

**Engineers Australia**



**ENGINEERS  
AUSTRALIA**

**PROFESSIONAL DEVELOPMENT ASSESSMENT PROGRAM**

for



**ENGINEERS  
AUSTRALIA**

**RTSA**

**RAILWAY TECHNICAL SOCIETY OF AUSTRALASIA (RTSA)**

**19 September, 2007**

The following document outlines the conditions and processes for the Railway Technical Society of Australasia (RTSA) Professional Development Assessment Program (PDAP).

The purpose of the PDAP is to assist members develop their competencies and gain professional recognition and to help corporate members enhance the capabilities of their workforce. The PDAP is open to both young and experienced members of the engineering team.

The PDAP assists the professional formation of **young engineers**, helping young members develop, in a structured and supported way, the competencies of a mature engineering professional.

The PDAP also assists **experienced engineers** attain recognition for competencies gained.

## 1. ELIGIBILITY TO PARTICIPATE IN THE RTSA PROFESSIONAL DEVELOPMENT ASSESSMENT PROGRAM (PDAP)

To participate in the program engineering staff must have completed an accredited engineering course and be registered as a member of Engineers Australia and/or the RTSA. This is to enable assessment, recording and tracking of participants' Career Episode Reports (CERs).

Members of Engineers Australia must supply their member number and complete an Application form to participate as an Individual PDAP Participant (Appendix A)

Non-members of Engineers Australia must complete the non-member application form (Appendix B). This information is used to determine the participant's occupational category for assessment purposes.

## 2. DESCRIPTION OF THE RAILWAY TECHNICAL SOCIETY OF AUSTRALASIA

The Railway Technical Society of Australasia (RTSA) promotes the science and practice of railway engineering and related technology. The RTSA seeks the advancement of the rail industry through excellence in railway engineering and technology, and through its industry and community education programs.

The key aim of the RTSA is to represent the interests of all rail professionals involved in the Australian and New Zealand rail industries and all those with an interest in the rail industry. RTSA aims to foster mutual technical development, networking, the expanding and sharing of knowledge, specialist recognition, the establishment of national links and the promotion of expert opinion and influence relating to all facets of the rail industry.

## 3. RTSA PROFESSIONAL DEVELOPMENT ASSESSMENT PROGRAM STRUCTURE

The RTSA PDAP will consist of the following key elements:

- Attend Chartered status workshops provided by Engineers Australia as part of the RTSA PDAP offer (available in each capital city).
- Provide Mentoring
  - Individual participants will nominate a mentor from their workplace.
  - If this is not available, RTSA will recommend possible RTSA members who are experienced engineers and whom would be willing to act as a mentor.
  - Corporate members will normally provide mentors for their nominated participants.
- Review and assess relevant engineering skills developed and practiced in the participants' workplace.
- Produce Career Episode Reports (CERs) written by the RTSA PDAP participants and assessed by Engineers Australia's National Assessors.

Once the RTSA PDAP process has been completed (i.e. the individual participant has achieved the required competencies) the individual may then apply for Chartered Status or registration on NPER or NTER from Engineers Australia which requires the following additional steps:

- Submit Engineering Practice Report; and
- Attend a Professional interview, organized by Engineers Australia (conducted on successfully gaining the required endorsed competencies).

Note: Non members of Engineers Australia may apply for registration on NPER or NETR only.

### 3.1 Competencies

The competencies specified by Engineers Australia to be developed by participants for the subsequent award of Chartered status and/or registration on the National Professional Engineers Register (NPER) or National Engineering Technologists Register (NETR)<sup>1</sup>, have been derived from the *National Generic Competency Standards*.

They include three core units and two elective units of competency (refer Appendix C).

- 3.1.1.1 A *unit of competency*, covering a particular area of performance, comprises a series of activities referred to as elements of competency. Each element has a set of *defining activities*, which provides a guide to the level of observable performance required to satisfy the criteria for satisfactory acquisition of that element (refer to the Chartered Membership Handbook for details).
- 3.1.1.2 In addition to the above competencies, the engineering team (graduate and experienced engineers) must also demonstrate both competence in communications skills and an understanding of, and commitment to, the Engineers Australia Code of Ethics (Refer Appendix D).
- 3.1.1.3 As the competencies are reviewed from time to time, participants will have the option of either completing their Chartered assessment under the existing competencies or transferring to the revised competencies.

## 4. PROFESSIONAL FORMATION

The period during which a graduate member of the engineering team acquires the above competencies is known as professional formation. A minimum period of professional formation is not generally stipulated as the assessment for the award of Chartered status is based on demonstrated competencies rather than a period of time. However in accordance with Engineers Australia Bye-Laws and Membership Regulations a graduate participating in a PDAP must have at least three years of work experience at the level of their related occupational category to achieve Chartered Status.

For experienced engineering participants the period of professional formation is likely to have already been achieved. Section 6.6 of this agreement outlines Engineers Australia's approach to providing a process for these participants in the demonstration of acquired competencies.

## 5. COMPETENCY ACQUISITION

- 5.1 Practical experience in professional roles is fundamental to the development of engineers so that they are provided with a range of professional engineering experiences in line with the competencies specified in 3.1.
- 5.2 To give guidance and support to PDAP participants in the acquisition of competency, RTSA will endeavour to ensure that supervisors and mentors are fully familiar with and supportive of the PDAP. The respective roles of mentors and supervisors are defined in section 9.

## 6. COMPETENCY DEMONSTRATION

### Graduate Engineering Participants

- 6.1 As RTSA members enrolled in the RTSA PDAP acquire elements of competency, they will compile career episode reports (CERs), similar to the example shown in Appendix E. The CERs will document related professional experiences over a continuous period and clearly indicate how the elements of competency have been achieved. These reports may vary in the number of elements of competency reported and in the period of time covered. For example, a minor CER may cover a

<sup>1</sup>Further details on the National Professional Engineers Register (NPER) and the National Engineering Technologists Register (NETR) are available from [www.nerb.org.au](http://www.nerb.org.au)

relatively short period of time (2-3 months) and be advanced to claim some elements. A major CER (for example, a large project) may be advanced to demonstrate an entire unit of competency. As shown in the example in Appendix E, CERs may contain elements from different units of competency.

- 6.2 Final year undergraduate project work, particularly if industry based, or work experience in industry while an undergraduate, may count towards the specified competencies, and graduates are invited to submit such work for assessment. It would be unusual for this to contribute to more than two or three elements of competency depending on the nature of the work and level of responsibility.
- 6.3 In their CERs, PDAP participants will address problems faced, options considered and reasons for selecting the solutions ultimately adopted.
- 6.4 CERs are to be written in the first person and are to emphasise the responsibilities, authorities and achievements of the graduate.
- 6.5 As CERs are completed, PDAP participants will submit them to their work supervisor(s) for checking and verification that the competencies claimed have been demonstrated to the appropriate standard. The verified CERs will then be submitted by the member to the Engineers Australia Assessor (refer Appendix H for details of the local Assessor).

### **Experienced Engineering Participants**

- 6.6 Mature and more experienced engineering participants, who have at least fifteen years of broadly-based engineering experience since graduation and have been responsible for substantial work in their occupational category, may demonstrate their acquisition of competencies by submission of a less voluminous Engineering Practice Report consisting of one or two comprehensive Career Episode Reports. National Assessors, taking a holistic approach, will determine whether the Engineering Practice Report provides a satisfactory basis for a Professional Interview.

## **7. ASSESSMENT**

- 7.1 For the duration of the RTSA PDAP, Engineers Australia Accredited Assessors will undertake the continuous assessment of participants' CERs. On submission, each CER will be assessed by the Assessor for compliance with the relevant competency requirements. Complying claims for competency elements will be endorsed by the Assessor. This will be repeated until each participant has acquired endorsement of all the specified competencies. This stage of the assessment process is formative, and feedback and counselling will be provided to participants by the Assessor.
- 7.2 The Assessor may discuss initial draft reports with participants' or their supervisors and/or mentors with a view to making amendments before the verified reports are approved.
- 7.3 The Assessor will advise each participant of the elements of competency that have been endorsed as demonstrated satisfactorily.
- 7.4 It is the participants' responsibility to record and keep count of the elements and units of competency they have acquired to date and to retain copies of all CERs submitted to Engineers Australia.
- 7.5 Once all elements of competency have been satisfactorily assessed the participant will be awarded a certificate acknowledging that the RTSA Professional Development Assessment Program has been successfully completed. The participants will be also encouraged to complete the final Chartered Interview stage to gain Chartered status.

## **8. ATTAINING CHARTERED STATUS AND REGISTRATION ON NPER OR NETR**

- 8.1 Once the specified units and elements of competency have been demonstrated to the appropriate standard and progressively endorsed, participants may apply for Chartered status and registration on NPER or NETR. This involves submission of an Engineering Practice Report and attendance at a Professional Interview. The verified CERs together form the Engineering Practice Report that is then submitted to Engineers Australia by the participant in support of his/her application for Chartered status and/or registration. The Professional Interview is the final assessment of the competencies claimed by the participant.

- 8.2 Participation in this PDAP does not guarantee eligibility for Engineers Australia membership. Normal membership eligibility criteria apply (refer Appendix G).

## **9. MENTORS AND SUPERVISORS**

In order to ensure that its engineering graduates receive appropriate professional formation, RTSA will work with the individual participant to ensure that an appropriate mentor has been identified from the individual's workplace, or if this is not possible, then appropriate RTSA members.

- 9.1 A mentor should be an experienced engineer, who is of equivalent standing, at least, to the graduate (Professional Engineer, Engineering Technologist or Engineering Officer) and preferably a Chartered Member of Engineers Australia, to act as a mentor for each graduate participant.
- 9.1.1 The role of the mentor is to advise the graduate participant on the graduate's overall development needs and to act as the graduate's counsellor, advisor, coach and advocate.
- 9.1.2 Mentors will be familiar with the concept of competency assessment and will have a working knowledge of the National Generic Competency Standards.
- 9.1.3 Mentors will provide guidance and encouragement to the graduates in the preparation of their CERs.

## **10. WORKSHOPS AND SEMINARS FOR PARTICIPANTS**

10.1 Engineers Australia will provide the following workshops as part of the RTSA Continuing Professional Development (CPD) program in major capital cities in Australia:

- An introductory presentation/workshop for participants, mentors and supervisors
- An annual CER Writing presentation/workshop

Further workshops may be requested by RTSA but will be subject to negotiation

10.2 A Program Manager/Coordinator will be appointed by the RTSA to coordinate the delivery of the PDAP workshops within the RTSA. The duties of the Program Manager/Coordinator will include:

- 10.2.1 Acting as a single point of contact with Engineers Australia.
- 10.2.2 Manage the allocation of mentors to graduate participants.
- 10.2.3 Maintenance of records of participants' progress in cooperation with Engineers Australia.
- 10.2.4 Encouraging participants to submit Career Episode Reports (CERs) for assessment.

10.3 As part of this agreement workshops and seminars are only available in Sydney, Melbourne, Canberra, Brisbane, Adelaide and Perth.

## **11. RTSA Corporate members**

RTSA Corporate members with up to 5 participants can join the RTSA PDAP. Corporate members with 5 or more participants should sign a separate Professional Development Program (PDP) agreement with Engineers Australia to ensure independent PDP monitoring, invoicing and corporate support.

The corporate members will provide mentors for their nominated participants and will be entitled to send participants to the RTSA PDAP workshops.

## 12. PROGRAM FEES

The following fees apply to participation in the RTSA PDAP and subsequent application for Chartered status and/or listing on NPER or NETR. The fees below are non refundable and are in addition to the annual Engineers Australia membership fee applicable to all Engineers Australia members.

### 12.1 PDAP Participant Annual Fee

Engineers Australia Members	\$110	Engineers Australia Non Members*	\$330
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\* Non-members joining the PDAP are required to provide a certified copy of engineering qualifications to confirm they meet the eligibility requirements as outlined at Appendix G.

### 12.2 Application Fee for Chartered Status

The current application fee for Chartered status for a PDAP participant is \$440. As this may vary from time to time as decided by Engineers Australia, it is advisable for Organisations to confirm current fees with the local Division or Assessor.

### 12.3 Chartered Application Fee Discount

A \$55 rebate will be offered for each year that a participant submits a CER for assessment. The rebate is offered for a maximum of three years to a total of \$165 (inc GST) and is applied as a discount against the final Chartered application fee.

### 12.4 NPER and NETR Application Fee

If a candidate applies for Chartered status at the same time as applying for registration on NPER or NETR, the NPER/NETR administration and assessment fees are not normally charged. However, a current NPER/NETR annual registration fee of \$77 applies. As this may vary from time to time as decided by Engineers Australia, it is advisable for Organisations to confirm current fees with the local Division or Assessor.

Non members of Engineers Australia may apply for registration on NPER or NETR only. The NPER/NETR fee schedule for candidates who are not applying for Chartered status is available on request.

All of the above fees include GST.

### 12.5 Payment of Fees

- 12.5.1 PDAP Participant annual fees are payable **in advance** of commencement in the PDAP and are then payable again in following years on the **anniversary date** of the participant joining the program. This item will be invoiced to the individual participant.
- 12.5.2. Application fees for Chartered status and/or registration on NPER or NETR, are payable on application. This item will be invoiced to the individual participant.
- 12.5.3 For Engineers Australia members, membership fees are payable by 30 June of each year. This item will be invoiced to the individual participants.

### 13. SUMMARY OF OBLIGATIONS OF THE VARIOUS PARTIES

#### 13.1 RTSA will:

- Assistance to identify mentors for graduate participants.
- In conjunction with Engineers Australia, brief and support mentors and supervisors on the objectives of the program.
- Encourage participants to report on their career episodes (see below).
- Appoint a senior person as Program Manager/Coordinator.

#### 13.2 PDAP participants will:

At intervals, compile Career Episode Reports recounting a particular career episode and setting out the competencies they claim to have acquired and demonstrated, in accordance with the guidelines set out in the Chartered Handbook. CERs are submitted through their supervisor and mentor for Engineers Australia assessment and feedback. When the full range of competencies has been demonstrated, participants will consolidate their CERs into a comprehensive Engineering Practice Report to be submitted as their application for Engineers Australia Chartered status.

#### 13.3 Engineers Australia will:

- Provide advice on the establishment of the program.
- Agree on a date for the agreement to be signed by both organisations.
- Conduct presentations and workshops for participants, senior engineers, supervisors and mentors.
- Assess Career Episode Reports of PDAP participants, credit participants with competencies satisfactorily demonstrated and provide feedback and counselling, including suggestions for strengthening areas of weakness.
- Maintain contact with the program and ensure its continued effective functioning.
- Provide a PDAP on-line facility for the submission and recording of competency elements to the participating members.
- Conduct Professional Interviews for eligible participants.

**Approved on behalf of  
RAILWAY TECHNICAL SOCIETY  
OF AUSTRALASIA**

**Approved on behalf of  
ENGINEERS AUSTRALIA**

.....  
**Ravi Ravitharan  
Executive Chairman**

**Date 19 September 2007**

**APPENDIX A  
PDAP APPLICATION FORM FOR ENGINEERS AUSTRALIA MEMBERS**



I am enrolling in the **RTSA Professional Development Assessment Program** as a as a member of Engineers Australia (\$110 annual fee)

**Membership Number** \_\_\_\_\_

**1. Personal and Contact Details**

Title \_\_\_\_\_ Gender: Female  Male  Date of Birth: D \_\_\_\_\_ M \_\_\_\_\_ Y \_\_\_\_\_

Family Name \_\_\_\_\_

Given Names \_\_\_\_\_

**Business Address** \_\_\_\_\_

\_\_\_\_\_ State/Territory \_\_\_\_\_ Postcode \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ Fax (\_\_\_\_) \_\_\_\_\_ Mobile \_\_\_\_\_

E-Mail \_\_\_\_\_

**Private Address** \_\_\_\_\_

\_\_\_\_\_ State/Territory \_\_\_\_\_ Postcode \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ Fax (\_\_\_\_) \_\_\_\_\_ Mobile \_\_\_\_\_

E-Mail \_\_\_\_\_

Preferred Address for Correspondence [please tick] Business  Private

**2. Educational Information**

University/College/Institute: \_\_\_\_\_

Title/s of qualification/s awarded: \_\_\_\_\_

Branch of engineering specialisation: \_\_\_\_\_

Date when you became eligible for the award: \_\_\_\_\_

**Certified copy of engineering qualifications must be attached to this application form.**

**3. Applicant's Declarations**

*As a participant in the program I acknowledge that Engineers Australia may from time to time provide reports of my progress in the PDAP to my employer. The information provided will be in the same form provided to me i.e. Career Episode Report endorsements and feedback and progress reports on the attainment of competency elements as detailed in the Engineers Australia Chartered handbook.*

*I agree to be bound by the provisions of the Royal Charter and Bye-Laws of Engineers Australia and by the Engineers Australia code of Ethics.*

**DISCLOSURE STATEMENT** (please cross out as appropriate): *I note that my mailing address details will be passed on to Engineers Australia's wholly-owned subsidiaries Engineers Media Pty Ltd and Engineering Education Australia Pty Ltd (EEA). I **CONSENT/DO NOT CONSENT** to the disclosure of my mailing address details to other third parties. (For more details on Engineers Australia's Privacy Policy refer to our website at [www.engineersaustralia.org.au](http://www.engineersaustralia.org.au))*

\_\_\_\_\_  
Signature

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Date

#### 4. Payment Details

Program Fees <i>as at March 2007</i>	Engineers Australia Members
<b>PDAP Participant Entry Fee</b> (payable on commencement of the program)	\$110
<b>PDAP Participant Annual Fee*</b> (payable on anniversary date of joining the program)	\$110
<b>PDAP Participant Chartered Assessment Full Fee</b> (payable on application for Chartered status)	\$440
<b>PDAP Participant Chartered Assessment Discounted Fee*</b> (payable on application for Chartered status)	\$275

\* A \$55 rebate will be offered to each participant for each year that they submit a CER for assessment. The rebate is offered for a maximum of three years to a total of \$165 (inc GST) and is applied as a discount against the final Chartered assessment fee.

#### METHOD OF PAYMENT *(Please tick appropriate box)*

- Money Order or Cheque drawn in \$A on an Australian bank and payable to Engineers Australia
- Credit Card – see below

#### CREDIT CARD DETAILS

*Please charge my Credit Card (tick one)*

- Visa     Bankcard     MasterCard     Diners     American Express

Card No:

Expiry:...../...../.....      Amount: \$.....

Name on Card: .....

Signature:.....      Date:.....

Please mail to: PDAP Coordinator, Engineers Australia, 11 National Circuit, BARTON ACT 2600  
or fax to (02) 6273 2354

# APPENDIX B APPLICATION FORM FOR NON-MEMBERS



ENGINEERS  
AUSTRALIA

I am enrolling in the **RTSA Professional Development Assessment Program** as a non-member of Engineers Australia (\$330 fee)

## 1. Personal and Contact Details

Title \_\_\_\_\_ Gender: Female  Male  Date of Birth: D \_\_\_\_\_ M \_\_\_\_\_ Y \_\_\_\_\_

Family Name \_\_\_\_\_

Given Names \_\_\_\_\_

Business Address \_\_\_\_\_

\_\_\_\_\_ State/Territory \_\_\_\_\_ Postcode \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ Fax (\_\_\_\_) \_\_\_\_\_ Mobile \_\_\_\_\_

E-Mail \_\_\_\_\_

Private Address \_\_\_\_\_

\_\_\_\_\_ State/Territory \_\_\_\_\_ Postcode \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ Fax (\_\_\_\_) \_\_\_\_\_ Mobile \_\_\_\_\_

E-Mail \_\_\_\_\_

Preferred Address for Correspondence [please tick] Business  Private

## 2. Educational Information

University/College/Institute: \_\_\_\_\_

Title/s of qualification/s awarded: \_\_\_\_\_

Branch of engineering specialisation: \_\_\_\_\_

Date when you became eligible for the award: \_\_\_\_\_

**Certified copy of engineering qualifications must be attached to this application form.**

The above information is required to enable Engineers Australia to advise you of the appropriate process we will need to undertake to determine your Occupational Category i.e. Engineering Officer, Engineering Technologist or Professional Engineer. Engineers Australia may require additional information to complete this Occupational Category Assessment (Stage 1 Assessment).

## 3. Applicant's Declarations

*As a participant in the program I acknowledge that Engineers Australia may from time to time provide reports of my progress in the PDAP to my employer. The information provided will be in the same form provided to me i.e. Career Episode Report endorsements and feedback and progress reports on the attainment of competency elements as detailed in the Engineers Australia Chartered handbook.*

*I agree to be bound by the provisions of the Royal Charter and Bye-Laws of Engineers Australia and by the Engineers Australia code of Ethics.*

**DISCLOSURE STATEMENT** (please cross out as appropriate): *I note that my mailing address details will be passed on to Engineers Australia's wholly-owned subsidiaries Engineers Media Pty Ltd and Engineering Education Australia Pty Ltd (EEA). I **CONSENT/DO NOT CONSENT** to the disclosure of my mailing address details to other third parties. (For more details on Engineers Australia's Privacy Policy refer to our website at [www.engineersaustralia.org.au](http://www.engineersaustralia.org.au))*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

#### 4. Payment Details

Program Fees <i>as at March 2007</i>	Non Engineers Australia Members
<b>PDAP Participant Entry Fee</b> (payable on commencement of the program)	\$330
<b>PDAP Participant Annual Fee*</b> (payable on anniversary date of joining the program)	\$330
<b>PDAP Participant Chartered Assessment Full Fee</b> (payable on application for Chartered status)	\$440
<b>PDAP Participant Chartered Assessment Discounted Fee*</b> (payable on application for Chartered status)	\$275

\* A \$55 rebate will be offered to each participant for each year that they submit a CER for assessment. The rebate is offered for a maximum of three years to a total of \$165 (inc GST) and is applied as a discount against the final Chartered assessment fee.

#### METHOD OF PAYMENT *(Please tick appropriate box)*

- Money Order or Cheque drawn in \$A on an Australian bank and payable to Engineers Australia
- Credit Card – see below

#### CREDIT CARD DETAILS

*Please charge my Credit Card (tick one)*

- Visa     Bankcard     MasterCard     Diners     American Express

Card No:

Expiry:...../...../.....      Amount: \$.....

Name on Card: .....

Signature:.....      Date:.....

Please mail to: PDP Coordinator, Engineers Australia, 11 National Circuit, BARTON ACT 2600  
or fax to (02) 6273 2354

## APPENDIX C: COMPETENCIES REQUIRED FOR CHARTERED STATUS

For full details of the competencies, please refer to the Handbook for Applicants for Chartered Status, available from the local Engineers Australia office or at [www.engineersaustralia.org.au](http://www.engineersaustralia.org.au).

When applying for Chartered Status and registration on the National Professional Engineers Register/National Engineering Technologists Register applicants need to address the following three Compulsory Units of Competency (UNIT C1, C2, C3). **Note that all seventeen [17] Elements within the Units must be addressed.**

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### UNIT C1      ENGINEERING PRACTICE

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#### ELEMENTS:

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C1.1	Presents and Develops a Professional Image
C1.2	Pursues Continuing Professional Development
C1.3	Integrates Engineering with other Professional Input
C1.4	Develops Engineering Solutions
C1.5	Identifies constraints on Potential Engineering Solutions

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### UNIT C2      ENGINEERING PLANNING AND DESIGN

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#### ELEMENTS:

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C2.1	Interprets and Scopes Design Requirements
C2.2	Prepares Concept Proposal and seeks advice on latest Technology
C2.3	Implements Planning and Design Process
C2.4	Reviews the Design to Achieve Acceptance
C2.5	Prepares and Maintains Documentation during the Design Process
C2.6	Validates Design

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### UNIT C3      SELF MANAGEMENT IN THE ENGINEERING WORKPLACE

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#### ELEMENTS:

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C3.1	Manages Self
C3.2	Works Effectively with people
C3.3	Facilitates and capitalises on change and innovation
C3.4	Plans and manages work priorities and resources
C3.5	Maintains customer focus and relationships with clients/stakeholders/suppliers/regulators
C3.6	Manages Information

#### Plus

Applicants need to address two of the following ten Elective Units and the specified number of Elements stipulated within the Units. Note that E1A and E1B are mutually exclusive, as are E4A and E4B.

#### Elective Units and their respective Elements

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### UNIT E1A      ENGINEERING BUSINESS MANAGEMENT

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#### ELEMENTS: AT LEAST FIVE ELEMENTS MUST BE ADDRESSED FROM THE FOLLOWING:

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E1A.1	Contributes to Engineering Business Strategies
E1A.2	Develops Client Relationships
E1A.3	Manages the Implementation of engineering plans within the business
E1A.4	Manages Resources
E1A.5	Manages People
E1A.6	Manages Suppliers
E1A.7	Manages Business Information
E1A.8	Monitors Engineering Business Performance

OR

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**UNIT E1B      ENGINEERING PROJECT MANAGEMENT**

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ELEMENTS: AT LEAST FIVE ELEMENTS MUST BE ADDRESSED FROM THE FOLLOWING:

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E1B.1	Develops Project Integration
E1B.2	Scopes the Project
E1B.3	Manages People
E1B.4	Manages the Physical Resources within the Project
E1B.5	Manages quality, safety, environment and risk
E1B.6	Manages cost and procurement
E1B.7	Manages time and progress
E1B.8	Finalises the Project

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**UNIT E2      ENGINEERING OPERATIONS**

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ELEMENTS: ELEMENT E2.2 AND AT LEAST FOUR OTHER ELEMENTS MUST BE ADDRESSED FROM THE FOLLOWING:

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E2.1	Plans Operations and Systems
E2.2	Manages the Process within the Operation/System
E2.3	Manages the Assets within the Operation/System
E2.4	Manages People
E2.5	Measures and Documents Engineering Operation/System
E2.6	Management of Environmental Performances

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**UNIT E3      MATERIALS/COMPONENTS/SYSTEMS**

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ELEMENTS: ELEMENTS E3.1, E3.2 AND AT LEAST TWO OTHER ELEMENTS MUST BE ADDRESSED FROM THE FOLLOWING:

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E3.1	Determines engineering requirements
E3.2	Designs/Develops Materials/Components/Systems
E3.3	Defines Processes to prepare Materials/Components/Systems for use in the Project/Operation
E3.4	Manages the Uses of Materials/Components/Systems within the Project/Operation
E3.5	Manages the Recovery Reuse and Disposal of Materials/Components/Systems

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**UNIT E4A      ENVIRONMENTAL MANAGEMENT**

**Please note: Applicants for NPER Environmental (general) MUST address this Unit and Must also respond to the *Guideline for Environmental Engineering*.**

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ELEMENTS: ELEMENTS E4A.1, E4A.2, E4A.3 AND AT LEAST ONE OTHER ELEMENT MUST BE ADDRESSED FROM THE FOLLOWING:

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E4A.1	Determines the existing Environmental Condition
E4A.2	Establishes Stakeholders' Expectations
E4A.3	Reviews Existing Environmental Conditions against Stakeholders' Expectations
E4A.4	Develops and Ranks Strategies to Achieve Sustainable Development
E4A.5	Implements, Monitors and Evaluates Strategies

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**OR**

**UNIT E4B      INVESTIGATION AND REPORTING**

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ELEMENTS: ALL ELEMENTS MUST BE ADDRESSED FROM THE FOLLOWING:

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E4B.1	Responds to/Identifies Problems
E4B.2	Plans the Investigation
E4B.3	Carries out the Investigation
E4B.4	Draws Conclusions and makes Recommendations

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**UNIT E5      RESEARCH and DEVELOPMENT and COMMERCIALISATION**

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ELEMENTS: ELEMENTS E5.1, E5.2, E5.3, E5.4 AND AT LEAST ONE OTHER ELEMENT MUST BE ADDRESSED FROM THE FOLLOWING:

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E5.1	Identifies Opportunities for New or Improved Processes and/or Products
E5.2	Identifies the Resources required for the R & D
E5.3	Initiates Concept Development

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- E5.4 Gains Commitment to the R & D Proposal
- E5.5 Ensures Research is undertaken
- E5.6 Collaborates in the Commercialisation of Research Outcomes

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**UNIT E6      1.1.1      SOURCE AND ESTIMATE MATERIALS**

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ELEMENTS: ALL ELEMENTS MUST BE ADDRESSED

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- E6.1 Defines requirements and sources for materials
- E6.2 Estimates material
- E6.3 Procures material/resources
- E6.4 Prepares materials/components/systems for use in the project/operation

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**UNIT E7      CHANGE and TECHNICAL DEVELOPMENT**

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ELEMENTS: ALL ELEMENTS MUST BE ADDRESSED

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- E7.1 Participates in planning the introduction of technical change
- E7.2 Develops technically creative and flexible approaches and solutions
- E7.3 Manages emerging technical challenges and opportunities

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**UNIT E8      TECHNICAL SALES AND PROMOTION**

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ELEMENTS: ALL ELEMENTS MUST BE ADDRESSED

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- E8.1 Identifies sales opportunities
- E8.2 Applies product knowledge to client requirements
- E8.3 Promotes technical capability of the product/system
- E8.4 Seeks client's feed back

## **APPENDIX D: ENGINEERS AUSTRALIA CODE OF ETHICS**

All members of Engineers Australia, in the practice of the discipline of engineering, are committed and obliged to apply and uphold the cardinal principles of the Code of Ethics, which are:

- to respect the inherent dignity of the individual;
- to act on the basis of a well informed conscience;
- to act in the interest of the community.

*These principles are encapsulated within and established by the Tenets of the Code of Ethics.*

The Tenets of the Code of Ethics are:

1. Members shall place their responsibility for the welfare, health and safety of the community before their responsibility to sectional or private interests or to other members;
2. Members shall act with honour, integrity and dignity in order to merit the trust of the community and the profession;
3. Members shall act only in areas of their competence and in a careful and diligent manner;
4. Members shall act with honesty, good faith and equity and without discrimination towards all in the community;
5. Members shall apply their skill and knowledge in the interest of their employer or client for whom they shall act with integrity without compromising any other obligation of these Tenets;
6. Members shall, where relevant, take reasonable steps to inform themselves, their clients and employers, of the social, environmental, economic and other possible consequences which may arise from their actions;
7. Members shall express opinions, make statements or give evidence with fairness and honesty and only on the basis of adequate knowledge;
8. Members shall continue to develop relevant knowledge, skill and expertise throughout their careers and shall actively assist and encourage those with whom they are associated, to do likewise; and
9. Members shall not assist in or induce a breach of these Tenets and shall support those who seek to uphold them if called upon or in a position to do so.

## APPENDIX E: EXAMPLE OF CAREER EPISODE REPORT

### Professional Engineer Occupational Category

Career Episode Title: Switch Board Upgrade Acme Widgets	Competency Element
Dates of Career Episode: 25.02.98 - 3.10.98	
<p>The project consisted of upgrading the main switchboard for the Acme Widget Company. It was my responsibility to determine the total power requirements for the new plant, calculate the power consumption of the existing plant and determine the maximum available power supplied through an existing board and the 11kV/415V transformer.</p> <p>After analysing the available information, I deduced that at least three alternatives for powering the new plant existed. A separate 11kV feeder could be brought onto the site to energise a new transformer and main board, the existing main board could be replaced with a new board or the existing main board could be upgraded. The last two options required the feeder cables to the main board to be upgraded. Technically, all three options were acceptable, although the first two allowed for a greater flexibility for expansion in future years.</p> <p>I prepared estimates for each of the options. The client indicated that minimising the capital cost of the plant was of a higher priority than enhanced flexibility for expansion. On this basis, I issued a written recommendation indicating that, although other technical solutions existed, the upgrading of the main board involved the lowest capital cost and still provided the new plant with sufficient power requirements. The client accepted this option.</p> <p>I selected and sized power cables using Powerpack software. I simulated the limits in current-carrying capacity and length of runs on the basis of voltage drop using this tool. I also performed simulation of the maximum number of cables that could be installed on a single cable ladder and in underground conduits.</p> <p>For the PLC system I applied a functional specification already in use by our Company. A subsection of this specification listed requirements of a Factory Acceptable Test (FAT) to be conducted at the configuration supplier's premises. I designed this test, the aim of which was to provide the consulting engineer with a reasonable confidence in the PLC software before it was installed and commissioned on-site. In a controlled environment and using the same PLC system hardware configuration to be installed on-site, various input signals were generated through a test rig to simulate field instruments. PLC outputs were recorded to verify the intended operation of the PLC program, as specified in the functional specification.</p> <p>During the test, a number of problems surfaced with the configuration. The client was present at the test and, after consultation with him, I gave recommendations and directions to the PLC programmer to overcome perceived problems and improve operation of the plant.</p>	<p>E3.1: Determines engineering requirements</p> <p>C2.3: Implements planning and design process</p> <p>C2.4: Reviews the design to achieve acceptance</p>
Signature of Candidate:	
<p>Candidate's Verifier/s     <b>Name:</b></p> <p>Engineering Qualifications: (or Engineers Australia Membership Number)</p> <p>I verify that the above narrative is a true account of the candidates own work</p> <p><b>Signature:</b></p>	

## APPENDIX E (continued) : EXAMPLE OF CAREER EPISODE REPORT

### Engineering Technologist Occupational Category

Career Episode Title: Gas Pipeline Instrumentation (Acme Engineering)	Competency Element Claimed
Dates of Career Episode: 1/2/99 – 21/4/99	
<p>This project consisted of the design of a 40km gas pipeline for the Alpha Mining Company. I was responsible for managing the design of the electrical instrumentation component of the project and was a member of the multidisciplinary project team for the project design. In this role I reported to the Project Manager who was a Chartered Professional Engineer.</p> <p>The first task delegated to me was analysis of the contract documents and the appropriate Australian Standards to develop an initial design for the instrumentation. I reviewed the client's requirements and interpreted them onto a series of functional specifications which met the requirements. During this phase my team produced a draft set of Piping and Instrument Diagrams. I was encouraged by the Project Manager to come up with innovative ideas for cost reduction in the design, but safety and reliability were to be paramount.</p> <p>I was responsible for designing the operating control and shutdown philosophy of the pipeline and integration with the overall power station PLC system. I discussed my ideas with other members of the project team both informally, to gain preliminary support, and at formal review meetings. In particular, the likelihood of frequent flooding along the route of the pipeline was of some concern and required innovative design approaches. Operational health and safety issues were important particularly where the pipeline route intersected with other utilities. I worked closely with the legal members of the team to determine the impact of such requirements on the design.</p> <p>I researched similar installations to determine the reliability of different types of instrumentation and to determine the simplest, but most reliable system. Because the installation was to be in a remote location there was a need to reduce the requirement for complex integration and commissioning and to maximise reliability during operation. I also contacted potential equipment suppliers (ie for pressure and temperature measurement, flow measurement, control valves, PLCs, etc), to determine price, availability and backup support for their equipment once installed. Although equipment selection was not one of my project responsibilities, I did provide recommendations regarding the most suitable equipment alternatives for this design based on the previously stated requirements of the project.</p> <p>On completion, I presented my initial design and recommendations to the Project Manager and client for review and after gaining acceptance, proceeded with the detailed engineering design.</p>	<p>C2.1: Interprets and scopes design requirements</p> <p>C1.3: Integrates engineering with other professional input</p> <p>C2.2: Prepares concept proposal and seeks advice on latest technology</p>
Signature of Candidate:	
<p>Candidate's Verifier/s      <b>Name:</b></p> <p>Engineering Qualifications: (or Engineers Australia Membership Number)</p> <p>I verify that the above narrative is a true account of the candidates own work</p> <p><b>Signature:</b></p>	

## APPENDIX E (continued): EXAMPLE OF CAREER EPISODE REPORT

### Engineering Officer Occupational Category

Career Episode Title: Design and Installation of Reagent Dosing System (Beta Chemicals)	Competency Element Claimed
Dates of Career Episode: 21/06/99	
<p>In my role as Service Engineer with Beta Chemicals I am often required to select, procure and install reagent dosing equipment as a component of the supply contract for our range of chemical products. We have a set of standard designs for this equipment, but I modify the designs as required to adapt them to the particular application. In this role I report to the Technical Manager who is a Chartered Engineering Technologist registered on the National Engineering Technologists Register.</p> <p>A typical project was the selection and installation of a flocculant dosing system for the tailings thickener at the Good Luck Gold Mine. I attended several meetings with the client for specification of the dosing system requirements and from this I prepared a functional specification which was subsequently reviewed and agreed with the client. Based on the functional specification I selected the most appropriate equipment to provide the dosage rates required.</p> <p>Because operators had reported some problems on this particular system design, I had telephone discussions with the client and made follow-up visits to two operations to determine first hand the causes of these problems. I discussed the problems with different valve suppliers and proposed a solution by specifying an alternative valve type. This was subsequently approved by the Technical Manager before being incorporated into the standard design for the system.</p> <p>I updated the drawings for the design changes and also the equipment list and had these signed off by the Technical Manager. I also revised the operating and maintenance manuals. I then scheduled the assembly and ordered the equipment for the Good Luck Gold Mine system.</p> <p>When the system had been assembled in the workshop I supervised the testing in the test rig. Normally systems are only tested when there is a new design, but as the valve type had been changed I decided that this system should also be tested before delivery to the client. The system tested satisfactorily without requiring further modifications. I subsequently arranged, with the approval of the Technical Manager, for replacement of the valves in the other clients' plants at our cost.</p> <p>The system was installed in the client's process plant by outside contract labour, which I supervised. I also supervised the commissioning of the system, which was trouble free, and I conducted two training sessions for the plant operators and maintenance crew.</p>	<p>C2.1: Interprets and scopes design requirements</p> <p>C2.2: Prepares concept proposal and seeks advice on latest technology</p> <p>C2.6: Reviews design outcomes in operation</p>
Signature of Candidate:	
<p>Candidate's Verifier/s      <b>Name:</b></p> <p>Engineering Qualifications: (or Engineers Australia Membership Number)</p> <p>I verify that the above narrative is a true account of the candidates own work</p> <p><b>Signature:</b></p>	

## **APPENDIX F: CONTACTS FOR COORDINATING THE RAILWAY TECHNICAL SOCIETY OF TECHNOLOGY PDAP**

### **ENGINEERS AUSTRALIA CONTACT**

NATIONAL ACCREDITED ASSESSOR FOR RTSA

Name: Mr Lyal Douglas  
Title: National Assessor  
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21 Bedford St  
North Melbourne VIC 3051  
Phone: 03 9321 1710  
Fax: 03 9326 6515  
Email: ldouglas@engineersaustralia.org.au

### **RTSA CONTACT**

RTSA PDAP COORDINATOR

Name: Mr Ravi Ravitharan  
Title: Executive Chairman - RTSA  
Address: Business Manager  
Institute of Railway Technology  
PO Box 31  
Monash University 3800  
Phone: 03 9905 1986  
Fax: 03 9905 1972  
Mobile: 0409 556 811  
Email: ravi.ravitharan@eng.monash.edu.au

## APPENDIX G: CRITERIA FOR GRADUATE MEMBERSHIP OF ENGINEERS AUSTRALIA

Occupational Category			Evidence needed in support of application
<b>Engineering Officer: GradOIEAust</b>	<b>Engineering Technologist: GradTIEAust</b>	<b>Professional Engineer: GradIEAust</b>	<ul style="list-style-type: none"> <li>• Certified copy of degree/award testamur, or</li> <li>• Certified evidence of eligibility to receive degree/award</li> <li>• For overseas qualifications, Engineers Australia letter of assessment, certifying equivalence with an Australian qualification.</li> </ul>
Completion of an Engineers Australia-recognised two-year engineering associate qualification in Australia, or equivalent.	Completion of an Engineers Australia-accredited or recognised three-year engineering-technology qualification in Australia, or equivalent.	Completion of an Engineers Australia-accredited four-year professional engineering qualification in Australia, or equivalent.	

**Note:** Membership Application Forms are available from Engineers Australia Division Offices or at [www.engineersaustralia.org.au](http://www.engineersaustralia.org.au)

**APPENDIX H: ENGINEERS AUSTRALIA'S NATIONAL ACCREDITED ASSESSORS**  
(as of October 2006)

**NEW SOUTH WALES**

**Mr Roland de Broglio FIEAust CPEng**  
**National Senior Assessor – Team Leader**  
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**OR**

**Ms Sheila Anderson MIEAust CPEng**  
**National Assessor**  
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**CANBERRA**

**Mr Doug Tompsitt MIEAust CPEng**  
**National Assessor**  
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**VICTORIA/TASMANIA**

**Mr Lyal Douglas MIEAust CPEng**  
**National Assessor**  
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**OR**

**Mr Robert Law AM FIEAust CPEng**  
**National Assessor**  
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**QUEENSLAND**

**Mr John Reid FIEAust CPEng**  
**National Assessor**  
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**SOUTH AUSTRALIA**

**Mr Ewan Hazeldine FIEAust CPEng**  
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**WESTERN AUSTRALIA**

**Mr John McLoughlin FIEAust CPEng**  
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**MALAYSIA/SINGAPORE**

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## **APPENDIX I: ENGINEERS AUSTRALIA'S INDUSTRY MANAGERS** (as of October 2006)

### **NEW SOUTH WALES**

#### **ACT**

#### **TASMANIA**

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