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Requirement for Election
To the Class of Members
From the University of the Technology

Approved by the Council in December 1990
Amended by Council in August 1994
Revised and approved in December 2001

INSTITUTION OF ENGINEERS PNG INC

Graduate Professional Development Programme

FORWARD

The process of admission to corporate member status of the Papua New Guinea Institution of Engineers requires the following:

The completion of a formal course of a course of study extending over a period of not less than four years of full time study, or its part time equivalent at tertiary level.

The completion over a minimum of four years of the Institution's Graduate Professional Development Program.

The satisfactory completion of the Professional Assessment

INSTITUTION OF ENGINEERS OF PAPUA NEW GUINEA

PDP REQUIREMENTS FOR CORPORATE MEMBERSHIP

SPECIALIST TRAINING REQUIREMENTS

1. The requirements set out below refer to part-time, post-graduate programmes normally attended to meet the PDP requirements. Candidates, employers or other interested persons may obtain additional information on POINTS accredited to specific courses by submitting the syllabi, duration of the course, method of instruction and examination together with K50.00 assessment fees for each course to be assessed. A programme may consist of one or more courses.

2. The minimum requirement is for the graduate to obtain a pass in a Postgraduate ate Certificate course or equivalent relevant to their specialist field of profess sional practice. (E.g.: A Graduate undergoing PDP with Water Board would attend a part-time postgraduate certificate course in public health engineering).

3. For further details, refer to the Continuing Progress Report.

Prepare & Check Calculations.

Develop a pit design (underground or open pit).

Prepare short-term mine plans for implementation by mine operations.

Prepare long-term mine plans for resource evaluation.

(i) Prepare & Check General Arrangement & Working Drawings. (j) Take off Quantities & Prepare Bills of Quantities.

(k) Prepare Cost Estimates.

(l) Programming of Design Work.

(m) Research.

4. CONSTRUCTION, OPERATION & MAINTENANCE (minimum fifteen months total *in at least six* of the following:)

Methods of Construction, including Design of Temporary Works.

Setting out of Works.

Equipment scheduling and allocation (e.g.: truck dispatch).

Foreman-level supervision in 3 of: loading, hauling, drill and blast; crushing/conveying.

Field experience in 2 of: survey, grade control, geotechnical monitoring.

Implementation and/or Supervision of Construction.

Liaison with other Organization, Clients & Public.

Site Safety.

Site Records & Reports.

Maintenance Programming & Implementation.

5. ADMINISTRATION & MANAGEMENT (minimum six months total in one or more of the following:)

Professional Ethics & Responsibility.

Contract Preparation including Conditions, Specifications and Drawings.

Tendering Procedures and Tender Evaluation

Cost Estimating and Cost Control.

Preparation of Manuals.

Contract Administration.

Project Management.

Administration.

Resource Planning.

Financial Management.

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INSTITUTION OF ENGINEERS OF PAPUA NEW GUINEA

PDP REQUIREMENTS FOR CORPORATE MEMBERSHIP

PDP MODEL GUIDELINES FOR MINING ENGINEERS

NOTE: The program set out below is for guidance only but substantial departure should not be made without prior consultation with the *Institution*. Employers should endeavor to provide training for their trainees in as many areas as possible, as is appropriate to the sector of employment.

1. INTRODUCTION & ORIENTATION (at least one week in total)
   a. Size, History, Subsidiaries & Branches.
   b. Function, Products, Markets & Competitors.
   c. Management Structure & Functions.
   d. Communication Systems.
   e. Location & Layout of Facilities.
   f. Safety, Health & Welfare.
   g. Training Programs, Prospects & Career Development.

2. BASIC TECHNICAL TRAINING (minimum six months total)
   a. Familiarization with Relevant Codes of Practice, Standards, Regulations, Statutory Requirements, Law & Ordinances, in particular the Mine Safety Act.
   b. Familiarization with orebody parameters including geology, mineralogy, rock types, hardness etc.
   c. Familiarization underground or surface mining equipment.
   d. Familiarity with drill and blast procedures, especially safety aspects;
   e. Understanding of geotechnical issues in mining;
   f. Familiarity with at least one ore processing technology;
   g. Appreciation of Computer Techniques & their Limitations.
   h. Understanding of Staff Relationship, Motivation & Discipline.
   i. Report Writing & Presentation.
   j. Financial Planning, Budgeting & Control.

3. DESIGN (minimum of twelve months total in at least five of the following:)
   a. Site Inspection & Survey.
   b. Site Investigation, Techniques & Interpretation
   c. Feasibility Studies, including Economic Considerations.
   d. Assessment of earthworks construction methods, including safety considerations.

(g) Familiarization with Basic Computer Techniques, including Data Collection & Statistical Analysis.

3. DESIGN (minimum twelve months total in at least two of the following:

a. Research & Development

b. Product Design.

c. Plant Design.

d. Tooling Design.

4. CONSTRUCTION, OPERATION & MAINTENANCE (minimum fifteen months total in at least four of the following:)

a. Manufacture of Plant.

b. Construction of Plant.

c. Installation of Plant.

d. Inspection, Testing & Commissioning of Plant.

e. Preparation of Standards Manuals for Operations Industrial Safety & Environmental Control.

f. Preparation of Production Schedules.

g. Preparation of Maintenance Schedules.

5. ADMINISTRATION & MANAGEMENT (minimum nine months total in at least six of the following :)

a. Interpretation & Use of Engineering Drawings.

b. Tendering Procedures, Tenders Appraisal & Contract Administration.

c. Cost Estimation of Labor, Materials, Installation & Transport.

d. Scheduling & Management of Projects.

e. Production Planning.

f. Data Processing.

g. Dispatch & Transportation.

h. Purchasing & Sales.

i. Finance.

j. Personnel & Training.

k. Facilities Planning.

l. Maintenance Planning.

m. Work Study, Job Evaluation & Rate Fixing.

1. DEFINITIONS

1.1 Professional Engineer

The following definition of Professional Engineering Work is given in the Professional Engineers (Registration) Act 1986.

a. requires the understanding of the scientific principles which form the basis of engineering disciplines, and the quantitative expression of these principles through analytical mathematics (where appropriate) and requires education in depth in a branch of engineering or in any other related discipline; or

(b) is essentially intellectual in nature, and varied involving competence in a branch of engineering with leadership, judgment, originality, and responsibility in the economical solution of engineering problems and then execution of engineering works; or

(c) includes the application of professional engineering knowledge and experience to activities such as design, planning, applied research and development, education and training, including the organization and management of these activities such as production and construction, installation, operation and maintenance of engineered facilities, systems, equipment and associated services; or

(d) includes all engineered facilities, systems, equipment and associated services within Papua New Guinea that are planned, designed, studied, organized, managed, developed, supervised, produced, constructed, installed, operated or maintained by persons within and outside Papua New Guinea".

1.2 Institution

The Papua New Guinea Institution of Engineers.

1.3 Board

The Board of the Institution.

1.4 Member

That Grade of membership of the *Institution* denoted as Corporate Member.

1.5 University

The Papua New Guinea University of Technology or other institutions approved by the *Board.*

1.6 Graduate

A Graduate with a Bachelor of Engineering Degree from the University who has not yet had sufficient experience to have been elected as a Member of the *Institution.*

1.7 Registered Engineer

A Professional Engineer who is registered under the provision of the Professional Engineers (Registration) Act 1986.

1.8 Employer

The Employer of a Graduate and therefore having some responsibility for the Graduate's Development Program.

1.9 Professional Development Program (PDP)

The program of experience and training that a Graduate is required to undergo prior to becoming eligible to be elected as a Member.

Professional Development Program Proposal (PDPP)

A proposed program of experience and training which a Graduate or an Employer submits to Board for its comments, advice and approval.

1.11 Model Guidelines for Professional Development Programs

Guidelines for PDP published by the Board which are intended for the use of Graduates and Employers.

1.12 Supervisor

A Registered Engineer of the Employer who is responsible for the professional development of the Graduate.

1.13 Log Book

A written record of the Graduate's PDP activities which is ratified by a Registered Engineer is periodically submitted by the Graduate to the Board for perusal.

1.14 Career Development Coordinator (CDC)

An employee of the Board appointed to receive the log books and coordinate the Professional Development Program.

1.15 Assessor

A senior Registered Engineer appointed by the Board to be the confidential assessor for a specified number of Graduates undergoing PDP. The primary requirement is that the assessor will specialize in the same area as that of the Graduates. He will normally communicate with his Graduates through the CDC.

Graduate trainees will be required to forward their progress reports to the CDC for forward transmission to the assessor.

INSTITUTION OF ENGINEERS OF PAPUA NEW GUINEA

PDP REQUIREMENTS FOR CORPORATE MEMBERSHIP

MODEL GUIDELINES FOR MECHANICAL ENGINEERS

NOTE: The program set out below is for guidance only but substantial departure should not be made without prior consultation with the *Institution*. Employers should endeavor to provide training to their trainees in as many areas as possible, as is appropriate to the sector of employment.

1. INTRODUCTION & ORIENTATION (minimum one week in total)

Company Size, History, Subsidiaries, Branches.

Products, Markets & Competitors.

Management Structure & Functions.

Communication Systems.

Location & Layout of Facilities .

Safety, Health & Welfare.

Training Programs, Prospects & Career Development

2. BASIC TECHNICAL TRAINING (minimum six months total in at least four of the following:)

a. Introduction to Office Procedures.

b. Familiarization with Relevant Codes of Practice, Standards, Regulations, Statutory Requirements, Laws & Ordinances.

c. Familiarization with & use of Hand/Power Tools, Machine Tools, Sheet Metal Working, Welding, Molding, Casting & Heat Treatment Equipment.

d. Knowledge of common engineering Materials, their Properties & Uses.

e. Familiarization with at least five of the following processes;

i) powder metallurgy;

ii) plastic processing;

iii) joining of material;

iv) heat treatment;

v) chemical surface treatment;

vi) enameling;

vii) shot and sand blasting;

viii) metal spraying.

(f) Familiarization with common Measuring Instruments, including Gauges.

5. ADMINISTRATION & MANAGEMENT (minimum nine months total in least two of the following:)

a. Professional Ethics & Responsibility.
b. Interpretation & Preparation of Engineering Contracts & Specifications.
c. Tendering Procedures, Tender Appraisal & Contract Administration.
d. Resource Planning, Allocation & Management.
e. Project Planning, Scheduling & Management.
f. Financial Management.
g. Material Procurement & Handling.
h. Product/Service Liability, Marketing & Sales.
i. Preparation of Reports, Manuals & Technical Documents.
j. Personnel Management & Administration.

1.16 Continuing Progress Report (CPR)

Written report to the CDC by the Assessor, including recommendations and progressive numeric mark, on the Graduate's progress towards the goal. The candidate will be informed of the contents of the CPR by the Career Development Coordinator. A CPR will be maintained by the CDC for each Graduate.

1.17 Continuing Professional Assessment Committee (CPAC)

A Committee of the Specialist Board of Qualification and Professional Development with members drawn from each major specialization.
At least 6 months prior to application for admission as a Member, each Graduate shall submit his original log book, duly completed, through the CDC to the Continuing Professional Assessment Committee. The Graduate will notify of his/ her intention to apply for corporate membership of the Institution subject to approval from the CPAC.
Within 4 months from receipt of the log book, the CPAC through the CDC shall inform the candidate of his/ her eligibility or otherwise to become a Member. A negative response from the CPAC shall include advice to the Graduate on additional requirements needed to satisfy the GDP requirements.

1.18 Professional Assessment

The process by which Board assesses whether or not a Graduate is eligible to be Elected as a Member as set out under Section 12.3.

1.19 Professional Assessment Interview

The interview that precedes Admission as a Member of the *Institution* is now compulsory.

1.20 Interviewers

Two senior Members of the *Institution* appointed by *Board*, who administer to the Graduate the Professional Assessment Interview.

1.21 Professional Essay

As part of the Professional Assessment, the Graduate is required to write an essay on a topic chosen by the Interviewers appropriate to the Graduate's experience.

2. EDUCATIONAL REQUIREMENTS

The Papua New Guinea education qualification that meets the requirements of the *Board* for the class of Member is the Bachelor of Engineering Degree from the University, or an equivalent qualification acceptable to the *Board*.

3. DEVELOPMENT OF A PROFESSIONAL ENGINEER

It is acknowledged that Graduates needs some years of post graduate *experience and training* prior to being able to effectively function as a Professional Engineer. The appropriate requirements of *Board* are contained in clauses 4-12 of this document.

4. PRINCIPLES OF PROFESSIONAL DEVELOPMENT

Practical experience, *postgraduate training and interest in the affairs of the profession* are essential elements in the development of a Professional Engineer. This covers a period of acquiring knowledge, skills and attitudes of a professional nature which can be learned only in an industrial environment, and are complementary to those acquired during a degree course. It is a period of developing the potential required during the studies and in further developing such crucial personal qualities as responsibility, initiative, creativity, industriousness, self-confidence, self-esteem etc. Above all, the principle aim is to develop judgment and critical abilities of the young engineers so that in later life they will be better able to undertake engineering projects with due regard to technical, economic, financial, environmental, social and other relevant factors. The aim is to produce engineers whose excellence is reflected in the quality of their work, and who can demonstrate that they are indeed a Professional Engineer as outlined in Section 1.1.

After a period of induction and basic training the Graduates are required to obtain a broad and sound knowledge of engineering practice relevant to the branch of engineering to which they aspire. This is to include familiarity with design, materials, tools, techniques and processes used in that branch and in related branches of engineering.

The Graduate should develop a flexible attitude so that they can meet the challenge of rapidly changing technology in their particular branch of engineering.

5. OBJECTIVES OF A PROFESSIONAL DEVELOPMENT PROGRAM

At the end of a program, the Graduate must be able demonstrate that they have a clear understanding of the:

3. DESIGN (at least twelve months total in at least five of the following:)
   a. Product or Service Specification.
   b. Feasibility Studies, Design Planning, Design Scheduling & Costing.
   c. Preparation of Schematic & Working Drawing, and familiarization with Drawing Office Practice.
   d. Modern Design Aids, Use of Computer & Computer Aided Design.
   e. Theoretical Considerations, Component & Device Specification, Tolerance, Reliability, Maintainability & Ergonomics.
   f. Product/Service Safety, Health & Environmental Considerations, Product/Service Standards & Regulations.
   g. Worst Case Design, Thermal Design & Mechanical Design.
   h. Development of Prototypes, Testing of Systems & Subsystems.
   i. Design Optimization, Computer Use in Design Analysis.
   j. Technical Literature/Product Survey.

4. CONSTRUCTION, OPERATION & MAINTENANCE (minimum fifteen months total in at least five of the following:)

   a. Construction & Installation Planning, Scheduling & Implementation.
   b. Construction & Installation Methods, Choice of Technologies & Equipment.
   c. Use of Field Tools, Equipment & Test Instruments.
   d. Testing & Commissioning.
   e. Operational Procedures & Operational Data Logging.
   f. Interpretation of Circuit Diagrams, Wiring Diagrams & Technical Drawings.
   g. Fault Analysis, Computer Diagnostic Systems & Automated System Tests.
   h. Corrective Maintenance Procedures & Personal Safety.
   i. Preventive Maintenance Scheduling.

INSTITUTION OF ENGINEERS OF PAPUA NEW GUINEA

PDP REQUIREMENTS FOR CORPORATE MEMBERSHIP

MODEL GUIDELINES FOR
ELECTRICAL & COMMUNICATION ENGINEERS

NOTE: The program set out below is for guidance only but substantial departure should not be made without prior consultation with the *Institution.* Employers should endeavor to provide training to their Graduates in as many areas as possible, as is appropriate to the sector of employment.

1. INTRODUCTION & ORIENTATION (at least one week in duration)

a. Size of Organization, History, Subsidiaries & Branches.
b. Products, Services, Markets & Competitors.
c. Management Structures & Functions.
d. Communication Systems.
e. Location & Layout of Facilities.
f. Safety, Health & Welfare.
g. Training Programs, Prospects & Career Development.

2. BASIC TECHNICAL TRAINING (at least six months)

a. Familiarization with National Codes of Practice & Regulations.
b. Knowledge of and Use of Hand/Power Machine Tools, and the Appropriate Corporate & Legislative Safety Requirements.
c. Knowledge of Wiring, Connecting, Fastening, Soldering, Welding & Brazing.
d. Choice of Materials Based on their Properties.
e. Handling of & Care of Integrated Circuit Systems.
f. Mechanical Aspects of Electrical Equipment & Systems.
g. Emergency Procedures, First Aid & Fire Fighting.

Hands on experience should be provided where possible, and this training may be provided in a specialized training school where appropriate and available.

5.1 importance of adhering to the *Board's* Code of Ethics and the application of *the* rules to their everyday work;

5.2 need to make appropriate provision in every engineering project to ensure safety and reliability;

5.3 responsibilities which they have to their Employers, to their colleagues, to other engineers and to the community at large;

5.4 importance of applying their theoretical knowledge in a relevant manner to the design, manufacture, construction, operation and maintenance of the particular products or services with which their employing organizations are concerned;

5.5 vital importance's of good employee/industrial relations;

5.6 detrimental effects of environmental pollution and the importance this has on the safety and health of the general public;

5.7 benefits of promoting good personal relations at all levels;

5.8 importance of effective communication and the need to discuss interrelated problems with members in other branches of engineering in order to achieve satisfactory solutions;

5.9 need to exercise sound judgment and to accept responsibility for decisions taken;

5.10 other aspects affecting industrial/commercial organizations, such as the constraints imposed due to;

5.10.1 financial, economic, commercial and statutory limitations;
5.10.2 limited availability of resources;
5.10.3 operational and maintenance requirements that may affect engineering decisions.

SCOPE OF A PROFESSIONAL DEVELOPMENT PROGRAM

It is essential that Graduates receive;

- *"hands on" engineering experience,*
- *attend specialist courses in their chosen field and*
- *actively participate in the affairs of the profession,*

in accordance with the guidelines below. These guidelines are applicable to all engineering disciplines. More detailed PDP Model Guidelines for each of the disciplines are appended in this document..

Graduates should have undergone the PDP training or be a mature candidate who has fulfilled the necessary requirements, in all three areas; (experience, training and participation) assessed in terms of equivalent PDP points. A pro-forma table to assess PDP points is given in Appendix One.

6.1 Engineering experience

Practical experience should be obtained in the following three areas:

6.1.1 Design: *Graduates must have been engaged in some aspect of design work for the period indicated in the model guidelines. Such work would be expected to include basic design concepts and may include research and investigation.*

6.1.2 Construction, Operation & Maintenance *Graduates must have been engaged in some aspects of construction, operational and maintenance work for the period indicated in the model guides. Such work would normally include aspects of;*

manufacture, construction, or installation;

inspection, testing, or commissioning and;

operation, maintenance, or repairs.

6.1.3 Administration & Management

Graduates must have been engaged in some aspects of administration and management for the period indicated in the model guide. Such work would be expected to cover aspects of;

- *Contract Preparation, including Conditions, Specifications or Drawings*
- *Tendering or Procurement Procedures, Appraisal of Tenders.*
- *Cost Estimating & Cost Control.*
- *Project Management.*
- *Preparation of Reports and/or Manuals.*
- *Contract Administration.*
- *Resource Planning.*

(d) Assessment of Construction Methods, including Safety Considerations.

(e) Prepare & Check Calculations.

(f) Develop Design in Conjunction with other Disciplines.

(g) Prepare & Check General Arrangement & Working Drawings.

(h) Prepare Specification & Contract Documents.

(i) Take off Quantities & Prepare Bills of Quantities.

(j) Prepare Cost Estimates.

(k) Programming of Design Work.

(l) Research.

4. CONSTRUCTION, OPERATION & MAINTENANCE (minimum fifteen months total *in at least ten* of the following:)

(a) Planning & Programming of Construction.

(b) Resource Planning Allocation & Control.

(c) Methods of Construction, including Design of Temporary Works.

(d) Setting out of Works.

(e) Equipment & Plant Use, Output, Capacity & Cost.

(f) Implementation and/or Supervision of Construction.

(g) Liaison with other Organization, Clients & Public.

(h) Measurement of Works.

(i) Site Safety.

(j) Site Administration.

(k) Site Records & Reports.

(l) Maintenance Programming & Implementation.

(5) ADMINISTRATION & MANAGEMENT (minimum nine months total in one or more of the following:)

(a) Professional Ethics & Responsibility.

(b) Contract Preparation including Conditions, Specifications and Drawings.

© Tendering Procedures and Tender Evaluation

(d) Cost Estimating and Cost Control.

(e) Preparation of Manuals.

(f) Contract Administration.

(g) Project Management.

(h) Administration.

(i) Resource Planning.

(j) Financial Management.

INSTITUTION OF ENGINEERS OF PAPUA NEW GUINEA

PDP REQUIREMENTS FOR CORPORATE MEMBERSHIP

PDP MODEL GUIDELINES FOR CIVIL ENGINEERS

NOTE: The program set out below is for guidance only but substantial departure should not be made without prior consultation with the *Institution*. Employers should endeavor to provide training for their trainees in as many areas as possible, as is appropriate to the sector of employment.

1. INTRODUCTION & ORIENTATION (at least one week in total)

(a) Size, History, Subsidiaries & Branches.

Function, Products, Markets & Competitors.

Management Structure & Functions.

Communication Systems.

Location & Layout of Facilities.

Safety, Health & Welfare.

(g) Training Programs, Prospects & Career Development.

BASIC TECHNICAL TRAINING (minimum six months total in (a) & (b) and at least two of (c) to (h))

Introduction to Office & Office Procedures.

Familiarization with Relevant Codes of Practice, Standards, Regulations, Statutory Requirements, Law & Ordinances.

(c) Familiarization with Relevant Construction Materials, their Properties & Costs.

(d) Familiarization with Testing of Construction Materials.

(e) Appreciation of Computer Techniques & their Limitations.

(f) Understanding of Staff Relationship, Motivation & Discipline.

(g) Report Writing & Presentation.

(h) Financial Planning, Budgeting & Control.

3. DESIGN (minimum of twelve months total in at least five of the following:)

(a) Site Inspection & Survey.

(b) Site Investigation, Techniques & Interpretation.

(c) Feasibility Studies, including Economic Considerations.

6.2 Specialist Training

The candidate should have obtained a level of specialization typified by a minimum equivalent number of PDP points. Points may be accumulated by satisfactorily completing relevant formal study modules assessed by examinations in management, health and safety issues and in the major area of specializ tion of the candidate (E.g.: subjects completed for a postgraduate certificate in Public Health Enginee ing). The candidate will be required to obtain such qualifications while in employment by attending approved courses by part-time or distance learning mode including assessment.

Examples of courses are as follows:

- *In-house training courses of suitable standard, offered by the Works Training Centre, Lae Technical College and others provided they include a formal assessment component.*
- *Relevant formally assessed courses offered by professional institutions in PNG or recognized overseas institutions. Local professional institutions amongst others include Papua New Guinea Institution of Engineers, PNG Institute of Architects, PNG Institute of Surveyors, PNG Institute of Accountants and the PNG Institute of Management.*
- *The Structural Registration examination or other specialist examinations held by the Institution or other recognized professional institutions.*
- *Formal courses leading to Postgraduate Certificates, Postgraduate Diplomas or Masters degrees offered by Unitech, UPNG or other institutions in professional, management or other relevant subjects.*
- *Significant parts of the above programs provided they are formally assessed.*

The Institution will regularly publish in the newsletter, approved courses and specify the relevant number of PDP points accredited for completion of each course or part of a course. Graduates or course providers may submit details of non-accredited courses for accreditation by the Institution.

6.3 Professional Participation (*They include the following:)*

- *Attending technical meetings, seminars or conferences;*
- *Undertake activities to promote professional engineering in schools, technical colleges and amongst the public or contribute articles of engineering or community interest to local media;*
- *Attending informal short courses and site visits;*
- *Participating in Institution activities such as being a Committee Member.*
- *Participation in community activities; E.g.: Member of Red-Cross.*
- *Participate in the activities of related professional institutions.*
- *Publication of articles in internationally recognized journals and conference proceedings including those of the Institution.*
- *Publication of articles in the Engineering Nius ,especially where they relate to engineering works completed in Papua New Guinea or directly relate to the research needs of the Country.*

7. PROFESSIONAL DEVELOPMENT PROGRAM, DURATION AND REQUIREMENTS

All Graduates proposing to be elected to the class of Member are required to have been engaged for a total stipulated minimum period in the practice of an engineering discipline. The acceptable periods of practical experience vary with the quality of guidance received, the degree of supervision under which it is conducted and the discipline of the Graduate. In this respect, two major options have been identified as Programs 1 and 2.

All Graduates proposing to be elected to the class of Member must complete their qualifying program of development within a stipulated maximum period. Only in exceptional circumstances will extension of time be considered.

The specific requirements and periods for each of these
programs is given in Clause 8 (Program 1) and Clause 9 (Program 2). Appropriate undergraduate and postgraduate activities may be accepted as periods of the PDP. They may qualify for periods of remission from Board's requirements. Relevant details of such periods of remission are given in Clause 11.

For Program 1, supervision of the Graduate is paramount to the success of the program. Details of supervision requirements are given in Clause 10.

It is in the Graduate's own interest to ensure that the PDP requirements are met in full. Therefore regular reporting to on progress to the Institution is essential (Refer Clause 10).

8. PROFESSIONAL DEVELOPMENT PROGRAM 1

Under the Program 1, which has the shortest period, following three requirements are mandatory:

the PDP proposed must have received the approval of the Board prior to the development period commencing;

(b) the PDP must be directed and authenticated by a Registered Engineer;

(C) details of training activity undertaken, relevance of training courses attended and professional participation during the PDP must be recorded in the graduate's log book.

12.3.3 Certification of Submission

All documents submitted should be the Graduate's own work *or work undertaken as a team member in which the Graduate's contribution is clearly indicated. The report on experience and training, and other documents submitted by the Graduate should be authenticated by the supervisor who shall be a Registered Engineer or a person of sufficient seniority in the employer's organisation and counter-signed by the Visiting Registered Engineer.*

12.4 The Assessment

As part of the Professional assessment, Graduates will be required to satisfy the Board when considering reports, submissions, specialist training, professional participation and experience that they have demonstrated sufficient understanding of the principles of professional engineering practice to be recommended for Election to be a corporate Member.

The Graduate will be required to attend for a Professional Interview at the *Institution* Headquarters, or such other place as may be designated to further support the application for Election to Member. Costs involved are the Graduate's responsibility. The essay required would be about 1500 words on a topic selected by the interviewers as appropriate to the experience of the applicant. The essay topic would embrace management topics and the engineer in the community.

12.3 Submission Required from the Graduate

12.3.1 Report on Professional Development Program

The objective of the Graduate's report is to inform the Board about the Graduate's professional experience and specialist training received and to demonstrate active participation to promote the aims of the Institution (Section 6.0). Reports should b concise, between 1,600 and 2,000 words, in good English, typewritten and in DUPL CATE on A4 paper.

At the head of the report, Graduates must set out in chronological order, giving the months and years in each case, the inclusive dates of the particular periods of *expe ence, specialist training and summary of professional participation.*

The report is to start from the most recently completed task. *In the report (which must not be a mere inventory of work prepared and executed) the Graduates must describe the tasks on which they have been employed, courses attended and participation in other activities.* Their accounts should be in chronological sequence commencing from the most recent activity, and should explain clearly their duties and responsibil ties in each position they have occupied or brief syllabus of courses attended. They should enlarge on any special problems which they met and on which they have ob tained more extensive experience. An indication of the size and cost of the project involved should be given.

12.3.2 Drawings and Documents

Graduates are required to provide samples as evidence of recent *work and other activities* in support of their application. These should include reports, plans, calcula tions, photographs and other relevant information as appropriate. All these documents should be submitted with the report (12.3.1 above).

All information and documents submitted will be treated as confidential *but will not be returned.*

8.1 Formation & Approval of Professional Development Program

PDP Guides are available from the Board. PDP's proposed by the Employer are required to meet the principles, objectives and scope as set out in Clauses 4, 5 and 6 of this document and should conform in principle to the appropriate model guidelines for the discipline concerned. As far as possible the program should be made up of well defined tasks in which the performance of the Graduate can be judged. It is stressed that Graduates are expected to measure the de- gree of success they have achieved at each stage in their program. The need to measure indi- vidual performance does not preclude the inclusion of group projects in a program that may well serve as a useful introduction to the value of teamwork. The Program should emphasize the complementary nature of theory and practice.

It should also be interesting, challenging and relevant to the future career of the Graduates thus stretching their intellectual powers. It is important that during the later stages of the program that Graduates be able to carry out work of a Professional Engineering nature for which, they are given a limited degree of responsibility. This is to develop their sense of professional responsibil- ity and to test their professional potential.

In drawing up their programs Graduates and Employers may obtain assistance and guidance by contacting the *Institution* and upon completion, programs must be submitted to the *Board* for approval and recognition prior to their commencement.

8.2 Professional Development Direction & Log Books

The program must be conducted under the direction of a Registered Engineer and all Graduates must maintain a record of activities in an approved Log Book. This record must be authenticated by a Registered Engineer. For detailed requirements of PDP Direction and particulars of Log Books, see Clause 10.

8.3 Accreditation of Employers, Supervisors & Graduates Programs

Employers who seek accreditation under this program will be required to apply to the *Institution* detailing the particulars of their program including the Registered Engineers and Graduates participating in the program.

8.4 Change of Professional Development Program

If a Graduate changes employer and is subsequently employed by another employer that agrees to offer the balance of PDP required to complete a previously approved program, the Board may recognize this as forming a complete Program. In all cases the *Board* must be noti- fied well in advance of changes of employer together with the details of program arrangements.

It is recognized that an employer's program could include periods of attachment to other employers for the purpose of gaining experience in fields not available within the employer's organization.

8.5 Duration of Professional Development Program

A PDP of not less than four (4) years must be satisfactorily completed including a minimum of two (2) years responsible experience. The maximum period of completion of any approved program will normally be six (6) years.

9.0 PROFESSIONAL DEVELOPMENT PROGRAM 2

9.1 General Requirements

The *Board* recognises that some Graduates are unable to take part in a formal PDP or to receive adequate direction from a Registered Engineer. Consequently an alternative is available to those Graduates who are not able to follow the formal route that leads to Membership.

Under Program 2 the experience a Graduate acquires after satisfying the academic requirements of the Board may be accepted as a PDP. *However, such experience must be approved by a Visiting Registered Engineer (VRE) appointed by the Board. The VRE will be also the mentor for the Graduate. The VRE shall direct the Graduate in receiving a sound and broad understanding of the particular branch of engineering in line with the general requirements for development in the particular discipline. In this respect, the Graduate and the VRE are strongly advised to carefully study Clause 4 of the present document, which details the principles of development. The mentor shall ensure that the general experience the Graduate is receiving is of sufficient depth, breadth and quality, together with experience in certain areas of engineering administration and management. These requirements are detailed at Clause 6 under the Scope of the PDP.*

The VRE will visit the Graduate at least once every 12 months, preferably more often. The cost of the visit shall be prepaid by the Employer in order for the Institution to arrange the visit. Alternatively, the employer may arrange to meet traveling, boarding and lodging expenses together with a stipulated honorarium of K100.00 per visit for the VRE.

Valuable guidance as to the type of experience required may be obtained from the Guidelines issued for Program I. These Guidelines, as well as assistance and guidance may be obtained on request from the *Institution*.

11.4 Other Cases

In all other cases the prior experience of the Graduate must be included in the proposal to the Council for approval of a Graduate's PDP. Any remissions granted will be entered in the Log Book prior to commencement of the program.

12. THE PROFESSIONAL ASSESSMENT FOR ELECTION TO THE CLASS OF CORPORATE MEMBER

12.1 Introduction

The purpose of the *assessment of Graduates; prior to being elected as Members* is to determine the extent to which Graduates meet the admission requirements set out in Section 3.12 above and can demonstrate that their approach is that of a Professional Engineer.

12.2 Procedure

The procedure is as follows;

(a) The Graduate should apply to the *Institution* on the required form to be elected as a *Corporate* Member. The Log Book must accompany this form. The PDP should be completed by the date of submission of the form.

(b) For an application to be accepted by the *Board*, it must include a report on the experience and training received together with a sample of drawings and/or documents as examples of the recent work of the Graduate.

(c) The *Board* may at any time refer the submission back to the Graduate.

(d) The Graduate will be required to attend for a professional assessment interview conducted by two senior Members of the *Institution.*

(e) The *Board* will require the Graduate to write a Professional Assessment Essay. The Graduate will be notified of the result of a Professional Assessment as soon as a decision has been made and ratified by *Board.* If the Graduate fails to satisfy *Board's* Professional Assessment, indications of the areas of weakness or failure to satisfy the *Board* will be given.

11.0 ALLOWABLE PERIODS OF REMISSION

Where it can be shown that experience of high quality has been undertaken prior to the commencement of or during the time of tertiary education (i.e. under the supervision of a Professional Engineer acceptable to Board) then such experience may count towards satisfying Board's requirements and may attract a maximum remission of up to 12 months. In special cases this can be extended; but in all cases the minimum period which must be served will not be less than two (2) years. Post-graduate studies could also be considered for remission. Some special cases which will attract remission are:

11.1 Sandwich Courses

Where the University provides a sandwich course which consists of periods of study interchanged with periods of industrial experience supervised by the University (i.e. by a Registered Engineer) and the course leads to the award of a qualification which is approved by *Board* to be elected as a Member, the period of remission will be allowed equal to the period of supervised experience. The maximum period allowed in this case will be 18 months.

11.2 Pre-tertiary Experience

Graduates who, prior to entering tertiary education, have had experience approved by the *Board* in engineering work after becoming fully qualified in an engineering trade or having completed qualifications as engineering technicians may gain a remission equal to one-third of the period of the approved experience. The maximum period allowed in this case will be 12 months.

11.3 Research Experience

Graduates who proceed on to postgraduate studies at the University and who undertake research projects in areas of engineering associated with industry under the supervision of a Registered Engineer may obtain remissions equal to the period spent on such projects, subject to maximum remission of two (2) years. In such cases, the remission will be treated as Design experience under the Guidelines. It is strongly recommended that postgraduate students commence a PDP Program 2 in order that a certified record can be kept in a Log Book.

9.2 Notification of Professional Development Program

The Graduate must advise the Board at an early stage that one is unable to follow P.D.P. Program 1, due to the nature of ones employment. The Graduate should, notify the Board of the proposal for obtaining the necessary experience and ask for a mentor to be appointed by the Board. The onus is on the Graduate to arrange the first visit of the appointed mentor to the Graduate's work place as specified in the previous section. Approval of this proposal, including notification as required together with the recommendation of the VRE and the written agreement of the employer will constitute the P.D.P. under Program 2.

9.3 Log Book

Graduates must keep their Log Books up to date and ensure that they are ratified regularly by their Supervisor. *In addition, for Program 2, the log books must be counter signed by the VRE (mentor) during visitations. Photocopies of the Log Book for the relevant period must be submitted to the Board at regular intervals (See Section 10.3)*

9.4 Allowable Periods of Remission

Certain periods of remission may be allowed. Details and conditions which apply are set out in Clause 11.

9.5 Duration of Professional Development Program

A PDP of not less than five (5) years must be satisfactorily completed. This must include a minimum of two (2) years responsible experience. The maximum period for completion of Program 2 will normally be seven (7) years.

10. PROFESSIONAL DEVELOPMENT DIRECTION & LOG BOOKS

Because of the formalised nature and high degree of direction required under Program 1, Employers, Registered Engineers (Supervisors and Mentors) and Graduates are strongly recommended to familiarise themselves with the advise and guidance given in Section 3.12 of this booklet. This familiarisation must be done prior to the submission of Programs to the *Institution* and subsequent commencement of development.

10.1 Supervisors

A Supervisor is a Registered Engineer, preferably of the same discipline as the Graduate, appointed by the Employer. Supervisors must be in a position of responsibility, such that they are able to control the movements of a Graduate within the Employing Organization in order that experience is gained in accordance with the approved program. Although Supervisors undertake to be personally responsible for guiding Graduates through the development program 1; it is recognized that Graduates may not always be supervised by Registered Engineers on a day to day basis.

Under Program 1, the *Board* must be advised as soon as possible of any change of Supervisor together with associated relevant professional information concerning the new appointee.

10.2 Duties of Supervisors

Under Professional Development Program 1, the *Board* in granting approval is acknowledging that the Employer appears to have the practical and technological resources, as well as suitably qualified professionals to meet its obligations.

Supervisors should be both guide and mentor to the Graduates and be readily accessible to them for discussion on technical and professional matters. They should ensure that the Graduates derive full benefit from the program and should discuss its progress with them at frequent intervals. Furthermore, they should also ensure that during the course of the PDP that Graduates are made aware of the principles that are outlined in Clause 4.

It is of course in the best interest of the Graduates themselves to ensure that opportunities are fully utilized and that they discuss their program fully with their Supervisors.

10.3 Visiting Registered Engineer (Mentor)

A Mentor under Program 2 is a Registered Engineer, preferably of the same discipline as the Graduate. The Mentor will be appointed by the Board with the approval of the employer.

Under Program 2, the Board shall receive the approval and an agreement in writing from the employer, stating that there is no objection and that the employer agrees for the Graduate to communicate freely with the Mentor on matters relating to the Graduate's professional development. The duties of the mentor in this respect will be similar to that of a Supervising Engineer as specified in Sections 10.1 and 10.2 above.
However, the Board appreciates that the requirements of the last paragraph may not always be adhered to by the graduate and the mentor under Program #2 for practical reasons; for instance the need to maintain confidential information.

10.4 Log Books

The progress of Graduates is to be regularly assessed throughout their PDP. It follows that he/she must *produce* reports of his/her work on a regular basis.

These records must be authenticated by the *Supervisor/ Mentor*. For this purpose, each Graduate is required to purchase from the Institution a Graduate Log Book. *Within two months of completing each year of training, the Graduates must submit to the Board, photocopies of the current entries of their Log Books.* However, the *Board* may require reports to be submitted at frequently more intervals if considered necessary. *The CDO will forward to the graduate, any advice given by the Assessor regarding the progress of the candidate.*