and pipelines
Minor alterations and additions	Health, aged care	Water and sewerage
	Accommodation	Telecommunications
	Education	Mining
	Entertainment	Recreation
	Miscellaneous	

Residential building construction:

- o Approx. 23,000 firms engaged in house construction
- o Approx. 2,400 firms engaged in other residential construction
- o 90% of these firms have less than 5 employees
- o Approx. 45 firms have 50 or more employees
- o Reliance on sub-contracting
- o Low barriers to entry into this industry
- o Low capital intensity
- o **Owner normally contracts directly with builder**

Larger firms competitive advantage (residential)

- o Capacity to provide a house and land package with accompanying finance or purchasers
- o Variety of “off the shelf” designs (it’s cheaper and therefore attractive)
- o Larger buying power with building materials and appliances

Historical Notes:

- House size has more than doubled since 1950
- Floor area per person has almost quadrupled

Non- Residential building construction:

- o Approx. 3000 firms engaged in non-residential building construction
- o Hotels, offices, shops, hospitals, factories and other commercial and institutional buildings
- o 72% of firms have less than five employees
- o 67 firms or 2.2% have more than 50 employees
- o 13 firms have more than 500 employees
- o Foreign ownership of major construction companies are growing as they have more money to expand and spend
- o Major difference between a Tier 1, 2 and 3 contractor is the size of the projects they take on

Week 2, Reading ~ What do we mean by building?

Construction as an economic activity is sometimes conceived to include, at one extreme, the industries producing raw and manufactured building materials and components and, at the other end, the professions involved in designing, supervising, assessing and controlling the building process.

“other construction and work” usually means civil engineering

Key:

- The close relationship between new construction and maintenance and repair works
- Maintenance and repair operations are mostly carried out by smaller firms

Client:

- Provides site
- Provides brief
- Size, spatial requirements, room types and functions
- Set of standard guidelines
- Security requirements
- Project budget
- Project briefing may be broken down into a series of smaller client reference groups
- External stakeholders may have an influence on the site

The Design Team:

- Client
- Project Manager
- Contractor
- Architect (Lead Consultant)

Architect:

- Principals
- Design architect
- 3D Visualisation
- Project architect

The Design Team-The Architect

Project Establishment – Concept & Schematic Design

PROJECT ESTABLISHMENT

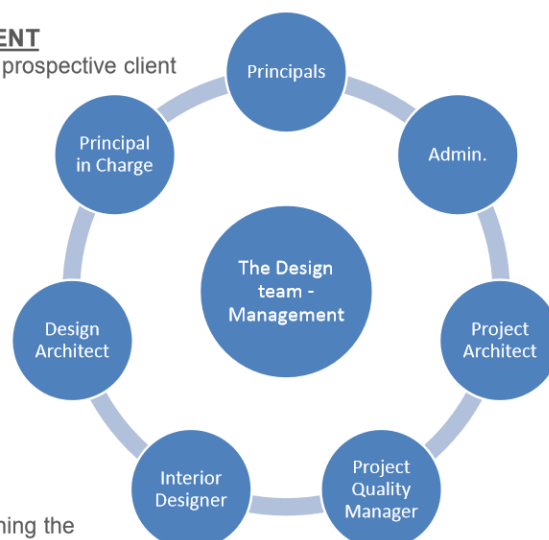
- >Preliminary enquiries from prospective client
- >In-house programme:
- >Who is in the Architects Design Team?
- >Conditions of Engagement
- >Architects Appointment
- >Clients Project Manager

Concept Design

- >Site Inspection
- >Survey
- >Briefing Process
- >Consultant appointment
- >QS appointment
- >Consultants Meetings
- >Statutory Requirements

Assists the client in establishing the feasibility of the project. eg; does the briefed area and the project budget align?

This is more straightforward on a conventional project;



Schematic Design

- >Project Team Meetings (Client and consultants)
- >Design Reviews
- >Consultant Workshops
- >Briefing Process expanded
- >Production of Return Brief
- >Room Data Sheets
- >Materials and finishes researched (ext. & Int.)
- >Meetings with QS on Project costs based on area and proposed materials and finishes
- >Client Presentations for signoff
- >External Stakeholder meetings

Briefing meeting between Principals, Project Architect and design architect to establish design direction.

Management of communication