water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

LEARNING ACADEMY

GRADUATE TRAINEES LOGBOOK

QUALIFICATION

Civil Engineer

INITIALS AND SURNAME

Somebodv

YEAR OF COMMENCEMENT

2011

PERSAL NUMBER

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Table of Contens

SECTION 1

DEFINITIONS, GENERAL INFORMATION AND ROLES AND RESPONSIBILITIES

1. DEFINITIONS

TERM	DEFINITION
Learning academy	A departmental institution initiated and supported by government to address development of skills in the various disciplines
Professional bodies	A structured body controlling the competence of a candidate member in the respective field of qualification in accordance with the relevant legislation and applicable requirements
Program manager	The head of the Learning Academy ensuring compliance of training and workplace exposure of Graduate Trainees with professional body requirements
Project Coordinator	A person facilitating, co-ordinating and supporting all Learning Academy activities
Stream leader	A person facilitating and co-ordinating the management of mentors
Mentor	A person overseeing the training and workplace exposure of the Graduate Trainee
Supervisor	A person undertaking daily supervision and training in accordance with a structured training program
Graduate Trainee	A candidate undertaking relevant training and workplace exposure with the intention of registering as a professional with the relevant professional body when applicable
Structured training program	A time bound program designed by professionals complying with professional body requirements and standards

2. GENERAL INFORMATION

The Graduate Trainee is contractually appointed for a maximum duration of 5 years to undertake a structured training program in order to obtain professional status.

A stream leader will be allocated by the Project Coordinator in the specific field of qualification.

A mentor, in addition to the supervisor, will be allocated to the Graduate Trainee by the stream leader for specific time frames on a rotational basis. The mentor will ensure implementation of the relevant structured training program. The mentor may in turn appoint a supervisor.

Proper *lines of communication* must be adhered to i.e.

- Graduate Trainee ⇔ Supervisor/ Mentor ⇔ Stream Leader ⇔ Project Coordinator ⇔ Program Manager

3. ECSA POLICY STATEMENT R2/1C - ENGINEER

(a) **Professional Engineers** are concerned primarily with the progress of technology through innovation, creativity and change. Their work involves the application of a significant range of fundamental principles, enabling them to develop and apply new technologies, promote advanced designs and design methods, introduce new and more efficient production techniques, marketing and construction concepts, and pioneer new engineering services and management methods. They may be involved with the management and direction of high risk and resource intensive projects. Professional Engineers undertake and lead varied work that is essentially intellectual in nature, requiring discretion and judgement. Such work has its base in proficiencies and competencies derived from and extended by experience and research. It is concerned with cost effective, timely, reliable, safe, aesthetically pleasing and environmentally sustainable outcomes.

(b) Candidate Engineers are people who have passed an accredited programme(s) and/or examination recognised by Council is eligible for registration in the candidate engineer category in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000).

3.1. Significance of registration as a Professional Engineer

The significance of registration as a Professional Engineer is that:

(a) It is a commitment to subscribe to the ***standards*** set by ECSA and to work within the ECSA Code of Conduct.
(b) It is ***proof of competency*** in terms of the standards of a Professional Engineer, measured by peers.

These features contribute to the protection of the public with respect to the work of a Professional Engineer and lend confidence in appointing such a person to carry out engineering work.

3.2. Criteria for Registration

(a) In the case of a person applying for registration as a **candidate** [engineer] has satisfied the relevant educational outcomes determined by the council for this purpose, by:

(i) *having **passed** accredited or recognised **examinations** at any educational institution offering educational programmes in engineering;* **and**
*(ii) having **passed** any **other examination** that may be determined by the council;* **or**
*(iii) presenting **evidence of prior learning** in engineering.*

(b) In the case of a person applying for registration as a **professional** [engineer]:

*(i) has demonstrated his or her **competence** as measured against standards determined by the council for the relevant category of registration;* **and**

*(ii) has **passed any additional examinations** that may be determined by the council.*

3.3. Scope and Level of Engineering Work for Candidate Engineers

Acceptable practical training must provide satisfactory experience to candidate engineers in the application of engineering principles and methods and must include the practical training elements as stated in § 3.1 to § 3.3, at the level of responsibility stated in § 3.4.

(3.1) **Problem Investigation**

The work must be aimed at investigating engineering problems and for which engineering judgement is required. The following practical engineering functions are contained in such work to a greater or lesser degree:

(a) problem identification and formulation;
(b) finding and selecting relevant information;
(c) evaluating, investigating, testing and research;
(d) analysis of all factors that influence the solution like relevant engineering and scientific principles;

(3.2) **Problem Solution**

The work must be aimed at the full development of the suggested solution to the problem through a process of synthesis, with the application of all information acquired during the problem investigation, also using design, development and communication. This includes but is not limited to the drawing up of plans, detailed designs, reports, specifications, adjudication of tenders taking into account all practical, economic, social, environmental, quality assurance, safety and statutory factors.

(3.3) **Execution / Implementation**

The work must be aimed at the execution of engineering tasks or projects (for example construction, manufacturing, transformation, processing, production, commissioning, testing, certification, quality assurance, operation, maintenance and closure) encompassing the efficient utilisation of people, materials, machines, equipment, means and funding with due regard for their interaction, to achieve the end result within the set parameters.

(3.4) **Responsibility**

The work must be aimed at increasing engineering and managerial responsibility until candidate engineers are clearly able to accept professional responsibility for taking engineering decisions. Part of their responsibility should also be to ensure that sufficient cognisance is taken of economic considerations, social circumstances, environmental factors, quality assurance, safety and legal aspects as well as of the code of professional conduct.

3.4. Duration of Practical Training

The *minimum* duration of practical training is *three years*.

Council will consider experience and training prior to obtaining an educational qualification on merit when assessing competence.

3.5. Documentation for the Recording of Training

Documentation is part of the practical training process. As such it is understood that the Candidate Engineer is responsible for preparing and keeping documentation that is necessary to manage the training process.

Portfolio of Learning

(a) A portfolio of learning is an individual's record of knowledge and skills acquired during his or her career.

(b) Council does not prescribe documentation for a training programme or that a portfolio is a compulsory part of practical training.

(c) It is recommended that Candidate Engineers keep records of their training. An adequately compiled portfolio of learning, kept up to date with ones learning, contains the evidence necessary to submit an application for registration when the required standard is reached.

This makes the preparation of an application for registration far easier than it would be if evidence must be collected some years after the learning took place.

(d) It is strongly recommended that Candidate Engineers include the following in their portfolios:

(i) Copies of training programmes and records of compliance with programmes
(ii) Records of achievements
(iii) Assessment results
(iv) Documentation from supervisors, coaches, assessors and mentors
(v) Examples or evidence of work done

In addition it is recommended that training and experience reports (as found in the application form for registration, available from ECSA – at www.ecsa.co.za) are completed and signed by supervisors when relevant sections of work (such as projects) are completed. This will save having to recreate reports and find individuals who can vouch for authenticity some time after the work has been completed.

4. ROLES AND RESPONSIBILITIES

4.1. Project Coordinator

The **Project Coordinator** is responsible for:

- Ensuring that a relevant structured training program is in place
- Compliance with the structured training program by the stream leader
- Compliance with the administrative functions of the stream leader
- Collating and consolidating Graduate Trainees' progress/ reports
- Feedback on training and administrative matters to the Programme Manager
- Quality control on the process.

4.2. Stream Leader

The **Stream Leader** is responsible for:

- The design and review of a relevant structured training program
- Provide the Mentor with a logbook for further distribution to the Graduate Trainee
- Compliance with the structured training program by the mentor
- Compliance with the administrative functions of the mentor
- Regular overall assessments on Graduate Trainees
- Coordinate quarterly probation reports
- Graduate Trainee interventions
- Graduate Trainee rotations

- Feedback on training and administrative matters to the Project Coordinator
- Quality control on structured training programs.

4.3. Mentor

The **Mentor** is responsible for:

- The implementation of a detailed structured training program, attached to time frames
- Provide the Graduate Trainee with a logbook and oversee the proper update thereof
- Compliance with the structured training program by the supervisor
- Assuring that the day-to-day supervision and training is carried out by the supervisor
- Providing guidance and encouragement other than 'day-to-day' supervision and training
- Ensuring that the Graduate Trainee receives fair opportunity to develop
- Acting as a role model
- Quarterly assessments on Graduate Trainees
- Quarterly probation reports
- Signing off of the quarterly technical reports
- Feedback on training and administrative matters to the Stream Leader.
- Being an ECSA Referee.

4.4. The Graduate Trainee

The **Graduate Trainee** is responsible for:

- Committed and dedicated undertaking of the structured training program;
- Displaying professionalism;
- Register with the professional body ECSA as a candidate;
- Acting responsibly in undertaking the structured training;
- Recording and updating daily activities;
- Updating the logbook;
- Submitting on a quarterly basis (no later than one month after the relevant quarter) :
  - Log of detailed exposure (extract of logbook);
  - Summary of workplace exposure (extract of logbook);
  - Evaluation (person & engineering);
  - Probation report;
  - Technical report (including feedback on courses attended);
  - ECSA status.

SECTION 2

PERSONAL INFORMATION; SUMMARY OF WORKPLACE EXPOSURE, EVALUATION OF TRAINING & AND COMMENTS

PERSONAL INFORMATION

SURNAME	**Schoeman**
FULL NAMES	**Johannes Lodewicus**
CALL NAME	**Vicci**
RACE	**White**
GENDER	**Male**
PERSAL NUMBER	**23391804**
DATE APPOINTED (GRADUATE TRAINEE)	**14 February 2011**
IDENTITY NUMBER	**8801315122088**
ECSA NUMBER & DATE OF REGISTRATION	
PHONE NUMBERS **LANDLINE** **MOBILE**	
POSTAL ADDRESS	
HOME ADDRESS	
NEXT OF KIN: NAME **CONTACT NUMBER**	
WORKPLACE 1 & DATE	
WORKPLACE 2 & DATE	
WORKPLACE 3 & DATE	
WORKPLACE 4 & DATE	
WORKPLACE 5 & DATE	
WORKPLACE 6 & DATE	
WORKPLACE 7 & DATE	
WORKPLACE 8 & DATE	

SUMMARY OF WORKPLACE EXPOSURE

	WORKPLACE & SHORT DESCRIPTION OF RESPONSIBILITY (Categorise from DETAILED LOG – section 3) Eg DRAWING OFFICE Pretoria: Editing drawings, Design drawings (outlet) De Hoop, Design WRM: Durban: Dam Safety inspections, Licence applications HYDRO: Boskop: Inspection of weirs, Installation of instrumentation	PERIOD OF ATTENDANCE (Day, Month & Year)		MONTHS Exposure	AVERAGE RESULT (%) (If applicable)
		FROM	TO		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
		TOTAL AMOUNT OF MONTHS			

EVALUATION YEAR 1: QUARTER 1 PERIOD: JAN – MAR 2010

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
1. Responsibility					
2. Independence					
3. Voluntary overtime service					
4. Attendance					
5. Professional Conduct					
6. Driving-force					
7. Planning					
8. Thoroughness & Exactness					
9. Purposefulness					
10. Leadership					
11. Enthusiasm					
12. Self-confidence					
13. Friendliness & Helpfulness					
14. Appearance & Dress					
15. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X				
	Poor	Not satisfactory	Satisfactory	Good	Excellent
1. APPLICATION OF THEORETICAL KNOWLEDGE					
2. APPLICATION OF SKILLS					
3. ORGANISATIONAL ABILITIES					
4. LEVEL OF UNDERSTANDING					
5. ACCURACY OF CALCULATIONS					
6. PROBLEM SOLVING ABILITIES					
7. PRODUCTIVITY					
8. GROWTH					
9. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
10. OVERALL PERFORMANCE					
11. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 1: QUARTER 2 PERIOD: APR – JUN 2010

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
16. Responsibility					
17. Independence					
18. Voluntary overtime service					
19. Attendance					
20. Professional Conduct					
21. Driving-force					
22. Planning					
23. Thoroughness & Exactness					
24. Purposefulness					
25. Leadership					
26. Enthusiasm					
27. Self-confidence					
28. Friendliness & Helpfulness					
29. Appearance & Dress					
30. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
12. APPLICATION OF THEORETICAL KNOWLEDGE					
13. APPLICATION OF SKILLS					
14. ORGANISATIONAL ABILITIES					
15. LEVEL OF UNDERSTANDING					
16. ACCURACY OF CALCULATIONS					
17. PROBLEM SOLVING ABILITIES					
18. PRODUCTIVITY					
19. GROWTH					
20. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
21. OVERALL PERFORMANCE					
22. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 1: QUARTER 3 PERIOD: JUL – SEP 2010

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
31. Responsibility					
32. Independence					
33. Voluntary overtime service					
34. Attendance					
35. Professional Conduct					
36. Driving-force					
37. Planning					
38. Thoroughness & Exactness					
39. Purposefulness					
40. Leadership					
41. Enthusiasm					
42. Self-confidence					
43. Friendliness & Helpfulness					
44. Appearance & Dress					
45. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
23. APPLICATION OF THEORETICAL KNOWLEDGE					
24. APPLICATION OF SKILLS					
25. ORGANISATIONAL ABILITIES					
26. LEVEL OF UNDERSTANDING					
27. ACCURACY OF CALCULATIONS					
28. PROBLEM SOLVING ABILITIES					
29. PRODUCTIVITY					
30. GROWTH					
31. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
32. OVERALL PERFORMANCE					
33. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 1: QUARTER 4 PERIOD: OCT – DEC 2010

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
46. Responsibility					
47. Independence					
48. Voluntary overtime service					
49. Attendance					
50. Professional Conduct					
51. Driving-force					
52. Planning					
53. Thoroughness & Exactness					
54. Purposefulness					
55. Leadership					
56. Enthusiasm					
57. Self-confidence					
58. Friendliness & Helpfulness					
59. Appearance & Dress					
60. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
34. APPLICATION OF THEORETICAL KNOWLEDGE					
35. APPLICATION OF SKILLS					
36. ORGANISATIONAL ABILITIES					
37. LEVEL OF UNDERSTANDING					
38. ACCURACY OF CALCULATIONS					
39. PROBLEM SOLVING ABILITIES					
40. PRODUCTIVITY					
41. GROWTH					
42. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
43. OVERALL PERFORMANCE					
44. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 2: QUARTER 1 PERIOD: JAN – MAR 2011

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
61. Responsibility					
62. Independence					
63. Voluntary overtime service					
64. Attendance					
65. Professional Conduct					
66. Driving-force					
67. Planning					
68. Thoroughness & Exactness					
69. Purposefulness					
70. Leadership					
71. Enthusiasm					
72. Self-confidence					
73. Friendliness & Helpfulness					
74. Appearance & Dress					
75. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
45. APPLICATION OF THEORETICAL KNOWLEDGE					
46. APPLICATION OF SKILLS					
47. ORGANISATIONAL ABILITIES					
48. LEVEL OF UNDERSTANDING					
49. ACCURACY OF CALCULATIONS					
50. PROBLEM SOLVING ABILITIES					
51. PRODUCTIVITY					
52. GROWTH					
53. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
54. OVERALL PERFORMANCE					
55. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 2: QUARTER 2 PERIOD: APR – JUN 2011

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
76. Responsibility					
77. Independence					
78. Voluntary overtime service					
79. Attendance					
80. Professional Conduct					
81. Driving-force					
82. Planning					
83. Thoroughness & Exactness					
84. Purposefulness					
85. Leadership					
86. Enthusiasm					
87. Self-confidence					
88. Friendliness & Helpfulness					
89. Appearance & Dress					
90. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
56. APPLICATION OF THEORETICAL KNOWLEDGE					
57. APPLICATION OF SKILLS					
58. ORGANISATIONAL ABILITIES					
59. LEVEL OF UNDERSTANDING					
60. ACCURACY OF CALCULATIONS					
61. PROBLEM SOLVING ABILITIES					
62. PRODUCTIVITY					
63. GROWTH					
64. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
65. OVERALL PERFORMANCE					
66. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 2: QUARTER 3 PERIOD: JUL – SEP 2011

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
91. Responsibility					
92. Independence					
93. Voluntary overtime service					
94. Attendance					
95. Professional Conduct					
96. Driving-force					
97. Planning					
98. Thoroughness & Exactness					
99. Purposefulness					
100. Leadership					
101. Enthusiasm					
102. Self-confidence					
103. Friendliness & Helpfulness					
104. Appearance & Dress					
105. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
67. APPLICATION OF THEORETICAL KNOWLEDGE					
68. APPLICATION OF SKILLS					
69. ORGANISATIONAL ABILITIES					
70. LEVEL OF UNDERSTANDING					
71. ACCURACY OF CALCULATIONS					
72. PROBLEM SOLVING ABILITIES					
73. PRODUCTIVITY					
74. GROWTH					
75. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
76. OVERALL PERFORMANCE					
77. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 2: QUARTER 4 PERIOD: OCT – DEC 2011

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
106. Responsibility					
107. Independence					
108. Voluntary overtime service					
109. Attendance					
110. Professional Conduct					
111. Driving-force					
112. Planning					
113. Thoroughness & Exactness					
114. Purposefulness					
115. Leadership					
116. Enthusiasm					
117. Self-confidence					
118. Friendliness & Helpfulness					
119. Appearance & Dress					
120. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
78. APPLICATION OF THEORETICAL KNOWLEDGE					
79. APPLICATION OF SKILLS					
80. ORGANISATIONAL ABILITIES					
81. LEVEL OF UNDERSTANDING					
82. ACCURACY OF CALCULATIONS					
83. PROBLEM SOLVING ABILITIES					
84. PRODUCTIVITY					
85. GROWTH					
86. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
87. OVERALL PERFORMANCE					
88. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 3: QUARTER 1 PERIOD: JAN – MAR 2012

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
121. Responsibility					
122. Independence					
123. Voluntary overtime service					
124. Attendance					
125. Professional Conduct					
126. Driving-force					
127. Planning					
128. Thoroughness & Exactness					
129. Purposefulness					
130. Leadership					
131. Enthusiasm					
132. Self-confidence					
133. Friendliness & Helpfulness					
134. Appearance & Dress					
135. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
89. APPLICATION OF THEORETICAL KNOWLEDGE					
90. APPLICATION OF SKILLS					
91. ORGANISATIONAL ABILITIES					
92. LEVEL OF UNDERSTANDING					
93. ACCURACY OF CALCULATIONS					
94. PROBLEM SOLVING ABILITIES					
95. PRODUCTIVITY					
96. GROWTH					
97. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
98. OVERALL PERFORMANCE					
99. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 3: QUARTER 2 PERIOD: APR – JUN 2012

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
136. Responsibility					
137. Independence					
138. Voluntary overtime service					
139. Attendance					
140. Professional Conduct					
141. Driving-force					
142. Planning					
143. Thoroughness & Exactness					
144. Purposefulness					
145. Leadership					
146. Enthusiasm					
147. Self-confidence					
148. Friendliness & Helpfulness					
149. Appearance & Dress					
150. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
100. APPLICATION OF THEORETICAL KNOWLEDGE					
101. APPLICATION OF SKILLS					
102. ORGANISATIONAL ABILITIES					
103. LEVEL OF UNDERSTANDING					
104. ACCURACY OF CALCULATIONS					
105. PROBLEM SOLVING ABILITIES					
106. PRODUCTIVITY					
107. GROWTH					
108. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
109. OVERALL PERFORMANCE					
110. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 3: QUARTER 3 PERIOD: JUL – SEP 2012

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
151. Responsibility					
152. Independence					
153. Voluntary overtime service					
154. Attendance					
155. Professional Conduct					
156. Driving-force					
157. Planning					
158. Thoroughness & Exactness					
159. Purposefulness					
160. Leadership					
161. Enthusiasm					
162. Self-confidence					
163. Friendliness & Helpfulness					
164. Appearance & Dress					
165. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
111. APPLICATION OF THEORETICAL KNOWLEDGE					
112. APPLICATION OF SKILLS					
113. ORGANISATIONAL ABILITIES					
114. LEVEL OF UNDERSTANDING					
115. ACCURACY OF CALCULATIONS					
116. PROBLEM SOLVING ABILITIES					
117. PRODUCTIVITY					
118. GROWTH					
119. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
120. OVERALL PERFORMANCE					
121. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 3: QUARTER 4 PERIOD: OCT – DEC 2012

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
166. Responsibility					
167. Independence					
168. Voluntary overtime service					
169. Attendance					
170. Professional Conduct					
171. Driving-force					
172. Planning					
173. Thoroughness & Exactness					
174. Purposefulness					
175. Leadership					
176. Enthusiasm					
177. Self-confidence					
178. Friendliness & Helpfulness					
179. Appearance & Dress					
180. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
122. APPLICATION OF THEORETICAL KNOWLEDGE					
123. APPLICATION OF SKILLS					
124. ORGANISATIONAL ABILITIES					
125. LEVEL OF UNDERSTANDING					
126. ACCURACY OF CALCULATIONS					
127. PROBLEM SOLVING ABILITIES					
128. PRODUCTIVITY					
129. GROWTH					
130. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
131. OVERALL PERFORMANCE					
132. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

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Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 4: QUARTER 1 PERIOD: JAN – MAR 2013

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
181. Responsibility					
182. Independence					
183. Voluntary overtime service					
184. Attendance					
185. Professional Conduct					
186. Driving-force					
187. Planning					
188. Thoroughness & Exactness					
189. Purposefulness					
190. Leadership					
191. Enthusiasm					
192. Self-confidence					
193. Friendliness & Helpfulness					
194. Appearance & Dress					
195. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
133. APPLICATION OF THEORETICAL KNOWLEDGE					
134. APPLICATION OF SKILLS					
135. ORGANISATIONAL ABILITIES					
136. LEVEL OF UNDERSTANDING					
137. ACCURACY OF CALCULATIONS					
138. PROBLEM SOLVING ABILITIES					
139. PRODUCTIVITY					
140. GROWTH					
141. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
142. OVERALL PERFORMANCE					
143. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

…… ……

Signature: Mentor / Instructor & Date ***Mentor's / Instructor's Surname & Rank & ECSA no***

…… ……

Noted signature Graduate Trainee & Date ***Graduate Trainee's Surname & ECSA no.***

EVALUATION YEAR 4: QUARTER 2 PERIOD: APR – JUN 2013

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
196. Responsibility					
197. Independence					
198. Voluntary overtime service					
199. Attendance					
200. Professional Conduct					
201. Driving-force					
202. Planning					
203. Thoroughness & Exactness					
204. Purposefulness					
205. Leadership					
206. Enthusiasm					
207. Self-confidence					
208. Friendliness & Helpfulness					
209. Appearance & Dress					
210. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
144. APPLICATION OF THEORETICAL KNOWLEDGE					
145. APPLICATION OF SKILLS					
146. ORGANISATIONAL ABILITIES					
147. LEVEL OF UNDERSTANDING					
148. ACCURACY OF CALCULATIONS					
149. PROBLEM SOLVING ABILITIES					
150. PRODUCTIVITY					
151. GROWTH					
152. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
153. OVERALL PERFORMANCE					
154. OVERALL RATING (General behaviour & Workplace exposure)					

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Mentor / Instructor:

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Signature: Mentor / Instructor & Date

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Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 4: QUARTER 3 PERIOD: JUL – SEP 2013

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
211. Responsibility					
212. Independence					
213. Voluntary overtime service					
214. Attendance					
215. Professional Conduct					
216. Driving-force					
217. Planning					
218. Thoroughness & Exactness					
219. Purposefulness					
220. Leadership					
221. Enthusiasm					
222. Self-confidence					
223. Friendliness & Helpfulness					
224. Appearance & Dress					
225. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
155. APPLICATION OF THEORETICAL KNOWLEDGE					
156. APPLICATION OF SKILLS					
157. ORGANISATIONAL ABILITIES					
158. LEVEL OF UNDERSTANDING					
159. ACCURACY OF CALCULATIONS					
160. PROBLEM SOLVING ABILITIES					
161. PRODUCTIVITY					
162. GROWTH					
163. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
164. OVERALL PERFORMANCE					
165. OVERALL RATING (General behaviour & Workplace exposure)					

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Mentor's / Instructor's Surname & Rank & ECSA no

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Noted signature Graduate Trainee & Date

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Graduate Trainee's Surname & ECSA no.

EVALUATION YEAR 4: QUARTER 4 PERIOD: OCT – DEC 2013

Training and workplace exposure

Detail of workplace exposure with reference to the structured training program:

Elements of workplace exposure	Duration (weeks/months)

Evaluation must be conducted in accordance with the following guidelines and rating table:

1	**Poor**	< 40 %	**2**	**Not Satisfactory**	40 – 49 %
3	**Satisfactory**	50 – 59 %	**4**	**Good**	60 – 74 %
5	**Excellent**	75 – 100 %			

General behaviour

EVALUATION: PERSON	TICK THE RELEVANT BOX WITH AN X				
	Poor	**Non-satisfactory**	**Satisfactory**	**Good**	**Excellent**
226. Responsibility					
227. Independence					
228. Voluntary overtime service					
229. Attendance					
230. Professional Conduct					
231. Driving-force					
232. Planning					
233. Thoroughness & Exactness					
234. Purposefulness					
235. Leadership					
236. Enthusiasm					
237. Self-confidence					
238. Friendliness & Helpfulness					
239. Appearance & Dress					
240. Willingness to learn					

Workplace exposure

EVALUATION: ENGINEERING WORK	TICK THE RELEVANT BOX WITH AN X

	Poor	Not satisfactory	Satisfactory	Good	Excellent
166. APPLICATION OF THEORETICAL KNOWLEDGE					
167. APPLICATION OF SKILLS					
168. ORGANISATIONAL ABILITIES					
169. LEVEL OF UNDERSTANDING					
170. ACCURACY OF CALCULATIONS					
171. PROBLEM SOLVING ABILITIES					
172. PRODUCTIVITY					
173. GROWTH					
174. LEVEL OF RESPONSIBILITY AND ACCOUNTABILITY (as Technician)					
175. OVERALL PERFORMANCE					
176. OVERALL RATING (General behaviour & Workplace exposure)					

Comments
Mentor / Instructor:

……
Signature: Mentor / Instructor & Date

……
Mentor's / Instructor's Surname & Rank & ECSA no

……
Noted signature Graduate Trainee & Date

……
Graduate Trainee's Surname & ECSA no.

SECTION 3

DETAILED LOG OF EXPOSURE

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

LEARNING ACADEMY

DETAILED LOG OF EXPOSURE 1

Somebody
Mentor
Sub-directorate

Date	Type of exposure	Duration	%

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

LEARNING ACADEMY

DETAILED LOG OF EXPOSURE 2

J. Soap (Surname, Initials)
Mr X. (Mentor)
xxxxxx Office(Placement)

Date	Type of exposure	Duration	%

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

LEARNING ACADEMY

DETAILED LOG OF EXPOSURE 3

J. Soap (Surname, Initials)
Mr X. (Mentor)
xxxxxx Office(Placement)

Date	Type of exposure	Duration	%

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

LEARNING ACADEMY

DETAILED LOG OF EXPOSURE 3

J. Soap (Surname, Initials)
Mr X. (Mentor)
xxxxxx Office(Placement)

Date	Type of exposure	Duration	%

SECTION 4

PROBATION REPORTS

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

PROBATION ASSESSMENT INSTRUMENT FOR NON-SMS MEMBERS
LEVEL 1 - 12

C O N F I D E N T I A L

Period under review:

Surname and initials:

Job title/Rank:

Remuneration level:

Persal no:

Component:

Date of appointment to current remuneration level: Age

Designated group

African	Coloured	Male	Disabled
☐	☐	☐	☐
Indian	**White**	**Female**	
☐	☐	☐	

Probation	Extended probation	Permanent	Contract
☐	☐	☐	☐

PART 1 – PERFORMANCE APPRAISAL

Standard Rating Schedule for Key Performance Areas:

Term	Description
Level 5: Outstanding performance	Performance far exceeds the standard expected of a member at this level. The appraisal indicates that the member has achieved above fully effective results against all performance criteria and indicators as specified in the Work plan and maintained this in all areas of responsibility throughout the year.
Level 4: Performance significantly above expectations	Performance is significantly higher than the standard expected in the job. The appraisal indicates that the member has achieved above fully effective results against more than half of the performance criteria and indicators and fully achieved all others throughout the year.
Level 3: Fully effective	Performance fully meets the standard expected in all areas of the job. The review/assessment indicates that the member has achieved fully effective results against all the performance criteria and indicators as specified in the Work plan.
Level 2: Performance not fully effective	Performance is below the standard required for the job in key areas. Performance meets some of the standards expected for the job. The review/assessment indicates that the member has achieved below fully effective results against more than half the key performance criteria and indicators as specified in the Work plan
Level 1: Unacceptable performance	Performance does not meet the standard expected for the job. The review/assessment indicates that the member has achieved below fully effective results against almost all of the performance criteria and indicators as specified in the Work plan. The member has failed to demonstrate the commitment or ability to bring performance up to the level expected in the job despite management efforts to encourage improvement.

PART 2 – SELF ASSESSMENT REPORT (To be completed by Employee)

2.1 Key Result Areas

Key Performance Area	Outputs	Outputs Achieved	Outputs not Achieved

2.2 Behavioural Assessment by Supervisor

Insert X in appropriate column	**Satisfactory**	**Unsatisfactory**	(xi) Is the officer in your view placed correctly? If not, what do you propose? …… …… …… ……
(i) Attendance			
(ii) Zeal			
(iii) Thoroughness			
(iv) Willingness to learn			
(v) Conduct			
(vi) Friendliness and helpfulness			(xii) Do you anticipate that the officer upon expiry of his/her probationary period will be suitable for a permanent appointment? …… …… ……
(vii) General progress			
(viii) Language proficiency measured against post requirements			
(ix) Sobriety			
(x) Appearance and dress			

PART 3 - DEVELOPMENT, TRAINING, COACHING, GUIDANCE AND EXPOSURE NEEDED BY THE EMPLOYEE

(To be completed by Supervisor in consultation with the employee)

SIGNATURE EMPLOYEE: _____ SIGNATURE SUPERVISOR: _____

DATE: _____ DATE: _____

PART 4 - CONFIRMATION/ EXTENSION/ TERMINATION OF PROBATION

EMPLOYEE'S COMMENTS:

_____

_____

_____

_____

EMPLOYEE SIGNATURE:_____

SUPERVISOR COMMENTS:

_____

_____

_____

_____

1. I recommend the confirmation of the probation of Mr/Mrs _____ in view of the member's diligence and as his/her conduct has been uniformly satisfactory.

OR

2. I recommend that the probation of Mr/Ms _____ be extended for a period of _____ months for the reasons/comments noted above.

OR

3. I recommend that _____ probation be terminated for the reasons/comments noted above.

----------	----------	----------
Signature	**Name**	**Date**

SECTION 5

DETAILED STRUCTURED TRAINING PROGRAM

1. BASIC TRAINING

The proposed programme is endorsed by the Engineering Council of South Africa (ECSA)

1.1. Introduction

1.1.1. General

The main topics below set the basic aspects that need to be covered, but the detail may vary somewhat depending on the specific projects running at the time. To indulge into academic exercises to follow any set programme to the letter may prevent the EIT to accept responsibility of the real world situations.

In many cases the EIT will work in a team, with each member with separate responsibilities. However, it remains paramount must take part in a good variety of activities and take cognisance of all the processes that are required to implement/operate a project successfully and get involved into the decision-making process as far as possible.

Median estimates of time spend on each activity in a period of 3 years may be as follows:

ACTIVITY	MEDIAN OF TIME (MONTHS)
Surveillance	3
Analysis	8
Design	11
Costing, project-planning and programming	8
Contract management	3
Operation & maintenance	2

1.1.1.1. Computer literacy

- MSExcell
- MSWord
- Software for specific analysis/drawing

1.1.1.2. Report writing

Report writing will be required at each activity. Guiding will be provided.

1.1.1.3. Administration

Administration for travelling and subsistence, etc.

1.1.1.4. ISO 9000

All processes must be conducted according to ISO9000 standards, as applied in the Directorate.

2. SURVEILLANCE (3 months)

2.1. Visual inspection

2.2. Surveying/Instrumentation logging

2.3. Risk assessment

2.4. Evaluate effectiveness of maintenance strategy

2.5. Reporting

3. ANALYSIS (8 months)

3.1. Hydrology

3.1.1. Various methods applied

3.1.2. Acceptable risk for structure/system

3.2. Hydraulics

3.2.1. Flow profile calculation

3.2.2. Physical modelling

3.3. Stability

3.3.1. Slopes

3.3.2. Retaining walls

3.4. Sub-surface drains

3.4.1. Filter criteria

3.4.2. Geo-textiles

3.5. Structural Concrete

4. DESIGN (11 months)

4.1. Calculations of the above plus

4.1.1. Design codes

4.1.2. Specific designs

4.2. Drawings

4.2.1. Sketches

4.2.2. Final drawings and control

4.3. Materials

4.3.1. Soil and geo-textiles

4.3.2. Concrete and reinforcement

4.3.3. Structural steel

4.4. Specifications

4.4.1. Materials and processes

4.4.2. SANS

4.4.3. Fidic

5. COSTING / PLANNING / PROGRAMMING (8 months)

5.1.1. Analyse options

5.1.2. Quantities

5.1.3. Costing

5.1.4. Budget/programming

6. CONTRACT MANAGEMENT (3 months)

6.1. Documentation

6.1.1. Set up documentation

6.2. Tenders

6.2.1. Invitation

6.2.2. Evaluation

6.2.3. Administration

7. OPERATION & MAINTENANCE (2 months)

7.1. Site visits

7.2. Compliance with O&M rules

7.3. Deterioration/betterments

7.4. Ease of operation

8. ESSAYS

8.1. ROLES OF ENGINEERS, TECHNOLOGISTS AND TECHNICIANS IN THE CIVIL ENGINEERING PROFESSION

Discuss in detail.

8.2. PROFESSIONAL PRACTICE

During periods of recession employers are forced to reduce their running costs. Discuss the implications of major reduction in the training budget. Suggest some options with reasons at the hand of the following headings:

- Introduction
- Training budget
- Areas of training: Industrial, Clerical, Sales and Supervisory
- Bursaries
- Other training
- Proposed Guidelines: Hiring, Training instructors, Suitable courses, Effective training techniques
- Training methods used in practice: Booster, Career, Vestibule
- PrEng
- Conclusion

8.3. CIVIL ENGINEER: SPECIALIST VERSUS GENERALIST OF THE FUTURE?

Discuss at the hand of the following topics:

- Structural engineering
- Infrastructure management and construction
- Water and waste management engineering
- Transportation engineering
- Geotechnical engineering
- Environmental engineering
- Water resources
- Urban engineering

8.4. RESOURCES FOR A DESIGN PROJECT OR A CONSTRUCTION CONTRACT

Discuss the way in which the resources required for a design project or a construction contract should be organized and managed in order to ensure that technical objectives are met and that work is completed on time and within budget. Refer to your own

experience where appropriate. Discuss at the hand of the following project management principles:

- Define and quantify objectives clearly
- Methodology versus the budget
- Teamwork concept
- Proper planning in stages
- Review

8.5. MANAGERS VERSUS LEADERS

Many civil engineers would call themselves managers but few become leaders of their organisations. Discuss the qualities, which enable a manager to develop into a leader

8.6. GLOBALISATION

Globalisation presents new challenges and opportunities to the engineering profession in South Africa. Discuss the implications for South African civil engineers and their employer firms.

8.7. TECHNOLOGY TRANSFER

In projects for developing countries emphasis is often placed on the need for transfer of technology. How can this best be achieved in practice? Discuss at the hand of the following headings:

- Introduction
- Definition of a Developing Country
- Definition of Technology Transfer (TT)
- TT in Practice
- Factors influencing the success and failure of internationally transferred technology (ITT) projects
- Barriers and Critical Elements To Technology Transfer in DC’s
- Vehicles for TT in Practice

8.8. ENVIRONMENTAL REGULATIONS

Discuss the effect of environmental regulations on the design, documentation and construction of civil engineering projects. Consider the following resources:

- National Environmental Managing Act no. 107 of 1998
- National Conservation Act, 1989

8.9. ENVIRONMENTAL IMPACTS

How should the environmental impact of civil engineering projects be assessed and how can this be taken into account in the evaluation of the merits of such projects? Discuss at the hand of the following topics:

- Legal procedures required
- Environmental impact assessments
- Impact on people, pollution
- Sustainability and materials
- Specifications and appropriate solutions
- Monitoring
- Suggested procedures for evaluation of the EIA in overall assessment of project viability

8.10. TRANSPORTATION

Over the past two decades significant changes in the development trends of South African cities have taken place. The continued effect of urban growth together with the fall of apartheid and economic pressures has called for new spatial development initiatives and loads were placed on the private and public transport system in which it could not deliver.

Discuss some background information into the combined effect at the following items on towns/cities in South Africa at the hand of the following:

- Spatial development trends
- Effect at electronic communication
- The taxi industry

8.11. SOCIO-POLITICAL ISSUES

Discuss appropriate and sustainable engineering solutions, having regard to the environment and the use of unskilled and semi-skilled workers (e.g. roads, arch masonry bridges, soil cement etc.). Use the following headings:

- Defining sustainable development/engineering
- Environmental importance
- Measures recommended at World summit 2002
- Case studies of sustainable engineering solutions (own experience)
- Aspects of sustainable engineering solutions
- Closing remarks

8.12. TURNING FAILURES INTO A POSITIVE LEARNING OPPORTUNITY

Failures of buildings, bridges, dams and other civil Engineering structures are no uncommon event. Usually these failures are coupled with huge financial costs and even the lost of lives. Are these failures however only negative or can they be transformed into a benefit to society? And if so, how should failures be assessed to obtain maximum benefit? Address the following aspects:

- Historical background
- Causes of failures and lessons to be learned
- Assessing and reporting failures
- Conclusions

8.13. IMPACTS OF INDUSTRIAL AND INFRASTRUCTURE PROJECTS ON COMMUNITIES

Increasingly South African industrial and infrastructure projects are being evaluated according to the impact on communities within which they are located. Discuss the opportunities and threats inherent in such projects and the role civil engineers can play in delivering value to society through their involvement in such projects.

8.14. PUBLIC PARTICIPATION IN INFRASTRUCTURE DEVELOPMENT

To what extent should the public be involved in the decision-making process for infrastructure projects? What role should civil engineers play in such decisions?

8.15. OCCUPATIONAL HEALTH AND SAFETY ACT

Discuss the problems involved in meeting the requirements of the Occupational Health and Safety Act in the design, construction, upgrading and maintenance of civil engineering projects and discuss health aspects which may not be covered by the Act (e.g. skin cancer, malaria, Aids, TB etc.).

8.16. CLAIMS AND DISPUTES

Claims and disputes are a normal part of construction projects. Discuss how claims and disputes should be managed in the interest of the overall project. The evaluation should be made taking different perspectives and interest of the involved parties into consideration.

8.17. QUALITY CONTROL VERSUS QUALITY ASSURANCE

Discuss the difference between 'Quality Control ' and 'Quality Assurance'. Discuss the requirements for quality management by clients, designers and contractors, and their respective contributions to the success of a project.

8.18. ACTIVITIES EFFECTING INDUSTRIAL RELATIONS

Industrial relations affect activities on a construction site. How can they influence flexibility in working practices, incentive schemes, quality of work and safety?

8.19. RISK MANAGEMENT

Risk is inherent in most civil engineering work. Discuss the ways in which such risks can affect the employer and the contractor, and how they can influence the form of contract and the contract price.

8.20. CONFLICT MANAGEMENT

Identify the areas in which disagreement between a Resident Engineer's staff and the Contractor's staff may develop. How can good relations be achieved between these parties? Illustrate where possible from your own experience.

8.21. DELEGATIONS

Describe the power of the Engineer to delegate decisions to the Engineer’s Representative under the General Conditions of Contract (GCC 1990/Colto GCC 1998). In what circumstances could the Engineer vary the level of delegation during the construction period?

8.22. INFORMATION TECHNOLOGY

How has the application of computers affected the civil engineering industry? Comment also on the attendant risks involved in adopting computerized methods, and how they can be minimized.

8.23. WATER DEMAND MANAGEMENT FOR SOUTH AFRICAN URBAN AREAS

Discuss Water Demand Management for South African Urban areas. In your reply, cover at least the following:

- Describe water demand management and unaccounted-for water
- Motivate the need for water demand management (alternatively – argue why it is unnecessary)
- Describe the causes of unaccounted-for water, and quote orders of magnitude
- Describe the measurement of unaccounted-for water

- Describe how to manage water demand
- Describe how specific management methods should be selected for specific situations (also describe incentives to implement those methods)

8.24. PROJECT REPORT

- **BULK WATER INFRASTRUCTURE: CIVIL WORKS**
- **DAMS (Outlet, Spillway, Aprons, Chambers, Walls, Concrete, Earthworks)**
- **CANALS**
- **WEIRS**
- **PIPELINES**
- **RESERVOIRS**
- **ABSTRACTION WORKS**

- Design of a structure
- Background
- Tender documentation and cost estimate
- Improvement of a structure
- Pre-design Responsibilities
- Method Statements (or Screening Report) for a structure
- Fishways (Fish ladders)
- Background
- Fishway design
- Fishway physical model
- Model parameters
- Scale proportions of the models
- Geometry of the models
- Drawing, construction and testing of the models
- Report on the findings of the fishway model testing
- Structure Reconstruction Reconnaissance Study
- Background
- Conclusions from the scope of work tasks
- Reserve for a structure
- Historic and stochastic yield analyses for a structure
- Structure design
- Existing and future water supply infrastructure

- Economic analyses for the structure
- Recommendations
- Conference on Hydropower and Sustainable Development
- Background
- Water and Energy Resource Briefing Document
- Conclusion on Projects

SECTION 6

SUPPORTING DOCUMENTS