

## HOW DO I BECOME A COASTAL ENGINEER?

Most Coastal Engineers become specialists in the field after graduating from universities with a degree in civil or environmental engineering. This is a 4 year full time course offered by most major universities in Australia. To qualify as a specialist in coastal engineering requires further post graduate study. This normally takes the form of formal course work programs that require 1 year of full time study or 2 to 3 years of part time study. A second option is to undertake a full time post graduate research degree, normally requiring between 2 and 3 years to complete. Often the post graduate training is done after working for some time with experienced engineers.

Therefore school leavers need to qualify for entrance to civil or environmental engineering degree courses and should select, and do well in, mathematics and physics at year 12 level.



*A beach profile being surveyed as part of the COPE field experiment at Burleigh, Gold Coast.*

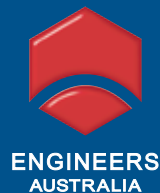
### What employment opportunities are there ?

A wide range of coastal engineering activity is carried out by government departments and agencies at federal, state, regional and local levels, by engineering consulting firms, universities, manufacturers, shipping companies, the tourist industry and the recreational boating industry. In addition, there is an ongoing demand for coastal engineers to work on development projects overseas.

## WHERE CAN I GET FURTHER INFORMATION?

Your first step should be to visit the web site of Engineers Australia. There you will be able to get information on a whole range of questions you might have about engineering or engineering courses. If you would like to talk to a Coastal Engineer, contact by mail, phone, fax or email the Secretary of the National Committee on Coastal and Ocean Engineering in Canberra. You will be referred to the committee member closest to where you live. The address is:

The National Committee  
on Coastal and Ocean Engineering  
Engineers Australia  
11 National Circuit  
Barton, ACT 2600  
ph (02) 6270 6545  
fax (02) 6273 2358  
email [nccoe@engineersaustralia.org.au](mailto:nccoe@engineersaustralia.org.au)  
Web Site [www.engineersaustralia.org.au/nccoe/](http://www.engineersaustralia.org.au/nccoe/)



Most Australians live close to the coast and our beaches are a significant national asset. Coastal Engineers are key players in the environmental rehabilitation and sustainable management of our coast.

## A CAREER IN COASTAL ENGINEERING

[www.engineersaustralia.org.au/nccoe](http://www.engineersaustralia.org.au/nccoe)



## Investigations

Coastal Engineers investigate what is actually happening in the coastal zone. This involves measurement of waves, winds, sea levels, sand movements and water quality. It also involves developing an understanding of the processes that are causing the coast to behave as it does. Advanced physical and mathematical modelling techniques are used to analyse the data and to test the effects of artificial and natural changes to the coastal environment.

## WHAT DO COASTAL ENGINEERS DO?

### Designs

Coastal Engineers design structures on the coast such as breakwaters, harbours, marinas and new beaches. In developing designs which are economical, safe, serviceable and environmentally acceptable the engineer will:

- study the shape of the coast and the historical changes that have occurred;
- determine the winds and waves that can occur at the project location;
- use physical and mathematical modelling techniques to help predict the effects of any changes;
- use appropriate and proven design criteria.

### Project Management

During construction and later operation of these structures the Coastal Engineer is responsible for:

- the quality of the construction;
- the management of the contracts;
- maintenance and the long term effects of the construction.

### Research

Coastal Engineers are deeply involved in research into the nature of the coastal processes that are occurring. They investigate the long term effects of phenomena such as the Greenhouse Effect and possible sea level rise. They are developing new technologies using measurement techniques such as advanced remote sensing to improve our knowledge of the coastal environment.

### Coastal Management

Coastal Engineers are responsible for providing the community with the scientific principles that underlie sustainable coastal management. They are technical leaders in the management of the coastal zone.

*Assessing the environmental impact of structures in the coastal zone by modelling.*



*Many shorelines require rehabilitation and revised building setbacks as a result of our improved understanding of coastal dynamics.*



*Scale models of coastal structures are tested in the wave flume.*



*Large cranes used to place materials on a breakwater.*



*The mobile, shallow and dangerous bar of the Nerang River entrance on the Gold Coast before the major entrance training walls were built.*