Administrative Report **AR 1/2012**

Engineering Geology Graduate (EGG) Training Scheme Manual

R.J. Sewell

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Planning Division

Foreword

This manual, which updates and supersedes AR 2/88, AR 7/97, and AR 4/99, describes the scheme established by the Geotechnical Engineering Office (GEO) of the Government of the Hong Kong Special Administrative Region for the training of Engineering Geology Graduates (EGGs). The report is based on similar documents produced for Civil Engineering Graduates by the Standing Committee on Civil Engineering Graduate Training and the Hong Kong Institution of Engineers, and the Training Guide for Engineering Geologists produced by the Geological Society of London, U.K.

The philosophy and detailed objectives of the training are discussed and the procedural, supervisory and scheduling aspects of the training scheme clearly laid down. Forms for all the necessary documentation are also included in the Appendices.

The aim of the scheme is to provide engineering geology core experience and training to graduates in geology or earth science at an early stage of their career and assist them to enter into membership of professional institutions. On successful completion of the training they will be eligible to apply for Assistant Geotechnical Engineer posts within the Government.

In comparison with AR 2/88, the main changes have been to (i) improve the balance of training in geology, site investigation, geotechnical design and construction site elements and modify the programme to follow the conventional stages of an engineering project, (ii) introduce formal CPD requirements, and (iii) reclassify the achievement ratings and coding. In comparison with AR 7/97, various minor amendments have been made to the text and Training Objectives Sheets as a result of audits; also the Working Group for the Training of EGGs has been formally incorporated in the scheme. In comparison with AR 4/99, various amendments have been made to reflect new organisational nomenclature introduced over the last eleven years, and to align the training objectives more closely with the new Geological Society of London Chartership System instigated on 1 January, 2010. The references have also been comprehensively updated.

The authors of earlier versions of this manual wish to acknowledge the leading roles played by Dr A.W. Malone (formerly Principal Government Geotechnical Engineer) and Dr A.D. Burnett (formerly Chief Training Geologist) in developing the scheme.

K.C. Ng
Chief Geotechnical Engineer/Planning

Abstract

This manual discusses the philosophy, objectives and rotational posting programme of the Engineering Geology Graduate Training Scheme (EGGTS). The procedural and administrative aspects of the training scheme are also laid down.

The EGGTS was established by the Geotechnical Engineering Office (GEO) in 1985. The aim of the three-year scheme is to provide geology or earth science graduates with core experience and training in engineering geology at an early stage of their career and assist them to enter professional institutions and become eligible to apply for Assistant Geotechnical Engineer posts within the Government of the Hong Kong Special Administrative Region (HKSAR Government). The details of former EGG training are described in GEO (formerly GCO) reports AR 2/86, AR 2/88, AR 5/97, and AR 4/99.

This manual updates the EGGTS on the basis of the experience gained since 1988 and the current training practices recommended by three professional institutions, namely, the Hong Kong Institution of Engineers (HKIE), the Institute of Materials, Minerals and Mining, U.K. (IOM3) and the Geological Society of London, U.K. (GSL).

The desirable knowledge and experience for an engineering geologist to practise in Hong Kong are stated in the training objectives set out in Sections 2.4, 4.2 and Appendix A. The achievement criteria for the training objectives are revised in Sections 4.2 and 4.5 according to the HKIE recommendations. The general training objectives given in Section 2.4 have been updated in accordance with the new GSL Chartership System introduced on 1 January, 2010, and the rotational posting programme has been slightly revised in Appendix B. The technical experience required by the EGGTS is given in Section 2.5 and Appendix A. Former sections on Continuing Education and Training (CET) in the early versions of the manual have been revised in Section 2.7 under a new heading of Continuing Professional Development (CPD) according to the HKIE and IOM3 requirements. A minimum of 7.5 CPD days per year of training is provided to EGGs, of which at least 3 CPD days each is devoted to occupational safety and health, environmental and related technological matters, and general and professional matters. Terminology used in the HKIE Scheme 'A' is adopted in Sections 3.3 and 3.4 to describe the names, role and duties of persons involved in supervising the EGGTS.

In comparison with the former EGGTS programme, the current programme has been modified slightly to improve the balance of training in geology, site investigation, geotechnical design, and construction site experience. In their first year, the EGGs receive practical training in geological mapping, aerial photograph interpretation and gain experience in planning, supervising and interpreting the results from various ground investigation and laboratory testing techniques, The second year is concentrated on developing technical competence in various aspects of engineering geology, rock mechanics and major landslide field studies leading on to the appreciation of geological and geotechnical problems in engineering design though practical experience.. The last year of training consists of attachments to major construction projects such as site formation, tunnelling or other geotechnical works. This provides the EGGs with opportunities to learn about the construction of temporary and permanent geotechnical works, as well as an understanding of contracts, methods of measurement and the use of mechanical plant. Guidance notes are provided in Appendix E in order to assist Training Tutors in assessing the EGGs' progress and attainment of their training objectives.

Contents

1 Introduction

1.1 General

The overall objective of the Engineering Geology Graduate Training Scheme (EGGTS) is to provide broadly-based training in engineering geology, such that, on successful completion of the scheme, and with appropriate post-training geotechnical experience, trainees with suitable first degrees are well placed to become Chartered Geologists under the Geological Society of London, UK or corporate members of the Hong Kong Institution of Engineers (HKIE) in the Geotechnical discipline, or other relevant professional institutions. This objective is best attained by means of a training scheme based on objectives. The purpose of this manual is to provide suitable guidance to ensure that the training of Engineering Geology Graduates (EGGs) is well-organised, effective and closely monitored. The manual provides guidance on the implementation of the EGGTS in the Geotechnical Engineering Office (GEO) of the Civil Engineering and Development Department (CEDD) assisted by other departments in the Development Bureau of Departments of the Government of the Hong Kong Special Administrative Region (HKSAR Government).

The basis of any good training scheme is clarity of content and simplicity of presentation. The scheme should guide trainees so that they may assess their own development during the training period by:

(a) observation of and practice in the activities being carried out within their immediate environment,

(b) enquiring and learning about activities being carried out by other organisations or departments providing a supporting role,

(c) reading and attending discussions on matters relating to the profession,

(d) private research and study, and

(e) forming the habit of pursuing continuing professional development.

The training scheme should also provide the employer with the means to:

(a) plan, organise and manage the training,

(b) identify the potential of the trainees,

(c) identify the need for off-the-job training with respect to technical, administrative or other particular needs of the trainees,

(d) monitor the progress of the trainees, and

(e) guide the trainees toward satisfying the key objective

criteria relevant to membership of a professional institution.

1.2 Professional Institutions

EGGs should direct their work towards membership of the HKIE or other recognised professional institutions. These institutions are important in that they represent their respective professions and members and generally aim at advancing their profession and practice, maintaining proper professional interests, standards and ethics, disseminating information about their subjects, and promoting a better understanding of these subjects by the public at large.

EGGs under the training scheme are encouraged to apply for the relevant grade of membership of one or more recognised professional institutions. At present the most appropriate institutions for this purpose are the Geological Society of London, U.K. (GSL), the Institute of Materials, Minerals and Mining, U.K. (IOM3) and the Hong Kong Institution of Engineers (HKIE), although membership of HKIE requires a first degree in engineering in accordance with the Washington Accord. Suitable top up to earth science degrees can be used to achieve this but require approval on a case-by-case basis. A list of references relating to these professional institutions is given in Section 5.

2 The Training Programme

2.1 General

This section describes the training programme, including desirable experience and training objectives that EGGs should attain at an early stage of their career to assist them to obtain membership of recognised professional institutions and become eligible to apply for Assistant Geotechnical Engineer posts in the HKSAR Government. In particular, the training programme now aligns closely with the new GSL Chartership System introduced on 1 January, 2010.

2.2 Length of Training

The EGGTS normally consists of training for a period of three years. If an exemption period is granted, the training period will be less. EGGs who wish to apply for exemption on account of previous relevant training or work experience should approach the Engineering Supervisor (ES)/Chief Training Geologist (CTG) for further advice. On satisfactory completion of training, a certificate will be issued to the EGGs by the GEO.

2.3 Principles of Graduate Training

In considering how best to help EGGs to attain professional status, the following principles should be adopted in the training of new graduates:

(a) They should not be expected to undertake tasks that require full professional competence without regular supervision and regular critical appraisal of their work by a suitably-qualified professional.

(b) From the outset, they should be given the opportunity to become familiar with the functions and management structure of their employing organisations, the role of their department or section, and their own position and value within that structure.

(c) They should be assisted in obtaining a working knowledge of relevant regulations, local bye-laws, legislation or codes of practice that affect the various tasks to be undertaken.

(d) They should be given the opportunity to gain experience in all aspects of relevant work, including initial and detailed planning, field and laboratory work, data analysis and interpretation and report preparation. Such experience will be obtained in greater depth if unbroken periods of time are devoted to each of them.

(e) They should be given the opportunity and encouragement whenever possible to follow up both scientific and technical references and enquiries so that a fuller understanding of the various tasks is obtained.

(f) When the opportunity arises, they should be encouraged to attend and participate in scientific meetings, conferences and courses of instruction, and to meet and exchange ideas with other engineering geologists or related professionals in geology and geotechnical engineering.

It is difficult to assign predetermined fixed periods of time to each of the various requirements listed. Much depends on the specific activities and the work in progress at the time the graduates commence their careers. As a broad guide only, the training should consist of:

(a) a period of initiation into employment, in which the general structure of the organisation is introduced, sites are visited and plans of existing works, structures, etc. are reviewed,

(b) spells of office and laboratory work in which to obtain a thorough understanding of the structure and the type of work undertaken by each unit,

(c) a period of field work under close supervision, and

(d) a balance of field and office work leading in due course (normally three years) to full responsibility for a particular job or project.

2.4 General Training Objectives

The EGGs should attain the following general objectives:

(a) understand the organisation of the GEO and its relationship with other parties in order to carry out work correctly and efficiently,

(b) understand the organisation of a construction site for the efficient and timely construction of a project,

(c) develop technical competence in the field of engineering geology (see Section 2.5),

(d) develop a professional attitude towards relationships with clients, associated professions and the public, with a clear understanding of the Rules of Conduct,

(e) understand the financial procedures and controls required during the design and construction stages of a project and how project costs are estimated,

(f) have a working knowledge of contract documents and tendering procedures, and

(g) have knowledge of relevant Safety and Health Legislation, including professional responsibilities, and competence in Safety and Health practices related to geotechnical works.

Section 2.4(c), which is elaborated in Section 2.5, covers the first three Chartership criteria of Regulation R/FP/2 introduced by the GSL on 1 January, 2010, while Sections 2.4(d) to 2.4(g) cover the remaining Chartership criteria. More specific and refined training objectives to achieve the above are given in the Training Objectives Sheets in Section 4.2 and Appendix A. A typical rotational posting programme for the training is shown in Appendix B.

2.5 Technical Experience

During the training period, EGGs should gain broad experience in the following aspects of engineering geology:

(a) understanding and interpretation of geological features in three dimensions, the processes and time scales leading to the development of these features and how these features may affect engineering works,

(b) preparation and use of geological and engineering geological maps at different scales,

(c) recognition, description and classification of (i) rock and soil materials in hand specimen and laboratory samples, and (ii) field conditions and soil and rock masses at field exposures, combined with an appreciation of the geological processes by which rocks and soils have arrived at their present state,

(d) evaluation and interpretation of various sources of geological data concerning a site or an area in the context of a desk study, including reports, memoirs or other materials such as aerial photographs,

(e) planning, organization and supervision of a ground investigation including drilling, trial pitting, core logging and engineering geophysical techniques,

(f) interpretation of data from field mapping, *in situ* testing, laboratory testing, monitoring installations or other forms of site investigation and evaluation of spatial and temporal variations in geological conditions, leading to the appreciation of potential geological problems in relation to an engineering project and engineering properties of rocks and soils, and

(g) presentation of oral and written technical reports.

As well as the general technical topics listed above, EGGs are encouraged to obtain experience in specific fields of engineering geological activity. In Hong Kong these are most commonly:

Aerial Photograph Interpretation,
Terrain Evaluation,
Geological Surveying,
Engineering Geophysics,
Site Investigation and Laboratory Testing,
Hydrogeology,
Rock Slope Engineering,
Tunnelling and Rock Cavern Engineering, and
Construction Material Resources.

EGGs are expected to have at least a general familiarity with all, and a thorough

understanding of some, of the above topics. Further details on these topics are given in the Specific Objectives Sheets in Appendix A.

2.6 Entry to a Professional Institution

New graduates should look upon the first four or more years of their career as an apprenticeship leading to recognition of professional competency. They should endeavour to undertake all tasks with interest and willingness.

While the GEO will provide the opportunities and encouragement to obtain relevant experience in engineering geology, the responsibility for certain aspects of training lies with the EGGs themselves, as follows.

(a) They should undertake continuing professional development as described in Section 2.7.

(b) They should be familiar with the qualifications and rules for admission to professional status and with institution membership requirements.

(c) They should undertake private study of subjects that are important to their employment, but in which they may need to supplement their basic academic training, such as rock mechanics, soil mechanics, structural engineering, mathematics, statistics and economics.

(d) They should devote a certain amount of their own time to updating their knowledge of modern developments in the field of geology and geotechnical engineering through reading technical literature, of both general and specific interest.

Possession of the prerequisite number of years of professional experience is not sufficient for membership of a professional institution. Applicants will need to demonstrate that they have made full use of the knowledge and experience obtained, that they have conscientiously and diligently undertaken their duties, and displayed an appropriate professional outlook. Log books and reports should also be completed with care as these will be studied closely to assess the experience of the applicants, their duties, responsibilities and general aptitude.

Applicants should bear in mind that it is not just their academic qualifications and professional experience which will be assessed. Other factors considered in professional assessments are the thoroughness with which they understand their projects, the manner in which they express themselves in their professional reports, and the bearing with which they conduct themselves at professional interviews. Assessors will consider all of these factors in deciding whether the applicants are suitable persons to be granted professional status.

2.7 Continuing Professional Development (CPD)

2.7.1 CPD Definition

CPD is the systematic maintenance, improvement and broadening of relevant knowledge and skills, and the development of these qualities necessary for the successful carrying out of professional duties throughout an engineering geologist's career. CPD is aimed at enhancing individual worth and thus corporate performance.

2.7.2 General Aspects of CPD

It is required that EGGs undertake CPD in parallel with their training and then throughout their career. The Training Logbook includes a section for recording the CPD undertaken and this is reproduced in Appendix C. Alternatively, CPD may be recorded in a separate HKIE CPD Log Book or other relevant professional institution CPD Log Book.

There are four main aspects of CPD which help to improve performance and competitiveness viz:

(a) Updating - bringing knowledge and skills up to date.

(b) Upgrading - enhancing existing skills and understanding.

(c) Awareness - revealing new subjects and considerations.

(d) Re-skilling - acquiring new knowledge and skills.

2.7.3 CPD Requirements

The following CPD requirements for the EGGTS are based on the HKIE - Continuing Professional Development Log Book:

(a) A minimum of 7.5 CPD days per year should be devoted to CPD activities during the EGGTS.

(b) CPD is a mandatory element for EGGs registered under the HKIE Scheme "A".

(c) A "'CPD Day" is six hours, either continuously or in multiples equal to six hours, such as (6 x 1 hr) (4 x 1.5 hr) (3 x 2 hrs) or (2 x 3 hrs).

(d) CPD is to be balanced between matters of direct technical interest and those of a general professional and technical kind.

(e) CPD activities are seminars, lectures, short courses, site visits and workshops, and include learning gained by working on a project, or undertaking specific professional tasks that enhance technical skills or improve knowledge.

(f) CPD subjects should cover a minimum of three days each on the principles and practice of Occupational Safety & Health, Environmental and related Technological Matters, and General and Professional matters.

(g) At least 50% of CPD days should be external to the Geotechnical Engineering Office (GEO).

(h) All CPD activities should be recorded in the CPD Log Book and endorsed by the Training Tutor (TT) or Engineering Supervisor (ES).

2.7.4 Endorsement of CPD Activities

Both the TT and the ES are authorised to endorse CPD activities but should only do so in the CPD Log Book if the activity fits the CPD definition and the EGGs can demonstrate that they have gained the desired benefit from participating in the activity. This should be achieved by either submitting a report of around 500 words for one CPD day or less and 800 words for more than one CPD day to the TT or ES within one month from the date of the CPD activity, or by passing a related test conducted at the end of the activity, as deemed appropriate. Claims for refunds of fees for CPD activities will not be entertained in case of late submission of the report concerned, irrespective of whether prior approval in principle has been granted.

3 Administration of the Programme

3.1 Standing Committee for the Training of EGGs

3.1.1 General

As with other HKSAR Government training schemes such as those for Civil Engineering Graduates (CEG) and Geotechnical Engineering Graduates (GEG), the EGGTS is under the overall direction of an interdepartmental Standing Committee. The Standing Committee for the Training of EGGs is charged with the responsibility of initiating and overseeing the EGGTS.

3.1.2 Terms of Reference

The Terms of Reference of the Standing Committee for the Training of EGGs are:

(a) to oversee, guide and assist the EGGTS,

(b) to advise on standards and technical policy matters related to EGGs, and

(c) to liaise with professional institutions on matters relating to the training of EGGs.

3.1.3 Membership

The membership of the Standing Committee for the Training of EGGs is as follows :

Chairman - Head of the Geotechnical Engineering Office (H(GEO)), who is also The Head of Office (HoO) in the EGGTS.

Secretary - Senior Geotechnical Engineer appointed by H(GEO)

Members
- Deputy Head (Planning & Standards) (DH(P&S)), GEO.
- Chief Geotechnical Engineer/Housing Department (CGE/HD).
- Chief Geotechnical Engineer/Planning (CGE/P), GEO, or any other Chief Geotechnical Engineer appointed by H(GEO), who is also the Engineering Supervisor (ES) and Chief Training Geologist (CTG) in the EGGTS.
- Chief Assistant Secretary/Works (6) (CAS(W) 6), Development Bureau.
- Senior Engineer/Training (SE/T), CEDD.
- Senior Geotechnical Engineer/Geological Survey (SGE/GS), GEO.

The Standing Committee conducts its business at minuted meetings which are called on an as-needs basis, but not less than once per year.

3.2 Working Group for the Training of EGGs

Monitoring of EGGs' progress under training, and any day-to-day administrative issues concerning EGG postings and duties, are reviewed regularly by the Working Group for the Training of EGGs.

The Working Group is chaired by ES/CTG. The Secretary of the Standing Committee is also the secretary of the Working Group. Members of the Working Group are the Training Tutors at the time when meetings are convened. The Working Group conducts its business at minuted meetings which are convened on an as-needs basis, but not less than twice per year.

3.3 Persons Involved in Supervision of the Training

While the Standing Committee provides overall guidance on the EGGTS, the routine

daily administration and running of the scheme also involves other persons and these are defined below:

(a) The Head of Office (HoO)

The HoO is the leader of the EGGTS approved by the HKIE and other relevant professional institutions to assume overall responsibility for the scheme, i.e. the Chairman of the Standing Committee for the Training of EGGs, namely H(GEO).

(b) Engineering Supervisor (ES)/Chief Training Geologist (CTG)

The ES/CTG is the professional in the GEO appointed to coordinate and manage the EGGTS. This is normally CGE/P. The ES/CTG may, however, delegate day-to-day supervision of the EGGs to qualified staff under his or her control or other qualified staff trained through the EGGTS.

(c) Training Tutor (TT)

The TT is the qualified professional Engineer/Geotechnical Engineer responsible for the day-to-day supervision of the EGGs while assigned for training.

(d) Engineering Geology Graduate (EGG)

The EGG is the person receiving training under the EGGTS.

3.4 Responsibilities of Persons Involved

3.4.1 General

Employers have a responsibility to ensure that graduate geologists under structured training obtain sufficient experience, guidance and leadership to enable them to become competent professionals, and so equip them to become corporate members of a relevant professional institution. The practical training of EGGs imposes a special responsibility on GEO staff to direct the EGGs' work and to pass on their knowledge and experience.

3.4.2 The Head of Office (HoO)

The HoO is responsible for providing a suitable scheme of training within government

and for seeing that it is duly implemented. The scheme of training is defined in the Training Objectives Sheets (Appendix A) and the Rotational Posting Programme (Appendix B). The scheme may also include off-the-job-training/post-graduate education.

3.4.3 Engineering Supervisor (ES)/Chief Training Geologist (CTG)

The ES/CTG is responsible for implementing the approved EGGTS and making adjustments to the rotational posting programme as and when required to ensure that the basic training objectives are met. The ES/CTG must ensure that the TTs understand what is required of them and implement the training effectively. The ES/CTG should also liaise with relevant professional institutions and ensure that the programme of training meets their requirements.

3.4.4 Training Tutor (TT)

The TT should be fully familiar with this manual. The TT will assume training responsibilities when the EGGs are formally assigned and will remain responsible until the EGGs are formally reassigned to a new posting. The TT will be informed by the ES/CTG of the programmed length of assignment and those items of the Training Objectives which should be achieved, together with the training level the EGGs are required to meet. The TT must give the EGGs every opportunity to reach this level and devise a training programme with the ES/CTG to ensure that the required objectives are met.

The TT must review progress monthly in order to:

(a) assess the ratings of the Training Objectives achieved by the EGGs under supervision (Section 4.5 refers),

(b) warn the ES/CTG as early as possible if any of the EGGs is having or is likely to have problems meeting the objectives in the time available, and

(c) review achievement ratings periodically.

The TT must fill in a Quarterly Performance Report (Appendix D) on each EGG under supervision in accordance with the routing chart in Section 4.6. The TT is also required to read and comment on the Quarterly Training Report (Appendix C) which must be the EGG's own work (Section 4.7 refers). Guidance notes for the TT on assessment of the EGG’s training progress and attainment of training objectives are provided in Appendix E.

3.4.5 Engineering Geology Graduate (EGG)

It is the responsibility of the EGGs to take every advantage of opportunities given and to achieve the standards required. EGGs must also advise the ES/CTG of any perceived deficiencies regarding their progress or the programme.

Each EGG is required to keep a daily diary and a monthly record and must submit a

Quarterly Training Report. The diary and monthly record should be kept updated and should be signed by the TT or other professional staff delegated by ES/CTG. The more substantial Quarterly Training Report must be routed as shown in Section 4.6 and in accordance with the timing specified. It is emphasised that the report must be the EGG's own work. Forms for the monthly record and the Quarterly Training Report are given at Appendix C.

4 Procedural Guidance Notes

4.1 General

The TTs and ES/CTG must maintain close professional contact with the EGGs. A high level of enthusiasm, interest and dedication is essential for their successful training. The EGGs are expected to cover a set format of basic geological and geotechnical engineering training. During this period they are also expected to undertake useful and productive work.

4.2 Training Objectives Sheets

The schedule of Training Objectives in Appendix A has been adopted for use in the EGGTS. The objectives shown on the Training Objective Sheets have one of the following four achievement criteria:

(a) G - General
(b) K - Knowledge
(c) E - Experience
(d) C - Competency

The interpretation of the achievement criteria and the rating procedures are given in Section 4.5.

The schedule is organised under the following three main objectives:

(a) Common Core are objectives that all trainees should meet, irrespective of their training, or where they are employed.

(b) Core Objectives consist of knowledge and expertise that all professional engineers should obtain.

(c) Specific Objectives are those related to the training of engineering geologists within GEO.

Procedural details should be carefully followed if the EGGTS is to be fully effective. A system of monitoring and careful assessment must be undertaken before deciding whether the required achievement criteria have been met or exceeded.

4.3 Briefing the EGGs

The EGGs should be briefed on government procedures, office organisation and office

and site practices upon first appointment. The TT will have to spend some time in close contact with the EGGs in the early stages so as to familiarise them with their new environment. The TT must discuss the work done under training with the EGGs on a regular basis. A brief note of the discussions should be included in the Quarterly Training Report.

In any briefing, the EGGs must be aware of the overall concept and design philosophy of the whole project, even though their own part in the project may be minor.

The TT responsible for site work must brief the EGGs on their responsibilities in relation to the duties of other site staff to ensure that they are fully aware of the limitations of their position. The authority given to the EGGs by the TT should increase as the trainees gain experience.

4.4 Assessing and Recording Progress of Training

Each EGG will receive a copy of this manual containing the set of Training Objectives Sheets (Appendix A). A copy of the Training Objective Sheets should be kept by the EGGs as part of their training record. These should be passed to the TT at regular intervals for assessing the progress and recording the standards reached in achieving relevant objectives. Each TT should provide a specimen initial/signature at the cover page of the Training Objectives Sheets. The ES/CTG will provide guidance as to which topics should be covered during each stage of the EGG's training.

4.5 Achievement Rating

The progress of the EGGs in achieving objectives will be assessed at least every three months by the TT and achievement up to or in excess of the required criteria will be recorded by dates and initials signed in appropriate columns. The ES should interview and test the EGGs quarterly to confirm the ratings assessed by the TT.

There are four ways that achievement of the Common Core, Core or Specific Objectives can be demonstrated by EGGs. Each has a different expectation. The objectives can be self-contained, or linked such that achievement of the set objective is dependent on successfully completing pre-requisite objectives. The meaning of the four codes is as follows:

(a) General (G) - This code is normally designated for objectives not easily categorised under other headings, e.g. a trainee's personal involvement and professional enhancement in educational, institutional or community-type activities.

(b) Knowledge (K) - This code is used for objectives where the EGGs must be able to demonstrate a good understanding of fundamental geological or engineering principles and their importance to the professional engineer and geologist. Such objectives could be attained by the EGGs reading appropriate literature and having their knowledge verified in discussion with the TT.

(c) Experience (E) - This code is used for objectives where the EGGs need

to obtain sufficient practical experience to be able to integrate theory with its application. The attainment of adequate knowledge (K) is usually a pre-requisite for such objectives. In order to apply the knowledge in a real working situation, the EGGs normally work under an appropriate level of supervision.

(d) Competency (C) - This code is used for objectives where the EGGs must demonstrate that they are adequately qualified and capable of undertaking tasks arising from the objective and are taking an appropriate level of responsibility. Such objectives are based in all cases on having attained adequate Knowledge (K) and Experience(E).

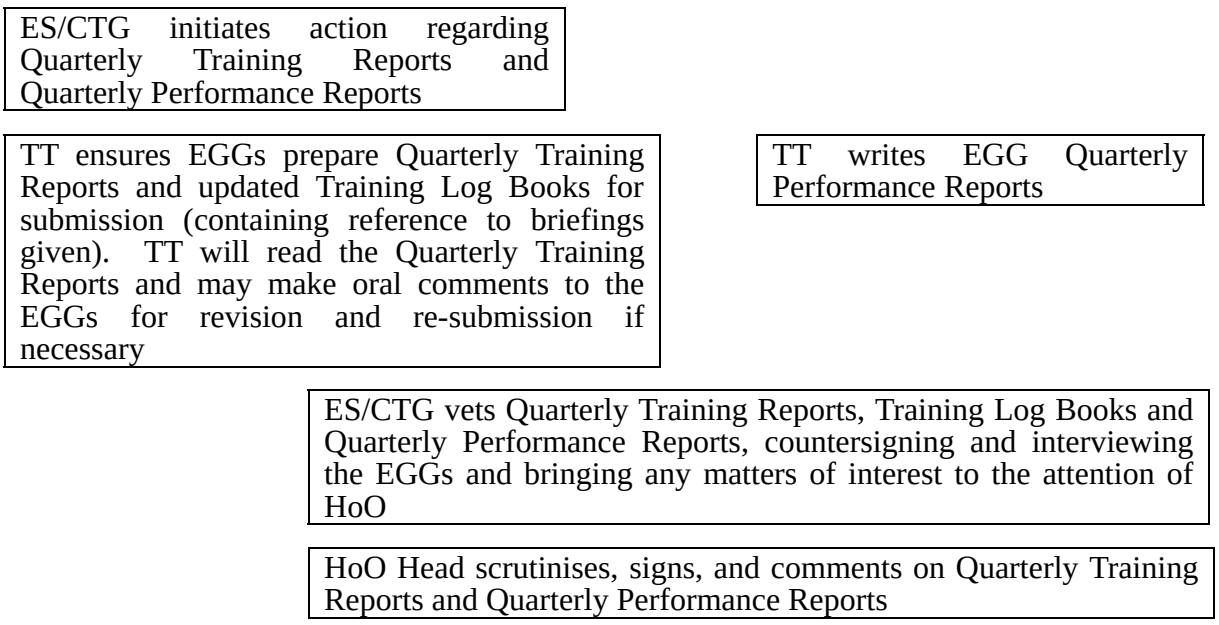
Only one initial/signature per topic per rating is required. If there is abnormally slow progress in any topic, the TT must draw this to the attention of ES/CTG.

4.6 Procedural Arrangement

As part of the preparation for the first Quarterly Training and Performance Reports in the first year of training, the TT should check and confirm to the ES/CTG that all the components of the EGG's Training Log Book given in Appendix C are in place and are up-to-date.

In order to ensure that the ES/CTG and HoO have accurate up-to-date knowledge of the progress of each EGG, it is essential that the current Quarterly Training Report and the current Quarterly Performance Report from the TT are submitted to the ES promptly in accordance with the dates on the routing sheet attached to the Quarterly Performance Report (see the Routing Chart below). In order to avoid unnecessary delays, the Quarterly Training Report and the Quarterly Performance Report need not be sent together.

Routing Chart for Quarterly Reports



The Quarterly Performance Report and a copy of the Quarterly Training Report is filed in the EGGs' Departmental files

ES/CTG returns Quarterly Training Reports and Training Log Books to the EGGs for retention and future action

4.7 Quarterly Training Reports

The procedure in respect of submission of Quarterly Training Reports should be as follows:

(a) The EGGs prepare their Quarterly Training Reports and hand them to the TT.

(b) The TT interviews the EGGs concerning the reports, and where necessary suggests ways of improving the presentation, including the identification of errors in grammar and English usage. At this stage their reports are not marked.

(c) The EGGs then make appropriate revisions to their unmarked reports.

(d) The EGGs resubmit their amended reports and updated Training Log Books to the TT.

(e) The TT reads and signs the returned reports and Log Book, making any comments on a separate sheet which should be stapled to the reports. (This sheet should be noted by the ES/CTG and detached after the HoO has signed the report).

(f) The reports and Log Book are then passed to the ES/CTG who signs them and forwards them to the HoO.

There is no objection to a photocopy of the reports being kept by the TT. The TT is encouraged to make more extensive corrections and comments on the photocopied reports and give these to the EGGs after the originals have been sent to the ES/CTG.

4.8 List of Training Documents

The following is a list of all the items comprising the scheme documentation:

(a) Training Objectives Sheets) See Appendix A

(b) Schooling and Employment Record, etc.)

(c) Monthly Report)

(d) Quarterly Training Reports) See Appendix C

(e)	Training Record for the Quarterly Period	)))
(f)	Continuing Professional Development Record	))
(g)	Quarterly Performance Reports	) See Appendix D

A Training Log Book containing the necessary forms relating to items (a) to (f) above and covering the full training period will be given to each EGG. This should be kept updated by the EGGs for future reference.

Any other lecture notes, reports, projects, assignments, etc. completed during the course of training should also be kept by the EGGs for future use and reference in matters such as submission to a professional institution.

4.9 Rotational Posting Programme

The EGGs will undertake their training by rotating mainly within GEO. However, they may also be posted to other HKSAR Government Departments, engineering consultants and contractors, in particular during their training for major construction site experience, in order to cover the Training Objectives laid down in Appendix A.

This rotation will be based on a Rotational Posting Programme. A typical example is given at Appendix B. The programme may be adjusted by the ES as circumstances and training opportunities dictate.

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Appendix A

Training Objectives Sheets

ENGINEERING GEOLOGY GRADUATE

TRAINING SCHEME

TRAINING OBJECTIVE SHEETS

DETAILS OF PROFESSIONALS DELEGATED TO SIGN TRAINING DOCUMENTS

Name : _____ Signature : _____ Initials : _____
(Block Letters)

Post/Organisation : _____

Name : _____ Signature : _____ Initials : _____
(Block Letters)

Post/Organisation : _____

Name : _____ Signature : _____ Initials : _____
(Block Letters)

Post/Organisation : _____

Name : _____ Signature : _____ Initials : _____
(Block Letters)

Post/Organisation : _____

Name : _____ Signature : _____ Initials : _____
(Block Letters)

Post/Organisation : _____

Name : _____ Signature : _____ Initials : _____
(Block Letters)

Post/Organisation : _____

Name : _____ Signature : _____ Initials : _____
(Block Letters)

Post/Organisation : _____

1. COMMON CORE OBJECTIVES	Code	ES initials and Date of Assessment			
		C	E	K	G
1.1 PROFESSIONAL INSTITUTION ACTIVITIES					
(a) Know the history, role and organisation of :	K				
(i) Hong Kong Institution of Engineers (HKIE). (ii) Geological Society of London (GSL). (iii) Institute of Materials, Minerals and Mining, U.K. (IOM3). Refer to current publications of professional institutions given in Section 5.					
(b) Develop and maintain a general interest in professional institution affairs.	E				
(i) Participate in at least six geotechnical divisional meetings of the HKIE or meetings of GSL, IOM3 or other professional institutions within the construction industry.					
(ii) Be involved in professional institution affairs, e.g. committee membership of Young Members.					
(iii) Where possible, attend AGMs of HKIE, GSL, IOM3 and write a report of about 500 words for each meeting to the satisfaction of the TT and ES.					
1.2 PROFESSIONALISM					
(a) The responsibilities of the engineer/geologist in society.	K				
(b) Rules of Conduct related to	K				
(i) HKIE (ii) GSL (iii) IOM3 (iv) Employers/clients (v) General public (vi) Colleagues					

1. COMMON CORE OBJECTIVES	Code	ES initials and Date of Assessment			
		C	E	K	G
(c) Inherent responsibilities for a professional engineer/geologist in relation to : (i) Ethics (ii) Codes of behaviour (iii) Professionalism	K				
1.3 GENERAL PERSONAL DEVELOPMENT					
(a) Keeping updated on local, regional and international current affairs in : (i) Geotechnical engineering and engineering geology by reading relevant local, regional and international publications such as 'Asia Engineer'. (ii) Current affairs both locally/regionally and internationally by reading, at least a quality local and national newspaper.	K				
(b) Involvement with other local learned societies such as the Geological Society of Hong Kong.	G				
(c) Record of Continuing Professional Development (CPD) attendance in CPD Log Book and satisfying the ES/CTG as to the value of each activity attended.	C				
1.4 PERSONAL QUALITIES Demonstrating personal activities with respect to: - Technical Competence - Creativity - Innovative Abilities - Professional & Social Confidence	C				

1. COMMON CORE OBJECTIVES	Code	ES initials and Date of Assessment			
		C	E	K	G
1.5 OCCUPATIONAL SAFETY & HEALTH (S&H)					
(a) Relevant S&H Legislation	K				
(b) S&H Responsibilities of Professional Engineers to :	K				
(i) Employers					
(ii) Employees					
(iii) General Public					
(c) S&H related to geotechnical works	C				
1.6 ENVIRONMENT					
(a) Be familiar with the provisions of the Environmental Impact Assessment Ordinance as it relates to the construction industry	K				
(b) Inter-relationship of technology with the environment in :-					
(i) The work place	C				
(ii) Society generally	K				
1.7 COMMUNICATION	C				
Be able to communicate confidently and accurately in the professional manner required:-					
(i) Orally - Informally at discussion - Formally at presentations - At meetings					
(ii) Written - Reports - Memos - Instructions to junior staff - Letters - Bibliography					

1. COMMON CORE OBJECTIVES	Code	ES initials and Date of Assessment			
		C	E	K	G
1.8 OWN ORGANISATION **Know the structure of the Geotechnical Engineering Office with respect to : -** - Size and History - Relationships with Government Departments and other organisations - Management Structure and Functions - Office Manuals, Procedures and Practices - Communications Systems - Training Programmes and Career Development Paths					

2. CORE OBJECTIVES	Code	TT initials and Date of Assessment			
		C	E	K	G
2.1 GEOTECHNICAL ENGINEERING DESIGN PRACTICE					
(a) Have a working knowledge of HKSAR Government design manuals, codes of practice and British Standards in regular use in GEO, especially : (i) GEO publications including Geoguides and Geospecs, (ii) Geological Maps and Memoirs published by Hong Kong Geological Survey, (iii) GEO Technical Circulars.	K				
(b) Have a working knowledge of computer programs in regular use in GEO.	E				
(c) Be familiar with sources of information in HKSAR (See Geoguide 2, Appendix B)	E				
2.2 DEFINING A PROBLEM					
Have experience in identifying and defining a problem accurately. Take an active part, probably in a supporting role, in researching, assembling and assessing basic data.	E				
2.3 ALTERNATIVE SOLUTIONS					
Gain practical experience in the identification and evaluation of alternative solutions to a problem. Assist in the technical and financial evaluation of alternatives by, for example, assisting with a feasibility study covering such aspects as : concepts and precedents, sources of information, estimates and budget quotations, quick design methods, writing, production and interpretation of feasibility reports, and briefs for detailed design, etc.	E				

2. CORE OBJECTIVES	Code	TT initials and Date of Assessment			
		C	E	K	G
2.4 APPLY STANDARDS					
Know the application and limitations of national and international standards, codes of practice, technical memoranda, etc.	K				
List the documents you have used					
2.5 DESIGNING A SOLUTION					
Produce the solution to a problem	E				
Draw together all the relevant data and analytical work under 2.1, 2.2 and 2.3 appropriate to engineering geology and geotechnical engineering.					
2.6 DRAWINGS					
Present the solution to a problem.	E				
Produce documentation on the solution containing diagrams, sketches, charts etc. and/or produce general arrangement and detailed drawings using scales and drawing sizes appropriate to the information to be conveyed.					
2.7 THE ENVIRONMENT					
Appreciate the way a report on environmental issues is used in arriving at an engineering solution.	G				
Understand the relevance of an environmental impact assessment as it affects the solution of a problem within GEO.					

2. CORE OBJECTIVES	Code	TT initials and Date of Assessment			
		C	E	K	G
2.8 SPECIFICATIONS					
Appreciate the way technical specifications are an essential part of the solution of a problem.	G				
Select or write a specification and/or amend an existing specification for a particular item or work.					
2.9 PROJECT COSTING					
Have experience of costing the solutions to problems by taking off quantities and building up cost estimates.	E				
Present examples for discussion and comment.					
2.10 SAFETY IN DESIGN					
Know the requirements for safety in problem solving by being familiar with the regulations applying to your work.	K				
State regulations used and safety criteria followed					
2.11 THE CONTRACT & ITS OPERATION					
(a) Know how all parties to a contract exercise their duties and responsibilities by appreciating the practical application of the various documents forming a particular contract.	K				
(b) Know the procedure for the issue and/or receipt, registration and filing of work instructions and/or drawings and amendments.	K				
(c) Be able to keep an accurate daily record of events and instructions.	C				
(d) Read and co-ordinate drawings and/or implement work instructions by being involved on a day-to-day basis in this process.	C				

2. CORE OBJECTIVES	Code	TT initials and Date of Assessment			
		C	E	K	G
2.12 SETTING OUT					
Participate in the dimensional control and accuracy of the work you are implementing.	C				
Demonstrate competence by the quality of your work.					
2.13 METHODS AND PLANT					
Know the use, performance and cost of equipment and/or plant used in implementing a solution.	K				
Include in Log Book all major items of which you have first-hand experience.					
2.14 PLANNING AND PROGRAMMING					
Participate in planning, programming, and monitoring work progress and reporting.	C				
Discuss programme with your TT.					
2.15 MEASUREMENT					
Be able to measure and record or independently check work done for payment purposes.	C				
Take part in this work for the preparation or checking of interim valuations and/or final accounts.					

2. CORE OBJECTIVES	Code	TT initials and Date of Assessment			
		C	E	K	G
2.16 SAFETY AT WORK					
Have a critical approach to safety matters in the implementation process and to the observance of safe working practices.	E				
Know your responsibilities relating to safety and be familiar with legislation relating to your particular work.					
Appreciate good safety practices relevant to your work by reference to the Government's Construction Site Safety Manual.					
2.17 QUALITY CONTROL AND QUALITY ASSURANCE					
Know the principles of quality control to meet a specification.	K				
Record your involvement with quality control and any involvement with quality assurance.					
2.18 PROCEDURAL					
(a) Have experience in the procedures to be followed for including projects in the Public Works Programme.	G				
(b) Know the procedures involved in calling for tenders and assessing tenders.	K				
(c) Know the procedures for land acquisition.	K				
(d) Have a working knowledge of relevant ordinances containing geotechnical provisions (e.g. Buildings Ordinance).	K				
2.19 TECHNICAL					
(a) Be able to produce working drawings and have knowledge of correlating drawings with technical specifications.	C				
(b) Have experience in applying the Conditions of Contract.	E				

2. CORE OBJECTIVES	Code	TT initials and Date of Assessment			
		C	E	K	G
2.20 FINANCIAL					
(a) Appreciate how departments' budgets are computed and controlled.	G				
(b) Appreciate the operation of cost indices.	G				
(c) Understand the financial authorities and financial limits of officers in Government departments.	K				
2.21 CONTRACTUAL					
Have some knowledge of the relative merits of implementing construction works by use of : (i) Lump Sum contracts, (ii) Remeasurement contracts, and (iii)Schedule of Rates contracts.	K				

3. SPECIFIC OBJECTIVES	Code	TT initials and Date of Assessment			
		C	E	K	G
3.1 TERRAIN EVALUATION & AERIAL PHOTOGRAPH INTERPRETATION (API)					
(a) Understand the basic principles and limitations of terrain evaluation methods.	K				
(b) Have a thorough knowledge of terrain classification mapping.	E				
(c) Know how to apply aerial photograph interpretation to engineering problems, including: (i) routine API, and (ii) API in a major landslide study.	E				
(d) Understand the use of API and terrain evaluation concepts in the GEO's Geotechnical Area Studies Programme (GASP) and Natural Terrain Landslide Study (NTLS).	K				
(e) Understand the use of digital technology in geotechnical studies, including Geographic Information System (GIS) and remote sensing techniques such as satellite imagery and Light Detection and Ranging (LiDAR).	K				
(f) Have a working knowledge of GEO's slope identification and registration system, and the technical content of the Slope Information System (SIS) database and its GIS products	K				
3.2 GEOLOGICAL SURVEY					
(a) Know how to carry out geological field mapping at the regional scale.	C				
(b) Be able to use and interpret other methods of geological surveying/problem solving (e.g. geophysical, geochemical methods)	E				
(c) Know how to use and interpret aerial photographs for geological mapping.	C				
(d) Be able to identify and classify soils and rocks.	C				

(e)	**Have a working knowledge of petrology and petrography and sedimentology (including use of palaeontology for dating)**	C				
(f)	**Know how to interpret and describe a field area and produce cross-sections, reports, geological maps, etc.**	C				
(g)	**Have an understanding of the GEO's Geoscience Database and its GIS products**	K				
3.3	**ENGINEERING GEOLOGY**					
(a)	**Understand the principles and know how to interpret engineering geology maps at regional, district and local/site scale.**	K				
(b)	**Be able to describe and classify soil and rock materials and masses for engineering use.**	C				
(c)	**Understand the material and mass behaviour and the engineering properties of common rock and soil types in Hong Kong.**	K				
(d)	**Be capable of assessing and improving the stability of a rock slope, including discontinuity data collection, kinematic analysis (including use of appropriate computer software) and design of improvement or remedial works.**	E				
(e)	**Know how to apply and interpret shallow engineering geophysical methods (e.g. seismic refraction and reflection, ground penetrating radar, resistivity imaging, spectral analysis of surface waves and electromagnetic methods).**	E				
(f)	**Know how to evaluate the stability of, and support requirements for, rock tunnels and caverns by rock mass classification systems (e.g. Q-Index, and RMR method).**	E				
(g)	**Have experience in carrying out engineering geological field studies of major landslides.**	E				
3.4	**HYDROGEOLOGY**					
(a)	**Understand and have some familiarity with the occurrence of groundwater, hydraulic**	K				

3. SPECIFIC OBJECTIVES		Code	TT initials and Date of Assessment			
			C	E	K	G
	boundary conditions, flow systems and hydrogeological parameters.					
(b)	**Understand the theory and principles of groundwater hydraulics and be able to assess the effect of groundwater on slope stability, including its representation in computer software based on limit equilibrium analytical techniques.**	E				
(c)	**Understand the effect of engineering work on a groundwater regime and the physical and environmental changes this can produce.**	K				
(d)	**Be able to analyse groundwater flow systems by use of flownets and mathematical modelling.**	E				
3.5	**CONSTRUCTION MATERIAL RESOURCES**					
(a)	**Know how to evaluate natural construction material reserves and layout working areas.**	K				
(b)	**Understand the methods of exploration, methods of working (blasting, loading, transport, etc.) and processing (crushing, screening, refining) of geological materials for construction use.**	K				
(c)	**Know how to evaluate the suitability of geological materials for construction by laboratory testing.**	K				
(d)	**Be able to evaluate the stability of working faces and waste disposal areas.**	E				
3.6	**GROUND INVESTIGATION AND LABORATORY TESTING**					
(a)	**Understand the capabilities of different ground investigation techniques and equipment.**	E				
(b)	**Be capable of carrying out technical supervision of ground investigation including land and marine-based drilling and boring,**	E				

	land and marine-based geophysics, trial pitting, slope stripping, sampling, *in situ* testing and piezometer installation.					
(c)	**Be proficient in assessing laboratory testing requirements for soils and rocks and assessing test data to derive design parameters.**	E				
(d)	**Be familiar with soil and rock laboratory testing standards and practice including sample description, sample preparation, testing techniques and reporting.**	E				
3.7	**GEOTECHNICAL ENGINEERING DESIGN**					
(a)	**Be capable of conducting a desk study for a site investigation.**	E				
(b)	**Be competent in the design of ground investigation for different types of geotechnical work (e.g. slope stability, foundations, borrow areas).**	E				
(c)	**Know how to evaluate the stability of fill slopes, cut slopes, and retaining walls, and be familiar with computer software based on common limit equilbrium analytical techniques.**	E				
(d)	**Be familiar with the range of measures used to improve the stability of existing slopes and retaining walls and to create stable new slopes and walls, including the use of geosynthetic products (e.g. for reinforcement, or in filters)**	E				
(e)	**Know how to design common slope stabilization, improvement or remedial measures.**	K				
3.8	**CONSTRUCTION SITE EXPERIENCE**					
(a)	**Be capable of supervising the construction of temporary and permanent geotechnical works such as :**	E				
	(i) site formation, including slopes (cut and fill), and retaining walls,					

3. SPECIFIC OBJECTIVES	Code	TT initials and Date of Assessment			
		C	E	K	G
(ii) foundations and deep excavations, (iii) tunnels and rock caverns, and (iv) site drainage.					
(b) Have knowledge of the efficient and economical use of mechanical plant commonly used in the execution of geotechnical works.	K				
(c) Understand the principles of concrete production and quality control of the end product and constituent materials.	K				

Appendix B

Typical Rotational Posting Programme

(Subject to Alteration at the
Discretion of the Engineering Supervisor/
Chief Training Geologist)

TYPICAL ROTATIONAL POSTING PROGRAMME

First Year	Training Location	Main Elements of Training
2 months	GEO Planning Division/ Planning and Terrain Evaluation Section	• Introduction (1 week) • Aerial Photograph Interpretation • Terrain Evaluation
1 month	GEO S&T Division/ Public Works Central Laboratory	• Soil Testing Methods • Rock Testing Methods
3 months	GEO Geotechnical Projects Division/ Ground Investigation Sections, or Housing Department, or GI Contractors	• GI Contract Specification & Management • Ground Investigation on Land • Marine Ground Investigation • Field Testing • Piezometer Installation • Chemical and Biological Testing for Contaminated Sediments
6 months	GEO Planning Division/ Geological Survey Section	• Geological Mapping • Soil & Rock Identification • Petrography & Petrology • Geochemistry • Geoscience Database
Second Year		
5 months	GEO Planning Division/ Engineering Geology Section and Planning and Terrain Evaluation Section	• Soil & Rock Description • Engineering Geology & Hydrogeology • Rock Slope Engineering • Engineering Geophysics • Geological Materials for Construction Use • Tunnelling & Cavern Engineering • Major Landslide Field Studies
9 months (7 months in Second Year, 2 months in Third year)	GEO LPM2 or Geotechnical Projects Division, or Housing Department, or Geotechnical Engineering Consultants	• Desk Study • Field Study • Ground Investigation Design • Laboratory Testing • Engineering Geological Assessment • Geotechnical Design and Analytical Method • Cost Estimate Preparation • Reporting
Third Year		
10 months	GEO LPM2 Division, or Housing Department, or A Development Bureau Department, or Engineering Consultants	• Construction Site Experience • Site Safety and Environmental Control • Hazard Assessment • Financial Procedures and Controls • Contractual Experience in one or more of the following : - site formation and slopes - natural terrain hazard mitigation works - foundations and deep excavations - tunnels and rock caverns - site drainage

APPENDIX B - TYPICAL ROTATIONAL POSTING PROGRAMME

Training Location	Elements of Training	Training Period			Training Objectives Item Details (of Appendices A & E)			Nominated Training Tutor (TT)
		Year 1	Year 2	Year 3	1.	2.	3.	
Planning Division/ Planning & Terrain Evaluation Section, GEO.	• Introduction • Aerial Photograph Interpretation • Terrain Evaluation	2 months				6K	1(a)K 1(d)K 1(b)E 1(e)K 1(c)E	SGE/PTE or representative
Planning Division/ Geological Survey Section, GEO	• Geological Mapping • Soil & Rock Identification • Petrography & Petrology • Geochemistry • Geoscience Database	6 months				6K 7G 10K	2(a)C 2(e)C 2(b)E 2(f)C 2(c)C 2(g)K 2(d)C	SGE/GS or representative
Planning Division/ Engineering Geology Section, and Planning & Terrain Evaluation Section, GEO	• Soil & Rock Description • Engineering Geology and Hydrogeology • Rock Slope Engineering • Engineering Geophysics • Geological Materials for Construction use • Tunnelling and Cavern Engineering • Major Landslide Field Studies • Natural Terrain Hazard Studies		5 months		1(a) K 1(b) E 2(a) K 2(b) K 2(c) K 3(a) K 3(b) G 3(c) E 4 K 5(a) K 5(b) K 5(c) E 6(a) K 6(b)(i) E 6(b)(ii) K 7 C 8 C	1(a) K 5 K 1(b) E 6 K 1(c) E 18(a) G 2 K 19(a) K 3 K 20(a) G 4 K 20(c) K	3(a)K 4(b)K 3(b)C 4(c)K 3(c)K 4(d)E 3(d)E 5(a)K 3(e)E 5(b)K 3(f)E 5(c)K 3(g)E 5(d)E 4(a)K	SGE/EG or representative
Geotechnical Projects Division/Ground Investigation Section, or Housing Department, or Drilling Contractors, and S&T Division, Public Works Central Laboratory, GEO	• GI Contract Specification & Management • Ground Investigation on Land • Marine Ground Investigation • Field Testing • Piezometer Installation • Chemical and Biological Testing for Contaminated Sediments • Soil & Rock Testing Methods	4 months				1(a) K 11(a) K 16 E 1(b) E 11(c) E 17 K 1(c) E 11(d) E 18(b) K 3 E 12 E 18(c) K 7 G 13 K 18(d) E 8 G 14 E 19(b) E 9 E 15 E 21 K	6(a)E 6(b)E 6(c)E 6(d)E	SGE/GI1 or SGE/GI2, or representative, and SGE/Lab or representative, or other nominated TTs
LPM2/Geotechnical Projects Division, GEO, or Housing Department, or Geotechnical Engineering Consultants	• Desk Study • Field Study • Ground Investigation Design • Laboratory Testing • Engineering Geological Assessment • Design and Analytical Methods • Cost Estimate Preparation • Reporting		7 months	2 months		1(a) K 4 K 9 E 1(b) E 5 E 10 K 1(c) E 6 E 19(a) C 2 E 7 G 3 E 8 G	3(a)K 6(a)E 7(a)E 3(b)C 6(b)E 7(b)E 3(c)K 6(c)E 7(c)E 3(d)E 6(d)E 7(d)E 3(e)E 3(f)E 3(g)E	SGE/GP1 or representative, or SGE/LPM2 or representative, or other nominated TTs
LPM2 Division, GEO or Housing Department, or A Development Bureau Department, or Engineering Consultants	• Construction Site Experience • Site Safety and Environmental Control • Hazard Assessment • Financial Procedures and Control • Contractual Experience in one or more of the following : - Site Formation and Slopes - Natural Terrain Hazard Mitigation Works - Foundation and Deep Excavations - Tunnel/Rock Cavern - Site Drainage			10 months	3(c) C 4 C 5(c) C 6(b)(i) C	2 E 11(c) C 17 K 3 E 11(d) C 18(b) K 6 E 12 C 18(c) K 8 G 13 K 18(d) K 9 E 14 C 19(a) C 10 K 15 C 19(b) E 11(a) K 16 E 21 K 11(b) K	5(a)K 8(a)E 5(b)K 8(b)K 5(c)K 8(c)K 5(d)E	SGE/LPM2 or representative, or CGE/HD or representative, or other nominated TTs

Appendix C

Graduate Training Log Book

GRADUATE TRAINING LOG BOOK

Name of Trainee (English) _____ (Chinese) _____
Date of Birth _____ Nationality _____ I.D. Card No. _____

Schooling Record			Academic Record		
School	Dates	Certificates	University/College	Dates	Certificates

Professional Institution Record		Learned Society Record	
Grade of Membership	Date attained	Grade of Membership	Date attained

Employment Record

	Employer	Nature of Business	From	To	Training Geologist/ Engineer
Pre-Training					
During Training					

MONTHLY REPORT FOR THE MONTH ENDING 20

EGG Name : _____

Synopsis of work undertaken during the month (aim at about 300 words)	Dates

Endorsed and confirmed :

_____

Training Tutor

QUARTERLY TRAINING REPORT FOR THE QUARTER ENDING 20

EGG Name : _____

Record a detailed description of the work performed during the quarter or alternatively a detailed analysis or presentation of a particular aspect of the training undertaken during the period. (Aim at about 1,000 words)

Endorsed and confirmed by :(use continuation pages as necessary)

_____
Training Tutor

_____ _____
Engineering Supervisor/Chief Training Geologist Head of Office

TRAINING RECORD FOR THE QUARTERLY PERIOD

_____ to _____ 20 _____

EGG Name : _____

Training Objectives Section/Para.	Give brief description of each principal type of work you were engaged in during the period	Weekly periods. Give commencement and completion dates			
	For the month of _____ 20 _____				
	For the month of _____ 20 _____				
	For the month of _____ 20 _____ Endorsed and confirmed by : _____ Training Tutor				

EGG CONTINUING PROFESSIONAL DEVELOPMENT (CPD) RECORDEGG Name _____

Dates	Activity	Activity Organizer	CPD Claimed **d/h	Initials of TT*/ES/CTG*

*TT = Training Tutor, ES/CTG = Engineering Supervisor/Chief Training Geologist
**d/h = day(s) or hours

Appendix D

Quarterly Performance Report

CONFIDENTIAL

ENGINEERING GEOLOGY GRADUATE QUARTERLY PERFORMANCE REPORT

NAME : _____ FOR PERIOD _____ TO _____
(IN BLOCK LETTERS) COMMENCING

19 _____ Intake Department _____

This report prepared in : Division _____

Office _____

Department _____

(A) PERFORMANCE REPORT (Tick one box for each item as appropriate)
(To be completed by the Training Tutor under whom the graduate has worked)

1. Responsibility
   - (a) Seeks and accepts responsibility at all times ☐
   - (b) Very willing to accept responsibility ☐
   - (c) Accepts responsibility as it comes ☐
   - (d) Inclined to refer up matters which could be decided personally ☐
   - (e) Generally avoids taking responsibility ☐

2. Relations with Colleagues
   - (a) Wins and retains the highest regard of all ☐
   - (b) Is generally liked and respected ☐
   - (c) Gets on well with them ☐
   - (d) Not very easy in relationships ☐
   - (e) A very difficult colleague ☐

3. Insight
   - (a) Gets at once to the root of a problem ☐
   - (b) Shows a ready appreciation of a problem ☐
   - (c) Usually grasps a point correctly ☐
   - (d) Not very quick on the uptake ☐
   - (e) Often misses the point ☐

4. Initiative/Constructive Power
   - (a) Outstandingly fertile in useful ideas ☐
   - (b) Always makes a valuable contribution ☐
   - (c) Solutions are normally adequate ☐
   - (d) Seldom produces constructive ideas ☐
   - (e) Fails to respond to a new situation ☐

5. Judgement
   (a) Judgements always sound and well thought out ☐
   (b) View of a matter is always a sensible one ☐
   (c) Takes a reasonable view of most matters ☐
   (d) Judgement tends to be erratic ☐
   (e) Judgement cannot be relied on ☐

6. Output
   (a) Outstanding in the amount of work done ☐
   (b) Gets through a great deal of work ☐
   (c) Output average ☐
   (d) Does rather less than expected ☐
   (e) Output regularly insufficient ☐

7. Quality
   (a) Distinguished for accurate and thorough work ☐
   (b) Maintains a high standard ☐
   (c) Work is generally of good quality ☐
   (d) Quality of work is uneven ☐
   (e) Inaccurate and slovenly ☐

8. Expression on Paper
   (a) Exceptional ☐
   (b) Very good ☐
   (c) Generally good expression ☐
   (d) Just good enough to get by ☐
   (e) Cannot express points clearly ☐

9. Oral Expression
   (a) Extremely effective ☐
   (b) Puts points across well ☐
   (c) Expresses points adequately ☐
   (d) Does not put points across well ☐
   (e) Ineffective ☐

10. Organisation of Work
   (a) Exceptional ☐
   (b) Shows considerable skill at organising work ☐
   (c) Plans work satisfactorily ☐
   (d) Unplanned approach ☐
   (e) Completely lacking in organising ability ☐

(B) OVERALL GRADING FOR QUALITIES AND PERFORMANCE OF DUTIES DURING PERIOD COVERED BY THIS REPORT (Tick appropriate box)

OUTSTANDING	An exceptional trainee, outstanding in most respects. Has displayed well-above-average capability of becoming a full professional.	☐
VERY GOOD	A very able and effective trainee. Has displayed above-average capability of becoming a full professional.	☐
GOOD	A competent trainee. Has displayed average capability of becoming a full professional.	☐
FAIR	Performs duties only moderately well. Has below-average capability of becoming a full professional.	☐
UNSATISFACTORY	Definitely not up to the required standard of the grade, is not full professional material.	☐

(C) PROGRESS IN TRAINING

1. Is the trainee gaining maximum benefit from the training
   Yes ☐ No ☐

   If no, please give details under "Training Tutor's Remarks" at Section D.

2. Is the trainee progressing along the Training by Objectives Programme satisfactorily?
   Yes ☐ No ☐

   If no, please give details under "Training Tutor's Remarks" at Section D.

(D) TRAINING TUTOR'S REMARKS

1. Comment on EGG's Training Report

(a) Report first received on time/..... weeks late compared to date on Routing Sheet.

(b) General quality

(c) Recurrent errors, if any (e.g. grammar, format, content, etc.)

(d) Proposed remedial actions, if any

Note TT must discuss 1(a) to 1(d) with EGG

2. General comments on training and performance

3. Specify any particular training needs

4. Deficiencies discussed with EGG on .....

Name .....
Date .....
Designation .....Training Tutor
Signature .....

(E) ENGINEERING SUPERVISOR/CHIEF TRAINING GEOLOGIST'S REMARKS

(ES/CTG should comment on the remarks at (D) above together with a brief statement on the EGG's progress).

The EGG was interviewed by me on .....

Date ..... Signature .....

Designation ..... Name in Block Capitals .....

(F) REMARKS OF HEAD OF TRAINING SCHEME

Date ..... Signature .....

( )

Head (Geotechnical Engineering Office)

Civil Engineering and Development Department

Appendix E

Guidance Notes for Training Tutors

1 Background

The Training Objectives Sheets comprise Appendix A of the EGG Training Manual, which has been endorsed by the HKIE, IOM3 and GSL

In the EGG Training Manual the following is stated:

Section 3.4.4, 1st paragraph - "The TT will be informed by the ES/CTG of the programmed length of his assignment and of those items of the Training by Objectives Programme which should be achieved, together with the training level the EGGs are required to meet."

Section 4.2, last paragraph - "A system of monitoring and careful assessment must be undertaken before deciding whether the required achievement criteria have been met or exceeded."

Section 4.4, - the Training Objectives Sheets "should be passed to the TT for assessing the progress and recording the standards reached in achieving relevant objectives at regular intervals".

Section 4.4, last paragraph - "The ES/CTG will provide guidance as to which items should be covered during each stage of the EGGs' training".

In general the EGGs keep the Training Objectives Sheets, and it is their responsibility to pass the sheets to their TT when required. If the EGGs forget to do this, then the TT should ask them for the sheets.

2 Study Related to the Training Objectives

The TT should encourage the EGGs to undertake regular study with the aim of attaining the standards required under the various Training Objectives. Some of this study will have to be carried out outside normal working hours.

The TT is expected to regularly discuss this job-related study with the EGGs, with a view to monitoring the EGGs' progress of training.

3 Training Log Books

The TT should check that the EGG’s Training Log Book is complete and up-to-date before it is submitted to ES/CTG and HoO with the Quarterly Training Report. This check is particularly important during the first training quarter in the first year of training, to ensure take the Training Log Book contains all the relevant documents (see Appendix C of the EGG Training Manual)

4 Training Records

Training record sheets are issued to each EGG in which they are required to enter brief details (in ink) of the time they spend in studying/working towards specified Training

Objectives. Training records should be regularly endorsed by the TT (once fortnightly as a minimum). Before signing each record, the TT should be satisfied that the EGGs have actually carried out the study/work claimed.

The record should not simply be used to note activities. It should contain frequent references to the item numbers (e.g. 1.3) of particular Training Objectives, such that over the entire period of training reference will have been made to all items, often quite a few times.

5 Daily Diary

Training Objective No. 2.11(c) requires the EGGs to keep an up-to-date, accurate daily diary for inspection by the TT and ES. This purpose can be served if the EGGs are assigned to keep the official site diary, or else they should separately keep a similar diary. The daily diary is in addition to the Training Objectives Diary mentioned above.

6 Achievement Ratings

The achievement ratings referred to in the Training Objectives Sheets are:

G	-	General
K	-	Knowledge
E	-	Experience
C	-	Competency

Section 4.5 of the EGG Training Manual, describes how these ratings should be interpreted.

7 Training Objectives Monitoring Schedule

The schedule attached to these Guidance Notes will assist in monitoring of the EGG's progress towards the various Training Objectives.

8 EGGs Seeking Remission/Exemption of Training

EGGs may seek remission/exemption of training by virtue of their working experience in engineering or geology obtained prior to their EGG training.

In these cases 'p' (for previous experience) may be inserted under the 'Posting Stage of First Involvement' or 'Posting Stage to Acquire Various Achievement Ratings', against the Objectives concerned. Usually, it would be appropriate for the TT to assess and record the achievement ratings against objectives which are relevant to the EGG's previous experience. The TT should seek assistance from the ES/CTG when difficulties are encountered in making the assessment.

Training Objectives Monitoring Schedule

Training Objective Clause No.	Required Standard	Posting Stage of First Involvement	Posting Stage to Acquire Various Achievement Ratings				To be Assessed and Signed by
			C	E	K	G	
1.1(a)	K	1	-	-	1/2/3	-	ES
1.1(b)*	E	1	-	1/2/3	1/2/3	-	ES
1.2(a)	K	1/2	-	-	1/2/3	-	ES
1.2(b)	K	1/2	-	-	1/2/3	-	ES
1.2(c)	K	1/2	-	-	1/2/3	-	ES
1.3(a)	K	1	-	-	1/2/3	-	ES
1.3(b)	G	1	-	-	-	1/2/3	ES
1.3(c)	C	1	3/4	1/2/3	1/2/3	-	ES
1.4	C	1	3/4	1/2/3	1/2/3	-	ES&TT
1.5(a)	K	1	-	-	1	-	ES
1.5(b)	K	1	-	-	1	-	ES
1.5(c)	C	1	4	2/3/4	1	-	ES
1.6(a)	K	1	-	-	1/2/3/4	-	ES
1.6(b)(i)	C	1	4	2/3/4	1	-	ES
1.6(b)(ii)	K	1	-	-	1/2/3	-	ES
1.7	C	1	1/2/3	1/2/3	1	-	ES&TT
1.8		1	1/2/3	1/2/3	1	-	ES
2.1(a)	K	1	-	-	1/2/3	-	TT
2.1(b)	E	1	-	1/3	1/3	-	TT
2.1(c)	E	1	-	1/3	1	-	TT
2.2	E	1	-	4	1/2/3	-	TT
2.3	E	1	-	3/4	1/2/3	-	TT
2.4	K	1	-	-	1/2/3	-	TT
2.5	E	1	-	3	1/2/3	-	TT
2.6	E	1	-	3/4	1/2/3	-	TT
2.7	G	1	-	-	-	1/2/3/	TT
2.8	G	1	-	-	-	2/4	TT
2.9	E	2	-	4	1/3	-	TT
2.10	K	2	-	-	1/4	-	TT
2.11(a)	K	2	-	-	1/4	-	TT
2.11(b)	K	2	-	-	1/4	-	TT
2.11(c)	C	2	4	1/4	1	-	TT & ES
2.11(d)	C	2	4	1/4	1	-	TT
2.12	C	2	4	1/4	1	-	TT
2.13	K	2	-	-	1/4	-	TT
2.14	C	2	4	1/4	1	-	TT
2.15	C	2	4	1/4	1	-	TT
2.16	E	2	-	1/4	1	-	TT
2.17	K	2	-	-	1/4	-	TT
2.18(a)	G	1	-	-	-	1	TT
2.18(b)	K	2	-	-	1	-	TT
2.18(c)	K	2	-	-	1/4	-	TT
2.18(d)	K	2	-	-	1/3/4	-	TT

Training Objective Clause No.	Required Standard	Posting Stage of First Involvement	Posting Stage to Acquire Various Achievement Ratings				To be Assessed and Signed by
2.19(a)	C	1	3	3	1	-	TT
2.19(b)	E	1	-	1/4	1	-	TT
2.20(a)	G	1	-	-	-	1	TT
2.20(b)	G	4	-	-	-	4	TT
2.20(c)	K	1	-	-	1	-	TT
2.21	K	2	-	-	1/4	-	TT
3.1(a)	K	1	-	-	1	-	TT
3.1(b)	E	1	-	1	1	-	TT
3.1(c)	E	1	-	-	1	-	TT
3.1(d)	K	1	-	-	1	-	TT
3.1(e)	K	1	-	1	1	-	TT
3.2(a)	C	1	1	1	1	-	TT
3.2(b)	E	1	-	1	1	-	TT
3.2(c)	C	1	1	1	1	-	TT
3.2(d)	C	1	1	1	1	-	TT
3.2(e)	C	1	1	1	1	-	TT
3.2(f)	C	1	1	1	1	-	TT
3.2(g)	K	1	-	-	1	-	TT
3.3(a)	K	1	-	-	2	-	TT
3.3(b)	C	1	2	2	2	-	TT
3.3(c)	K	1	-	-	2	-	TT
3.3(d)	E	1	-	2	2	-	TT
3.3(e)	E	1	-	2	2	-	TT
3.3(f)	E	1	-	2	2	-	TT
3.3(g)	E	1	-	2	2	-	TT
3.4(a)	K	1	-	-	2	-	TT
3.4(b)	K	1	-	-	2	-	TT
3.4(c)	K	1	-	-	2	-	TT
3.4(d)	E	1	-	2	2	-	TT
3.5(a)	K	1	-	-	2/4	-	TT
3.5(b)	K	1	-	-	2/4	-	TT
3.5(c)	K	1	-	-	2/4	-	TT
3.5(d)	E	1	-	2	2/4	-	TT
3.6(a)	E	1/2	-	2	1/2	-	TT
3.6(b)	E	1/2	-	2	1/2	-	TT
3.6(c)	E	2/3	-	1/3	1	-	TT
3.6(d)	E	1/2	-	1	1/3	-	TT
3.7(a)	E	1/3	-	3	1	-	TT
3.7(b)	E	2/3	-	3	1/3	-	TT
3.7(c)	E	3	-	3	3	-	TT
3.7(d)	K	3	-	3	3	-	TT
3.8(a)	E	3/4	-	4	4	-	TT
3.8(b)	K	3/4	-	-	4	-	TT
3.8(c)	K	4	-	-	4	-	TT

Note : The posting stages referred to above are :

1 - 12 months in Geology, Ground Investigation & Laboratory Testing Training (Year 1)
2 - 5 months in Engineering Geology (Year 2)
3 - 9 months Geotechnical Design Training (Year 2)
4 - 10 months Construction Site Training (Year 3)

N.B. EGGs granted remission/exemption of training will have modified posting stages depending on their previous experience.

* The 500-word precis report should be submitted together with the appropriate quarterly report.

AR 1/2012