



**Water Supplies Department
The Government of the Hong Kong Special Administrative Region**

**Agreement No. CE 15/2012 (GE)
Engineer Inspections, Preventive Maintenance Works
and Upgrading Works for WSD Slopes,
2012-2013 Programme
Design and Construction**

BRIEF
(3 September 2012)

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1. Introduction

This Brief is to be read in conjunction with the Memorandum of Agreement, the General Conditions of Employment of Engineering and Associated Consultants for a Design and Construction Assignment (1997 Edition) [hereinafter referred to as the General Conditions of Employment], Special Conditions of Employment, Schedule of Fees and Schedule of Resident Site Staff standards and duties.

2. Description of the Project

- 2.1 Under Lands Department's project "Systematic Identification of Maintenance Responsibility of Slopes in the Territory (SIMAR)", some 6,500 registered man-made slopes and retaining walls, disturbed terrain features and hazard mitigation measures provided to natural terrain (collectively referred as slopes hereafter) were assigned to Water Supplies Department (WSD) for maintenance. Engineer Inspections for Maintenance (EI) to these slopes are required to be carried out by professionally-qualified geotechnical engineers at frequency specified in Geoguide 5 or in the Maintenance Manuals (MM). This Project is to carry out EI for a batch of 1,530 WSD slopes.
- 2.2 This project also includes carrying out Emergency Inspections (EMI), Initial Emergency Works (IRW) and Subsequent Emergency Works (SEW) for slopes and natural terrain arising from landslides or serious incidents.
- 2.3 In addition to the above, Preventive Maintenance Works (PMW) and Upgrading Works (UGW) are carried out as necessary to maintain the condition and to improve the stability of the slopes respectively. This Project comprises the PMW of 215 and UGW of 39 WSD slopes, that have not been included in Geotechnical Engineering Office's (GEO) Landslip Preventive Measures Programme (LPMP) or Landslip Prevention and Mitigation Programme (LPMitP) in order to reduce the overall landslide risk.

3. Objectives of the Assignment

- 3.1 The objectives of this Assignment are to:
 - (a) Carry out EI, including preparation and updating of the MMs, for 1,530 slopes listed in Appendix 1 to this Brief in accordance with Geoguide 5.
 - (b) Conduct EMI, design and supervise IRW and SEW in relation to landslides or serious incidents for a maximum of 150 cases.

- (c) Complete the design of PMW for 215 WSD slopes listed in Appendix 2 to this Brief and to supervise the construction of PMW for 210 slopes selected from the 215 slopes above.
- (d) Complete the design and supervise the construction of UGW for 39 WSD slopes listed in Appendix 3 to this Brief.

4. Description of the Assignment

4.1 Engineer Inspections for Maintenance

- (a) Carry out EI for 1,530 slopes listed in Appendix 1 to this Brief including preparation of the records of EI as well as preparation and updating of the MMs in accordance with Geoguide 5 in both hard and soft copies suitable for uploading into the Water Supplies Department Slope Management System (WSDSMS) and the GEO's Slope Information System (SIS) in accordance with Works Bureau Technical Circular (WBTC) No. 9/2000 "Registration and Updating of the Catalogue of Slopes". WSDSMS is a computer system holding the inventory as well as various maintenance inspections and works records of the slopes maintained by WSD. The Consultants shall update the maintenance inspection records including EIs, MMs and EMIs and the works records including the PMW and UGW in WSDSMS when so required by the Director's Representative. Where the Director's Representative considers or the Consultants seek agreement of the Director's Representative that any slope should be deleted from the Assignment, the Director's Representative shall provide other slopes to the Consultants as replacement. The replacement slope may be in any part of the territory and may not be of similar size to the replaced one.
- (b) Carry out immediate EI for slopes anywhere in the territory when instructed by the Director's Representative. The total number of such slopes may be up to 13. Immediate EI and EI in Clause 4.1(a) of this Brief are interchangeable i.e. if the number of immediate EI ordered is more than 13, the Director's Representative may reduce the number of EI accordingly and vice versa.
- (c) Establish whether Stability Assessments (SA) have previously been carried out for the slopes and, if so, carry out a review of the previous designs or SAs.
- (d) Determine whether SA, UGW, PMW, IRW and access provision are necessary.
- (e) Conduct regular monitoring on special measures to slopes listed in Appendix 4 to this Brief.

4.2 Emergency Inspections

- (a) Conduct EMI arising from landslides or serious incidents for a total of 150

cases within the Territory as instructed by the Director's Representative within 52 months from 1 April 2013. The Consultants shall carry out the inspections immediately within reasonable time after receiving instruction from the Director's Representative or Regional staff of WSD.

- (b) Provide advice on IRW and immediate measures that are required to remove immediate danger or inconvenience to the public caused by the incidents, and arrange the WSD Term Contractors to implement the works and measures immediately. The Resident Site Staff (RSS) shall be deployed immediately to supervise the works with design input and advice continue to be provided by the Consultants.
- (c) Design, arrange implementation and supervise the construction of SEW.

4.3 Design of Preventive Maintenance Works

- (a) PMW aim to prevent deterioration of the condition of the 215 slopes listed in Appendix 2 to this Brief and to enable safe inspection of the slopes normally include, but not limited to, the following works:
 - (i) provision of safe access for inspection;
 - (ii) types 1, 2 and 3 prescriptive measures to soil slopes and retaining walls as outlined in GEO Publication No. 1/2009;
 - (iii) types 1, 2, 3 and 4 prescriptive measures for rock slopes as outlined in GEO Report No. 161; and
 - (iv) landscaping works endorsed by landscape architect with the advice, if deemed necessary by the Director's Representative, of a qualified arborist.
(Note: A qualified arborist shall be a holder of a bachelor's degree in Botany / Biology / Forestry / Horticulture / Arboriculture or a related field from a Hong Kong university, or equivalent; a Certified Arborist qualification of the International Society of Arboriculture or National Certificate in Horticulture (Arboriculture) or equivalent; and no less than 3 years of post-qualification experience in tree management work.)
- (b) Review the PMW of the slopes listed in Appendix 2 to this Brief against the previous EI reports, liaise with the Director's Representative, carry out studies, inspections, surveys, assessments and investigations etc. to identify any other PMW items that are required for the same slope.
- (c) Check whether the PMW have been designed by consultants of previous consultancies and, if yes, review and ascertain the viability of the design.
- (d) Prepare the PMW design using prescriptive measures or conventional analytical techniques, produce calculations, specifications, drawings, bills of quantities, cost estimates and programme etc. for construction of the PMW.

- (e) Prepare tender documents to enable the Employer to invite tenders for the proposed works and to assist the Employer in the invitation of tenders. If the Director's Representative decide to implement the PMW by Term Contracts, the Consultants shall prepare estimates and agree programme with the WSD Term Contractors for the Employer to issue works orders under WSD's Term Contracts.
- (f) Analyse the tenders and prepare recommendations to the Employer as to which tender to accept.
- (g) Prepare contract documents to enable the Employer to execute the Articles of Agreement with the selected tenderer.
- (h) Supervise the construction of PMW.

4.4 Design of Upgrading Works

- (a) Carry out desk study, site reconnaissance, survey work, aerial photograph interpretation of the slopes, GI, laboratory testing, stability assessment, design of upgrading works and associated works (which shall include, but not limited to, associated drainage provisions, landscaping works, provision of access for future maintenance and implementation of necessary environmental mitigation measures and measures to conserve heritage sites).
- (b) Carry out further surveys, studies, analyses, assessments, inspections, public consultations, and investigations including site investigations necessary for the preparation of the detailed design and contractual arrangements for the construction of the proposed UGW.
- (c) Determine whether UGW are required based on the findings of EI and the results of investigations and assessments of the listed slopes. If no UGW are required, the Director's Representative may provide other slopes to the Consultants as replacement to make up the 39 slopes.
- (d) Prepare the Stage 2 Study Report as referred in Clauses 5.5(u) and (v) of this Brief if no UGW are required. The Stage 2 Studies will be considered as work carried out under Clause 5 of the Schedule of Fees.
- (e) Prepare detailed designs, calculations, specifications, drawings, bills of quantities, cost estimates, programmes for the construction of the proposed UGW including landscaping works endorsed by landscape architect with the advice, if deemed necessary by the Director's Representative, of a qualified arborist for each slope and the Stage 3 Study Report as referred in Clauses 5.5(s) and (t) of this Brief. (See Note in Clause 4.3(a)(iv) of this Brief for the requirement of a qualified arborist.)
- (f) Prepare tender documents to enable the Employer to invite tenders for the proposed works and to assist the Employer in the invitation of tenders. If the Director's Representative decide to implement the UGW by Term

Contracts, the Consultants shall prepare estimates and agree programme with the WSD Term Contractors for the Employer to issue works orders under WSD's Term Contracts.

- (g) Analyse the tenders and prepare recommendations to the Employer as to which tender to accept.
- (h) Prepare contract documents to enable the Employer to execute the Articles of Agreement with the selected tenderer.
- (i) Supervise the construction of UGW.

4.5 Contract administration and supervision of the Preventive Maintenance and Upgrading Works.

- (a) Liaise with the contractors including WSD Term Contractors if necessary to formulate works programme for the PMW and UGW.
- (b) Set out and supervise the PMW and UGW.
- (c) Discharge the duties of the Engineer for the Contract and administer the works contracts.
- (d) Discharge the duties of the Engineer's Representative for WSD Term Contracts and administer the works orders for the PMW and UGW.
- (e) Prepare such further drawings and specifications as may be necessary during the execution of the works.
- (f) Appoint and administer the RSS.
- (g) Report on the financial situation, variation orders, claims for additional payment and request for extensions of time and all other matters affecting the progress and financial situation of the Assignment.
- (h) Prepare as-built records for all works carried out under the Assignment and update the MMs for the slopes.
- (i) Obtain GEO Checking Certificates for Slopes and Retaining Walls in accordance with Environmental, Transport and Works Bureau Technical Circular (Works) (ETWB TC(W)) No. 20/2004 "GEO Checking Certificate for Slopes and Retaining Walls".

4.6 The Consultants shall at their own cost devise safe inspection procedures and arrange safety measures where required to ensure their field study/site inspection as required by the Agreement to be carried out in a safe manner.

4.7 When instructed by the Director's Representative, the Consultants may have to carry out the followings, as additional Services:

- (a) Total number of EI and immediate EI for slopes exceeding 1,530.

- (b) Detailed desk studies and SAs for original or additional slopes.
- (c) EMI exceeding the total number specified in Clause 4.2(a) of this Brief.
- (d) Number of design or supervision of the PMW exceeding the respective number specified in Clause 3.1(c) of this Brief.
- (e) Design and supervision of the UGW for additional slopes to those specified in Clause 3.1(d) of this Brief.
- (f) Detailed leakage checks to WSD buried water mains, drains or sewers which show signs of leakage and which may affect the stability of the slopes.
- (g) Stage 2 Studies for slopes other than those specified in Clause 3.1(d) of this Brief.

Payment for such services shall be in accordance with Clause 5 of the Schedule of Fees.

5. Deliverables

5.1 The Deliverables to be produced by the Consultants throughout the period of the Agreement and submitted to the Director's Representative are as follows:

- (a) Programme for the Assignment (3 hard copies, 1 soft copy in MS Project and 1 soft copy in MS excel) in accordance with Clause 7.2 of this Brief.
- (b) Inception Report detailing the following:
 - (i) Objectives of the Assignment.
 - (ii) Approach and methodology, with emphasis on how to expedite approval of Simplified Temporary Land Allocation (STLA) and consent from various Government departments to meet the due dates for commencement and completion of PMW and UGW.
 - (iii) Organisation and staffing of the project team.
 - (iv) A typical complete cycle for the activities of EI from desk studies, information collection, and work on site to the production of MMs and the records of EI.
 - (v) Quality Assurance Procedures.
 - (vi) Procedures for responding to instruction for attending emergency slope inspections and leakage checks to WSD buried water mains, drains or sewers which show signs of leakage.

The Consultants shall submit 3 hard copies and 1 soft copy of the draft Inception Report before the due date specified in Clause 7.3 of this Brief. Within 2 weeks after receiving the draft Inception Report, the Director's Representative shall give either comments on or approval of the Inception Report. Within one week after receiving the comments, the Consultants shall submit the revised draft Inception Report (3 hard copies and 1 soft

copy). Within 3 working days after receiving the approval, the Consultants shall submit the final Inception Report (6 hard copies and 1 soft copy).

- (c) Implementation strategy for the proposed PMW and UGW for slopes (3 hard copies and 1 soft copy) in accordance with Clause 6.2 of this Brief. The strategy shall be submitted within 5 months from the date of commencement of the Agreement.
- (d) Progress Reports (3 hard copies and 1 soft copy) in accordance with Clause 8 of this Brief. (To be submitted 3 working days before progress meeting or within the first 3 working days of the month for which no progress meeting will be held.)
- (e) Financial Reports (3 hard copies and 1 soft copy) in accordance with Clause 9 of this Brief. (To be submitted together with the Progress Reports.)
- (f) Records of meetings and correspondence with others and responses to comments (1 copy). (To be submitted within 5 working days from the date of meeting/correspondence.)
- (g) Information Papers, in both English and Chinese (up to 120 hard copies each as requested by the Director's Representative and 1 soft copy) for consultation with the District Councils, or other public bodies and community groups. (To be submitted 4 weeks prior to the consultation.)
- (h) Presentation materials (2 hard copies and 1 soft copy) including colour drawings mounted on boards, photographs and slides in connection with the Project Scope, programme and progress for consultation with District Councils, or other public bodies and community groups. (To be submitted 2 weeks prior to the presentation.)
- (i) Drawings, designs, plans, specifications, bills of quantities or other documents in accordance with Clause 15 of the General Conditions of Employment. Drawings shall be prepared by Computer-Aided-Drafting (CAD) in AutoCAD DXF or DWG format conforming to the CAD Standard for Works Projects version 1.03.00 (or later versions as agreed between the Employer and the Consultants from time to time) as posted on the Development Bureau's web site. http://www.devb.gov.hk/en/construction_sector_matters/electronic_services/cad_standard/computer_aided_drafting/cad/index.html
- (j) Evidence of professional indemnity insurance in accordance with Clause 47(4) of the General Conditions of Employment as amended by Clause S14 of the Special Conditions of Employment.
- (k) Land acquisition and allocation plans including those for any temporary land allocations (8 copies) in accordance with Clause 6.1.12 of this Brief.
- (l) Quality Plan for the Project which incorporates the standards and

specifications stipulated in Clause 10 of this Brief. (To be submitted within 4 weeks from the date of commencement of the Agreement.)

- (m) Draft Final Report (4 hard copies and 1 soft copy) of the Assignment consisting of at least the following information. (To be submitted before the due date as specified in Clause 7.3 of this Brief.):
 - (i) Engineer Inspections for Maintenance
Updated list of slopes with EI carried out, a summary including lists showing consequence-to-life (CTL) category of the slopes, New Priority Ranking System (NPRS) score of the slopes; recommendations on Stability Assessment, Prescriptive Measures, Preventive/Routine Maintenance Works, Upgrading Works and access.
 - (ii) Date of EMI, brief summary of the findings and recommendations, completion dates of the IRW and SEW etc.
 - (iii) List of slopes with construction of PMW completed, brief description of PMW and the completion date.
 - (iv) List of slopes with design of PMW carried out but construction of PMW not undertaken under this Agreement with brief summary of the status of the design and the reason of not proceeding with the construction of PMW.
 - (v) List of slopes with construction of UGW, brief description of UGW and the completion dates.
 - (vi) Other services provided by the Consultants.
- (n) Final Report (6 hard copies and 1 soft copy) to be submitted to the Director's Representative not later than one month after receipt of acceptance of the draft Final Report from the Director's Representative.

5.2 The Deliverables to be produced by the Consultants for EI of the slopes of the Assignment and submitted to the Director's Representative are as follows:

- (a) Draft records of the EI and the updated MMs (2 hard copies and 1 soft copy in CD-ROM) shall be submitted to the Director's Representative for comment prior to finalisation. Recommendations and the changes of key slope data from previous EI shall be included in the records of EI. The Consultants shall attach to each batch of submission a working paper summarizing the recommendations and the changes of the key slope data. The records of EI and the updated MMs produced under this Agreement shall be compatible with WSDSMS and GEO's SIS. Items not included in the WSDSMS computer system but required to be recorded for the EI and the MMs shall be reported in formats to the agreement of the Director's Representative.

The draft records of EI and the updated MMs shall be submitted before the respective due dates as specified in Clause 7.4 of this Brief. Any submission later than the deadline shall be subject to the prior agreement of the Director's Representative.

- (b) Final records of EI and the updated MMs (2 hard copies and one soft copy

in CD-ROM) for uploading into WSDSMS with all photographs in colour and in digital form shall be submitted to the Director's Representative not later than 2 weeks after receipt of approval from the Director's Representative. The Consultants shall provide a copy of the submitted records to the Director's Representative after direct uploading into GEO's SIS.

5.3 The Deliverables to be produced and submitted to the Director's Representative by the Consultants for regular monitoring of special measures are as follows:

- (a) Draft Assessment Report on the monitoring results including recommendations on contingency actions, SEW or UGW (2 hard copies and 1 soft copy), if necessary, shall be submitted to the Director's Representative for comment prior to finalization. The draft Assessment Report on the monitoring results shall be submitted by not later than 1 month after the completion of the monitoring works.
- (b) Final Assessment Report on the monitoring results (2 hard copies and 1 soft copy) shall be submitted to the Director's Representative not later than 7 days after receipt of the approval of the draft report.
- (c) Updated MM for the slopes, if applicable, incorporating any follow-up action required.

5.4 The Deliverables to be produced and submitted to the Director's Representative by the Consultants for EMI and IRW are as follows:

The Consultants shall provide a preliminary report of the results of the EMI to the Director's Representative within 24 hours and a full report to the Director's Representative within 72 hours of the inspection, complete with full details of the case, including recommendations for the immediate measures and the further action required. The report shall be in a format to the agreement of the Director's Representative.

5.5 The Deliverables to be produced and submitted to the Director's Representative by the Consultants for the design of UGW, PMW and SEW identified in the EMIs are as follows:

- (a) Design Memorandum (4 copies) in accordance with Clause 6.5.1(a) of this Brief. (To be submitted before the due date as specified in Clause 7.3 of this Brief.)
- (b) Environmental Review Report (4 copies) in accordance with Clause 6.5.2 of this Brief. (To be submitted within 3 months from the commencement of the Agreement.)
- (c) The proposed establishment and duration of the RSS for the Project shall be submitted for the agreement of the Director's Representative. (To be submitted within 3 months after the commencement of the Agreement.)
- (d) Tree Survey Report in accordance with Clause 6.5.3 of this Brief (8 copies).

(To be submitted within 4 months from the commencement of the Agreement.)

- (e) Heritage Impact Assessment Report (4 hard copies and 1 soft copy) in accordance with Clause 6.5.5 of this Brief.
- (f) Desk Study Report for the proposed site investigations and laboratory testings (4 copies) in accordance with Clause 6.5.8(f)(ii) of this Brief. (For UGW only) (To be submitted within 1 month from the commencement of the Agreement.)
- (g) Site investigations and laboratory testings strategy in accordance with Clause 6.5.8(f)(iii) of this Brief. (For UGW only) (To be submitted within 1 month from the commencement of the Agreement)
- (h) Traffic Impact Assessment Report in accordance with Clause 6.5.6 of this Brief (8 copies). (For UGW only) (To be submitted within 10 months from the commencement of the Agreement.)
- (i) Draft drawings and other documents to be circulated to relevant Government departments and parties involved in or affected by the works for comments or approval in accordance with Clause 6.1.8 of this Brief.
- (j) Draft tender documents for the site investigations and laboratory testings contracts referred to in Clause 6.5.8(f)(v) of this Brief (3 copies), including preliminary programmes for the works, draft gazette notices and draft press releases, for approval by the Director's Representative. The draft tender documents shall be submitted at least 6 weeks before tendering of the specialist contracts for site investigations and laboratory testings. (For UGW only)
- (k) Finalised tender documents for the site investigations and laboratory testings contracts referred to in Clause 6.5.8(f)(v) of this Brief, including the Electronic Dissemination Package in accordance with ETWB TC(W) No. 11/2005 "Electronic Dissemination of Tender Documents and Electronic Submission of Tender Returns on Removable Media" (40 copies for each contract). (For UGW only)
- (l) Tender reports for the site investigations and laboratory testings contracts referred to in Clause 6.5.8(f)(vi) of this Brief (3 copies) in an approved format. The reports shall be submitted within 3 weeks from the tender closing dates. (For UGW only)
- (m) Reports on site investigations and laboratory testings (2 copies) in accordance with Clause 6.5.8(f)(xii) of this Brief. (For UGW only) (To be submitted within 2 weeks from the completion of the respective site investigations and laboratory testings.)
- (n) Reports on interpretation and analysis of site investigations and laboratory testings data giving rise to design parameters (8 copies). (For UGW only) (To be submitted together with the report on site investigations and

laboratory testings.)

- (o) Draft tender documents for the works contracts referred to in Clause 6.5.10 of this Brief (4 copies), including summaries of any outstanding technical and administrative matters affecting tendering and contract award, preliminary programmes for the works, draft gazette notices and draft press releases, for approval by the Director's Representative. The draft tender documents shall be submitted at least 6 weeks before tendering of the works contracts.
- (p) Estimates of the cost of works and deployment of RSS in accordance with Clause 6.5.1(k) of this Brief (8 copies). The estimates shall be submitted at least 2 months before the commencement of works or 1 month before the Project Estimate Control Committee (PECC) meeting whichever the earlier.
- (q) Draft Preliminary Design Report (2 hard copies and 1 soft copy) as referred in Clause 6.5.8(b) of this Brief including preliminary cost estimates of the UGW for each slope. (For UGW only) (To be submitted before the due date as specified in Clause 7.3 of this Brief.)
- (r) Final Preliminary Design Report (2 hard copies and 1 soft copy) shall be submitted within 2 weeks from the receipt of approval of the draft Preliminary Design Report from the Director's Representative. (For UGW only)
- (s) Draft Design Reports (2 hard copies and 1 soft copy) for the Stage 3 Studies (draft Stage 3 Reports) as referred in Clause 6.5.8(j) of this Brief for the slopes requiring UGW shall be submitted not later than 4 months after the submission of its final Preliminary Design Report unless it is due to the unavailability of site for investigation of the parameters or measurements. (For UGW only)
- (t) Final Design Reports (2 hard copies and 1 soft copy) for the Stage 3 Studies for the slopes requiring UGW. The reports shall be submitted within 2 weeks from the receipt of approval of the draft Stage 3 Reports from the Director's Representative. (For UGW only)
- (u) Draft Reports (2 hard copies and 1 soft copy) for the Stage 2 Studies (draft Stage 2 Reports) as referred to in Clause 6.7 of this Brief. The reports shall be submitted within 3 months from the instruction given by the Director's Representative to proceed with the studies. (For UGW only)
- (v) Final Reports (2 hard copies and 1 soft copy) for the Stage 2 Studies. The reports shall be submitted within two weeks from the receipt of approval of the draft Stage 2 Reports from the Director's Representative. (For UGW only)
- (w) Draft Design Reports (2 hard copies and 1 soft copy) as referred in Clause 6.5.7 of this Brief for the slopes. (For PMW and SEW) (For PMW the submission of the reports shall cater for the completion dates of the works in Appendix 2 to this Brief. For SEW identified in the EMIs, the draft

report of a slope shall be submitted within 72 hours after the EMI.)

- (x) Final Design Reports (2 hard copies and 1 soft copy). The reports shall be submitted within 2 weeks from the receipt of approval of the draft Design Reports from the Director's Representative. (For PMW and SEW identified in the EMIs.)
- (y) Quality Site Supervision Plan (QSSP) for each works contract and works orders under WSD Term Contracts (4 copies) in accordance with Clauses 6.1.6 and 6.5.1(n) of this Brief. (To be submitted within 4 months from the commencement of the Agreement.)

5.6 The Deliverables to be produced and submitted to the Director's Representative by the Consultants for the tendering of UGW PMW and SEW identified in the EMIs are as follows:

- (a) Tender Documents for the works contracts referred to in Clause 6.5.10 of this Brief, including the Electronic Dissemination Package in accordance with ETWB TC(W) No. 11/2005 "Electronic Dissemination of Tender Documents and Electronic Submission of Tender Returns on Removable Media" (40 copies for each contract) for issue to prospective tenderers.
- (b) Tender Reports (3 copies for each contract) in an approved format. The reports shall be submitted within 4 weeks from the tender closing date.
- (c) Drawings and other contract documents for the work contracts referred to Clause 6.5.10 of this Brief (3 sealed copies of all documents and drawings, and 10 certified true copies of documents and 6 certified true copies of drawings for each works contract) for the execution of the Articles of Agreement by the Employer and the contractors, for retention by the Director's Representative and for issue to the contractors, RSS and other parties. At the request of the Director's Representative some sets of drawings are to be reduced to A2 or A3 size as appropriate. (Sealed copies of documents and drawings for execution of Articles of Agreement to be submitted 3 working days prior to the execution. Certified true copies of documents to be submitted within 1 week after the execution.)

5.7 The Deliverables to be produced and submitted to the Director's Representative by the Consultants for the construction of the UGW, PMW and SEW identified in the EMIs are as follows:

- (a) Reports on the RSS Organization (4 copies) in accordance with Clause 13.5 of this Brief. (To be submitted together with the Progress Reports.)
- (b) Documents, letters, certificates, charts and all other information (1 copy) produced in the discharge of the duties of the Engineer or Engineer's Representative as appropriate and the management of the RSS.
- (c) Updated MMs including the as-constructed drawings (3 hard copies and one soft copy in CD-ROM) for each slope upgraded or improved under the Project compatible with the WSDSMS and SIS with all photographs in

digitized format and in colour. (To be submitted within 3 months from the completion of the UGW, PMW and SEW identified in the EMI for each slope.)

- (d) Revised Final Design Reports updated for design parameters and assumptions based on the findings and results of site observations and testings during the construction stage if necessary.
- (e) Data for updating the Catalogue of Slopes and the GEO's SIS in accordance with WBTC No. 9/2000 "Registration and Updating of the Catalogue of Slopes".
- (f) As-constructed drawings (one set of velograph, 2 hard copies and 1 soft copy in CD-ROM). As-constructed drawings shall be prepared by CAD software in accordance with Clause 5.1(i) of this Brief. The as-constructed drawings shall be submitted within 3 months from the completion of the UGW, PMW and SEW identified in the EMI for each slope.
- (g) Revised QSSP (4 copies) in accordance with Clause 6.6.4 of this Brief. (To be submitted upon major modification of the QSSP during construction stage.)

5.8 The Consultants shall draw the Employer's attention to any Deliverables that are under license and any pre-existing copyrights or patents on any Deliverables and any other restrictions whatsoever affecting the Employer's use of the same and, if required by the Director's Representative, to establish the existence of any license, copyrights, patents or restrictions.

6. Services to be provided by the Consultants

6.1 General

- 6.1.1 Comply with all instructions from the Director's Representative and with all relevant Government circulars, Departmental Instructions, and Technical Memoranda as directed by the Director's Representative.
- 6.1.2 Draw to the attention of the Director's Representative the need to consider any implications and consequences arising out of or in relation to the Assignment and any alternative proposals.
- 6.1.3 Attend progress meetings at monthly intervals or at such other intervals as required by the Director's Representative.
- 6.1.4 Prepare and submit a programme covering the work of the Assignment and such revised programmes as may be necessary in accordance with Clause 7.2 of this Brief.
- 6.1.5 Discuss with the Director's Representative and review the programme of the proposed slope UGW, PMW and other works to meet the availability of

fund, workload of the contractors or WSD Term Contractors and the target commencement and completion dates etc.

- 6.1.6 Prepare a QSSP in accordance with Clause 6.5.1(n) of this Brief and the quality management system of the Consultants. The Consultants shall also review the QSSP with the RSS during construction.
- 6.1.7 Prepare the various reports and documents as stated in Clause 5 of this Brief.
- 6.1.8 Consult the following departments/authorities as required in addition to any other authority necessary all in accordance with Clause 19 of the General Conditions of Employment and obtain their approval where necessary to the works, working methods and programme for carrying out of the UGW:
 - (a) Agriculture, Fisheries and Conservation Department (AFCD)
 - (b) Antiquities and Monuments Office of Leisure and Cultural Services Department (AMO)
 - (c) Architectural Services Department (ArchSD)
 - (d) Bus Companies
 - (e) Civil Engineering and Development Department (CEDD)
 - (f) District Lands Office of Lands Department (DLO)
 - (g) District Survey Office of Lands Department (DSO)
 - (h) District Office of Home Affairs Department (DO)
 - (i) Drainage Services Department (DSD)
 - (j) Environmental Protection Department (EPD)
 - (k) Fire Services Department (FSD)
 - (l) Food and Environmental Hygiene Department (FEHD)
 - (m) Geotechnical Engineering Office of Civil Engineering and Development Department (GEO)
 - (n) Government Property Agency (GPA)
 - (o) Government Secretariat: Development Bureau (DEVB)
 - (p) Government Secretariat: Environment Bureau (ENB)
 - (q) Government Secretariat: Transport and Housing Bureau (THB)
 - (r) Highways Department (HyD)
 - (s) Hong Kong Police Force (HKPF)
 - (t) Housing Department (HD)
 - (u) Lands Department (LandsD)
 - (v) Leisure and Cultural Services Department (LCSD)
 - (w) Marine Department (MD)
 - (x) Mass Transit Railway Corporation (MTRC)
 - (y) Planning Department (PD)
 - (z) Public Fill Committee (PFC)
 - (aa) Transport Department (TD)
 - (bb) Urban Renewal Authority (URA)
 - (cc) WSD including Planning Unit, Slope Safety Sections, Hong Kong & Islands (HK & I) Region, Kowloon (K) Region, New Territories East (NTE) Region, New Territories West (NTW) Region, Customer Services Division, Development (1)

Division, Development (2) Division, Design Division, Construction Division, Project Management Division, Consultants Management Division, Mechanical & Electrical/Projects Division, and Mechanical & Electrical/Maintenance Division.

- (dd) All other relevant utility companies, Government departments and authorities.
- (ee) Other consultants and contractors in connection with the proposed works

6.1.9 Take cognizance of the following existing and proposed studies, systems and projects during the course of the Assignment:

- (a) Systematic Identification and Registration of Slopes in the Territory (SIRST) - GEO
- (b) Systematic Identification of Maintenance Responsibility of Slopes in the Territory (SIMAR) - LandsD
- (c) Slope Information System (SIS) - GEO
- (d) Natural Terrain Landslide Inventory - GEO
- (e) Inspection of Buried Watermains Affecting Slopes - WSD
- (f) Landslip Preventive Measures Programme (LPMP) - GEO
- (g) Landslip Prevention and Mitigation Programme (LPMitP) - GEO
- (h) Landslip Preventive Measures Information System (LPMIS) - GEO
- (i) Slope Maintenance Responsibility Information System (SMRIS) - LandsD
- (j) Water Supplies Department Slope Management System (WSDSMS) - WSD
- (k) Maintenance Works Management System (MWMS) - WSD

6.1.10 Provide technical support for the Director's Representative to attend meetings with District Councils, or other public bodies and community groups in public consultation. This assistance is to include the preparation of information papers (including the required information on greening works in accordance with ETWB TC(W) No. 34/2003 "Community Involvement in Greening Works" in both English and Chinese and presentation materials such as colour drawings, photographs and slides in both hard copy and soft copy.

6.1.11 Provide Chinese translation of the information papers referred to in Clause 5.1(g) of this Brief. This translation shall be carried out by competent translators or translation firms. The translation should be of reasonable quality in rhetoric and phraseology to convey precisely the original meaning of the English version.

6.1.12 Assist the Director's Representative to identify, arrange and take possession of any land required for the purpose of or in connection with the Project and handing over the land to the contractors or others. The services required include preparation of land acquisition and allocation plans, survey field work to establish the site boundary and liaison with DLOs, DOs, other relevant Government departments, tenants or owners of the land in question

or in the vicinity, contractors and stakeholders.

- 6.1.13 Assist the Director's Representative to apply for land allocations. Early approval from DLOs for the temporary allocations for works sites and work areas, including that for the ground investigations, is critical to the timely completion of the PMW and UGW. The Consultants shall nominate a professionally qualified engineer acceptable to the Employer to be named as the contact person of the Employer in dealing with all applications for temporary allocations of work sites and work areas. He shall have at least 5 years relevant local experience and will be responsible for liaising with DLOs, DOs and stakeholders in resolving problems relating to temporary allocations for work sites and work areas so that the necessary temporary land allocations can be obtained at the earliest possible. He shall also identify potential problems that may delay the approval of the temporary land allocations and assist the Employer to eliminate the impact of these problems.
- 6.1.14 Advise the school principals concerned if the progress of the UGW to any slopes affects schools, identify the need of individual contingency plans for the schools concerned and help the schools to draw up a contingency plan as necessary in consultation with the Director's Representative.
- 6.1.15 Prepare all reports according to a standard format approved by the Director's Representative. The Consultants shall ensure all geotechnical submissions are acceptable to the relevant GEO District Divisions.
- 6.1.16 Check the presence of any unregistered slope in the vicinity of works boundary/venue of EI that satisfies the registration criteria and bring to the attention of the Director's Representative any unregistered slope including the following:
- (a) Advise and assist the Director's Representative to register the slope in accordance with the requirements of WBTC No. 9/2000 "Registration and Updating of the Catalogue of Slopes", in case the unregistered slope is located within the project/allocation boundary and the owner has obligation to maintain the land and slopes within the boundary.
 - (b) Provide GEO with the following information to facilitate the registration of the unregistered slope:
 - (i) A plan showing the location of the unregistered feature;
 - (ii) The estimate height and angle of the feature; and
 - (iii) Record photographs showing the unregistered slope.
- 6.1.17 Nominate a professional acceptable to the Employer to be named as the contact person of the Employer in applications for excavation permits and, where applicable, emergency excavation permits pursuant to the requirements of the Land (Miscellaneous Provisions) Ordinance, Cap 28.
- 6.1.18 Carry out all duties imposed upon the Employer under the Land (Miscellaneous Provisions) Ordinance, Cap 28 or under the conditions of

the excavation permits and, where applicable, emergency excavation permits in so far as such duties have not been imposed only on the Contractors under the Ordinance or under the Contracts.

6.1.19 Notwithstanding Clause 6.1.18 of this Brief, the Consultants shall not be liable to the Employer in respect of obligations stipulated under the following conditions of the excavation permits and, where applicable, emergency excavation permits:

- (a) The condition stipulated in the excavation permits and, where applicable, the emergency excavation permits relating to the obligation and liability of the Permittee to indemnify the Government against all losses and claims for injury or damage to any person or property, nuisance, disruption or interference whatsoever which may arise out of or in consequence of the work of the Permittee, and against all claims, demands, proceedings, damages, costs, charges or expenses whatsoever in respect thereof or in relation thereto; and
- (b) The condition stipulated in the excavation permits and, where applicable, emergency excavation permits relating to the obligation and liability of the Permittee to make good or pay for any works as a result of or in consequence of the work of the Permittee.

6.1.20 Clause 6.1.19 of this Brief is without prejudice to Clause 22 of the General Conditions of Employment.

6.1.21 Ensure that the Contractors comply with the permit conditions imposed by the Authority under the Land (Miscellaneous Provisions) Ordinance, Cap 28, including those conditions stipulated in the excavation permits and, where applicable, emergency excavation permits to be observed by the Nominated Permittee or by both the Permittee and the Nominated Permittee and those stipulated in the excavation permits and, where applicable, emergency excavation permits to be observed by the Permittee but which the Contractors are required to comply with under the Contracts.

6.1.22 In respect of permit conditions which are stipulated in the excavation permits and, where applicable, emergency excavation permits to be complied with by the Permittee but which are required to be complied with by the Contractors under the Contracts, if notwithstanding Clause 6.1.21 of this Brief the Contractors have failed to comply with these conditions, the Consultants shall take such actions so as to ensure that these conditions are complied with by the Employer in his capacity as the Permittee irrespective of whether these actions are required to be carried out by the Contractors under the Contracts.

6.1.23 Clauses 6.1.17 to 6.1.22 of this Brief shall apply only with respect to excavation in street maintained by the Highways Department that requires excavation permits and, where applicable, emergency excavation permits under the Land (Miscellaneous Provisions) Ordinance, Cap 28 for execution of the Works.

- 6.1.24 Engage a competent person to supervise the excavation works on behalf of the Employer, maintain a documented system for supervising the excavation works and maintain a documented system to ensure that the Contractors comply with their duties in relation to excavation works. The attention of the Consultants is drawn to Sections 10T(5) and (6) of the Land (Miscellaneous Provisions) Ordinance, Cap 28.
- 6.1.25 Assist the Employer in seeking planning permission from the Town Planning Board for the proposed works as required.
- 6.1.26 The Consultants shall perform Systematic Risk Management in accordance with ETWB TC(W) No. 6/2005 “Implementation of Systematic Risk Management in Public Works Project” and ETWB Risk Management User Manual to identify risks and uncertainties associated with the Project and recommend treatment measures aiming to reduce these risks and uncertainties to acceptable level and to ensure timely completion of the Project and within budget and to the required quality. This may include arranging risk management workshops, meeting with relevant stakeholders, preparing the risk treatment plans, risk management plans and risk registers, etc. The Consultants shall employ a dedicated professional staff equipped with relevant experience in this field to perform the duty of the Risk Manager.

6.2 Implementation Strategy

- 6.2.1 The proposed PMW and UGW may be undertaken by WSD Term Contractors or contractors to be engaged by tendering. The Consultants shall discuss with the Director’s Representative and prepare an implementation strategy for carrying out the proposed PMW and UGW to meet the Assignment programme, workload of the WSD Term Contractors or contractors to be engaged by tendering and availability of funds under the block allocation. The implementation strategy shall include packaging of works and contracts arrangement for the proposed works.
- 6.2.2 Unless otherwise agreed by the Director’s Representative, UGW for slopes in Appendix 3 have to be completed before the relevant due date as specified in Clause 7.3 of this Brief. In addition, the Consultants may arrange to commence these slope upgrading works in advance of the relevant due date for commencement of works as specified in Clause 7.3 of this Brief subject to the availability of fund and agreement of the Director’s Representative.
- 6.2.3 The Consultants shall review the implementation strategy of the PMW, and UGW and discuss with the Director's Representative at monthly intervals or at such other intervals as required by the Director's Representative so as to complete the UGW as referred to in Clause 7.3 of this Brief.

6.3 Engineer Inspections for Maintenance of Slopes

The EI shall be carried out by geotechnical engineers professionally qualified and experienced in Hong Kong. A suitable qualification is Registered Professional Engineer (Geotechnical). As the inspecting engineer, the geotechnical engineer shall prepare and sign the records of EI. The inspecting engineer shall be as proposed and approved under the Inception Report. Prior approval of the Director's Representative must be sought for any change of inspecting engineer(s) under the Agreement. The EI shall be carried out in accordance with Geoguide 5 and associated guidance notes that are promulgated by GEO from time to time.

6.3.1 Carry out information collections for the slopes including:

- (a) Based on the sample checklist in Appendix 5 to this Brief, prepare a checklist for the agreement of the Director's Representative indicating the types of documents to be collected under the Assignment. The checklist shall not be taken as exhaustive as additional documents may need to be collected for the slopes depending on the particular history of the slopes.
- (b) Collect available documentary information pertaining to the slopes and nearby areas that may have implications on the stability of the slopes.
- (c) Study the data structure of the WSDSMS and the format of the records of EI and MMs. The Consultants shall make their own arrangement for the production of hard copies and soft data copies of the records of EI and the MMs compatible to the WSDSMS and GEO's SIS.

6.3.2 Carry out site inspections for the slopes including:

- (a) Make arrangement for gaining access to the slopes and nearby areas to be inspected including liaison with all relevant parties, vegetation clearance, the application of any necessary permits, the collection and return keys and provision of the necessary equipment, facilities and consumables for inspecting the slope safely. Obtain documentary evidence where permission of access is not granted.
- (b) Carry out inspections of the slopes and the nearby areas. The inspections of the slopes shall commence not earlier than 4 months before and shall complete before the respective due dates for EI of each slope listed in Appendix 1 to this Brief for preparation/updating of the records of EI and MMs. The format of the records has been developed based on the "Indicative Format for Maintenance Manual for Man-made Slopes and Retaining Walls" and the "Indicative Record Sheets for Engineer Inspections for Maintenance" given in Appendix A and Appendix F to Geoguide 5 respectively. In particular,
 - (i) Identify visually any discrepancies between the records of previous EI, MMs, the as-constructed works, actual site conditions and the plans in the SA reports, design reports,

drawings or as-constructed records, if any;

- (ii) Identify all visible changes including landslides, unauthorised constructions, unauthorised structures, formation of unauthorised cultivation areas, appearance of tension cracks, or other signs of distress, that have taken place at or in the vicinity of the slope, in particular any changes since the last SAs and EI, which could have implications on its stability, and to judge whether these might be significant;
- (iii) Identify the presence of buried and exposed water-carrying services, including any ducting systems housing the services and unauthorised services, on or in the vicinity of the slopes (including relevant areas outside the lot boundary), both visually and with reference to the record plans for the services;
- (iv) Check for signs of leakage of any exposed and buried water-carrying services, including any ducting system housing the services and identify the source of any leaky water-carrying services where possible and provide recommendations under Clause 6.3.4 of this Brief;
- (v) Check for signs of leakage of any water-carrying services maintained by any party in accordance with "Guidelines for Engineer undertaking EI to deal with buried water carrying services maintained by party other than the features owners" in Appendix 6 to this Brief;
- (vi) Inspect any boulders in the vicinity of the slopes and check for signs of instability, and bring to the attention of the Director's Representative any immediate and obvious danger noted and provide recommendations under Clause 6.3.4 of this Brief;
- (vii) Look for and consider the implications of problems that are not explicitly included in the list of maintenance for man-made items, and bring to the attention of the Director's Representative any immediate and obvious danger noted and provide recommendations under Clause 6.3.4 of this Brief;
- (viii) Bring to the immediate attention of the Director's Representative any immediate and obvious danger to the public noted during the course of the EI and, if necessary, recommend emergency measures and repair works/PMW (including all necessary details to be shown on sketches)/further ground investigations and survey;
- (ix) Check the presence of slope signs and the slope registration numbers displayed and report any irregularities; and

- (x) Evaluate the adequacy of access to the slopes for maintenance inspections taking into account the requirements of safety regulations and provide recommendations under Clause 6.3.4 of this Brief.
 - (c) Inform relevant responsible parties for slopes of sub-divisions under multiple-maintenance responsibilities, who are either other government slope maintenance departments or GEO's District Divisions in cases involving private parties, when urgent repair action is considered necessary.
 - (d) Collect or update relevant data used to determine the priority ranking of follow-up actions for slopes, including SAs, PMW or UGW.
 - (e) Collect data for registration in accordance with WBTC No. 9/2000 "Registration and Updating of the Catalogue of Slopes" or any more recent guidance documents promulgated by the Development Bureau for any unregistered slopes found within the project/allocation boundary, or for which the Employer has the obligation to maintain. In the event of an unregistered slope and retaining wall locating in the vicinity of the project/allocation boundary or the venue of inspections and whose maintenance responsibility is not clear, collect the basic information of the unregistered slope including its location, the height and gradient of the slope and record photographs.
- 6.3.3 Perform assessments for the slopes based on the work under Clauses 6.3.1 and 6.3.2 of this Brief including:
- (a) Evaluate the relevance and completeness of all information collected with reference to the checklist agreed by the Director's Representative, and obtain further information if necessary. Determine whether SAs covering parts or the entirety of the slopes have previously been carried out. If so, review the previous SA Reports to check whether the engineering approach used, the assumptions and the conclusions made in these reports are reasonable in the light of current practices and safety standards. Review the previous landscape design, if available. The advice from a qualified arborist should be sought if necessary. (See Note in Clause 4.3(a)(iv) of this Brief for the requirement of a qualified arborist.)
 - (b) Assess or reassess the CTL category of the slopes, as set out in the standards and guidance documents promulgated by GEO.
 - (c) Obtain the data as required by the NPRS and calculate the Instability Scores and Consequence Scores for the slopes. Calculate the NPRS score of the slopes in accordance with the guidance promulgated by GEO. The Consultants shall carry out the file

search and if necessary Aerial Photographic Interpretation (API) to study the feature development history for determining the NPRS score. The score shall be documented in the MM. The Consultants shall, unless otherwise agreed by the Director's Representative, use the standard electronic spreadsheets developed and vetted by GEO for the calculation of the NPRS score. All the necessary key parameters, data and worksheets for calculating NPRS score of the selected features shall be submitted to the Director's Representative and GEO for updating GEO's SIS.

- (d) Provide to and agree with the Slope Safety Division of GEO any updated details including any changes in the slopes boundary and data in accordance with WBTC No. 9/2000 "Registration and Updating of the Catalogue of Slopes" or more recent guidance documents promulgated by the Development Bureau. The Consultants shall provide the updated details in soft and hard copies in formats/data structure agreed with GEO.
- (e) Check that Routine Maintenance Inspections and the recommendations for routine maintenance works have been carried out and documented satisfactorily.
- (f) Check that the regular checks of the buried and exposed water-carrying services including ducting system housing the services and/or the Regular Monitoring of Special Measures, if required, and the recommendations arising from the checks have been carried out and documented satisfactorily.
- (g) Assess the adequacy of the scope of routine maintenance works and supplement the list of basic maintenance works items, as necessary.
- (h) Re-assess the required frequency of Routine Maintenance Inspections and EI.
- (i) Re-assess the required frequency for regular checks of the buried and exposed water-carrying services, including any ducting system housing the services.

6.3.4 Provide recommendations for the slopes including:

- (a) Advise whether SAs of the slopes are needed taking into consideration the results of the tasks in Clauses 6.3.1 to 6.3.3 of this Brief and the results of the reviews of the previous SAs, if any.
- (b) If SAs of the slopes are considered necessary in Sub-clause (a) above, advise the Director's Representative whether the slopes can be upgraded by means of prescriptive measures or whether alternative mitigation measures can be used to reduce the potential consequence of failure, instead of carrying out SAs.
- (c) If the slopes show a history of failure or signs of distress,

recommend urgent repair and/or UGW instead of SAs. Specify the items of prescriptive measures that are applicable and practicable for these works. The requirements for improving the slope appearance in accordance with WBTC No. 17/2000 “Improvement to the Appearance of Slopes” shall also be taken into account as far as possible.

- (d) Recommend any necessary routine maintenance works including a full description of the recommended works, the preparation of sketches to indicate the location and extent of work required and taking photographs of areas requiring the recommended routine maintenance works.
- (e) Recommend any necessary PMW. Specify the items of prescriptive measures that are applicable and practicable for these works taking into consideration the requirements for improving the slope appearance in accordance with WBTC No. 17/2000 “Improvement to the Appearance of Slopes”.
- (f) Recommend any necessary remedial works or mitigation measures to reduce the risk of boulder fall that will potentially affect the stability of the slopes or nearby facilities, in particular, waterworks installations.
- (g) Based on the work of Clause 6.3.2(b)(iv) of this Brief, recommend any necessary immediate detailed leakage checks, repairs and re-routing of the services. Where leaky water-carrying services are found, advise the services’ owner and appropriate authorities for actions. Update the MM to include a provision to initiate an out-of-turn EI whenever anomalies due to leaky services are observed.
- (h) Based on the works of Clauses 6.3.2(b)(ii) and 6.3.2(b)(vi) of this Brief, recommend any necessary emergency measures (e.g. cordoning of works), urgent repairs or investigations. Specify the items of prescriptive measures that are applicable and practicable for the urgent repair works.
- (i) Based on the work of Clause 6.3.2(b)(x) of this Brief, recommend any necessary access provision for maintenance inspections.
- (j) Based on the data collected under Clause 6.3.2(d) of this Brief, advise the Employer a ranking list for carrying out SA, PMW or UGW for the slopes, based on a suitable prioritising scheme approved by the Director's Representative (e.g. the NPRS or other system proposed in consultation with the GEO). Submit the key data collected in Clause 6.3.2(d) of this Brief to the GEO. The ranking list should take into account the CTL category of the slopes and any possible action under the LPMP, LPMitP and/or other developments to be taken in consultation with the GEO.

- (k) Based on data collected under Clause 6.3.2(e) of this Brief, registered slopes identified within the project/allocation boundary, which the Employer is responsible for their maintenance, in accordance with the guidance and standards promulgated by the GEO. In case the unregistered slope lies in the vicinity of the project/allocation boundary or the venue of inspections or where its maintenance responsibility is not certain, provide the basic information to facilitate the registration by GEO.

6.3.5 Records of Engineer Inspections for Maintenance and Maintenance Manuals

- (a) Prepare the draft and final records of EI and MMs for each slope to include, inter alia, all relevant information, assessments and recommendations from the works under Clauses 6.3.1 to 6.3.4 of this Brief with traceability to all source documents.
- (b) Explain the findings and recommendations of the EI to the Director's Representative, in particular whether SAs or works are required to be carried out, with justifications and cost estimates including any site supervision costs and answer any queries.
- (c) Prepare or update the MM for each slope to include all relevant information extracted from the previous SAs, the desk study, records and details of any previous landslides and subsequent repair works, and action status and priority of the slope in the LPMP or LPMitP and site inspection(s) under this Assignment, with traceability to all source of documents used.
- (d) Prepare or update the MM for each slope to include a statement of landscape design highlighting the rationale for the choice of the landscaping items for the slope based on a review of previous landscape design for the slope. The advice from a qualified arborist should be sought if necessary. (See Note in Clause 4.3(a)(iv) of this Brief for the requirement of a qualified arborist.)
- (e) Study the WSDSMS and prepare soft copies of the draft and final records of EI and MMs in format and every detail compatible with the WSDSMS and capable of direct uploading to WSDSMS by WSD, as agreed by the Director's Representative. Revise the software for the production of the draft and final records of EI and MMs from time to time to cope with any revision in the WSDSMS or relevant GEO's requirements.

6.3.6 Immediate EI

Carry out immediate EI for any slope in the territory when instructed by the Director's Representative. The records of such immediate EI, including recommendations on urgent repair, shall be submitted to the Director's Representative within 1 week of the date of the Director's Representative's instruction.

6.3.7 Detailed Leakage Checks to WSD Buried Water Mains, Drains or Sewers

- (a) Carry out detailed leakage checks as directed by the Director's Representative to those buried WSD water mains, drains or sewers which show signs of leakage and which may affect the stability of the slopes using methods as agreed with the Director's Representative.
- (b) This work of leakage checks will be considered as work carried out under Clause 5 of the Schedule of Fees.

6.3.8 Independent Auditing of Reports of Engineer Inspections for Maintenance

When directed by the Director's Representative, provide assistance to the professional geotechnical engineer appointed by the Director's Representative to carry out an independent auditing of the Engineer Inspection Reports submitted under this agreement. The Consultants shall agree with the Director's Representative the follow-up actions to rectify the deficiencies identified and report the status of actions taken before forthcoming submission of the next batch of EI Reports.

6.4 Emergency Inspection of Slopes

- 6.4.1 EMI for slopes shall include slopes, retaining walls, natural terrain hazard mitigation measures and natural terrain, including those not maintained by WSD.
- 6.4.2 Within 14 days after the commencement of the Agreement, the Consultants shall provide the Director's Representative with the contact details of at least 6 designated staff (2 designated staff for HK&I Region, 1 for K Region, 2 for NTE Region and 1 for NTW Region) who can be contacted at any time within a period of 52 months from 1 April 2013, to carry out EMI arising from landslides and other serious incidents for slopes in the Region. EMI shall be ordered by the Director's Representative, Chief Engineer of HK&I Region, K Region, NTE Region or NTW Region or their representatives.
- 6.4.3 The Consultants shall submit for the agreement of the Director's Representative the contact arrangement and procedures of carrying out EMI within 14 days after the commencement of the Agreement and carry out drills not later 10 March 2013 in format to be agreed by the Director's Representative.
- 6.4.4 The EMI shall be carried out by professionally qualified and experienced geotechnical engineers such as Registered Professional Engineer (Geotechnical). The inspecting geotechnical engineer shall provide instruction on site to WSD Term Contractors for carrying out IRW to remove immediate danger, to prevent further damage to the public and slope failure and to protect life and property. This shall be followed by SEW to reinstate the operation of vital public facilities and services and to

allow people to re-occupy their dwellings, including removal of remaining landslide debris causing public concern or nuisance. Within 1 day after the EMI, the Consultants shall submit draft record of the EMI including the details of IRW and immediate measures, and recommendations for SEW to be carried out for the Director's Representative's acceptance. In case of complaints from the public relating to the slope failure, the Consultants shall liaise with the complainants and provide recommendations on the appropriate course of action to deal with complaints or maintenance problems for the Director's Representative's consideration. The Consultants shall liaise with GEO for handling major landslides cases, arrange joint inspections and deal with all queries from Government departments and the general public.

6.4.5 In addition to the details mentioned in Clause 6.4.4 of this Brief, the draft records for the EMI shall also include a plan, section and photographs of the incidents in the format compatible with the WSDSMS database. The Consultants shall arrange their staff to input draft records of the EMI into WSDSMS. Items not included in the WSDSMS but required to be recorded shall be reported in the format to be agreed by the Director's Representative.

6.4.6 The Consultants shall arrange with the WSD Term Contractors to carry out the IRW and raise the works orders through the WSD's Maintenance Works Management System (MWMS). MWMS is a computer system established by WSD to process Works Orders and to monitor various kinds of daily operation works. For the processing of works orders, MWMS is involved from the issue of works order, measurement, payment and accounting and to the finalization of the works orders.

6.5 Design Phase

6.5.1 General

- (a) Prepare a Design Memorandum which shall set out the standards governing the design of the works and obtain the consent of the Director's Representative to this memorandum before proceeding further with the detailed design of the proposed works.
- (b) Study the requirements of the Ordinances listed below and bring to the attention of the Director's Representative any special measures necessary to comply with the requirements of these Ordinances:
 - (i) Air Pollution Control Ordinance.
 - (ii) Antiquities and Monuments Ordinance
 - (iii) Country Parks Ordinance
 - (iv) Environmental Impact Assessment Ordinance
 - (v) Electricity Ordinance
 - (vi) Factories and Industrial Undertakings Ordinance
 - (vii) Land (Miscellaneous Provisions) Ordinance
 - (viii) Land Drainage Ordinance
 - (ix) Noise Control Ordinance

- (x) Town Planning Ordinance
 - (xi) Road Traffic Ordinance
 - (xii) Waste Disposal Ordinance
 - (xiii) Waterworks Ordinance
 - (xiv) Water Pollution Control Ordinance
 - (xv) Occupational Safety and Health Ordinance
 - (xvi) Any other Ordinances having a bearing on the works of the Assignment.
- (c) If necessary, prepare and submit proposal to seek consent of the Country and Marine Parks Authority for works within Country Park.
 - (d) Prepare the specification clauses required to effect the environmental measures necessary to mitigate the impact of the construction activities and the permanent installations on the environment and make submission to EPD for agreement.
 - (e) Submit and present the proposal to the Vetting Committee on Slope Appearance of WSD if shotcreting is proposed.
 - (f) Provide any necessary clarifications and advice regarding the designs of the works as and when required during the course of the Assignment.
 - (g) Where necessary, make geotechnical design submission and obtain GEO's checking approval in accordance with ETWB TC(W) No. 29/2002 "Geotechnical Control for Slopes and Retaining Walls" if the conditions in paragraph 20 of ETWB TC(W) No. 13/2005 "Prescriptive Measures for Stabilisation and Improvement of Man-made Slopes and Standardised Debris-resisting Barriers for Mitigation of Natural Terrain Landslide Hazards" cannot be satisfied.
 - (h) Where necessary, submit vibration assessment reports and obtained WSD's approval to ensure the effect of the proposed works on the existing WSD tunnels, watermains, service reservoirs and other waterworks installations in the vicinity that the vibration limit as specified in WSD's Departmental Instruction No. 1038 will not be exceeded.
 - (i) Where necessary, engage a professional engineer with expertise and experience in reservoir safety, such as a qualified civil engineer appointed to the All Reservoirs Panel or the Service Reservoirs Panel under the UK Reservoirs Act 1975 to give advice on the effect of the proposed works on the stability or safety of existing service reservoirs and impounding reservoirs in the vicinity and review the design and propose a suitable method of construction.
 - (j) Recommend the requirements of construction design review for the works.

- (k) Prepare estimates of the cost of works and deployment of RSS. The estimation of contingency items shall be in accordance with Section 5 of Project Administration Handbook or any subsequent version. Attend the PECC meetings of WSD and present the cost estimates when required.
- (l) Prepare and enter the details of the works including advance works to be carried out by WSD Term Contractors into MWMS including cost estimate for issuing works orders, processing of payment, issuing variation orders, administration and management of works order, etc.
- (m) Accept the appointment as Engineer's Representative under the terms of WSD Term Contracts and carry out the duties of Engineer's Representative for the works including advance works carried out under this Agreement.
- (n) Prepare a QSSP in line with the Implementation Strategy to include, but not limited to, the following details:
 - (i) A detailed site supervision arrangement, including arrangements for supervision of construction activities that are required to be carried out outside the normal working hours of the RSS;
 - (ii) A list of critical construction activities and structural elements that require special attention together with the associated supervision requirements for such items, where appropriate the level of supervision and the rank of staff who should perform the supervision of such items and/or sign the Request for Inspection Form (or a purposely made inspection form for a particular activity or test);
 - (iii) If necessary, the Consultants shall also specify for any critical construction activities, structural elements and particular aspects or details that should be noted by the inspection officer on the Request for Inspection Form for future reference;
 - (iv) A guideline on the details of inspection to be recorded for specialist works or critical elements; and
 - (v) In case it is envisaged that construction or fabrication works will be carried out outside Hong Kong, the Consultants shall formulate supervision requirements and inspection arrangement for such works. The Consultants shall also prepare comprehensive guidelines to be followed by the RSS who need to conduct inspection outside Hong Kong. The guideline shall include but not limited to the requirements as given in Appendix 8 to this Brief.

6.5.2 Environmental Review

- (a) Identify the environmental issues that will arise from the proposed works and liaise with EPD to ensure compliance with current Environmental Impact Assessment (EIA) Ordinance and other relevant ordinances and regulations.
- (b) Identify schools, hospitals and any other noise sensitive receivers in the vicinity of the proposed works.
- (c) Identify any trees that will be affected by the proposed works. The advice from a qualified arborist should be sought if necessary. (See Note in Clause 4.3(a)(iv) of this Brief for the requirement of a qualified arborist.)
- (d) Identify those areas for which a tree survey will be required.
- (e) Identify and recommend the mitigation measures required so as to achieve compliance with the relevant ordinances, regulations and guidelines for the environmental issues.
- (f) Liaise with and seek agreement of AFCD, EPD, DLO and other concerned parties or persons on all matters associated with environmental impacts arising from the Assignment. For proposed work within Country Park areas, prior written consent of the Country and Marine Parks Authority is required before commencement of works.
- (g) Prepare and submit reports to the Director's Representative on the results, findings and conclusions of the review/studies.
- (h) Present the results of the review/studies to all concerned parties or persons including District Councils if necessary.

6.5.3 Tree Survey

- (a) Carry out a survey of the trees that will be affected by the proposed works and of the old and valuable trees in the lands that will be affected by the proposed works. The survey results will be incorporated in a survey report.
- (b) Prepare a tree survey report that include drawing(s) showing the location and size of the trees together with a tree schedule showing the species, height, and circumference of trunk, tree spread, general condition and photographs. The report shall indicate the trees to be retained, transplanted or felled and the existing and the proposed general ground adjacent to the trees. The report shall include drawings showing compensatory landscaping and replanting.
- (c) The tree survey report shall be signed by a landscape architect with the endorsement by a qualified arborist. (See Note in Clause

4.3(a)(iv) of this Brief for the requirement of a qualified arborist.).

- (d) Make submission and obtain approval from the appropriate authorities such as DLO, AFCD, HyD and LCSD on the tree survey report as required in accordance with ETWB TC(W) No. 3/2006 “Tree Preservation”, ETWB TC(W) No. 2/2004 “Maintenance of Vegetation and Hard Landscape Features” and ETWB TC(W) No. 29/2004 “Registration of Old and Valuable Trees, and Guidelines for their Preservation”.
- (e) Where tree removal, either by felling or by transplanting, is necessary, submit tree removal application to the relevant authorities for approval in accordance with ETWB TC(W) No. 3/2006 “Tree Preservation”, and take necessary follow-up action until obtaining approval to the application from the relevant authorities. The tree removal application shall include a tree survey plan and a tree assessment schedule, including tree preservation and protection measures for the trees to be retained and a compensatory planting proposal as required in ETWB TC(W) No. 3/2006 “Tree Preservation”.

6.5.4 Liaise with the EPD, including the provision of relevant plans and project details, regarding confirmation of whether any of the slope upgrading work is a designated project under the EIA Ordinance. For works classified as designated projects under the EIA Ordinance, the Consultants shall carry out the following:

- (a) Prepare project profiles as set out in the Technical Memorandum on the EIA Process (under the EIA Ordinance S16) and advise and assist the Employer to apply to the Director of Environmental Protection (DEP) in accordance with the EIA Ordinance for environmental impact assessment study briefs or for approval to apply directly for environmental permits.
- (b) If necessary, engage at the Consultants’ expense with an EIA consultant who will conduct EIA studies, prepare an EIA reports in accordance with the EIA study briefs issued by the DEP and EIA Ordinance, advise and assist the Employer in obtaining approval for the EIA reports in accordance with the EIA Ordinance under a separate consultancy agreement.
- (c) If necessary, incorporate the findings and recommendations of the approved EIA reports into the contract documents for implementation.

6.5.5 Cultural Heritage Study

- (a) Prepare a checklist and drawings to cover all of the slopes for UGW and PMW that contain valuable cultural heritage and will likely be affected by the works within 1 month after the Date of Commencement of the Agreement for the Director’s Representative

to submit to AMO to seek their advice on whether a Heritage Impact Assessment (HIA) is required for this Project in accordance with Development Bureau Technical Circular (Works) (DEVB TC(W)) No. 6/2009 “Heritage Impact Assessment Mechanism for Capital Works Projects”.

- (b) Prepare and submit study brief, within 3 weeks after AMO advises that HIA is required for this project, for agreement with AMO; carry out an HIA and submit the HIA report to AMO for approval within 6 weeks after approval of the study brief in accordance with DEVB TC(W) No. 6/2009 “Heritage Impact Assessment Mechanism for Capital Works Projects”. The Consultants shall also provide technical support to the Employer in the public engagement exercises as stipulated in DEVB TC(W) No. 6/2009 “Heritage Impact Assessment Mechanism for Capital Works Projects”. Every effort should be made to avoid or minimise adverse impact of the proposed works on the “heritage site”.
- (c) Carry out archaeological review by a qualified archaeologist if works has to be carried out in the vicinity of or within archaeological sites and areas as required by AMO.

6.5.6 Traffic Impact Assessment

- (a) Where necessary, carry out a Traffic Impact Assessment for the proposed works including the site investigation work under the Assignment using, where appropriate, the Guidelines on Traffic Impact Assessment and Day-Time Ban Requirements for Road Works on Traffic Sensitive Routes issued by the Research and Development Division of HyD. The assessment should cover the cumulative traffic impact arising from the proposed works and other projects in the vicinity, including other water mains rehabilitation and replacement works by WSD.
- (b) Establish and agree with the Transport Department the boundaries of the study area.
- (c) Carry out traffic counts at the critical junctions and links and perform junction and road link analysis for the Traffic Impact Assessments.
- (d) Identify any traffic lights that will need adjustment to suit the proposed works.
- (e) Identify any traffic diversions and road closures that will be necessary to facilitate the proposed works.
- (f) Review the standard requirements of an Excavation Permit issued by HyD and identify those parts of the proposed works that will require special provisions in the contract documents to effect these

measures and recommend how these provisions are to be made.

- (g) Identify any special measures required by HyD, TD and HKPF for carrying out the proposed works and recommend how the provisions for these special measures are to be made in the contract documents for the proposed works.
- (h) Identify those parts of the works that will require special measures for pedestrian traffic and recommend how the provisions for these special measures are to be made in the contract documents for the proposed works.
- (i) Prepare report on the results, findings and conclusions of the study.
- (j) Present the results of the study to all concerned parties or persons as required.

6.5.7 Design of Preventive Maintenance Works and Subsequent Emergency Works

- (a) Carry out the design of the PMW for 215 slopes listed in Appendix 2 to this Brief and SEW arising from EMI using prescriptive measures or conventional analytical techniques. Consultants' fees for design of PMW cover the circulation of the design to all relevant parties, seeking consent from all relevant Government departments, obtaining STLA for works from DLO and completion of all other design duties as required in the Brief. Design of the PMW and all necessary procedures shall be completed as early as possible to meet the completion date stated in Appendix 2 to this Brief for the PMW of individual slope. However, if the Consultants have worked diligently to process the design but due to circumstances beyond the control of the Consultants, such as unresolved objections from other parties, the design of the PMW cannot be completed for implementation of the works within 40 months from commencement of the Agreement, the design of these PMW will still be considered as completed and no deduction in fees will be imposed.
- (b) Where the Director's Representative considers, or the Consultants propose and the Director's Representative agrees, that any PMW shall be deleted from this Assignment, the Director's Representative shall provide other slopes to the Consultants as replacement. The replacement slope may be in any part of the Region and may not be of similar size or of similar formation to the replaced one.
- (c) The PMW included in the 2014/15, 2015/16 and 2016/17 PMW programme are as follows :

2014/15 Programme	PMW with completion date on or before 15 January 2015
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2015/16 Programme	PMW with completion date on or before 15 January 2016
2016/17 Programme	PMW with completion date on or before 15 January 2017

- (d) The above PMW programme is tentative only. The Director's Representative may take out from the programme any slope and replace it with another.
- (e) Check SIS, Slope Maintenance Responsibility Information System (SMRIS) and Landslip Preventive Measures Information System (LPMIS) to assess whether there is any change in the maintenance responsibility and any planned UGW that are to be carried out and, advise the Director's Representative whether the slopes should be deleted from this Assignment as appropriate.
- (f) Review the PMW as recommended in the EI reports, check with Director's Representative or the Regional staff of WSD their specific requirements on the PMW (such as maintenance access, greening works etc.) to meet the operation and maintenance needs, and carry out studies, inspections, surveys, assessments and investigations as necessary to identify any other PMW items that are required for the same slope.
- (g) Prepare Design Reports for the PMW and SEW including but not limited to design assumptions and justifications, design calculations, recommended sequence of construction, working drawings, recommendations on construction design review, cost estimates and bill of quantities. The format of the Design Reports shall be agreed by the Director's Representative. The essence of the SEW aims to reinstate the operation of vital public facilities and services and to allow people to re-occupy their dwellings that the draft Design Report shall be submitted to the Director's Representative within 72 hours after the EMI of the slope.
- (h) Determine the extent of existing materials to be excavated that can be used for backfilling purposes and assess the volume of materials if any, to be imported to complete the backfilling. Draw up a Construction and Demolition Material Management Plan (C&DMMP) for vetting by the Vetting Committee as required by paragraph 4.1.3 of Chapter 4 of Project Administration Handbook. Attend Vetting Committee meetings to present the plan if necessary.
- (i) Prepare detailed design, plans, sections and cost estimates for each of the slopes together with specifications, drawings and bills of quantities. These works shall be carried out through works orders under the WSD Term Contracts.
- (j) Many slopes are in remote areas or along catchwaters and without proper vehicular access. The design and construction method shall take into consideration of the site constraints.

- (k) The design of the PMW shall include greening works endorsed by a landscape architect with the advice, if deemed necessary by the Director's Representative, of a qualified arborist. (See Note in Clause 4.3(a)(iv) of this Brief for the requirement of a qualified arborist.)

6.5.8 Design of Upgrading Works (Stage 3 Studies)

- (a) Undertake detailed desk studies including any necessary review of documentary records and adequacy of past stability, detailed site inspections, aerial photograph interpretation, land surveys data and detailed design and the associated landscaping works for the slopes.
- (b) Prepare Preliminary Design Reports for the UGW which shall include plans, sections, landscaping design endorsed by a landscape architect with the advice, if deemed necessary by the Director's Representative, of a qualified arborist and preliminary cost estimates of each slope, and submit them to the Director's Representative for agreement.
- (c) Where some of the slopes are found to be up to the current safety standards and if agreed by the Director's Representative, the Consultants shall prepare and submit Stage 2 Study reports for the slopes. The Director's Representative shall nominate another slope as replacement for the UGW. The Stage 2 Studies will be considered as work carried out under Clause 5 of the Schedule of Fees.
- (d) Where appropriate, the UGW may be designed by means of prescriptive measures in accordance with GEO Publication No. 1/2009 (or the latest extensions to the Report) or the use of conventional analysis methods based on suitable design parameters and engineering judgment.
- (e) Where the Director's Representative considers, or where the Consultants propose and the Director's Representative agrees, that a slope should be deleted from the Agreement, the Director's Representative may nominate another slope as replacement for the UGW.
- (f) Design and supervise site investigations and laboratory testings.
 - (i) Design the site investigations and laboratory testings necessary for the detailed design to be carried out. The Consultants shall provide an adequate number of qualified and experienced professionals to plan, direct and supervise the site investigations and laboratory testings. The recommendations of Geoguide 2 regarding requirements of the personnel for site investigations and laboratory testings should be followed. The Consultants shall obtain the

approval from the Director's Representative before carrying out the site investigations and laboratory testings.

- (ii) Prepare Desk Study Reports for the proposed site investigations and laboratory testings. The reports shall document the information examined (including available reference documents, aerial photographs and site investigations and laboratory testings reports, with Geotechnical Information Unit reference where appropriate), describe the geological setting of the sites, and indicate the location of utilities within and surrounding the sites and the land status. It shall state the need, scope and objectives of the proposed additional site investigations and laboratory testings, and give the estimated depths of proposed drillholes and the likely amount of rock drilling. It shall also include a proposed supervision plan for both the site investigations and laboratory testings, giving the names and curriculum vitae of the proposed supervisory personnel. The Consultants shall arrange for the reports to be vetted and signed by qualified and experienced professionals if the reports have not been prepared by such persons. A copy each of the Desk Study Report shall be passed to the nominated supervisory personnel to convey to them the available information and the aims of the proposed site investigations and laboratory testings.
- (iii) Site investigations and laboratory testings have to be completed as early as possible in order to meet the target commencement and completion of the UGW. As the estimated cost of the site investigations and laboratory testings may be over \$4.0M, the Consultants may consider to arrange separate contract(s) for site investigations and laboratory testings to be let. However, if some urgent site investigation works are required before commencement of the site investigation contract, the WSD Term Contractors may be deployed to carry out the urgent site investigation works. Moreover, GEO may offer services for a number of slopes provided that their workload situation can cope with at that time. As such, the Consultants shall, within 1 month from the commencement of the Agreement, liaise with GEO and formulate a site investigations and laboratory testings strategy. Different options for packaging of works and contract arrangement shall be considered in formulating the strategy.
- (iv) For site investigations and laboratory testings to be carried out by GEO Term Contractors, the Consultants shall pass a copy of the Desk Study Report to CGE/GP of GEO with the request for arranging the site investigations and laboratory testings. The Consultants shall allow a lead time of at least 3 months between the submission of request for site

investigation works and the actual commencement of the works, and allow time required for the production of the site investigations and laboratory testings reports. The responsibilities of the Consultants for site investigations and laboratory testings to be carried out by GEO Term Contractor are detailed in the Ground Investigation Note No. 1/2008, or its updated version from GEO. CGE/GP may be enquired of any proposed special testings, as well as rock testings required, at the early stage of the Agreement. A list of tests available under GEO term contracts and associated test methods specified can be obtained from CGE/GP.

- (v) Regarding letting specialist contracts for site investigations and laboratory testings, CGE/GP will provide a copy of the latest GEO specification and rates for estimation purposes upon request. The Consultants shall prepare the draft tender documents for the specialist contracts and send them to CGE/GP for comment in accordance with WBTC No. 13/90 “Ground Investigation”. This should be done well in advance of the intended date for tendering.
- (vi) Invite and evaluate tenders from approved specialist contractors in accordance with WBTC No. 13/90 “Ground Investigation” to carry out site investigations and laboratory testings and make recommendations for the Employer to engage the contractors in accordance with the Stores and Procurement Regulations.
- (vii) Liaise with WSD Term Contractors regarding those site investigations to be carried out by them.
- (viii) Liaise with the WSD Term Contractors, the GEO Term Contractor and the specialist contractors engaged under Clauses 6.5.8(f)(iv), 6.5.8(f)(v), 6.5.8(f)(vi) and 6.5.8(f)(vii) of this Brief and all Government departments and authorities concerned to obtain permissions for the site investigations and laboratory testings including the application for Excavation Permits, temporary land allocations and access permissions.
- (ix) Identify all utilities, facilities, installations and existing rights that may be affected by the site investigations and laboratory testings. Liaise with and obtain consent from the concerned parties for carrying out the site investigations and laboratory testings, including the consents for diversion or relocation of the utilities, facilities and installations if necessary.
- (x) Carry out all necessary surveys, setting out, levels and sounding, make such investigations and inquiries and search site records as are necessary for the satisfactory completion

of the site investigations and laboratory testings.

- (xi) Supervise the site investigations and laboratory testings, including reinstatements, and ensure that pedestrian and vehicular traffic arrangements and the provisions for supporting, watching guarding and lighting of any excavations are to a standard that will enhance the public image of WSD. Report on the contractor's performance. Take measurements of findings and photographs. Take measurements of work done and prepare quantities for payment for the works. Supervise laboratory testings. The Consultants shall provide adequate qualified personnel for administration and supervision of the site investigations and laboratory testings.
- (xii) Prepare and submit reports on the results, findings and conclusions of the site investigations and laboratory testings including drawings to show the location of all existing services, underground structures and obstructions.
- (g) Obtain information from the LandsD to check whether the slopes are affecting squatters and hence are to be actioned through Non Development Clearance (NDC) instead of UGW in accordance with the current Government policy.
- (h) Determine the extent of existing materials to be excavated that can be used for backfilling purposes and assess the volume of materials if any, to be imported to complete the backfilling. Draw up a C&DMMP for vetting by the Vetting Committee as required by paragraph 4.1.3 of Chapter 4 of Project Administration Handbook. Attend Vetting Committee meetings to present the plan if necessary.
- (i) Prepare detailed design, plans, sections and cost estimates for the UGW for each of the slopes together with specifications, drawings, bills of quantities and all tender documentation using the standard documents. The production of these documents shall be carried out for all works contracts and for procurement of any materials or services required prior to or separately from the main works contracts including works entrusted to other Government departments/parties and advance work to be carried out under WSD Term Contracts. The cost estimates shall be submitted at least 1 month before the PECC meeting. Attend PECC meetings to present the pre-tender estimates if necessary.
- (j) Prepare design report for the slopes for carrying out the necessary UGW (including prescriptive upgrading measures stipulated in GEO Publication No. 1/2009) and access provision, where recommended. The design reports shall include the following:
 - (i) Details of the proposed UGW, landscaping works that shall be endorsed by a landscape architect with the advice,,if

deemed necessary by the Director's Representative, of a qualified arborist, and access provisions; (See Note in Clause 4.3(a)(iv) of this Brief for the requirement of a qualified arborist.)

- (ii) Design assumptions and justifications;
- (iii) Design calculations;
- (iv) Recommended sequence of construction stages and temporary precautionary measures during construction;
- (v) Confirmation that the slopes would be upgraded to current standards by the proposed UGW;
- (vi) Working drawings;
- (vii) Comprehensive aerial photograph interpretation reports prepared by the Consultants with particular emphasis on establishing the history and nature of any past failures that may affect the stability of the slopes;
- (viii) Details of GEO submissions for approval where necessary;
- (ix) Recommendation on construction design reviews; and
- (x) Cost estimates, bill of quantities and deployment of RSS.

6.5.9 Works Order Preparation under WSD Term Contracts (for works undertaken by the WSD Term Contractors)

- (a) Prepare and submit cost estimates for the works orders at least 2 months before the respective commencement dates of the works orders. Calculate the level of Liquidated Damages to be stated in the works orders using the cost estimates.
- (b) Prepare documents for the works orders.
- (c) Assist the Employer in issuing works order for the proposed works under MWMS. The Consultants shall arrange their staff to input the details of the draft works order into MWMS for the Director's Representative's confirmation. The Consultants shall input details of the works into the WSDSMS within 7 days from commencement of works.

6.5.10 Contract Preparation and Tendering

- (a) Prepare and submit pre-tender estimates for the works contracts at least 2 months before the invitation of tender for the respective works contracts. Calculate the level of Liquidated Damages to be stated in the tender documents using the pre-tender estimates.

- (b) Prepare tender documents for the works contracts.
- (c) Assist the Employer in the invitation of tenders for the proposed works. Draft tender notifications, distribute tender documents, prepare and issue tender addenda, answer queries and carry out pre-tender briefings if required.
- (d) Prepare tender assessments and recommendations, including evaluation of alternative tenders, and submit tender reports to the Director's Representative in a standard format as required by the Director's Representative.
- (e) Prepare Articles of Agreement and other contract documents for signature, for retention by the Director's Representative and for issue to the contractors, RSS and other parties. Prepare publicity material, attend signing ceremony and any press briefings.
- (f) Carry out debriefings to unsuccessful bidders if required.

6.6 Construction Phase

The Construction Phase is subject to incorporation. The written approval of the Director's Representative shall be obtained before commencing construction of PMW and UGW for each slope.

- 6.6.1 The design of 215 PMW and all necessary procedures completed by December 2013, 2014 and 2015 respectively for construction. Unless otherwise agreed, the completion date for each PMW shall be as stated in Appendix 2 to this Brief.
- 6.6.2 Carry out the duties of the Engineer under the conditions of the works contracts for the construction, completion and maintenance of the works, which shall be deemed to include the coordinating of works carried out by public utility companies and other authorities, bodies or persons for or in connection with or necessitated by the Assignment.
- 6.6.3 Undertake the duties of the Engineer's Representative as described in WSD's Departmental Instruction No. 862 for the works to be carried out under the WSD Term Contracts. The Consultants' attention is drawn to WBTC No. 15/99, 15/99A and 15/99B "Improvement to Quality of Maintenance Works".
- 6.6.4 At the commencement of works, review the QSSP (against the activities described by the contractor in his Quality Plan prior to the execution of works if the contractor is required to submit it under the contract), and conduct regular reviews of the QSSP with the RSS subsequently, and as the need arises, and make necessary updating and modification in order to suit the actual circumstances, and the Consultants shall report in the progress reports the status of implementing the QSSP and any major modifications to it as a result of the review. The Consultants shall submit a revised QSSP

to the Director's Representative if there is a major revision and as requested by the Director's Representative.

- 6.6.5 The Consultants shall provide qualified supervision for the works in accordance with the requirements as stipulated in Appendix 9 to this Brief.
- 6.6.6 Comment on any insurance policies submitted by the contractors.
- 6.6.7 Co-ordinate the works carried out in conjunction with the works of public utility companies and other Government departments.
- 6.6.8 Liaise with contractors to programme their works and submit the works programme to the Director's Representative for agreement.
- 6.6.9 Carry out all necessary checks to ensure that the proposed methods for temporary works submitted by the contractors do not have a detrimental effect on the permanent works and are safe in every aspect with reference to the relevant current Codes of Practice and Standards.
- 6.6.10 Advise on, arrange where necessary, and direct the inspections and testings of materials and plants supplied for the works under the works contracts or WSD Term Contracts.
- 6.6.11 Determine the need of arranging, as necessary, for any monitoring of the stability of the slopes by the contractors during construction.
- 6.6.12 Provide Head Office support and supervision for the execution of the works contracts and WSD Term Contracts, including appointment, running down, control and administration of such RSS as may be approved by the Director's Representative.
- 6.6.13 Report on the performance of the contractors in the format advised by the Director's Representative.
- 6.6.14 Report on the financial situation, variation orders, claims for additional payment and request for extensions of time and all other matters affecting the progress and financial situation of the Project.
- 6.6.15 Plan, arrange and, where necessary, direct the inspections, testings of materials and workmanship. The inspections and testings of materials and workmanship including preparation of reports and any re-tests necessary as a result of the failure of initial testings.
- 6.6.16 Liaise with HyD, TD, HKPF and other concerned parties regarding traffic diversions and traffic management proposals made by the contractors.
- 6.6.17 Arrange joint inspections, before the issue of the completion certificates, for the purpose of handing over the completed works to the Government with representatives of the Director's Representative and the relevant Regions of WSD. Deliver to the Director's Representative, at least two weeks prior to these inspections, all information, instructions, calculations, draft MMs and

drawings as are necessary for the taking over/maintenance of the completed works.

- 6.6.18 Within three months from the substantial completion of the works for each slope upgraded or improved under the Assignment, prepare and deliver to the Director's Representative drawings showing in full details the slope works as actually carried out together with calculations and the updated MM. The Consultants shall also submit all survey data being used, in a format to be agreed by the Director's Representative, to facilitate subsequent input by the Government into the Land Information System in the LandsD.
- 6.6.19 Review the adequacy of design assumptions and performance of the upgraded slopes (in accordance with GEO Technical Guidance Note No. 2) within the maintenance period of the works contracts or of the respective works orders of WSD Term Contracts, especially during and after heavy rainfall, and shall report on the findings or observations and recommend the necessary follow-up actions to the Director's Representative.
- 6.6.20 Submit to GEO updated information for each slope upgraded or improved under the Assignment in accordance with WBTC No. 9/2000 "Registration and Updating of the Catalogue of Slopes".
- 6.6.21 Arrange final joint inspections of the slopes works with the representatives of the Government, the Director's Representative and the Regional staff of WSD two months before expiry of the maintenance period.
- 6.6.22 Prepare finalized site plans for the Project so as to enable the return of surplus land to LandsD, registration of WSD reserves and finalization of land allocations.
- 6.6.23 Respond to audit reports.
- 6.6.24 Submit additional calculations and certificates for any design works carried out during the Construction.
- 6.6.25 Carry out necessary construction design reviews including site visits and any necessary recording or surveying for checking the site conditions and liaison/briefing the WSD's staff as necessary.
- 6.6.26 Prepare and certify records of construction design reviews carried out, and update the MM (in accordance with Geoguide 5 and WBTC No. 9/2000 "Registration and Updating of the Catalogue of Slopes) to document the works done, based on site inspections and the as-built records of the works.
- 6.6.27 Input the updated MM into the WSDSMS by the Consultants' staff within 14 days after approval by the Director's Representative. (For PMW and SEW arising from EMI).
- 6.6.28 Prepare and submit soft copy of updated MM for UGW in a format capable of direct uploading into the WSDSMS and agreed by the Director's

Representative within 14 days after approval by the Director's Representative. (For UGW only)

- 6.6.29 Submit all records and accounts relating to the works contracts and WSD Term Contracts.
- 6.6.30 Settle the final account for payment to the contractors.
- 6.6.31 Obtain the Checking Certificate for Slopes and Retaining Walls from GEO in accordance with ETWB TC(W) No. 20/2004 "GEO Checking Certificate for Slopes and Retaining Walls" for the UGW.
- 6.6.32 Plan and arrange for the community planting near or after the completion of the works in accordance with ETWB TC(W) No. 34/2003 "Community Involvement in Greening Works" if required.
- 6.6.33 Input all data required by MWMS for administration and management of works orders by RSS.
- 6.6.34 Input details of works completed into the WSDSMS by the Consultants' staff within 14 days from substantial completion of works. (For PMW and SEW arising from EMI)

6.7 Stage 2 Studies

- 6.7.1 Undertake detailed desk studies and prepare reports on slopes for Stage 2 Studies using an integrated approach, including search and study of background data from Government's current and archive files and records (e.g. BD, GEO District Divisions and Planning Division, GIU), maps, drawings, reports and relevant documents in Government's archives, survey of cross-sections and, where considered necessary, aerial photograph interpretation, together with detailed site inspections and geotechnical stability assessments of the slopes arising from Clause 6.5.8(c) of this Brief.
- 6.7.2 Attend meetings with the WSD and, if required, other relevant parties to answer queries or appeals, etc., pertinent to the submitted papers or the Stage 2 Study Reports, if so directed by the Director's Representative.
- 6.7.3 Carry out site investigations and laboratory tests in accordance with Clause 6.5.8(f) of this Brief.
- 6.7.4 Check the effect of existing utilities within the vicinity of the slopes and take due consideration of the utilities in their SAs.
- 6.7.5 Carry out survey works including vegetation clearances and scaffolding accesses as required for the Stage 2 Studies and submit the survey specifications and the details of the surveyors engaged to the Director's Representative for approval.
- 6.7.6 Obtain the GEO Checking Certificate for Slopes and Retaining Walls from GEO in accordance with ETWB TC(W) No. 20/2004 "GEO Checking

Certificate for Slopes and Retaining Walls”.

6.7.7 Carry out the administrative and technical activities required for accomplishing the Stage 2 Studies.

6.7.8 The Stage 2 Studies shall be considered as work carried out under Clause 5 of the Schedule of Fees.

6.8 Regular Monitoring of Special Measures

6.8.1 Define the monitoring requirements of the slope feature after review on the MM and the results of previous regular monitoring of the special measures for the slopes listed in Appendix 4 to this Brief.

6.8.2 Prepare specifications, drawings, bills of quantities, cost estimates, and programme for issuing works orders for conducting regular monitoring of the special measures for the slopes within one month before the due dates shown in Appendix 4 to this Brief. The technical capacity and competence of the specialist sub-contractors proposed by WSD Term Contractors shall be assessed to ensure the adequacy of the monitoring works of the special measures.

6.8.3 Undertake the role of Engineer’s Representative of WSD Term Contracts to administer WSD Term Contractors and the specialist sub-contractors for the monitoring works including the issue of works orders and payment certification etc. through the MWMS.

6.8.4 Input all required data into the MWMS.

6.8.5 Vet the method statements submitted by the specialist sub-contractor and carry out all necessary checks to ensure that the proposed methods for the prestressed ground anchors monitoring works complies with the monitoring requirements for permanent prestressed ground anchors as stipulated in Geospec 1.

6.8.6 Undertake supervision of the monitoring works and measurement by qualified and experienced personnel.

6.8.7 Check and assess the monitoring results and advise the Director’s Representative of the results of the assessment.

6.8.8 Where the results of monitoring exceed the ‘alert levels’ given in the Monitoring Schedule, recommend necessary contingency actions and/or follow-up action to the Director’s Representative for consideration.

6.8.9 Prepare and submit the draft Assessment Report and final Assessment Report on the regular monitoring of special measures for the Director’s Representative’s comments and acceptance.

6.8.10 Update the MM and input the data into the WSDSMS by the Consultants’ staff.

6.9 Responses to Queries

The Consultants shall respond to queries under Clause 20 of the General Conditions of Employment raised prior to a date three months after the final submission of the Deliverables required under the Agreement. Such date shall be confirmed in writing to the Consultants by the Director's Representative.

7. Programme of Implementation

7.1 The due date for commencement of the Agreement is 1.3.2013.

7.2 Pursuant to Clause 26(B) of the General Conditions of Employment, the Consultants shall submit the draft programme and revised draft programmes and the Director's Representative shall agree, or instruct, within the following periods:

- | | | |
|-----|--|---|
| (a) | Submission of the draft programme: | Within 2 weeks of the due date for commencement of the Agreement |
| (b) | Agreement of the draft programme: | Within 2 weeks from receipt of the draft programme or instruction for submission of revised draft programme |
| (c) | Submission of revised draft programme: | Within 2 weeks from receipt of the instruction of the Director's Representative. |

The draft programme and revised draft programmes shall detail the activities to be carried out, target dates for particular tasks and any decision dates that may be required for the uninterrupted progress of the Assignment. The Consultants shall discuss with the Director's Representative during the above periods to agree the timing of submission of reports, other documents and plans for each of the main elements of the Assignment, for inclusion in the draft programme and revised draft programmes.

7.3 The following key activities are to be completed within the following dates:

- | | <u>Key Date</u>
(from commencement of the Agreement) | |
|-----|--|----------|
| (a) | Submission of draft Inception Report | 2 weeks |
| (b) | Submission of the design memorandum | 2 months |
| (c) | Environmental Review Reports | 3 months |
| (d) | The proposed establishment and duration of the RSS | 3 months |
| (e) | Submission of the Preliminary Design Reports for UGW of all the slopes in Appendix 3 to this Brief | 5 months |

	<u>Key Date</u> (from commencement of the Agreement)
(f) Commencement of PMW in the 2014/15 PMW programme	10 months
(g) Commencement of UGW for slopes along Golden Hill and Shing Mun Catchwater	12 months
(h) Completion of all UGW	47 months
(i) Submission of draft Final Report	54 months
(j) Finalisation of accounts of all works contracts and all works orders issued to the WSD Term Contractors	72 months

7.4 The due dates for carrying out EI for the slopes are listed in Appendix 1 to this Brief. The Consultants shall commence site inspections of the slopes not earlier than four months before and shall complete before the respective due dates. The draft records of EI and the updated MMs shall be submitted not later than eight weeks after the respective due dates for EI. Under special circumstances such as interfaces with other projects, immediate EI or other reasons, the Director's Representative may change the due date for EI and due date for submission of draft record of EI.

7.5 The Consultants shall endeavour to ensure that the Assignment and the works contracts and other contracts are carried out in accordance with the programme and shall submit regular reviews as part of the Progress Reports referred to in Clause 8 of this Brief.

7.6 Interface with other projects

- (a) The Consultants shall liaise closely with the Design Division of WSD and their consultants regarding details and programme of the slope and catchwater upgrading works along Golden Hill Catchwater and Shing Mun Catchwater. The Consultants shall include suitable provisions in the design and contract documents to minimize conflicts.

8. Progress Reports

The Consultants shall submit to the Director's Representative progress reports at monthly intervals or at such other intervals as required by the Director's Representative on all aspects of the Services stated in Section 6 of this Brief relating it to the Programme referred to in Section 7 of this Brief. The reports shall include a list of those parts of the Services the execution of which are behind the Programme together with proposals to expedite progress, so as to complete the work by the due dates. The reports shall also include updated expenditure forecasts in accordance with Section 9 of this Brief.

9. Financial Management

- 9.1 At monthly intervals or at such other intervals as the Director's Representative may require, the Consultants shall submit a report on the current and the forecast expenditure on the various elements of the Project and the fees due to the Consultants, in a form to be agreed by the Director's Representative.
- 9.2 The Consultants shall closely monitor progress and expenditure on all items and advise on the possibility of approved contract sums being exceeded. They shall advise the Director's Representative immediately if there is any likelihood of the approved contract sum being exceeded. To ensure sufficient time to obtain the necessary authorities and make funds available, the Consultants shall give the Director's Representative at least four months notice in writing of the need to increase the approved contract sum to meet contractual payments and shall provide the supporting information, except that if the need cannot be foreseen so far ahead, then the Consultants shall give as much notice as is possible in the circumstances. The following information shall be provided:
- (a) Details of the proposed increase broken down into the following categories:
 - (i) Price fluctuation payment under the works contracts. An arithmetical derivation based on the projected percentage and the estimated final effective value of work done is required;
 - (ii) Additional works and changes arising from the bills of quantities items and variation orders. Reasons shall be given for increases or decreases in the earlier estimates; and
 - (iii) Claims from the Contractors. These shall be the Consultants' estimates of the amounts which will be certified for payment.
 - (b) An assessment of increase in consultancy fees and RSS costs if the contract period is likely to be extended or additional RSS are required; and
 - (c) A revised projected monthly cash flow pattern of contract payments, consultancy fees and all other costs.

10. Standards and Specifications

The Consultants shall adopt such technical and design standards and specifications as are in current use by the Geotechnical Engineering Office of the Civil Engineering and Development Department, the Water Supplies Department and other relevant departments and organisations, including the following: -

	<u>Title</u>	<u>Issuing Authority</u>
(i)	Civil Engineering Design Manual	WSD
(ii)	Geotechnical Manual for Slope	GEO
(iii)	Geoguide 1: Guide to Retaining Wall Design	GEO
(iv)	Geoguide 2: Guide to Site Investigation	GEO

	<u>Title</u>	<u>Issuing Authority</u>
(v)	Geoguide 3: Guide to Rock and Soil Descriptions	GEO
(vi)	Geoguide 5: Guide to Slope Maintenance	GEO
(vii)	Geoguide 7: Guide to Soil Nail Design and Construction (2008)	GEO
(viii)	Geospec 1: Model Specification for Prestressed Ground Anchors (1989)	GEO
(ix)	Geospec 3: Model Specification for Soil Testing. (2001)	GEO
(x)	GEO Publication No. 1/2009: Prescription Measures for Man-made Slopes and Retaining Walls	GEO
(xi)	GEO Report No. 136: Guidelines on Safe Access for Slope Maintenance	GEO
(xii)	GEO Report No. 161: Guidelines on the use of Prescriptive Measures for Rock Cut slopes	GEO
(xiii)	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment and Bio-Engineering for Man-made slopes and Retaining Walls	GEO
(xiv)	Ground Investigation Note No. 1/2008	GEO
(xv)	GEO Technical Guidance Notes	GEO
(xvi)	Code of Practice on Inspection and Maintenance of Water Carrying Services Affecting Slopes	ETWB
(xvii)	Project Administration Handbook for Civil Engineering Works	CEDD
(xviii)	Project Administration Manual for Engineering Works	WSD
(xix)	Standard Drawings	WSD
(xx)	Standard Drawings	CEDD
(xxi)	General Specification for Civil Engineering Works	Government of HKSAR
(xxii)	Standard Method of Measurement for Civil Engineering Works	Government of HKSAR
(xxiii)	Stormwater Drainage Manual	DSD
(xxiv)	Hong Kong Planning Standards and Guidelines	PlanD
(xxv)	Public Works Departmental, Lands and Works Branch, Works Branch, Works Bureau, Environment, Transport and Works Bureau and Development Bureau Technical Circulars	DEVB
(xxvi)	Planning, Environment and Lands Bureau (Branch), Planning and Lands Bureau and Housing, Planning and Lands Bureau Technical Circulars	HPLB

	<u>Title</u>	<u>Issuing Authority</u>
(xxvii)	Departmental Instructions	WSD
(xxviii)	Technical Circulars	DSD
(xxix)	Technical Circulars	CEDD
(xxx)	GEO Circulars	GEO
(xxxix)	Professional Persons Environmental Consultative Committee (Pro PECC) Practice Notes	EPD
(xxxii)	Guidelines on Traffic Impact Assessment & Day-time Ban Requirements for Road Works on Traffic Sensitive Routes	HyD
(xxxiii)	Operations Branch Instructions/Supply & Distribution Branch Instructions	WSD

and such other technical & design standards and specifications as are in current use by the above or, if non-existent, British Standard Codes of Practice and Specifications after approval by the Director's Representative. Should instances arise for which suitable standards or specifications do not exist or for which the current standards or specifications appear to require modification or if by the adoption of current standards the Consultants would incur additional expenses not within reasonable contemplation, the Consultants shall submit recommendations on appropriate alternatives to the Director's Representative for agreement.

11. Checking and Certification of the Design

- 11.1 The Consultants shall submit to the Director's Representative the Stage 3 Study Reports for each slope requiring UGW, and the Stage 2 Study Reports for each slope allocated for Stage 2 Studies. Each Stage 2 or Stage 3 Study Report shall include, where appropriate, the results of desk studies, aerial photograph interpretation, site inspections, site investigations, laboratory testing and SAs. In case of reports for UGW, statements of the design standards, procedures and methodologies shall also be provided together with full set of design calculations. Each report shall be accompanied by a certificate stating the report has been checked by another qualified independent designer in the Consultants' employ who is a Registered Professional Engineer (Geotechnical) under the Engineers Registration Board of Hong Kong and that the design drawings, if any, are in accordance with the design requirements. The standard form of 'Design Certificate' set out in Appendix 4.7 of the Handbook on Selection, Appointment and Administration of Engineering and Associated Consultants shall be used for this purpose wherever applicable.
- 11.2 If major design amendments or detailed appraisal of the adequacy of design are necessary during the course of construction (e.g. due to change in design geological model, landslips, etc.), the Consultants shall submit to the Director's Representative a supplementary design report. The supplementary design report shall be subjected to checking by a Registered Professional Engineer (Geotechnical) and shall include a separate Design Certificate as per Clause 11.1 of this Brief.

12. Variations and Other Commitments

- 12.1 The value of a variation to the contract works or other expenditure commitment for the purposes of Clause 24 of the General Conditions of Employment is \$300,000.
- 12.2 All variations to the contract works shall be covered by a variation order in a form to be agreed by the Director's Representative, except that no variation order will be required for increase or decrease in quantities arising from remeasurement of the items in the bills of quantities.
- 12.3 The Director's Representative shall advise the Consultants of his approval or otherwise under Clause 24 of the General Conditions of Employment within 14 days of submission. The reasons for non-approval, which may include insufficiency of supporting information provided with the submissions, will be provided to the Consultants at the same time. If because of the need for consultation or referral elsewhere, the Director's Representative is unable to give his decision within the period stated then he shall inform the Consultants immediately and advise them when he will give his decision. Provide that, in any case, a different period can be applied by mutual agreement.
- 12.4 Under sub-clause (iii) of Clause 25(A) of S12 of the Special Conditions of Employment, the Consultants shall report all claims to the Director's Representative within 14 days of their receipt. The Director's Representative shall provide the Employer's views to the Consultants within 60 days of receipt of the Consultants' principles of assessment of a claim.
- 12.5 Under sub-clause (iv) of Clause 25(A) of S12 of the Special Conditions of Employment, the Consultants shall report all delays to the Director's Representative within 14 days of the delay being identified. The Director's Representative shall provide the Employer's views to the Consultants within 28 days of receipt of the Consultants' assessment of extension of time.

13. Resident Site Staff

- 13.1 The establishment, duties, mandatory basic safety training, appointment, deployment, remuneration, conditions of employment and administration of RSS shall be in accordance with the Special Conditions of Employment relating to RSS and the Schedule of RSS Standards and Duties (Appendix 7 to this Brief). The RSS without the mandatory basic safety training may be accepted by the Director's Representative provided that the Consultants shall arrange for the staff concerned to attend the necessary training courses within one month of the date of commencing duty.
- 13.2 The Consultants shall submit to the Director's Representative for approval the proposed establishment of RSS prior to the commencement of the recruitment process.
- 13.3 For the employment of the Labour Relation Officer (LRO), the Consultants shall,

within 14 days of commencement of the Contract, or as the case may be, within 14 days after being notified by the Director's Representative of his disapproval of employment of any person as LRO, submit the name and particulars of the person they intend to employ as the LRO to the Director's Representative for his approval. The Consultants shall furnish further information within 7 days pertinent to the employment of such person if required by the Director's Representative.

- 13.4 The qualifications, experience required and the duties of the RSS are shown in Appendix 7 to this Brief but it shall remain the responsibility of the Consultants to ensure that the RSS are suitable in all respects and that all the RSS remain courteous in all dealings relating to this Agreement including the construction works and conduct themselves in a manner that will not bring Government in general or WSD in particular into disrepute or cause embarrassment, publicly or non-publicly. Qualified geotechnical supervision shall be provided for the major geotechnical works including enhanced maintenance, UGW. Advice from GEO on the suitability of personnel for the qualified geotechnical supervision should be sought prior to commencement of works.
- 13.5 The Consultants shall submit to the Director's Representative at monthly interval reports on the RSS, structure, establishment and dates of events affecting the deployment of the RSS.
- 13.6 The Consultants shall agree with the Director's Representative on the form of provision of site office accommodation to the RSS by the Employer. The site office may take the form of a temporary building on any land to be provided by the Employer or a rented premise at the Employer's expenditure but to be arranged and managed by the Consultants.
- 13.7 The Consultants shall be provided with free uniform for the RSS under the works contracts. The Consultants shall ensure that RSS, except those who are not involved in site work, such as office-based staff, or those engaged in work requiring personal protective equipment which, in the opinion of the Consultants, render the wearing of uniform unsuitable or impractical, wear the uniform in carrying out their duties of administration and site supervision of the works contracts.

14. Director's Representative

- 14.1 The Director's Representative as defined in the General Conditions of Employment shall be the Assistant Director/Operations of Water Supplies Department or such other person as may be authorised by the Director of Water Supplies in writing and notified to the Consultants. The Director's Representative may delegate any of the powers and functions vested in him to other officers. If the Consultants are dissatisfied with a decision or instruction of any such officer the matter shall be referred to the Director's Representative for a ruling.
- 14.2 During the course of the Agreement the Consultants shall report direct to the Director's Representative.

15. Control of the Project and Assignment

- 15.1 Pursuant to Clause 13 of the General Conditions of Employment, the Consultants shall attend meetings of the relevant committees, public consultation bodies, District Councils etc. as necessary. The total amount of this kind of meeting is estimated to be not more than 70 meetings, beyond which the extra cost shall be reimbursed by the Employer on a time charge basis.
- 15.2 The Consultants, when necessary, shall communicate and correspond direct with other Government departments and their consultants, utility undertakers and various Divisions of WSD to obtain information in connection with the Project, copying such correspondence to the Director's Representative.

16. Information and Facilities Provided by the Employer

- 16.1 All available information relevant to the Assignment will be provided to the Consultants. Relevant documents including reports, drawings and other background materials are listed in Clause 16.2 of this Brief. The Consultants shall indicate for guidance those documents which they currently hold and those of which a copy may be needed, should the Agreement be awarded to them. A copy of each of the documents indicated as needed will be supplied free of charge by the Director's Representative on request from the Consultants, except those currently available from the Publication Sales Unit of the Information Services Department or the Map Publication Centres of the LandsD.
- 16.2 The following documents will be supplied to the Consultants free of charge for the Assignment:
- (i) a soft copy (in CD-ROM) of the available records of EI and MMs for the slopes listed in Appendices 1 and 2 to this Brief;
 - (ii) a soft copy (in CD-ROM) of the computer programme for the WSDSMS;
 - (iii) a set of the prints showing the boundaries of the Regions, namely HK&I, K, NTE and NTW Regions of WSD; and
 - (iv) a soft copy of 1:1000 Slope Boundary Plans for the slopes listed in Appendices 1 and 2 to this Brief.

17. Consultants' Office and Staffing

- 17.1 The Consultants shall maintain for the duration of this Agreement an office in Hong Kong under the control of the Project Director of the Consultants who shall be responsible for the Project. He shall have adequate authority and sufficient professional, technical and administrative support staff in all relevant disciplines to ensure progress to the satisfaction of the Director's Representative.
- 17.2 The Consultants shall provide the staff and manpower input in accordance with the Technical Proposal which was submitted with the Consultants' tender for this

Assignment. The Director's Representative shall have the right to check the time-log record of the Consultants' staff deployed for the Assignment.

- 17.3 If the Director's Representative considers that the performance of the Consultants is not satisfactory due to inadequate staffing and manpower input allocated to the Assignment, the Consultants shall, upon the request of the Director's Representative, forthwith submit to the Director's Representative the time-log record of the staff deployed for the Assignment for the Director's Representative to check against the Technical Proposal.
- 17.4 The Consultants' failure to adhere to their staffing proposal, in particular the employment of core personnel of the Consultants and their sub-consultants, thus causing an adverse impact on the performance of the Services, shall be duly reflected in the Employer's performance report on the Consultants.
- 17.5 If the Consultants are unable to maintain any of the core personnel specified in the Technical Proposal, the Consultants shall as soon as possible report this to the Director's Representative and propose, for the Director's Representative's approval, a revised personnel arrangement which is equivalent to or better than the existing personnel arrangement, in terms of qualifications, experience and competence.

18. Specialist and Sub-consultant Services

- 18.1 The Consultants shall provide all specialist and sub-consultant services required for the satisfactory completion of the Assignment. No additional fees or expenses for provision of such services rendered locally or overseas shall be payable by the Employer except as otherwise provided for in the Schedule of Fees.
- 18.2 Without derogating from the generality of Clause 38(i) of the General Conditions of Employment, the Consultants shall, upon the award of this Agreement and save as otherwise agreed by the Director's Representative, appoint the sub-consultants as proposed in their Technical Proposal for the Assignment. The Director's Representative shall have the right to check the sub-consultancy agreements. If the Director's Representative considers that the performance of the Consultants is not satisfactory due to inadequate staffing and manpower input allocated to the Assignment, the Consultants shall, upon the request of the Director's Representative, forthwith submit to the Director's Representative a certified copy of any or all of the sub-consultancy agreements.

19. Surveys

- 19.1 The Digital Map Data prepared by the Survey and Mapping Office of the LandsD, where available for the area covered by the Project for which the Assignment forms a part, can be obtained from LandsD. The Consultants will be charged a fee for handling the digital map data. This fee shall be included in the Lump Sum.
- 19.2 All field survey works required for the proper execution of the Assignment shall unless otherwise provided for in the Agreement, be the duty of the Consultants. A copy of field notes, field data and resultant plans arising from these surveys shall

be handed over to the Director's Representative upon completion of the Assignment. The accuracy as well as presentation of these surveys should be of a standard agreed by the Director's Representative.

19.3 The Consultants shall be responsible for all engineering surveys required in connection with the Assignment. The division of responsibility among the Consultants, the Lands Administration Office, and Survey and Mapping Office of the LandsD for other surveying required in connection with the Assignment shall be as follows:

	<u>Task</u>	<u>Responsibility of</u>
(1)	(a) Provision of basic horizontal and vertical survey control	Survey and Mapping Office
	(b) Checking of given control point values and establishment of survey control network(s) based on survey control given vide (a)	Consultants
(2)	(a) Provision of basic mapping (at 1/1000 or other standard mapping relevant to the Assignment)	Survey and Mapping Office (excluding those specified as to be provided by the Consultants in the Agreement).
	(b) Updating and verification of accuracy of information shown on plans supplied vide (a) as necessary in relation to the Assignment	Consultants
	(c) Carrying out detailed surveys for site investigations and for preparation of design and contract documents as necessary in relation to the Assignment	Consultants
(3)	(a) Supply of digital data.	Land Information Centre, Lands Department
	(b) Provision of a plan of the study area to the Land Information Centre for data preparation.	Director's Representative
	(c) Completion of "Undertakings by Government Department for provision of Digital Data from Land Information Centre, Lands Department to Consultants" Form.	Director's Representative
	(d) Completion of Digital Data Order Form.	Consultants

<u>Task</u>	<u>Responsibility of</u>
(e) Completion of “Undertaking by Consultants on the use of Government Digital Data from the Land Information Centre, Lands Department” Form.	Consultants
(f) Before data collection, Payment of the charges for the storage media and labour to prepare the data when informed by the Land Information Centre prior to data collection and collection of the Demand Note.	Consultants
(4) Supply of existing cadastral plans and records and co-ordinate data	District Survey Office
(5) Computation of detailed dimensioned layouts of roads, drainage and WSD reserves, platforms, etc.	Consultants (checked and accepted by District Survey Office)
(6) Determination of site/lot boundaries, calculation of areas, etc. in connection with the agreed dimensioned layouts.	District Survey Office (in liaison with District Lands Office)
(7) (a) Processing of resumption and surrender for privately owned land in Development Area	District Lands Office (in liaison with District Survey Office and Consultants)
(b) Resumption and surrender plans and demarcation of lands to be resumed	District Survey Office (in liaison with District Lands Office and Consultants)
(8) (a) Setting-out of roads, drainage works, slope upgrading works, etc.	Contractors (checked and accepted by Consultants, usually by RSS under their supervision.)
(b) Initial site survey, and interim and final payment surveys	Consultants, usually by RSS under their supervision (joint survey with contractors or agreed survey with contractors)
(9) Preparation of proposal plans for Government land allocations and grants	District Survey Office (in liaison with District Lands Office)
(10) Preparation of dimensioned plans and setting out of boundaries of sites and lots for Government land allocation and for grant to architects (Government and Housing Authority)	District Survey Office

<u>Task</u>	<u>Responsibility of</u>
(11) As-constructed surveys (including records of levels on all underground pipelines, etc.)	Consultants, usually by RSS under their supervision.

20. Insurance

The amount of insurance cover to be maintained in accordance with Clause S14 of the Special Conditions of Employment shall be twice the Lump Sum Fee, subject to a maximum of HK\$150 million and a minimum of HK\$10 million.