



# **SUBSEA ENGINEERING COMPETENCY FRAMEWORK GUIDELINES FOR ENGINEERING TECHNOLOGIST CANDIDATES**

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# 1 INTRODUCTION

The document sets out the requirements that a subsea engineering technologist needs to demonstrate to achieve a designation of “competent” in their areas of practice.

## 1.1 BACKGROUND

The Society for Underwater Technology (Perth Branch) (SUT) is a not for profit learned society with an interest in developing subsea engineering capabilities in Australia.

In collaboration with industry and academia SUT have defined a competency framework for assessing the competency of a subsea engineering technologist. The competency framework:

- Provides an opportunity for individuals to be recognised for their knowledge, experience and competency to work in the area of practice of subsea engineering
- Assists customers in understanding the level of competency of supplier personnel who work in the area of practice of subsea engineering
- Assists employers in determining if their subsea engineering technologists are competent to undertake the roles required of them
- Provides a framework for assessing Subsea engineering technologist for admission by Engineers Australia as Chartered Professional Engineers
- Provides confidence that a person with Chartered Engineering Technologist (Subsea) accreditation has a minimum level of competence.

## 1.2 FRAMEWORK LAYOUT AND COMPOSITION

SUT developed subsea engineering competency profiles covering various areas of practice for CPEng (Subsea) candidates. The areas of competence included:

- Field Development Planning / Concept Selection
- Corrosion and Materials Engineering
- Flexible Flowlines and Risers, Umbilicals and Cables
- Geotechnical Design
- Subsea Structural Engineering
- Mechanical Engineering
- Subsea Control Systems
- Dynamic Risers & Moorings Design and Analysis
- Construction Engineering and Construction Spread Management
- Pre-Commissioning & Commissioning
- Subsea Asset Management
- Discipline Engineering

An equivalent set of competency profiles for Engineering Technologists has not been created, however Engineering Technologist candidates may wish to make reference to this information when preparing their application.

The applicant for CEngT (Subsea) shall demonstrate competence in the competency profile:

- S-001T: Subsea Engineering Technologist

Details of the above can be found online at the SUT (Perth Branch) website:

<https://www.sut.org/branch/australia-perth/subsea-engineering/>

### 1.3 DEFINITION OF TERMS

Specific definitions of terms have been adopted in this framework as per the following table:

Term	Definition
Competent	has the minimum knowledge, expertise and experience in an area of practice
Awareness	is aware of what others do but cannot do it themselves
Knowledge	has a theoretical understanding of the subject matter, but has not applied it in the workplace, (EA terminology: “Developing”)
Working Knowledge	has independently undertaken and/or managed work that applies the theoretical understanding, (EA terminology: “Functional”)
Expert Knowledge	has significant expertise in their discipline or acts as a technical authority in this field, (EA terminology: “Proficient”)
Experience	The process of gaining knowledge and skills from action, observation or participation. The experience requirements are contained in each Subsea engineering technologist competency profile under the heading “What this competency means in practice”
Subsea Facilities	means an aggregated system of subsea permanent equipment installed subsea. Includes all facilities underwater but excludes rigid pipelines.
Subsea Equipment	means single items of permanent equipment, construction hardware or intervention tooling

### 1.4 OCCUPATIONAL CATEGORIES

The following category descriptions are taken from the EA website: <https://www.engineersaustralia.org.au/Membership/Occupational-Categories>

#### 1.4.1 Professional Engineer

Professional Engineers hold an Engineers Australia accredited or recognised **four-year professional engineering degree**.

As a Professional Engineer, you:

- Focus on overall systems
- Develop and apply new engineering practices
- Apply leadership & management skills
- Pursue engineering opportunities in an holistic way, taking environmental, community & social issues into account
- Solve diverse problems.

#### 1.4.2 Engineering Technologist

The academic qualification is an Engineers Australian accredited or recognised **three-year engineering technology degree**.

As an Engineering Technologist, you:

- Focus on interactions within the system
- Modify and adapt established engineering practices
- Advance engineering technology.

### 1.4.3 Engineering Associate

The academic qualification is an Engineers Australia recognised **two-year advanced diploma or associate degree of engineering**.

As an Engineering Associate, you:

- Focus on specific elements of the system
- Work within codes and applies established practices and procedures.

## 2 ASSESSMENT OF COMPETENCE

This framework is intended for the assessment of subsea engineering technologists who will have typically 5 or more years of relevant experience in industry after completing their formal engineering training. This is compliant with the present standards for chartered status with Engineers Australia and admission to the NER.

### 2.1 PRE-REQUISITES

Engineers Australia and the international agreements it is signatory too sets the pre-requisite formal engineering qualification requirements.

In terms of formal engineering training there is often confusion about requirements, especially if the candidate has formal qualifications gained outside of Australia. The following information from EA provides some guidance between Australian engineering qualifications (accredited by EA) and the International Accord that they meet.

Source: Engineers Australia, Accreditation Management System, Accreditation Criteria User Guide – Higher Education, AMS-MAN-10, version 2.

The normal minimum program duration requirements of accredited engineering qualifications in Australia align with the volumes of learning (post-secondary school certificate) specified in the Australian Qualifications Framework (AQF). The Australian school education system specifies thirteen years of compulsory schooling (Foundation to Year 12).

Engineering occupation	AQF level	Post school academic years of full-time study	Qualification (typical)	International Accord
Professional Engineer	9 - 8	5 - 4	MEng, BEng(Hons)	Washington
Engineering Technologist	7	3	BEngTech	Sydney
Engineering Associate	6	2	Associate Degree Advanced Diploma	Dublin

### 2.2 REQUIREMENTS

In order to be considered competent according to this framework, a candidate shall demonstrate that they meet the minimum requirements for admission by Engineers Australia as a Chartered Engineering Technologist (CEngT).

The candidate for CEngT (Subsea) shall also demonstrate competence in the elements of competency profile, S-001T Subsea Engineering Technologists.

Note that S-001T Subsea Engineering Technologist competency profile replaces the technical elements of competence 12 to 16 in the document Australian Engineering Competency Standards, Stage 2.

In addition to the above applicants are to identify the areas of subsea engineering work they have participated in and provide demonstrable evidence to support their claim for competence in these areas.

Reference can be made to the competency profiles created for CPEng (Subsea) and tempered with the occupational category characteristics for Engineering Technologist.

Other areas of subsea engineering work not already identified in the CPEng competency profiles can also be presented for consideration provided you can show demonstrable evidence to support the claim for competence in those areas.

Industry based training and accreditation, as well as in-house training that you have completed, should also be referenced and documented evidence provided in support of your claim.

## **2.3 APPLICATION FOR RECOGNITION OF SUBSEA ENGINEERING TECHNOLOGIST**

Applicants can apply for recognition of competence in the area of practice (AoP) of Subsea Engineering via a number of different routes:

- National Engineering Register as a subsea engineering technologist in the AoP of Subsea Engineering
- CEngT (Subsea) via the EA Stage 2 assessment
- As an existing CEngT applying for additional recognition in the AoP of Subsea Engineering
- Eng Exec via the EA Stage 3 assessment – EngExec gives Chartered status in Leadership and Management (L&M). Applicants for EngExec can also elect to request recognition in the AoP of Subsea Engineering at the same time.

## **2.4 APPLICATION PROCESSES**

### **2.4.1 NER**

The application process for inclusion on the National Engineering Register in the area of practice of Subsea Engineering is managed by EA and published on the EA website.

SUT provides information and assessment support in the area of subsea engineering.

### **2.4.2 CEngT and Subsea Engineering area of practice**

The application process for Stage 2 assessment leading to CEngT is managed by EA and published on the EA website.

It is important that all applicants for Stage 2 assessment review and understand the standard before submitting an application.

SUT provides information and assessment support in the area of subsea engineering, including the subsea engineering technologist competency profiles.

SUT supports EA in the assessment process with review of submitted information, attendance at candidate interview and input to the assessment decision. All SUT assessors are either CPEng or CEngT and accredited in the subsea engineering AoP.

## **2.5 ONLINE INFORMATION AND APPLICATION**

### **2.5.1 SUT**

SUT provide online resources for graduates pursuing a career in Subsea Engineering and candidates considering applying for recognition of the Subsea engineering technologist area of practice. Refer to

<https://www.sut.org/branch/australia-perth/subsea-engineering/>

### **2.5.2 EA**

EA provides online information and access to the application processes via a number of locations;

NER: <https://www.engineersaustralia.org.au/Engineering-Registers/National-Engineering-Register/NER-Info>

CEngT: <https://www.engineersaustralia.org.au/For-Individuals/Chartered-Engineer>

EngExec: <https://engexec.org>

Subsea Engineering AoP: <https://www.engineersaustralia.org.au/Chartered/Chartered-Area-of-Practice>

## **2.6 ONGOING CPD REQUIREMENTS**

Having achieved recognition of the subsea engineering technologist area of practice, the candidate has an ongoing obligation of continued professional development (CPD) to maintain accreditation. This is achieved by completing 150 hours of applicable CPD in a rolling three year period.

Candidates should consider attendance at relevant events and training opportunities provided by SUT, EA and others.

Membership details for SUT can be found via the following link:

<https://www.sut.org/branch/australia-perth/membership/>

## Appendix A. Competency Profile

### Chartered Engineering Technologist (Subsea)

- S-001T Subsea Engineering Technologist

Details of this competency profile is available from the SUT (Perth Branch) web page;

<https://www.sut.org/branch/australia-perth/subsea-engineering/>