

SMEC Asia Limited

Contract No. WSD/SO/16/086

Quotation Ref. WQ/16/A032

**Provision of Independent Environmental Checking
Service for Investigation, Review and Design of
First Stage of Tseung Kwan O Desalination Plant**

Detailed Design Plan for Slope Mitigation Works

Verified by:	 Vivian Chan
Position:	Independent Environmental Checker
Date:	15 February 2018

Black & Veatch Hong Kong Limited

Agreement No. CE 8/2015 (WS)
First Stage of Desalination Plant at Tseung Kwan O
– Investigation, Design, Construction

Detailed Design Plan for Slope Mitigation Works

Certified by:	 <hr/> Manuel Chua
Position:	Environmental Team Leader
Date:	1 Feb 2018

ISSUE 214-2

DETAILED DESIGN PLAN FOR SLOPE MITIGATION WORKS

Agreement No. CE 8/2015 (WS)

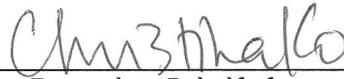
First Stage of Desalination Plant at

Tseung Kwan O

– Investigation, Design and Construction

B&V PROJECT NO. 190495/29.2140

Report Authorized For
Issue By:



For and on Behalf of
Black & Veatch Hong Kong Limited

PREPARED FOR

Water Supplies Department

1 FEBRUARY 2018

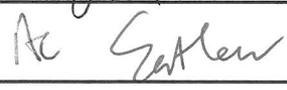
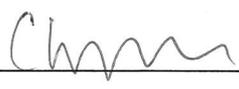


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	Name	Signature	Date
Prepared	Yumi Yiu		20 Feb 2018
Checked	Amy Cheung/Esther Tong		20 Feb 2018
Reviewed	Christina Ko		20 Feb 2018

1 Introduction

1.1 Background and Purpose

- 1.1.1 Water Supplies Department appointed Black & Veatch Hong Kong Limited (B&V) to undertake the consultancy “Agreement No. CE 8/2015 (WS) First Stage of Desalination Plant at Tseung Kwan O – Investigation, Design, and Construction” on 16 November 2015.
- 1.1.2 The purpose of the project is to construct a sea water reverse osmosis (SWRO) desalination plant at Tseung Kwan O (TKO) Area 137, together with all ancillary facilities and the slope mitigation works in the adjoining Clear Water Bay Country Park.
- 1.1.3 The first stage of the proposed SWRO desalination plant will have a water production capacity of 135,000 cubic meters (m³) per day with provision for future expansion to the ultimate capacity up to 270,000 m³ per day when necessary.
- 1.1.4 The proposed desalination plant is a key supply management initiative under the Total Water Management (TWM) strategy promulgated in 2008. As one of the key supply management initiatives, the desalination plant will help diversify the water supply resources and serve as a new water source to better prepare Hong Kong for uncertainties such as acute climate change and low rainfall. Under the TWM strategy, Hong Kong should broaden its strategic investment in advanced water treatment for desalination of seawater.

1.2 Project Elements

- 1.2.1 The Project comprises of the following elements:
- Formation of the reserved site of about 8 hectares in TKO Area 137 to provide sufficient space for a desalination plant with an ultimate water production output at 270,000 m³ per day.
 - Design and construction of the desalination plant including:
 - Seawater treatment components using RO technology with a water production output at 135,000 m³ per day with provision for future expansion of the desalination plant to an ultimate water production output at 270,000 m³ per day.
 - Associated facilities including the intake pipes, outfall pipes, administration building, laboratory, maintenance workshop, chemical building, chlorine building, sludge filter press building, seawater intake pumping station, fresh water pumping station and power supply facilities, etc. with provision for future expansion of the desalination plant to cater for an ultimate water production output at 270,000 m³ per day.
 - Provision of all associated civil, structural, architectural, geotechnical, landscaping, marine, electrical and mechanical works, including landscaping, permanent and temporary access, etc.
 - Operation and maintenance of the desalination plant for the initial operation period to be determined prior to tendering the works.
 - Slope mitigation works in the Country Park Area to mitigate the natural terrain hazards affecting the site.
- 1.2.2 Fresh water produced by the desalination plant will be transferred via a trunk main to the existing Tseung Kwan O Fresh Water Primary Service Reservoir (TKOFWPSR) and/or other existing fresh water service reservoirs. Detailed design of the trunk main is being carried out by WSD Design Division and the associated main laying works will be procured by WSD.

1.3 Site Description

- 1.3.1 The proposed site at TKO Area 137 is located on the Clearwater Bay Peninsula. The site is at the southern tip of the TKO Phase III (Area 137) reclamation. The Area 137 reclamation involves reclaiming the sea between the islands of Fat Tong Chau and Tit Cham Chau. The site covers about 10 hectares. The existing land use of the site is public fill area managed by Civil Engineering and Development Department (CEDD). Intake and outfall pipes will be extended to the east and south from the coastline of Tit Cham Chau.
- 1.3.2 The site boundary of the project is shown in Appendix A. Trunk main to the existing TKOFWPSR and/or other existing fresh water service reservoirs is excluded from our Project scope and will under WSD separate contract.

1.4 Objective of the Detailed Design Plan for Slope Mitigation Works (“this report”)

- 1.4.1 The objective of this report is to prepare and submit the Detailed Design Plan for Slope Mitigation Works to the Director of Environmental Protection for approval as per the requirement under Condition 2.8 Submission of Detailed Design Plan for Slope Mitigation Works of Environmental Permit No. EP-503/2015.
- 1.4.2 This report had been circulated to AFCD for comments and AFCD has no comment on this report. Correspondences with AFCD are appended in Appendix H.
- 1.4.3 This report presents the details of the proposed slope mitigation works and the associated landscape and visual mitigation measures as well as the recommended protection and mitigation measures for the existing trees and plant species of conservation importance as identified in the tree survey and vegetation survey conducted under this project.

1.5 Structure of this Report

- 1.5.1 The report is structured as follows:
- Section 1: Introduction, this section
- Section 2: Presents the detailed design plan for slope mitigation works as required in the Environmental Permit, the design development of the slope mitigation works and the proposed mitigation measures
- Section 3: Presents the landscape and visual mitigation measures
- Section 4: Presents the conclusions

2 Detailed Design Plan for Slope Mitigation Works

2.1 Environmental Impact Assessment (EIA) Report (Register No. AEIAR-192/2015)

- 2.1.1 As stated in the Environmental Impact Assessment (EIA) report carried out for “Agreement No. CE21/2012 (WS) Desalination Plant at Tseung Kwan O - Feasibility Study”,
- Section 9.3 of the EIA report, “...*At the lower portion of the natural hill of the Clear Water Bay Country Park, a flora species of conservation interest Marsdenia lachnostoma was recorded in the shrubland/grassland habitat along the proposed alignment of the flexible barriers within the country park area (Annex 9B)*...”.
 - Section 9.5.2 of the EIA report, “...*no trees will be felled for the implementation of slope mitigation works. To avoid tree felling, the exact locations of the flexible barrier foundation plates, soil nails and rock dowels can be adjusted during detailed design when detailed*”.

topographic data are available. To further minimize potential impacts on trees including the root system, a setback distance (e.g. 1-1.5m from stem) from existing trees can be maintained as far as practical. For the flexible barriers which are 4-5m tall, canopies of existing trees, if any, may be in conflict with the barriers and pruning may be required. This will be minimized as far as practicable and will be undertaken properly to reduce damages to trees. To restore the naturalness of habitats within the Country Park and improve the vegetation cover in the desalination plant, landscaping works will be provided at the desalination plant and slope mitigation works area upon completion of the construction.”

- Section 9.7 of the EIA report, “...the alignment of flexible barriers shall be optimized to preserve all flora species of conservation interest and minimize potential impact to existing vegetation as far as practicable. All individuals of *Marsdenia lachnostoma* within the slope mitigation areas shall be retained in-situ, by positioning the alignment of flexible barriers at a minimum 1.5m in a radius away from these individuals. The implementation of this mitigation measures is presented in Figure 9.1 as an illustration...”. Good site practices shall also be implemented as far as practicable for the protection of flora species of conservation interest.

2.2 Environmental Permit No. EP-503/2015 (Condition 2.8)

2.2.1 Environmental Permit No. EP-503/2015 Condition 2.8 Submission of Detailed Design Plan for Slope Mitigation Work states:

2.2.1.1 “To reduce ecological impact on the Clear Water Bay Country Park due to the slope mitigation works of the Project as shown in [Figure 3](#), the Permit Holder shall, no later than 3 months before the commencement of site clearance works for the slope mitigation works of the Project, submit 4 hardcopies and 1 electronic copy of the Detailed Design Plan for Slope Mitigation Works to the Director of Environmental Protection for Approval. The Detailed Design Plan shall be prepared in accordance with the conceptual plan contained in Figure 9.1 of the EIA Report (Register No. AEIAR-192/2015) and with reference to the guidelines and standards adopted by the Civil Engineering and Development Department. The Plan shall include:

- (i) details on the design of the proposed flexible barriers, soil nailing and rock stabilisation for slope mitigation works;
- (ii) landscape and visual mitigation measures for slope mitigation works; and
- (iii) recommended protection and mitigation measures to avoid felling of existing trees, to minimise ecological impact on plant species of conservation importance, including but not limited to *Marsdenia lachnostoma* within the country park.

2.2.1.2 Before submission to the Director of Environmental Protection, the Detailed Design Plan shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the EIA Report (Register No. AEIAR-192/2015). All recommended mitigation measures as set out in the approved Detailed Design Plan shall be fully and properly implemented.

2.2.1.3 The Permit Holder shall consult the Director of Agriculture, Fisheries and Conservation in preparing the Detailed Design Plan prior to the submission to the Director of Environmental Protection for approval.”

2.2.2 Figure 9.1 of the EIA Report (Register No. AEIAR-192/2015) is appended in Appendix B of this report. Figure 3 of Environmental Permit No. EP-503/2015 is appended in Appendix C of this report.

2.2.3 This report had been circulated to AFCD for comments and AFCD has no comment on this report. Correspondences with AFCD are appended in Appendix H.

2.3 Original Slope Mitigation Works

- 2.3.1 The original proposed slope mitigation works planned during the Feasibility Study stage of the Project includes:
- (a) Flexible barriers installed along the coastal slope crest within the Country Park and along the slope toe;
 - (b) Rock slope stabilization works along the toe of the natural terrain within the Clearwater Bay Country Park area; and
 - (c) Soil nailing above the rock face within the Country Park.

2.4 Tree and Updated Vegetation Survey

- 2.4.1 Tree surveys were conducted between November 2015 and March 2016 within the Works and Study Area by Earthasia Ltd, directly employed by WSD under Contract No. WSD/SO/15/149. Locations of existing trees and associated tree assessment schedule are appended in Appendix D.
- 2.4.2 A total of 370 existing trees and undersized trees were recorded, the findings are as follows:
- 306 nos. of existing trees (i.e. trunk diameter greater than or equal to 95mm).
 - 64 nos. of undersized trees (i.e. trunk diameter greater than or equal to 75 mm but less than 95 mm).
 - 2 nos. of existing trees were found to be dead trees
 - A total of 17 species, all of which are common and widespread in Hong Kong.
 - Height range: 2m to 11m.
 - Spread range: 1m to 15m.
 - Trunk diameter from 75mm to 437mm.
 - Health condition, structural condition and form: Fair to Poor.
 - Amenity value of the overall trees in the survey: Fair to Poor.
 - No rare or endangered tree species were recorded.
 - No Registered Old and Valuable Trees (OVT) or potential OVT were recorded.
- 2.4.3 Updated vegetation surveys were conducted between the months of May and December 2016 to cover the wet and dry seasons within the Works and Study Area by a Qualified Ecologist¹ as appointed under Condition 2.3 of EP-503/2015 for Updated Vegetation Survey.
- 2.4.4 It was noted that species of conservation importance were identified within or were in close proximity to the proposed flexible barriers and soil nails in the Country Park, as indicated in Appendix E.
- 2.4.5 A total of 139 plant species were recorded between May and December 2016. Of the 139 plant species recorded, 2 were considered as plant species of conservation importance, including Hairy-throat Condorvine *Marsdenia lachnostoma* and Balloon Flower *Platycodon grandiflorus*. Only *Marsdenia lachnostoma* was found within the Works Area and within the shrubland and hillside grassland mosaic habitat. Their representative photos and the full list of the plant species are presented in Appendix E.

¹ Employment of Qualified Ecologist for Updated Vegetation Survey: The Permit Holder shall appoint a Qualified Ecologist who has at least 5 years of relevant experience to be responsible for carrying out the updated vegetation survey for slope mitigation works and preparing submission for the Project as required under Condition 2.7 of EP- 503/2015.

- 2.4.6 To avoid and minimize the impact on those existing trees and plant species of conservation importance, the proposed slope mitigation measures of installing flexible barriers and soil nails within the Country Park were reviewed and the proposed works revised.

2.5 Revised Slope Mitigation Works

- 2.5.1 The revised slope mitigation works includes:

- (a) Flexible barriers are redesigned and located away from the slope toe of the Clearwater Bay Country Park area, thus no flexible barriers will be installed within the Clearwater Bay Country Park area.
- (b) Rock slope stabilization/improvement works along the toe of the natural terrain within the Clearwater Bay Country Park area (the design is similar to the Section 2.3.1 item (b) including rock bolt, buttress/dentition & wire mesh); and
- (c) Soil nailing works as stated in Section 2.3.1 item (c) is not required and omitted due to the relocation of flexible barriers;
- (d) Boulder removal/break-off of 15 unstable boulders, identified at the natural terrain within the Clearwater Bay Country Park area.

- 2.5.2 The design drawings for the revised slope mitigation works extracted from the submission “Deliverable 49 – Detailed Design for Slope mitigation Works” for this project are appended in Appendix F. Geotechnical Engineering Office of the Civil Engineering and Development Department (CEDD/GEO) has no adverse comment on the captioned submission.

- 190495/B/DD/00-10001 gives the layout plan of slope mitigation works
- 190495/B/DD/00-20001 to 20011 gives the locations of rock slope works
- 190495/B/DD/00-30001 gives the notes of slope mitigation works including the recommended good site practices and mitigation measures inside Country Park
- 190495/B/DD/00-30002 to 30003 gives the details of rock slope works
- 190495/B/DD/00-30004 gives the reference details of flexible barrier

- 2.5.3 Access to the boulders for the boulder removal break-off works will be required, to minimise the disturbance to the existing habitat and vegetation from the works, temporary elevated accesses of 600mm width shall be provided. Five nos. of the temporary elevated accesses with a total length of approximately 433m, ranging from 9m to 290m, extending from temporary working platform for rock slope works will be provided. To facilitate the boulder removal / break-off works, temporary elevated access of 600mm width around each of the 15 nos. of boulders will be provided (total area = 0.006 ha). Two temporary working platforms for rock slope works (with an area of ~0.02ha and ~0.26ha respectively) will also be provided. The temporary elevated access and temporary working platform for boulder and rock slope works are indicated in Appendix G.

2.6 Mitigation Measures

Flexible Barrier

- 2.6.1 The flexible barriers will be located outside the Clearwater Bay Country Park area as discussed in Section 2.5.1 (a). However, localised trimming of the ground vegetation within the works areas of the flexible barrier will be needed. The flexible barrier will be located in close proximity to mixed woodland, the footprint of vegetation clearance would therefore be localised and very limited. The ecological impact due to the construction of flexible barriers is considered insignificant.
- 2.6.2 With the implementation of proposed good site practices, no unacceptable impact to the existing trees and plant species of conservation importance is anticipated.

Rock Slope Stabilisation/Improvement Works

- 2.6.3 Rock stabilization works shall be adjusted such that no tree will be felled and no plant species of conservation importance shall be affected. The anchorage for the temporary working platform and access to be erected will be designed to avoid the plant species of conservation importance.
- 2.6.4 Hydroseeding and/or planting shrub seedlings will be provided to reinstate vegetation loss and disturbance at the area of slope stabilization works due to construction works, with regular monitoring and appropriate maintenance works carried out for a 12-month establishment period. Stone facing and tree rings to constructed hard surfaces (such as buttress wall and dentition) at the rock slope will be provided to restore the natural finishes of the slopes. Wire mesh covering the rock face will be provided with opening to existing trees to avoid the trees. The general details of stone facing, tree rings and opening to trees are shown in Drawing No. 190495/B/DD/00-30002 and 30003 of Appendix F.
- 2.6.5 No unacceptable impact to the habitat loss and disturbance from rock slope stabilization is anticipated.

Boulder Removal/Break-off

- 2.6.6 The proposed boulder removal works will involve provision of temporary working platform and access of 600mm around the boulder. To avoid direct conflict between the boulder removal and nearby plant species of conservation importance, protection zones/works exclusion zones will be established at least 1m radius from the identified plant species of conservation importance to preserve them on site.
- 2.6.7 The protection zones/works exclusion zones will be established prior to site clearance and throughout the construction period to separate the identified protected plant individuals from the works.
- 2.6.8 The temporary working platform and temporary access will be designed to avoid anchorage on the plant species of conservation importance.
- 2.6.9 With proper implementation of the recommended mitigation measures, no unacceptable impact to the existing trees and plant species of conservation importance is anticipated.

Recommended Good Site Practices inside Country Park Area

- 2.6.10 Prior to the commencement of construction works, the location and condition of the plant species of conservation importance along the direct footprint of the slope mitigation works shall be verified by a qualified plant ecologist appointed under Environmental Team (ET).
- 2.6.11 Protection zones/works exclusion zones will be established, prior to site clearance and throughout the construction period, at least 1m radius and 1m height to surround the plant species of conservation importance to preserve them on site. Signage to identify the protection zones/works exclusion zones shall be implemented.
- 2.6.12 Upon completion of the works, the species of conservation importance that will be potentially affected will be revisited to assess the condition.
- 2.6.13 Induction training will be provided to all site staff to ensure that every staff will fully understand the preservation method and location of the identified plant species of conservation importance.
- 2.6.14 The ET shall monitor the condition of the plant species of conservation importance within the protection zone/works exclusion zones during the construction period in accordance with EM&A Manual with representative photographic record to present the updated conditions of the plant specimens in the EM&A monitoring report.

- 2.6.15 Where vegetation clearance and/or trimming is required, a qualified ecologist/arborist will be appointed by the Contractor to provide on-site supervision and monitoring to ensure no tree canopy or tree roots will be adversely impacted.
- 2.6.16 Standard good site practice will considerably reduce any potential disturbance from slope works including:
- (a) All construction materials shall be stockpiled offsite to minimize the disturbance to areas in particular inside the country park area;
 - (b) Construction activities will be restricted to the clearly demarcated slope mitigation works areas;
 - (c) Boulders works will be carried out by handheld tool to minimize the works area. No excavation works, tree felling and removal of vegetation should be allowed during the boulder removal/break-off works; and
 - (d) Tree Preservation and Protection Measures shall be implemented as specified in General Specification Section 26, such as provision of temporary protective fencing, armouring and mulching to the preserved trees.

3 Landscape and Visual Mitigation Measures

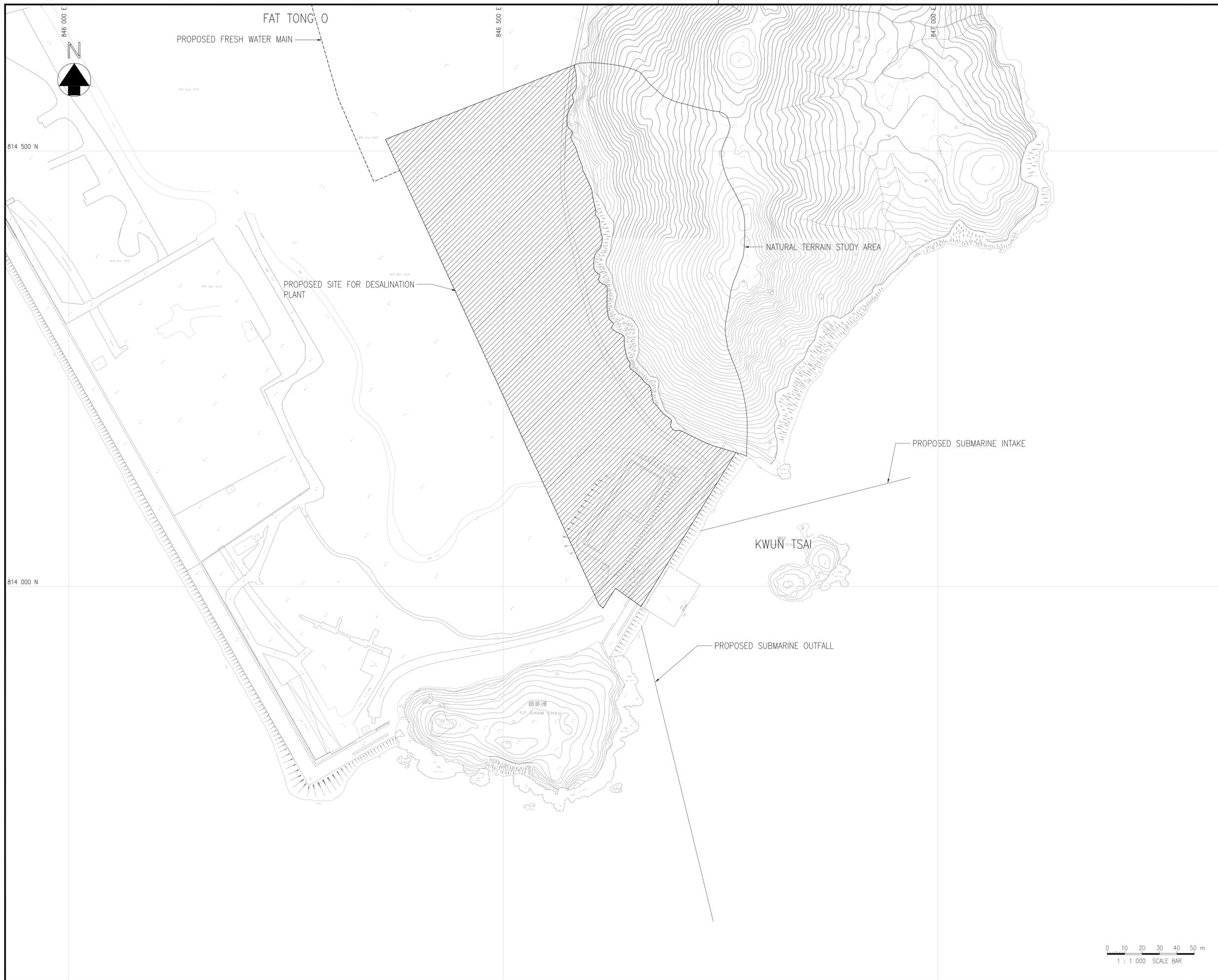
- 3.1.1 With the implementation of revised slope mitigation works as discussed in Section 2.5 with design drawings appended in Appendix F, felling of existing trees is avoided and ecological impact on plant species of conservation importance is minimized.
- 3.1.2 Flexible barriers will be located away from the slope toe of the Clearwater Bay Country Park area, thus no flexible barriers will be installed within the Clearwater Bay Country Park area. Therefore, the ecological impact to the country park due to the construction of flexible barriers is considered insignificant. No landscape and visual mitigation measure for the flexible barrier is required.
- 3.1.3 Stone facing and tree rings to hard surfaces (such as buttress wall and dentition) at rock face will be provided as landscaping measures to restore the natural finishes of the slopes as shown in Drawing No. 190495/B/DD/00-20001 to 20010 of Appendix F. Wire mesh covering the rock face will be provided with opening to existing trees to avoid the trees. The general details of stone facing, tree rings and opening to trees are shown in Drawing No. 190495/B/DD/00-30002 and 30003 of Appendix F.
- 3.1.4 Unstable boulder inside the country park will be removed or broken-off and no landscape and visual mitigation measure for the boulder works is required.
- 3.1.5 No works are proposed to the soil slope portion inside the country park. However, the Contractor shall be responsible to reinstate the vegetation in all temporarily disturbed areas due to construction works to its original condition (particularly the soil slope in proximity to the rock slope improvement works and boulder removal/in-situ breaking-off works). Where necessary, hydroseeding shall be applied to restore the green appearance of the site. Notes of slope mitigation works including the good site practice and mitigation measures inside country park area are stated in Drawing No. 190495/B/DD/00-30001 of Appendix F.

4 Conclusion

- 4.1.1 The design drawings for the revised slope mitigation works extracted from the submission "Deliverable 49 – Detailed Design for Slope mitigation Works" for this project are appended in Appendix F. CEDD/GEO has no adverse comment on the captioned submission.

- 4.1.2 With revised slope mitigation works as discussed in Section 2.5 and implementation of mitigation measures as discussed in Section 2.6, felling of existing trees will be avoided and ecological impact on plant species of conservation importance will be minimised inside the Clear Water Bay Country Park area.
- 4.1.3 Hard surface with stone facing and tree rings as well as wire mesh with opening to trees will be provided at the rock face to mitigate the landscape and visual impact of the Project as discussed in Section 3.
- 4.1.4 All recommended protection/mitigation measures (Section 2.6) as set out in this report shall be fully and properly implemented on site during the construction stage of this Project. No site clearance works for slope mitigation works of this Project shall be allowed prior to the completion of such protection/mitigation works on site.

APPENDIX A
SITE BOUNDARY OF THE PROJECT



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MAP NOS. 12SW11D, 12SW12C,
12SW16B, 12SW16D,
12SW17A, 12SW17C

Revision	Date	Description			Initial
		Designed	Checked	Drawn	
A	08/16	UPDATED SITE BOUNDARY			KHC
Initial		YLC	CKH	SZ	WLS
Date		11/15	11/15	11/15	11/15

Approved

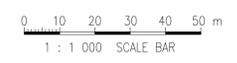
Agreement No. CE 8/2015 (WS)

Contract Title
FIRST STAGE OF
DESALINATION PLANT AT
TSEUNG KWAN O - INVESTIGATION,
DESIGN AND CONSTRUCTION

Drawing Title
SITE BOUNDARY

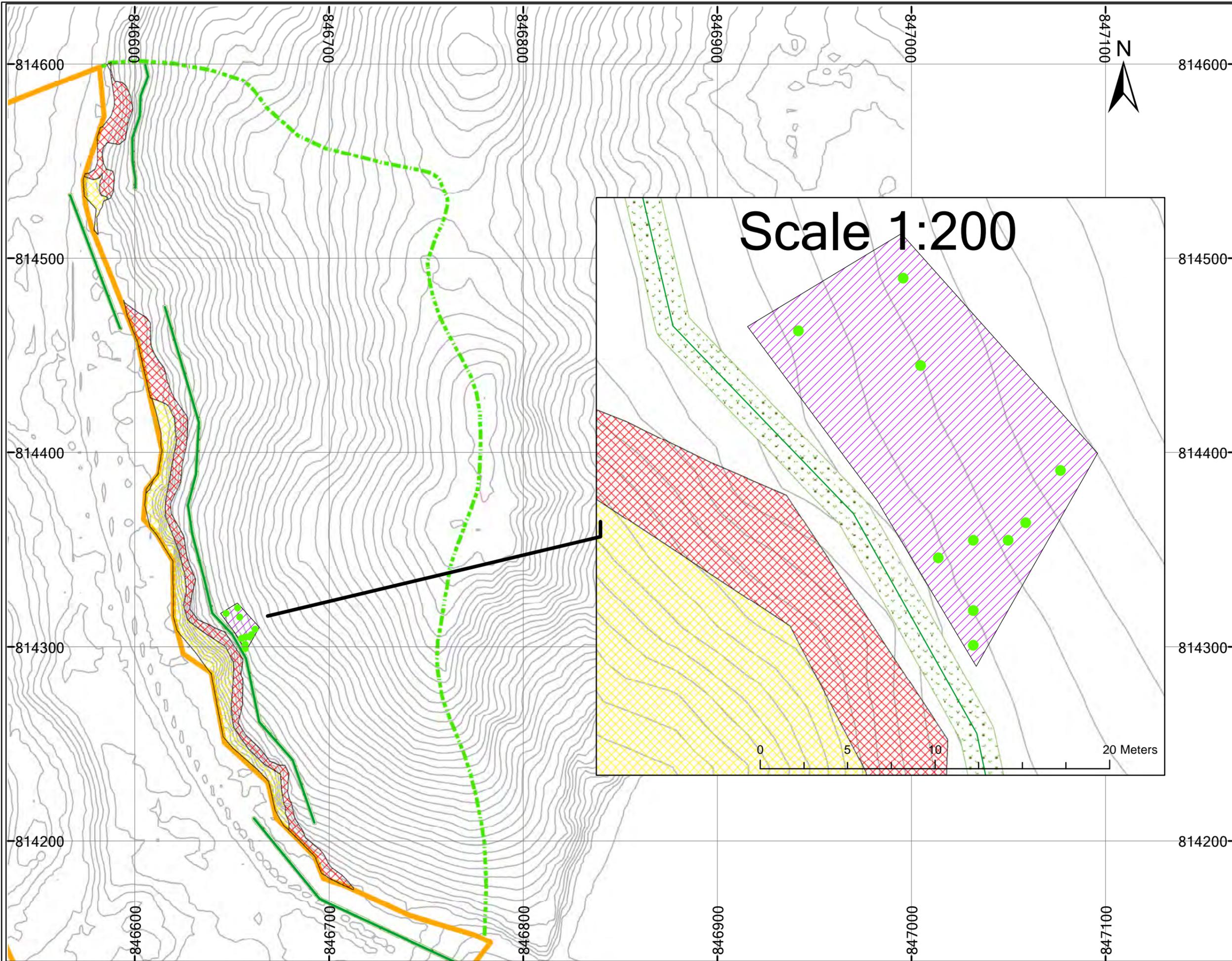
Drawing No. Appendix A

Scale A1 1 : 2000
A3 1 : 4000



APPENDIX B

**LOCATION PLAN AND PROTECTION MEASURES FOR *MARSDENIA LACHNOSTOMA*
(FIGURE 9.1 OF ENVIRONMENTAL IMPACT ASSESSMENT REPORT)**



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Initial	Designed	Reviewed	Drawn	Checked
	YLC	TT	YLC	KHL
Date	03/13	03/13	03/13	03/13

Revision	Date	Description	Initial

Legend

- Marsdenia Lachnostoma
- Flexible Barrier
- ▨ Temporary Fence for Protection
- ▨ Works Area of Flexible Barrier
- ▨ Proposed Soil Slope Stabilisation Works
- ▨ Proposed Rock Slope Stabilization Works
- Proposed Fresh Water Main
- Proposed Submarine Intake and Outfall
- Proposed Desalination Plant
- ▨ Study Area for Slope Mitigation Work

Agreement No. CE21/2012 (WS)

Project Title
 DESALINATION PLANT AT
 TSEUNG KWAN O
 - FEASIBILITY STUDY

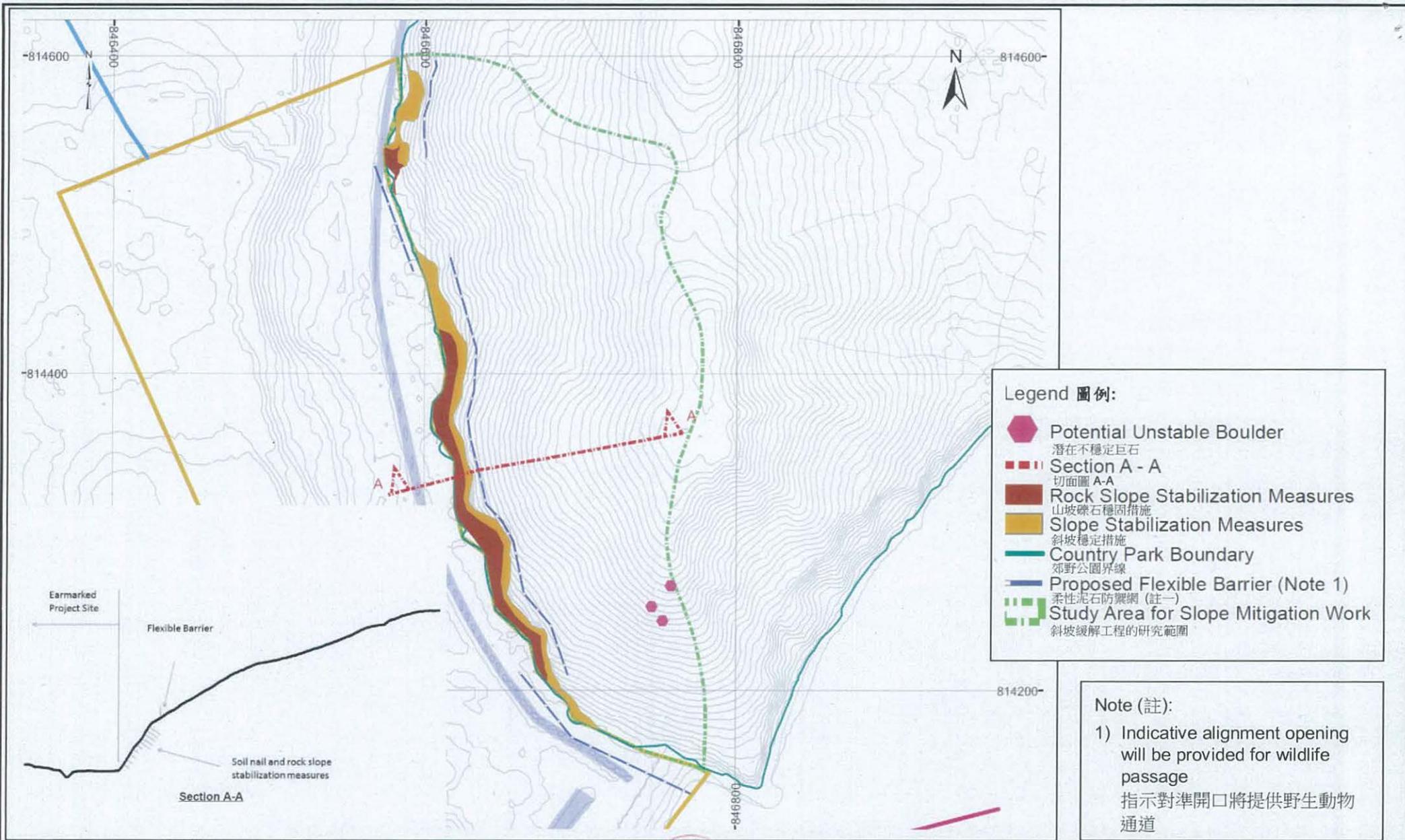
Figure Title
 Location Plan and Protection Measures
 for Marsdenia Lachnostoma

Drawing No. Figure 9.1	Scale 1:1,800 @ A3
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Client
 水務署
 Water Supplies
 Department

Consultant
BLACK & VEATCH
 Building a world of difference.

APPENDIX C
SLOPE MITIGATION WORKS AREA OF THE PROJECT
(FIGURE 3 OF ENVIRONMENTAL PERMIT)



Project Title: Desalination Plant at Tseung Kwan O
 工程項目名稱: 將軍澳海水化淡廠
 Slope Mitigation Works within the Clear Water Bay Country Park
 位於清水灣郊野公園範圍內的斜坡緩解工程



Plan originated from the Figure 2.3d of approved EIA Report: AEIAR-192/2015
 圖則源自已批准環評報告-AEIAR-192/2015 內的圖 2.3d

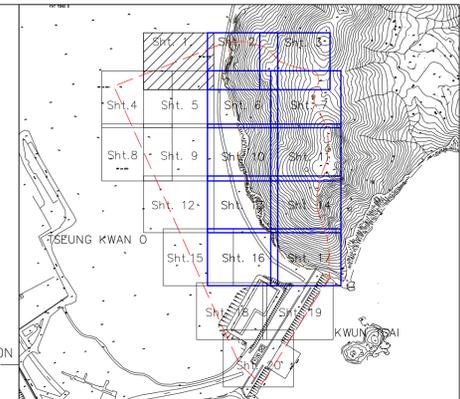
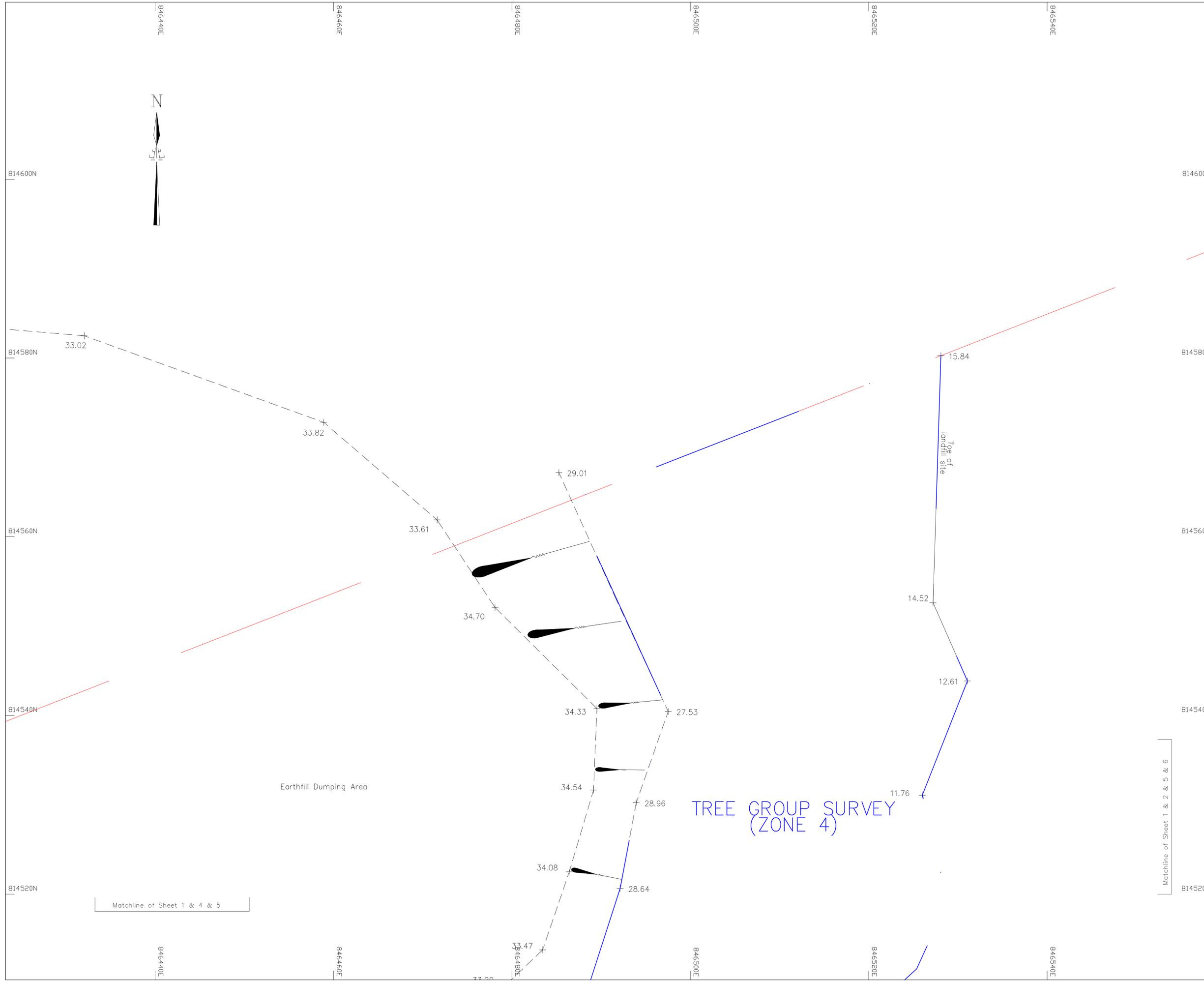
Environmental Protection Department
 環境保護署



Environmental Permit No. EP-503/2015
 環境許可證編號: EP-503/2015

Figure 3
 圖三

APPENDIX D
LOCATION PLAN OF EXISTING TREES AND TREE ASSESSMENT SCHEDULE



KEY PLAN 1:7,000

NOTES :

1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - CLIFF
 - TS TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - T1 TREE & TREE NO.
 - U1 UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 1 OF 20 SHEETS)	REVISION
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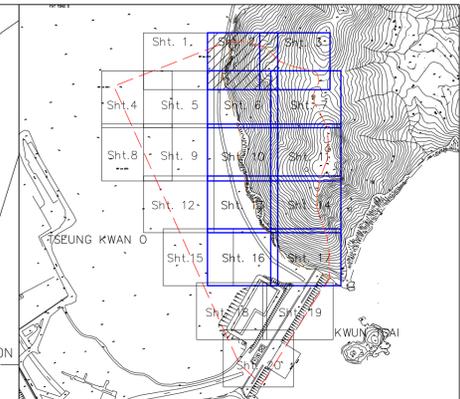
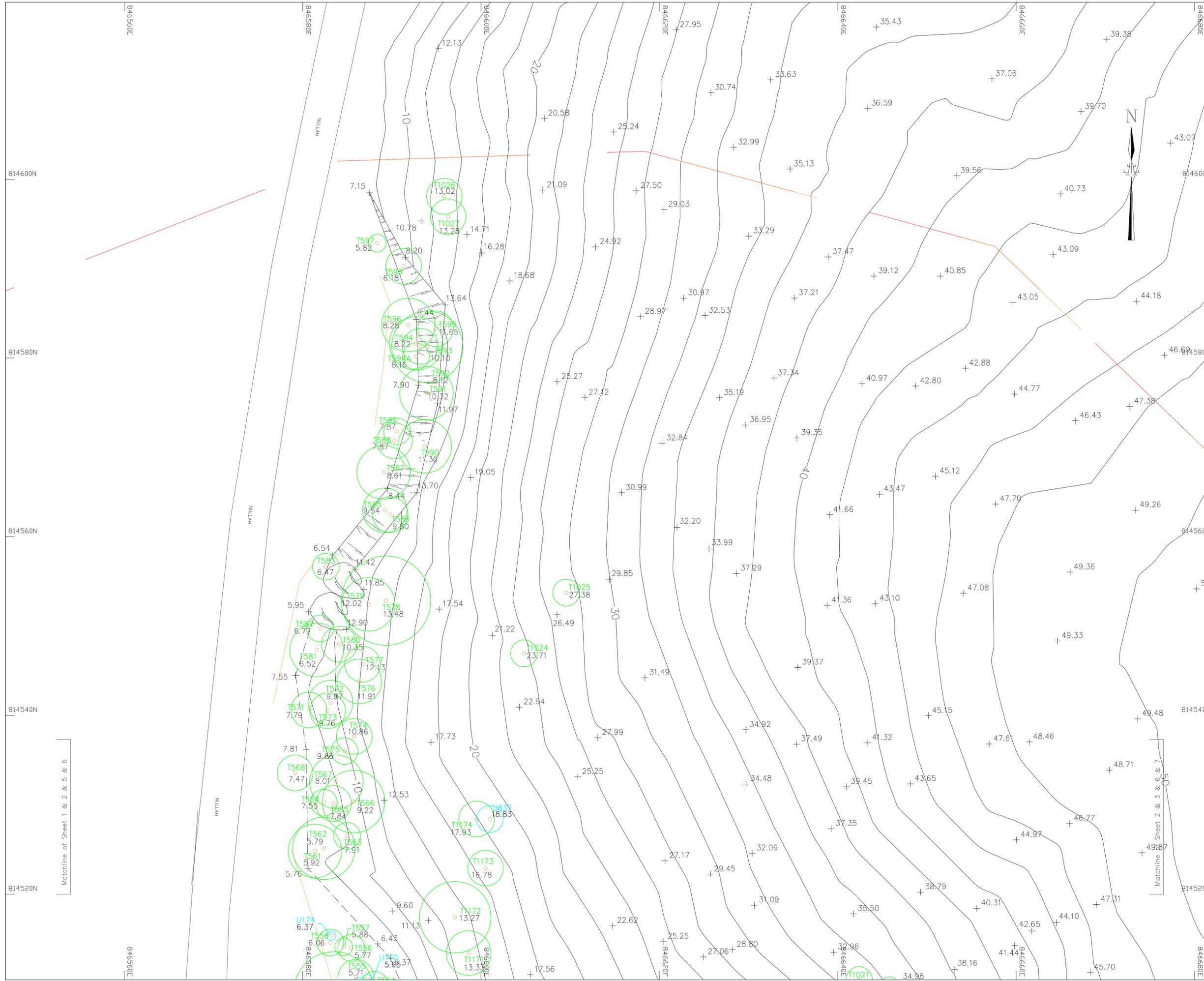
Plan Approved By:

Signature _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKIS, FRICS, MIS(Aust.), RPS(LS), MCI Arb, MSSI (Aust.)

Dated this: 7th day of March 2016

Matchline of Sheet 1 & 2 & 5 & 6

Matchline of Sheet 1 & 4 & 5



KEY PLAN 1:7,000

- NOTES :
1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
 2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - CLIFF
 - TS — TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - T1 TREE & TREE NO.
 - U1 UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

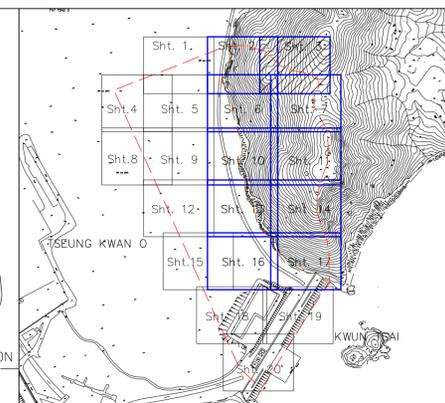
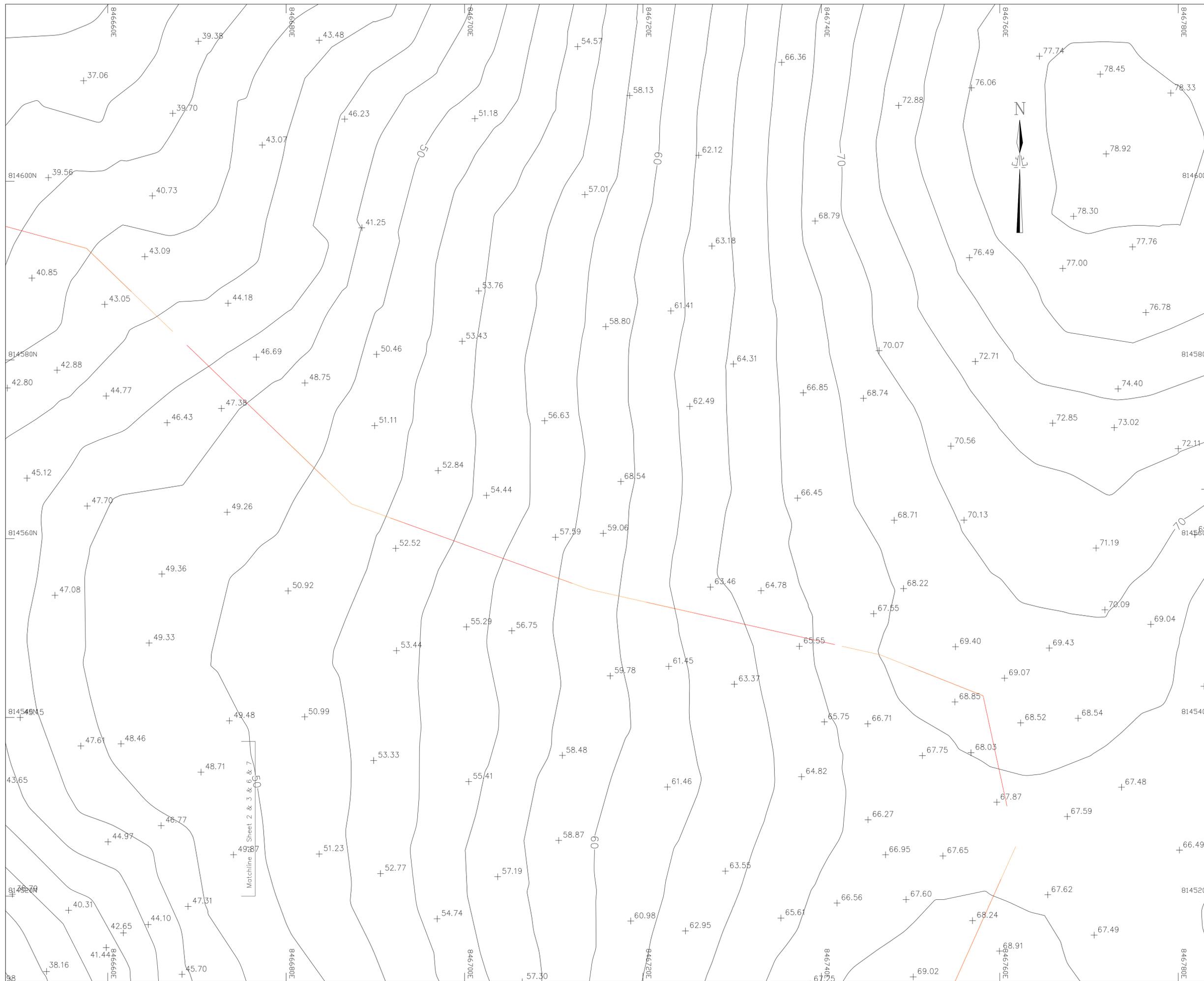
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 2 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKIS, FRICS, MIS(Aust.), RPS(LS), MOLA, MSSI (Aust.)

Dated this: 7th day of March 2016



KEY PLAN 1:7,000

NOTES :
 1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
 2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:**
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - CLIFF
 - TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - TREE & TREE NO.
 - UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :
 Topographical Survey and Tree Survey
 at Tseung Kwan O Area 137 for
 Water Supplies Department

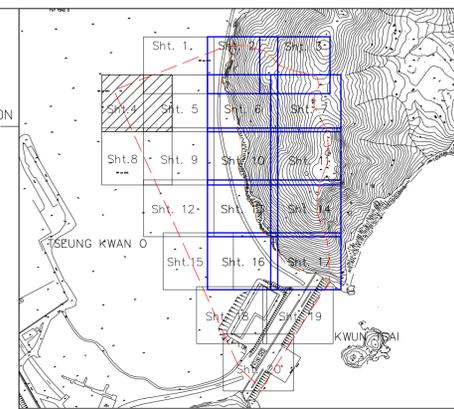
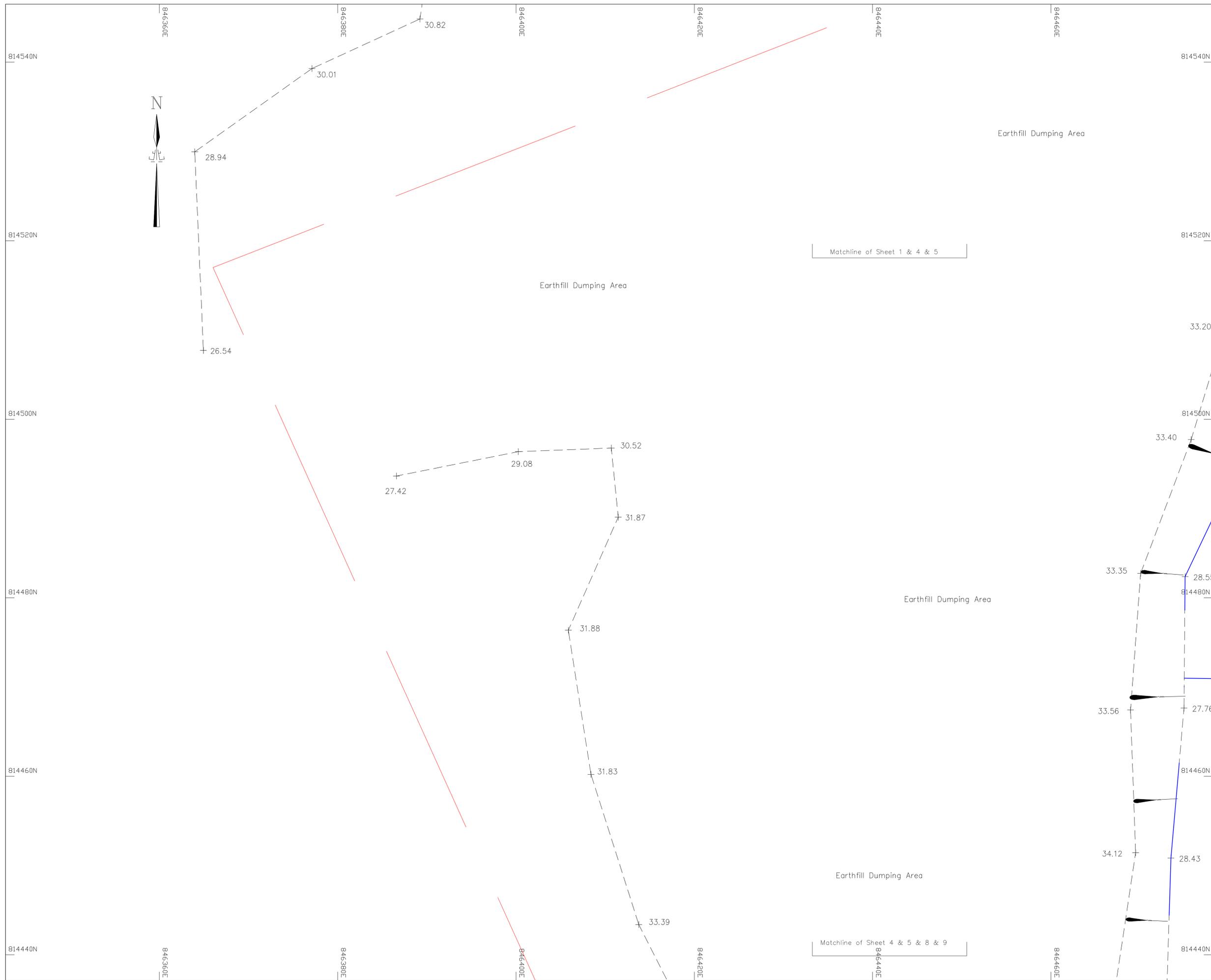
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 3 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature: _____
 Sr Dr. Ching Siu-tong
 Authorized Land Surveyor
 FHKIS, FRICS, MIS(Aust.), RPS(LS), MOLA, MSSI (Aust.)

Dated this: 7th day of March 2016



KEY PLAN 1:7,000

NOTES :

1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

LEGEND:

- 5.91 LEVEL POINT
- ▤ BAMBOO STEPS
- ~ CONTOUR
- ⌋ CLIFF
- TS TEMPORARY STRUCTURE
- BH BOREHOLE
- ⊖ BOULDER
- ⊙ T1 TREE & TREE NO.
- ⊙ U1 UNDERSIZED TREE & TREE NO.
- - - SLOPE TOP/BOTTOM
- - - TREE GROUP SURVEY EXTENT
- - - INACCESSIBLE AREA
- - - TOPOGRAPHICAL AND TREE SURVEY EXTENT
- - - TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

DATE OF SURVEY
NOV 2015-MAR 2016

SCALE AT A1
1:200

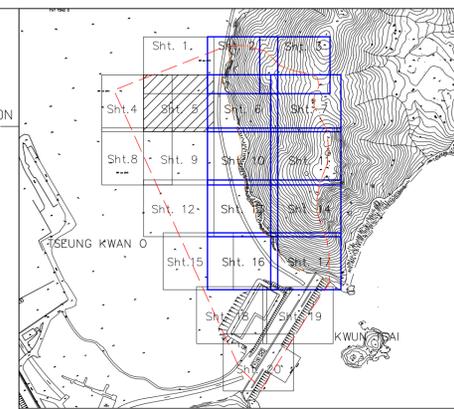
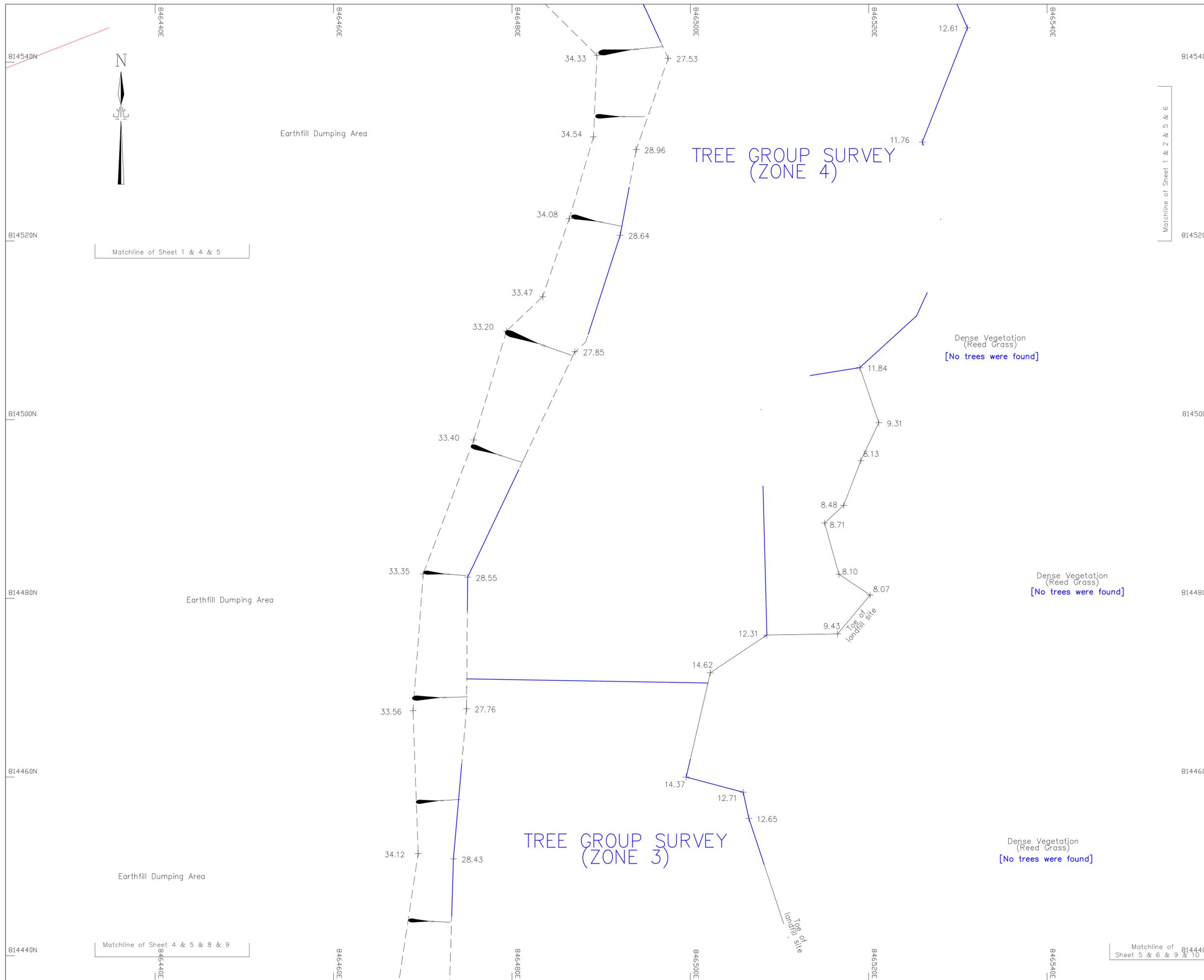
DRAWING NUMBER
KEL/TOPO/15/45
(SHEET 4 OF 20 SHEETS)

REVISION

Plan Approved By:

Signature _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKIS, FRICS, MIS(Aust.), RPS(LS), MCI Arb, MSSI (Aust.)

Dated this: 7th day of March 2016



NOTES :

1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
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- LEGEND:**
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - CLIFF
 - TS TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - T1 TREE & TREE NO.
 - U1 UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

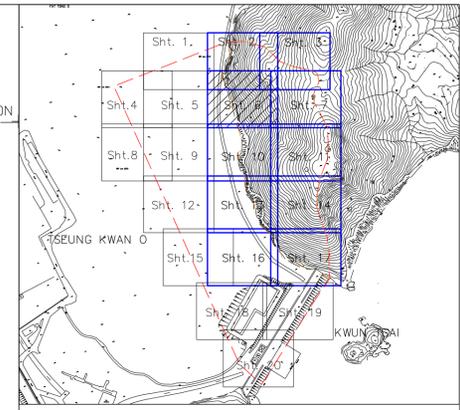
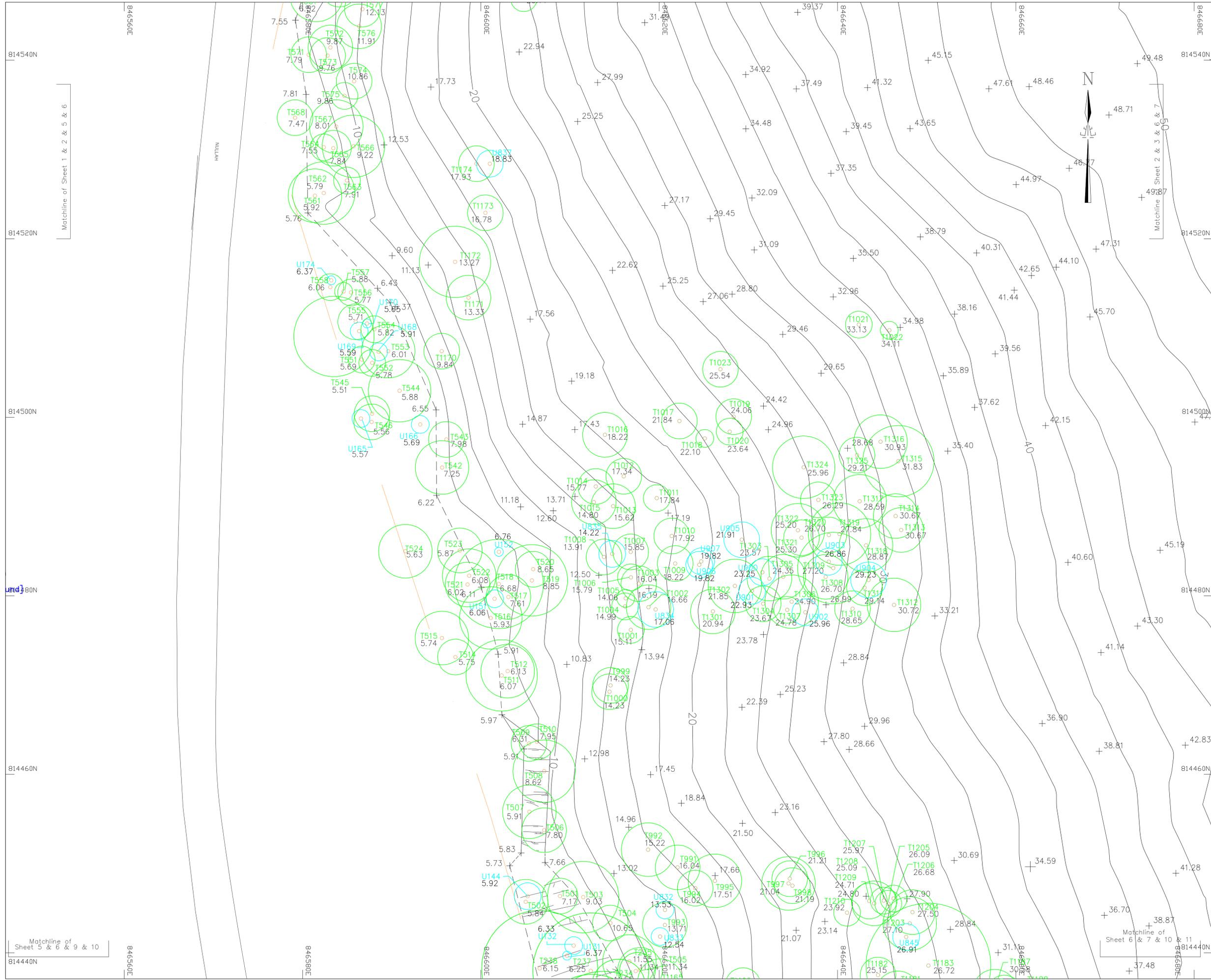
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 5 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature: _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKIS, FRICS, MIS(Aust.), RPS(LS), MDArb, MSSI (Aust.)

Dated this: 7th day of March 2016



- NOTES :
- MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
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- LEGEND:
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - CLIFF
 - TS TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - T_i TREE & TREE NO.
 - U_i UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

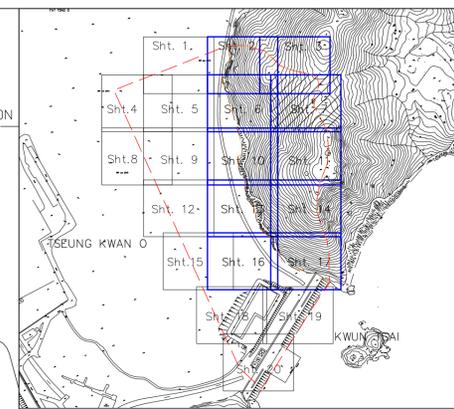
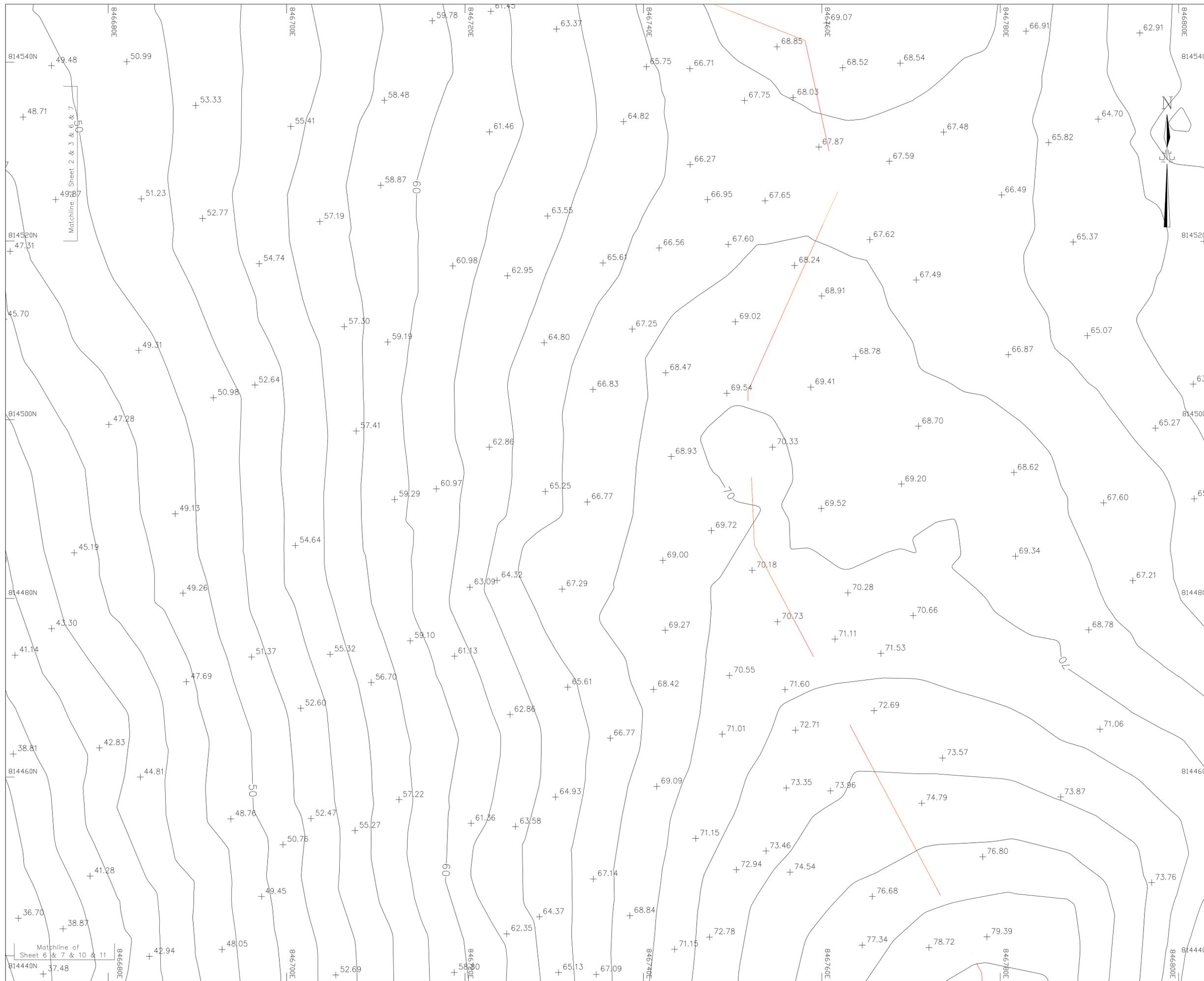
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 6 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKHS, FRICS, MIS(Aust.), RPS(LS), MCIARB, MSSI (Aust.)

Dated this: 7th day of March 2016



KEY PLAN 1:7,000

NOTES :
 1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
 2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:**
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - ⊥ CLIFF
 - TS TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - T1 TREE & TREE NO.
 - U1 UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :
 Topographical Survey and Tree Survey
 at Tseung Kwan O Area 137 for
 Water Supplies Department

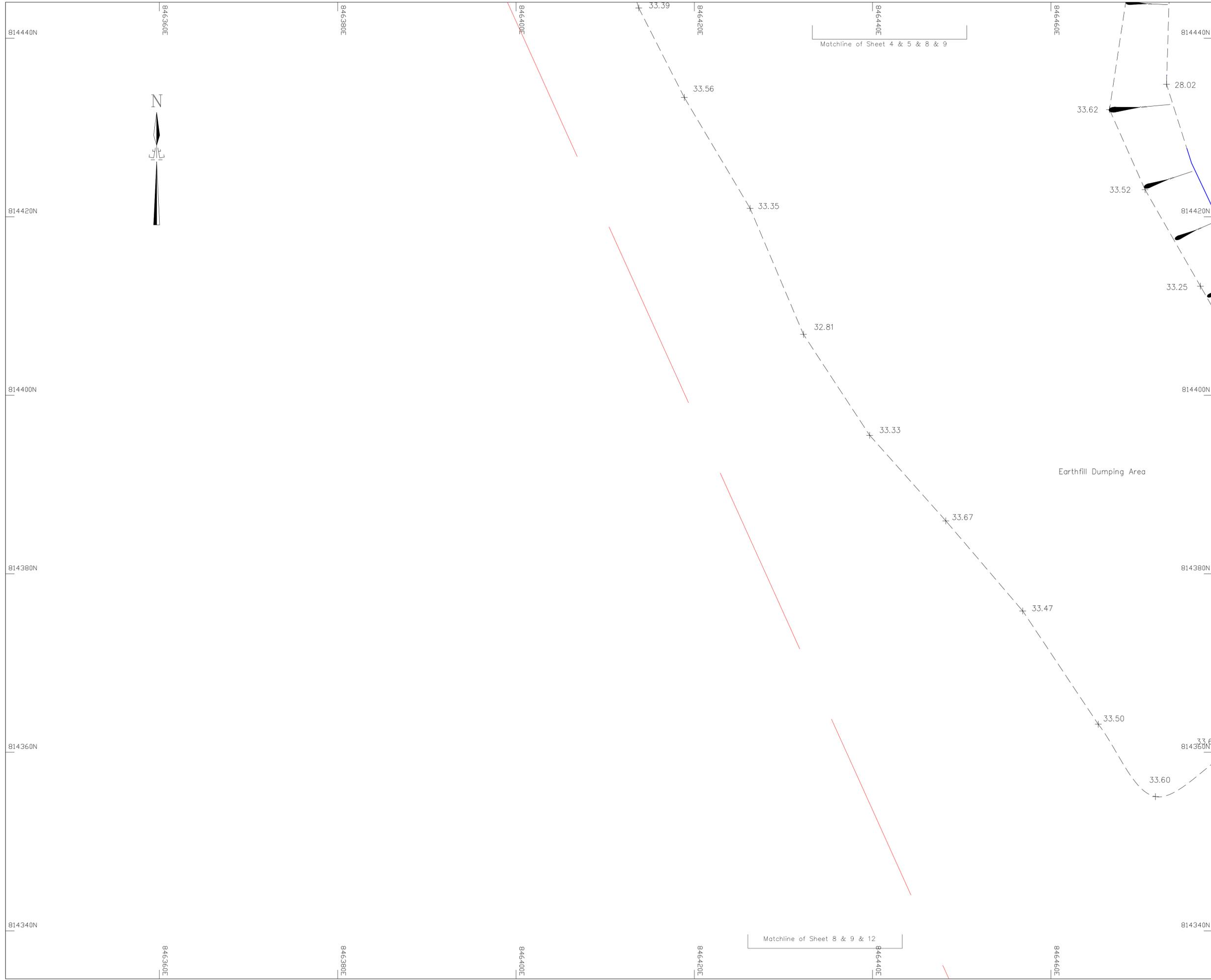
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 7 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature: _____
 Sr Dr. Ching Siu-tong
 Authorized Land Surveyor
 FHKIS, FRICS, MIS(Aust.), RPS(LS), MCI(Arb), MSSJ (Aust.)

Dated this: 7th day of March 2016



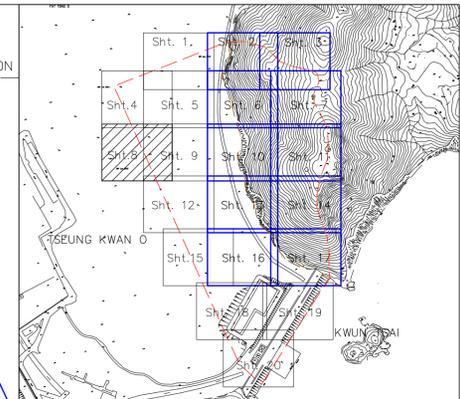
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846380E
846400E
846420E
846440E
846460E



Matchline of Sheet 4 & 5 & 8 & 9

Matchline of Sheet 8 & 9 & 12



KEY PLAN 1:7,000

- NOTES :
1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
 2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - CLIFF
 - TS TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - TREE & TREE NO.
 - UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

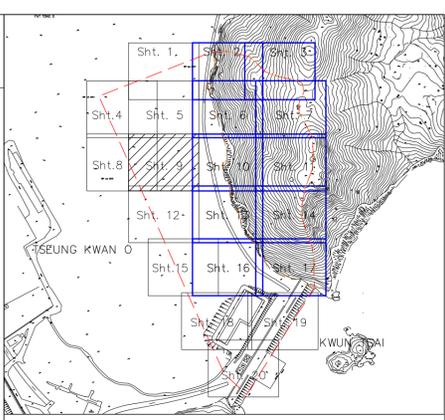
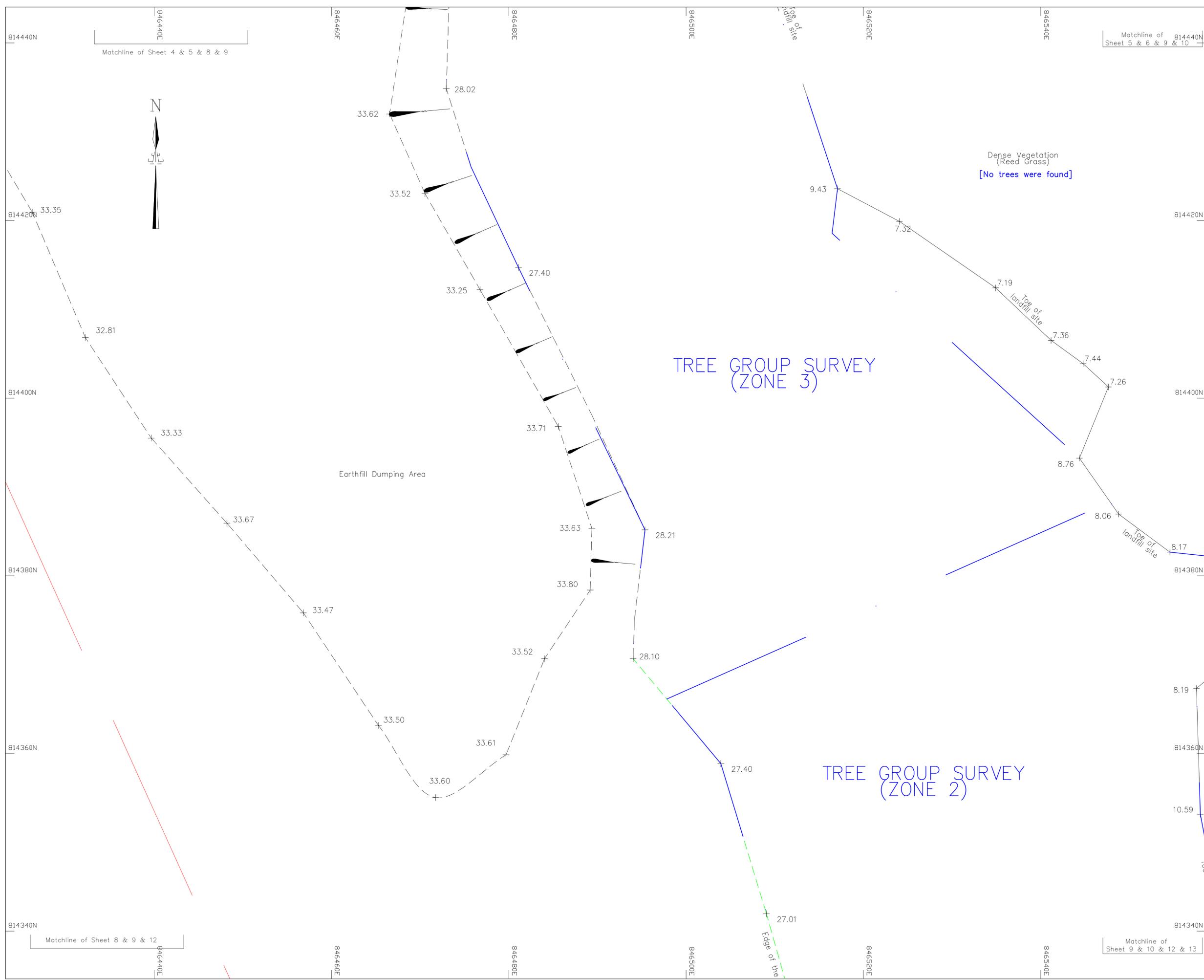
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 8 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKIS, FRICS, MIS(Aust.), RPS(LS), MCI(Arb), MSSI (Aust.)

Dated this: 7th day of March 2016



KEY PLAN 1:7,000

NOTES :

1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - CLIFF
 - TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - TREE & TREE NO.
 - UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

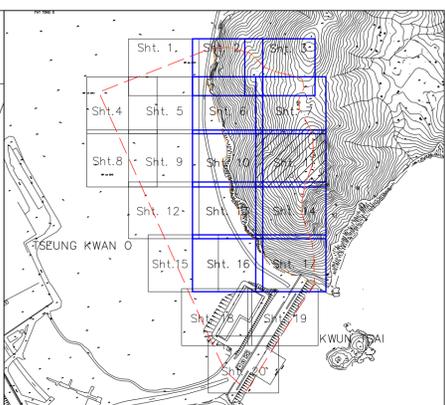
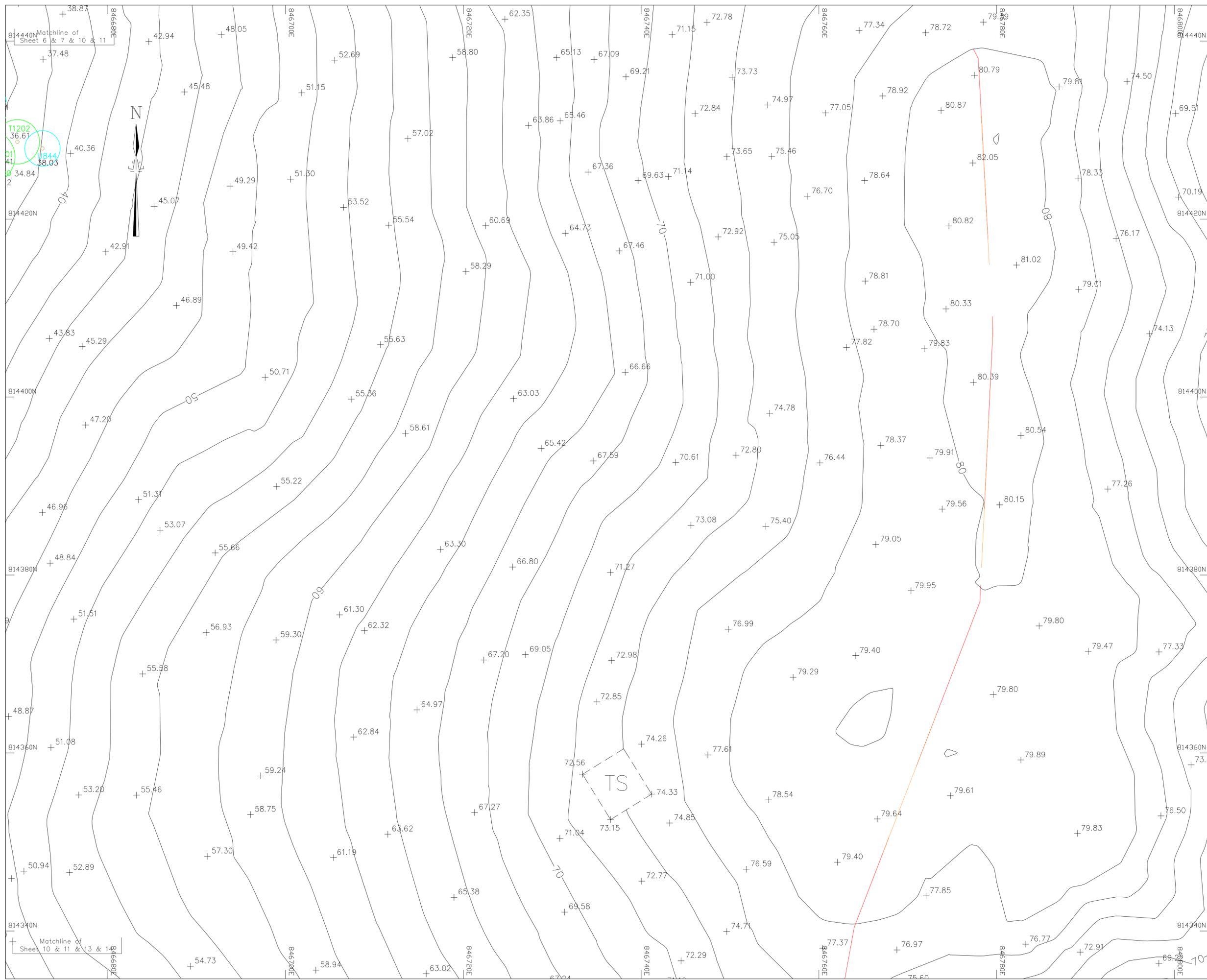
DATE OF SURVEY NOV 2015-MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 9 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKIS, FRICS, MIS(Aust.), RPS(LS), MCI Arb, MSSI (Aust.)

Dated this: 7th day of March 2016



KEY PLAN 1:7,000

NOTES :

- MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
- ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:
- 5.91 LEVEL POINT
 - BAMBOO STEPS
 - CONTOUR
 - CLIFF
 - TS TEMPORARY STRUCTURE
 - BH BOREHOLE
 - BOULDER
 - TREE & TREE NO.
 - UNDERSIZED TREE & TREE NO.
 - SLOPE TOP/BOTTOM
 - TREE GROUP SURVEY EXTENT
 - INACCESSIBLE AREA
 - TOPOGRAPHICAL AND TREE SURVEY EXTENT
 - TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

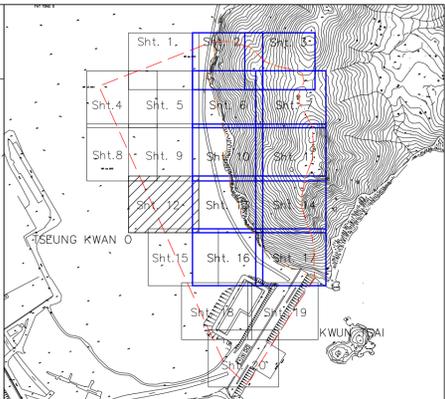
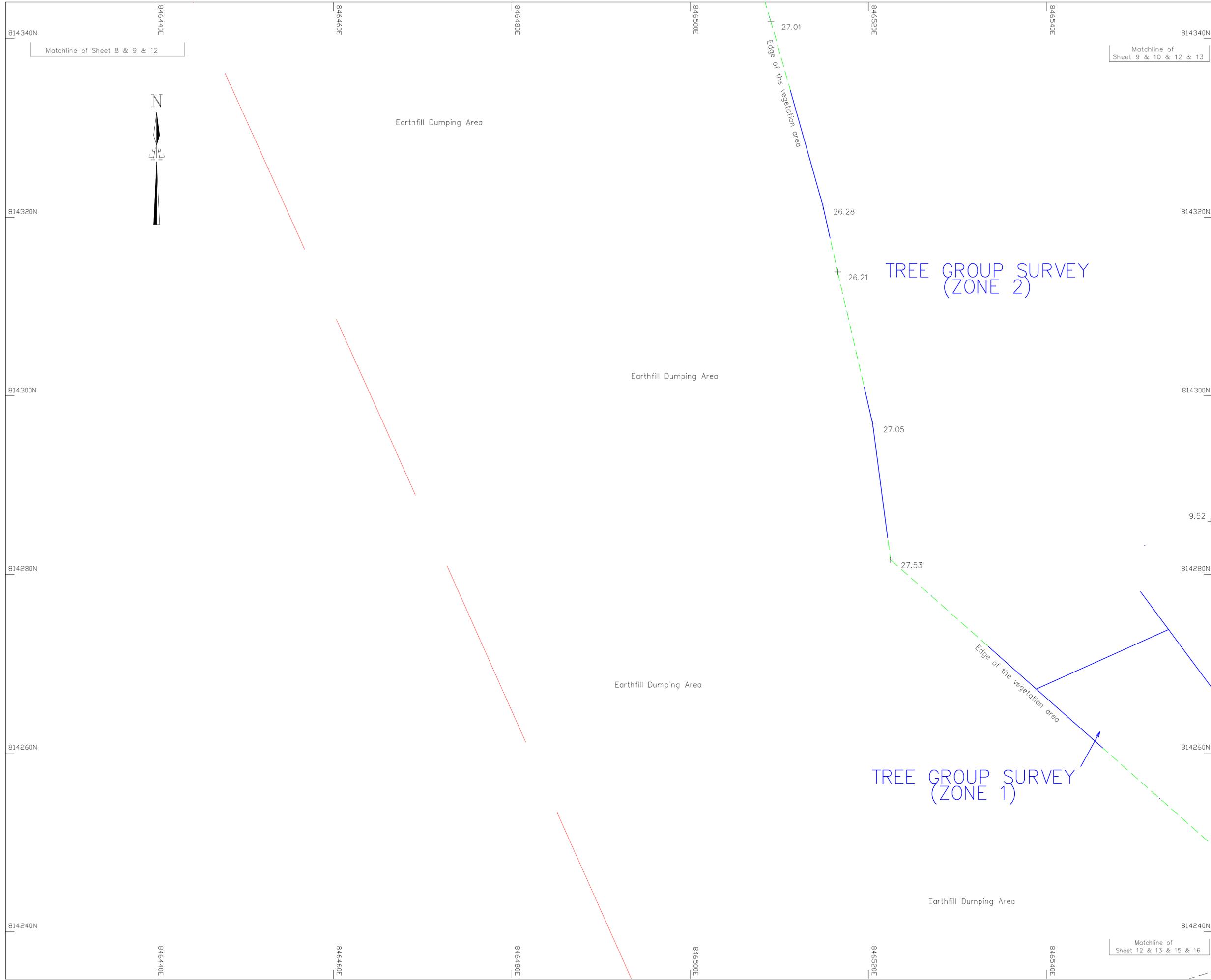
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 11 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKHS, FRICS, MIS(Aust.), RPS(LS), MCI(Arb), MSSI (Aust.)

Dated this: 7th day of March 2016



KEY PLAN 1:7,000

NOTES :

1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

LEGEND:

5.91	LEVEL POINT
	BAMBOO STEPS
~ ~ ~	CONTOUR
	CLIFF
TS	TEMPORARY STRUCTURE
○ BH	BOREHOLE
○	BOULDER
○ T1	TREE & TREE NO.
○ U1	UNDERSIZED TREE & TREE NO.
---	SLOPE TOP/BOTTOM
---	TREE GROUP SURVEY EXTENT
---	INACCESSIBLE AREA
---	TOPOGRAPHICAL AND TREE SURVEY EXTENT
---	TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey
at Tseung Kwan O Area 137 for
Water Supplies Department

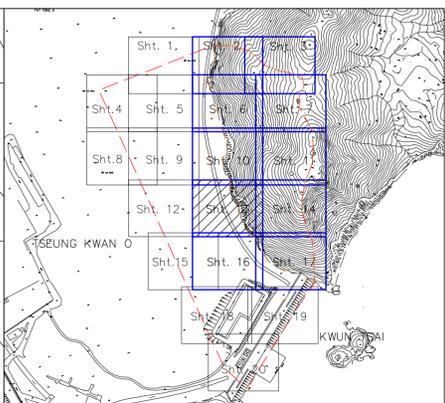
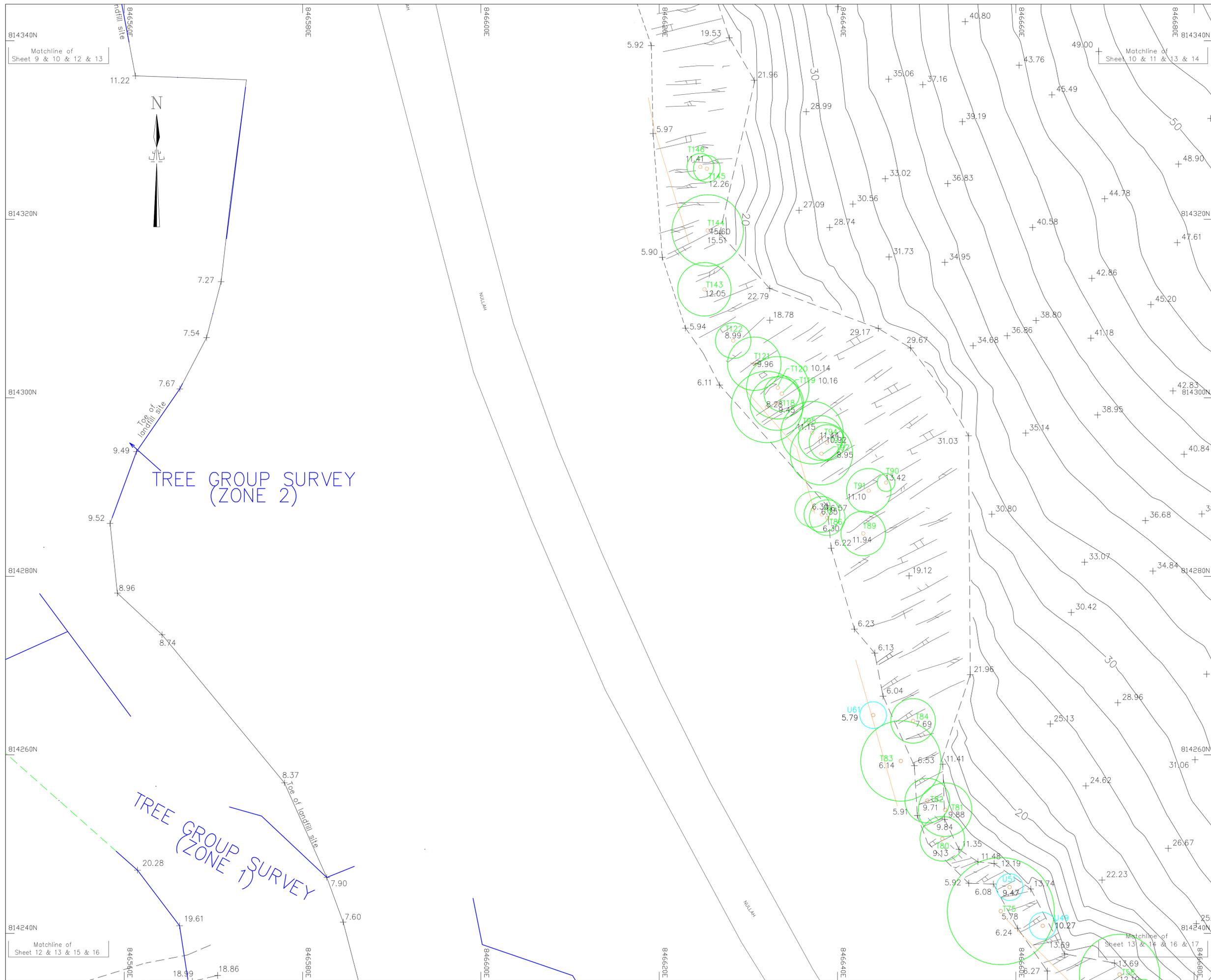
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 12 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature _____
Sr Dr. Ching Siu-tong
Authorized Land Surveyor
FKIS, FRICS, MIS(Aust.), RPS(LS), MCI Arb, MSSI (Aust.)

Dated this: 7th day of March 2016



KEY PLAN 1:7,000

NOTES :

- MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
- ALL UNITS ARE IN METRES OR OTHERWISE STATED.

LEGEND:

5.91	LEVEL POINT
	BAMBOO STEPS
~~~~~	CONTOUR
	CLIFF
[TS]	TEMPORARY STRUCTURE
○ BH	BOREHOLE
○	BOULDER
○ T1	TREE & TREE NO.
○ U1	UNDERSIZED TREE & TREE NO.
---	SLOPE TOP/BOTTOM
---	TREE GROUP SURVEY EXTENT
---	INACCESSIBLE AREA
---	TOPOGRAPHICAL AND TREE SURVEY EXTENT
---	TREE SURVEY EXTENT

PROJECT :

Topographical Survey and Tree Survey  
at Tseung Kwan O Area 137 for  
Water Supplies Department

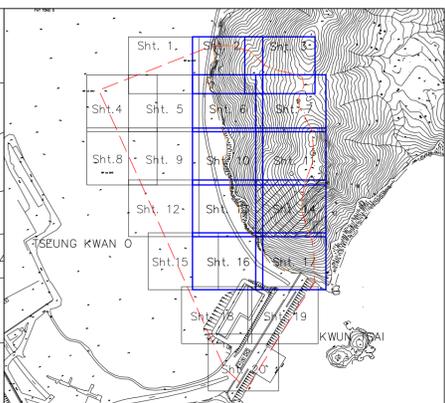
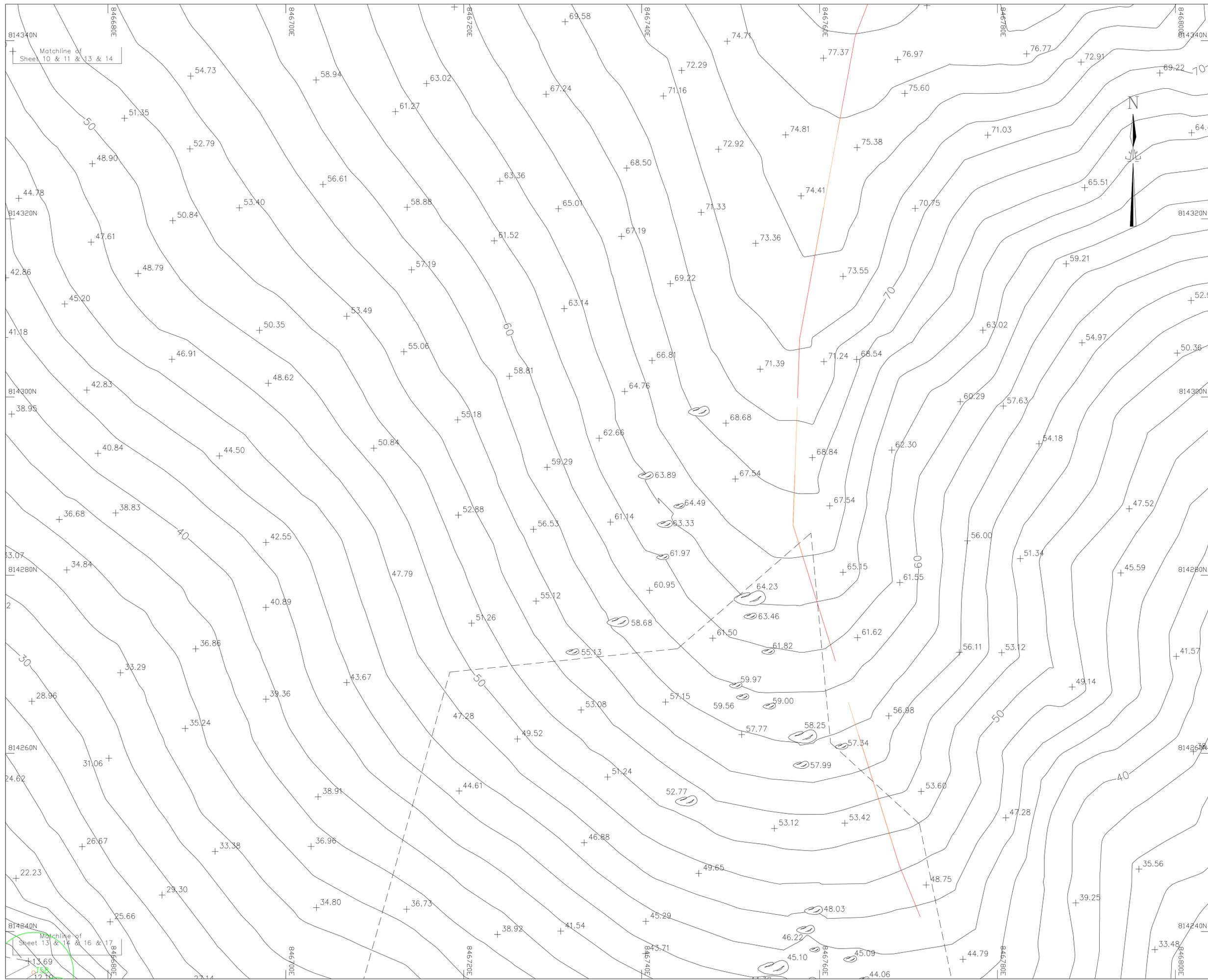
DATE OF SURVEY NOV 2015-MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 13 OF 20 SHEETS)	REVISION
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Plan Approved By:

Signature _____  
Sr Dr. Ching Siu-tong  
Authorized Land Surveyor  
FKHS, FRICS, MIS(Aust.), RPS(LS), MCIARB, MSSI (Aust.)

Dated this: 7th day of March 2016



KEY PLAN 1:7,000

**NOTES :**  
 1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.  
 2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:**
- 5.91 LEVEL POINT
  - BAMBOO STEPS
  - CONTOUR
  - CLIFF
  - TS TEMPORARY STRUCTURE
  - BH BOREHOLE
  - BOULDER
  - T1 TREE & TREE NO.
  - U1 UNDERSIZED TREE & TREE NO.
  - - - SLOPE TOP/BOTTOM
  - - - TREE GROUP SURVEY EXTENT
  - - - INACCESSIBLE AREA
  - - - TOPOGRAPHICAL AND TREE SURVEY EXTENT
  - - - TREE SURVEY EXTENT

**PROJECT :**  
 Topographical Survey and Tree Survey  
 at Tseung Kwan O Area 137 for  
 Water Supplies Department

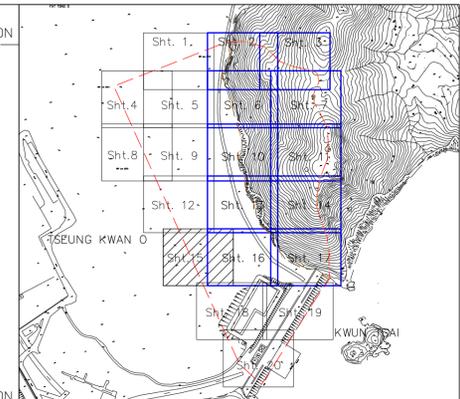
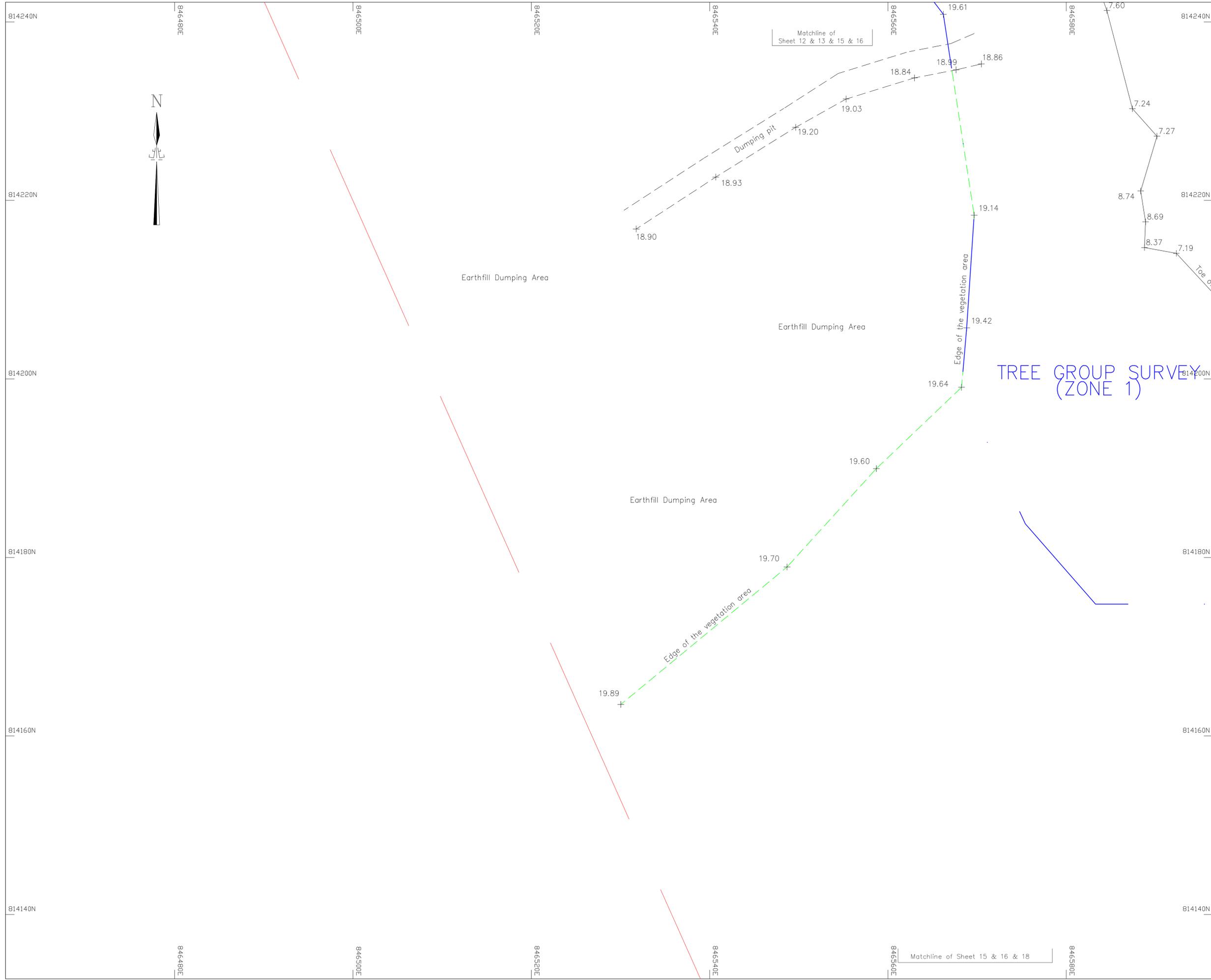
DATE OF SURVEY NOV 2015-MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 14 OF 20 SHEETS)	REVISION
-------------------------------------------------------------	----------

Plan Approved By:

Signature _____  
 Sr Dr. Ching Siu-tong  
 Authorized Land Surveyor  
 FHKIS, FRICS, MIS(Aust.), RPS(LS), MCI Arb, MSSI (Aust.)

Dated this: ..... 7th day of ..... March 2016



KEY PLAN 1:7,000

- NOTES :
1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
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- LEGEND:
- 5.91 LEVEL POINT
  - BAMBOO STEPS
  - ≡≡≡≡ CONTOUR
  - ⊥ CLIFF
  - TS TEMPORARY STRUCTURE
  - BH BOREHOLE
  - BOULDER
  - T1 TREE & TREE NO.
  - U1 UNDERSIZED TREE & TREE NO.
  - - - SLOPE TOP/BOTTOM
  - - - TREE GROUP SURVEY EXTENT
  - - - INACCESSIBLE AREA
  - - - TOPOGRAPHICAL AND TREE SURVEY EXTENT
  - - - TREE SURVEY EXTENT

TREE GROUP SURVEY  
(ZONE 1)

PROJECT :  
Topographical Survey and Tree Survey  
at Tseung Kwan O Area 137 for  
Water Supplies Department

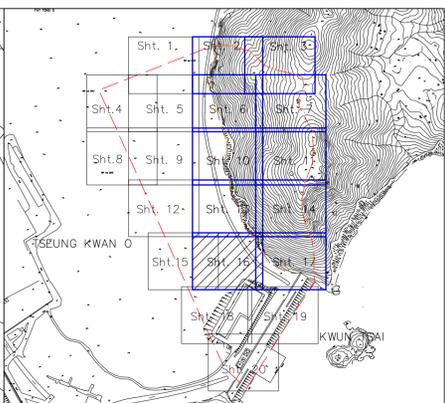
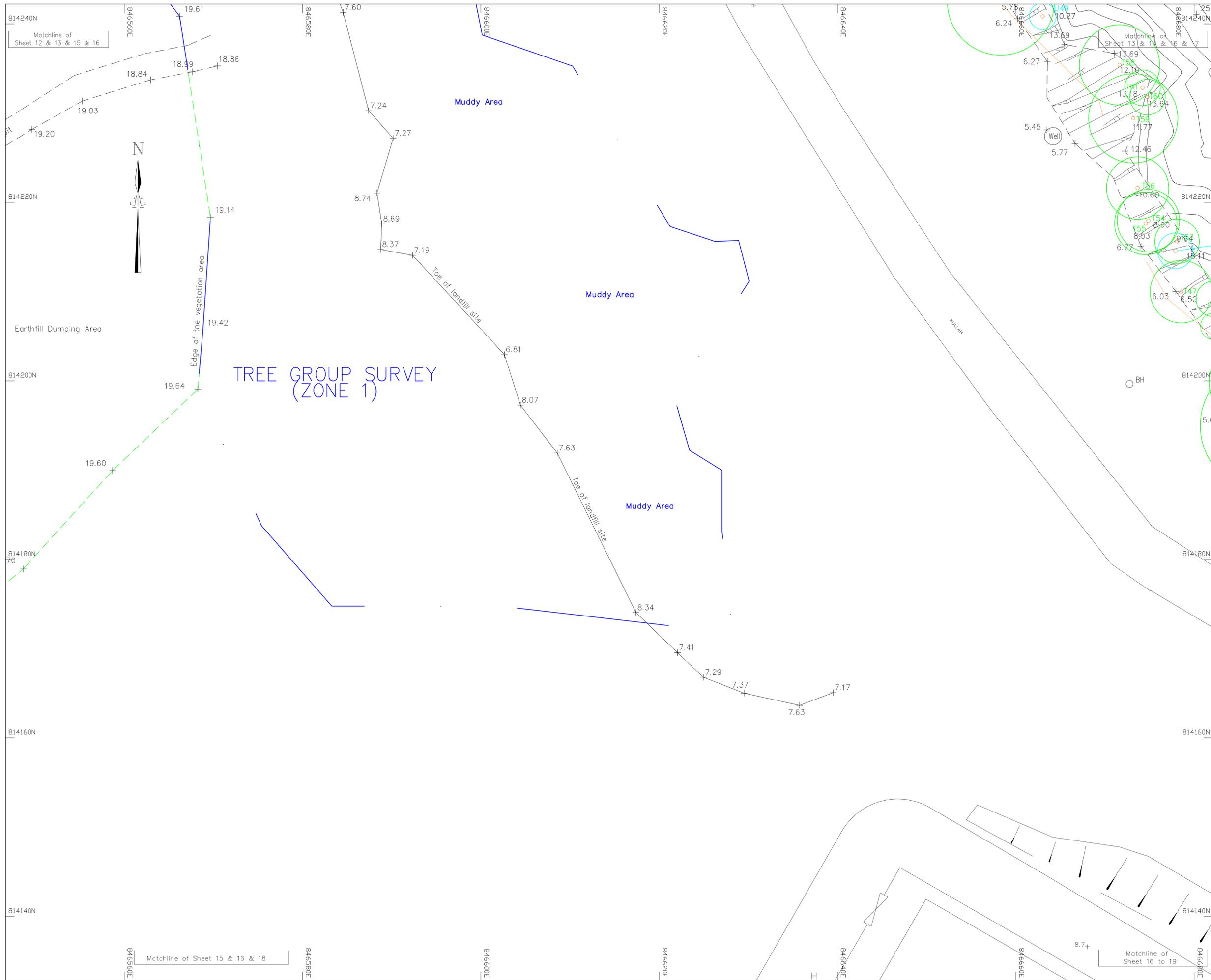
DATE OF SURVEY NOV 2015-MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 15 OF 20 SHEETS)	REVISION
-------------------------------------------------------------	----------

Plan Approved By:

Signature _____  
Sr Dr. Ching Siu-tong  
Authorized Land Surveyor  
FKIS, FRICS, MIS(Aust.), RPS(LS), MCIAB, MSSI (Aust.)

Dated this: ..... 7th day of ..... March 2016



KEY PLAN 1:7,000

NOTES :

1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
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- LEGEND:
- 5.91 LEVEL POINT
  - BAMBOO STEPS
  - CONTOUR
  - CLIFF
  - TEMPORARY STRUCTURE
  - BH BOREHOLE
  - BOULDER
  - TREE & TREE NO.
  - UNDERSIZED TREE & TREE NO.
  - SLOPE TOP/BOTTOM
  - TREE GROUP SURVEY EXTENT
  - INACCESSIBLE AREA
  - TOPOGRAPHICAL AND TREE SURVEY EXTENT
  - TREE SURVEY EXTENT

PROJECT :

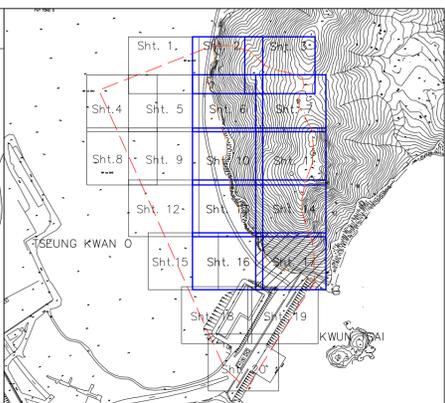
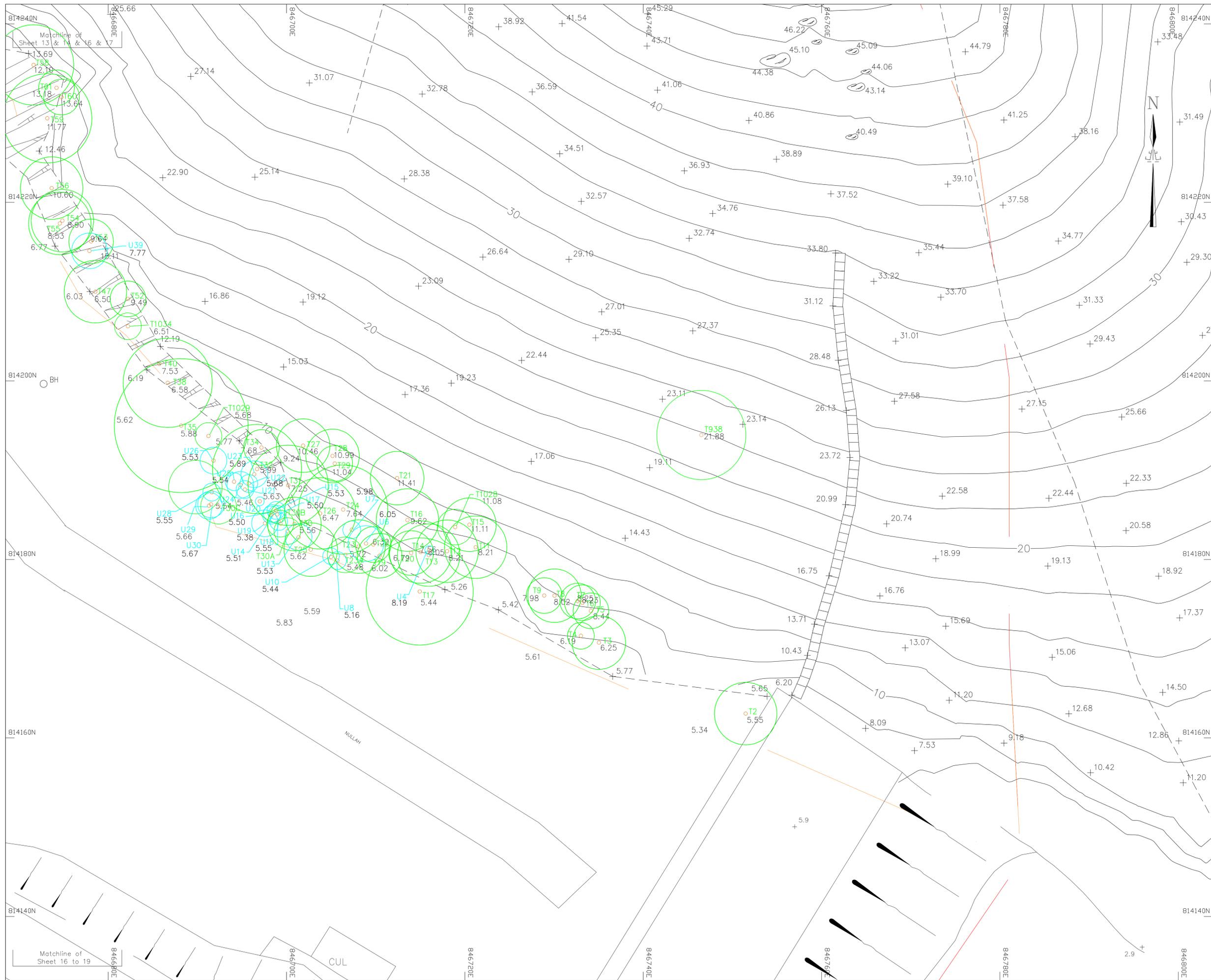
Topographical Survey and Tree Survey  
at Tseung Kwan O Area 137 for  
Water Supplies Department

DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
DRAWING NUMBER KEL/TOPO/15/45 (SHEET 16 OF 20 SHEETS)	REVISION

Plan Approved By:

Signature _____  
Sr Dr. Ching Siu-tong  
Authorized Land Surveyor  
FKIS, FRICS, MIS(Aust.), RPS(LS), MDArb, MSSI (Aust.)

Dated this: ..... 7th day of ..... March 2016



KEY PLAN 1:7,000

**NOTES :**  
 1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.  
 2. ALL UNITS ARE IN METRES OR OTHERWISE STATED.

- LEGEND:**
- 5.91 LEVEL POINT
  - ▤ BAMBOO STEPS
  - CONTOUR
  - ▬ CLIFF
  - ▭ TEMPORARY STRUCTURE
  - BH BOREHOLE
  - BOULDER
  - T₁₁ TREE & TREE NO.
  - U₁₁ UNDERSIZED TREE & TREE NO.
  - - - SLOPE TOP/BOTTOM
  - - - TREE GROUP SURVEY EXTENT
  - - - INACCESSIBLE AREA
  - - - TOPOGRAPHICAL AND TREE SURVEY EXTENT
  - - - TREE SURVEY EXTENT

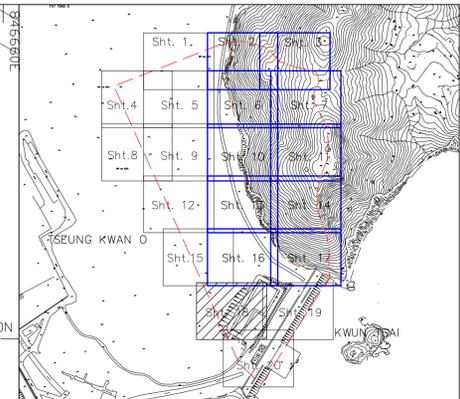
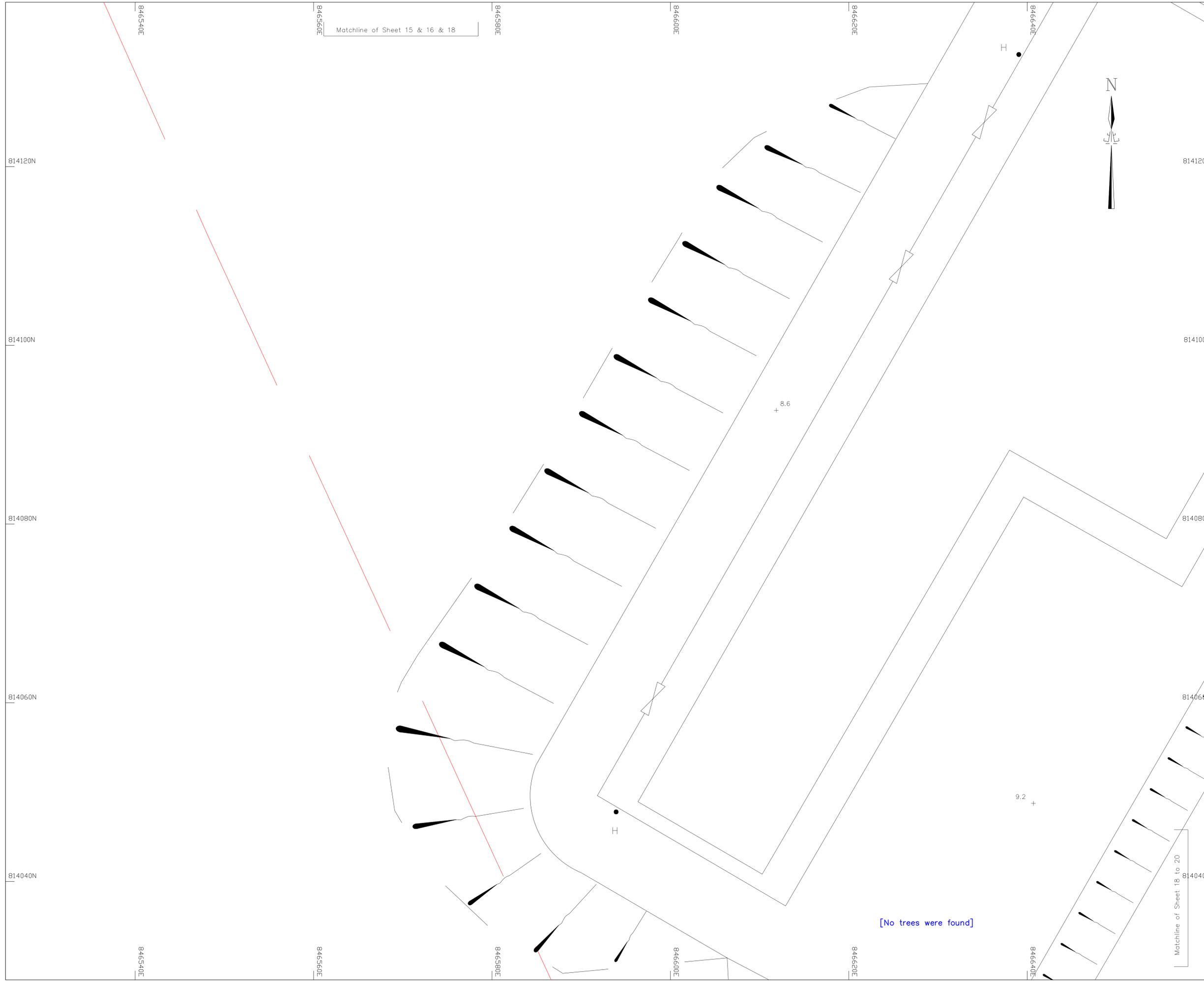
**PROJECT :**  
 Topographical Survey and Tree Survey  
 at Tseung Kwan O Area 137 for  
 Water Supplies Department

DATE OF SURVEY NOV 2015-MAR 2016	SCALE AT A1 1:200
DRAWING NUMBER KEL/TOPO/15/45 (SHEET 17 OF 20 SHEETS)	REVISION

Plan Approved By:

Signature _____  
 Sr Dr. Ching Siu-tong  
 Authorized Land Surveyor  
 FHKIS, FRICS, MIS(Aust.), RPS(LS), MCI Arb, MSSI (Aust.)

Dated this: ..... 7th day of ..... March 2016



KEY PLAN 1:7,000

NOTES :

1. MEASUREMENTS ARE BASED ON HONG KONG 1980 METRIC GRID & HONG KONG PRINCIPAL DATUM.
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LEGEND:

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PROJECT :

Topographical Survey and Tree Survey  
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DATE OF SURVEY  
NOV 2015-MAR 2016

SCALE AT A1  
1:200

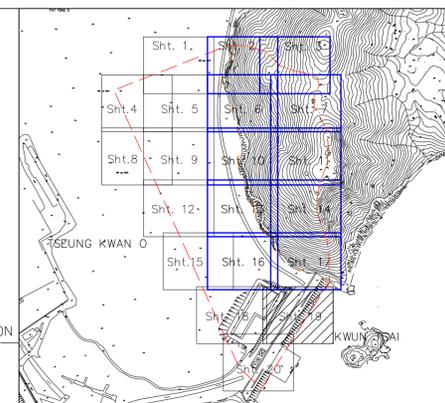
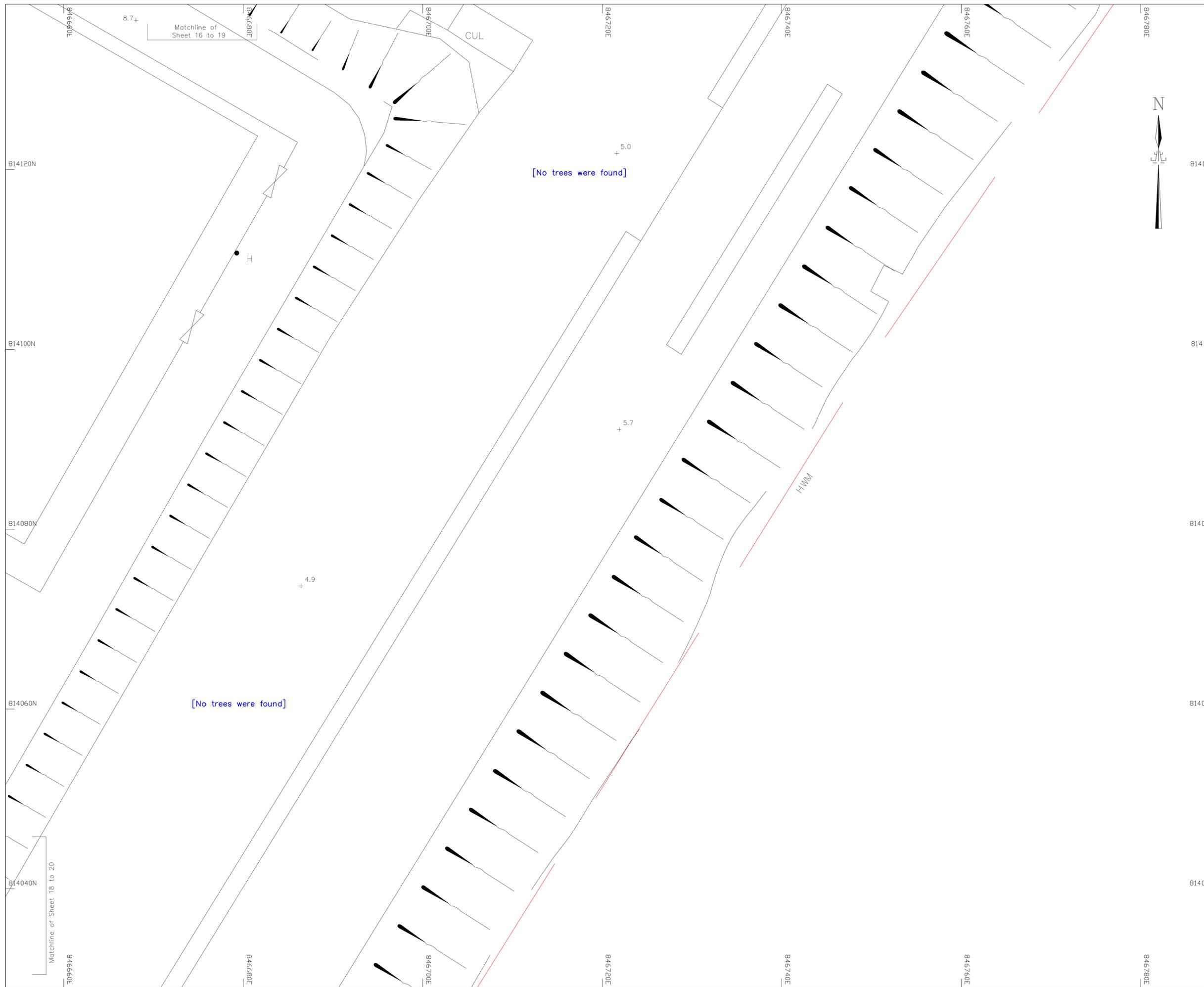
DRAWING NUMBER  
KEL/TOPO/15/45  
(SHEET 18 OF 20 SHEETS)

REVISION

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Authorized Land Surveyor  
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**PROJECT :**  
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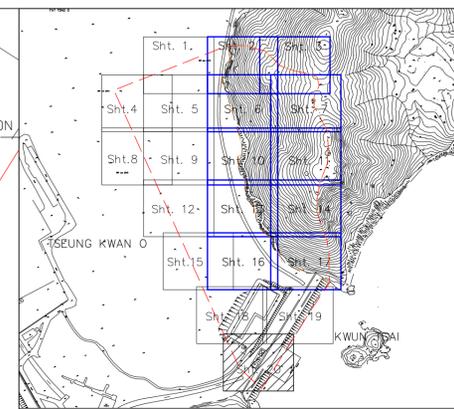
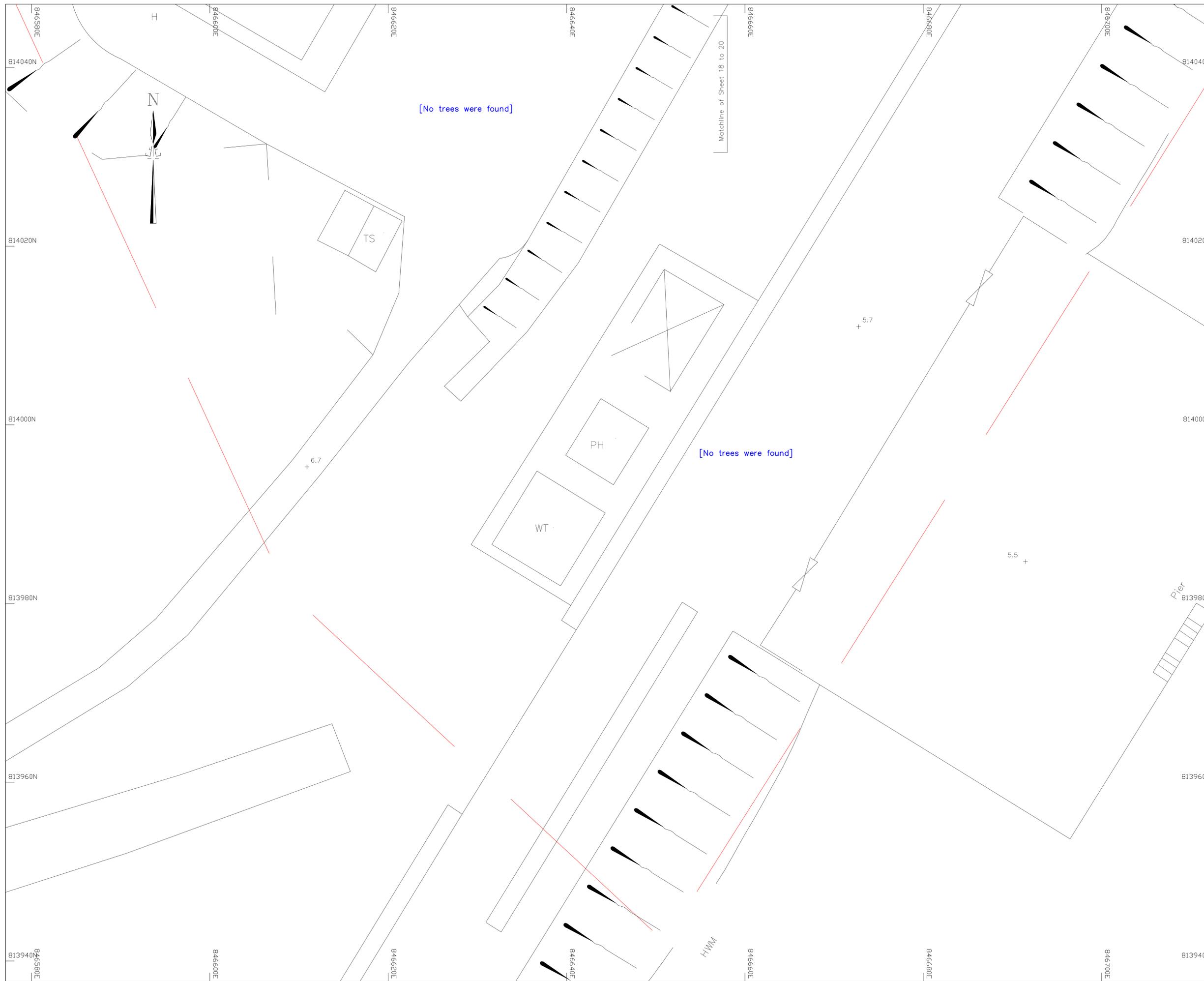
DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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DRAWING NUMBER KEL/TOPO/15/45 (SHEET 19 OF 20 SHEETS)	REVISION
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Dated this: ..... 7th day of ..... March 2016



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PROJECT :

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DATE OF SURVEY NOV 2015–MAR 2016	SCALE AT A1 1:200
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Authorized Land Surveyor  
FKIS, FRICS, MIS(Aust.), RPS(LS), MCI Arb, MSSI (Aust.)

Dated this: ..... 7th day of ..... March 2016

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

Project Title: Topographical Survey and Tree survey at Tseung Kwan O Area 137 for Water Supplies Department

Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

Tree No.	Species		Measurements			Amenity value	Form	Health condition	Structural condition	Suitability for transplanting		Conservation status	Recommendation* (Retain/Transplant/Fell)	Department to provide expert advice to LandsD	Justification	Additional Remarks
	Scientific name	Chinese name	height (m)	DBH (mm)	crown spread (m)					(good/fair/poor)						
T2	<i>Macaranga tanarius</i>	血桐	3	180	7	Fair	Fair	Fair	Fair	Low	-	N/A	Retain	AFCD	-	-
T3	<i>Macaranga tanarius</i>	血桐	3	248	6	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 140mm,100mm,100mm,110mm); shrubby form; scaffold
T4	<i>Macaranga tanarius</i>	血桐	4	198	3	Poor	Poor	Poor	Poor	Low	On slope	N/A	Retain	AFCD	-	Double trunks with included bark (dia. 150mm,130mm)
T5	<i>Macaranga tanarius</i>	血桐	4	120	4	Poor	Poor	Poor	Poor	Low	On slope	N/A	Retain	AFCD	-	Restricted root; wound on bark
T6	<i>Macaranga tanarius</i>	血桐	3	180	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Cross with T7; crooked trunk
T7	<i>Ficus hispida</i>	對葉榕	3	277	4	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 150mm,150mm,130mm,100mm,70mm); shrubby form; cross with T6
T8	<i>Macaranga tanarius</i>	血桐	4	128	6	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	-
T9	<i>Macaranga tanarius</i>	血桐	3	150	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T11	<i>Macaranga tanarius</i>	血桐	4	300	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T12	<i>Celtis sinensis</i>	朴樹	6	234	7	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Double trunks with included bark (dia. 150mm,180mm)
T13	<i>Celtis sinensis</i>	朴樹	8	170	7	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T14	<i>Macaranga tanarius</i>	血桐	6	150	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T15	<i>Macaranga tanarius</i>	血桐	4	120	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T16	<i>Macaranga tanarius</i>	血桐	5	176	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia.80mm,80mm,90mm,100mm)
T17	<i>Macaranga tanarius</i>	血桐	5	322	12	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCD	-	Multiple trunks (dia.100mm,120mm,130mm,250mm); exposed root; heavily leaning
T19	<i>Macaranga tanarius</i>	血桐	7	188	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia.80mm,170mm); leaning; vined

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

Project Title: Topographical Survey and Tree survey at Tseung Kwan O Area 137 for Water Supplies Department

Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

T20	<i>Macaranga tanarius</i>	血桐	4	150	5	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk; exposed root
T21	<i>Macaranga tanarius</i>	血桐	5	150	6	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T22	<i>Ficus hispida</i>	對葉榕	6	170	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T23	<i>Macaranga tanarius</i>	血桐	7	217	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 70mm,80mm,100mm,160m m); shrubby form
T23A	<i>Leucaena leucocephala</i>	銀合歡	5	184	4	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCD	Weed species	Double trunks (dia. 100mm,85mm)
T24	<i>Macaranga tanarius</i>	血桐	7	200	10	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T25	<i>Leucaena leucocephala</i>	銀合歡	8	175	6	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCD	Weed species	Double trunks (dia.90mm,150mm); leaning
T26	<i>Macaranga tanarius</i>	血桐	8	200	8	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T27	<i>Macaranga tanarius</i>	血桐	3	140	6	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T28	<i>Macaranga tanarius</i>	血桐	4	140	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T29	<i>Macaranga tanarius</i>	血桐	4	95	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T30	<i>Macaranga tanarius</i>	血桐	6	140	6	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
T30A	<i>Leucaena leucocephala</i>	銀合歡	5	131	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Heavily leaning; exposed root
T30B	<i>Leucaena leucocephala</i>	銀合歡	5	100	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Double trunks (dia. 110mm,60mm)
T30C	<i>Leucaena leucocephala</i>	銀合歡	4	130	4	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCD	Weed species	-
T31	<i>Macaranga tanarius</i>	血桐	4	130	9	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk; exposed root
T32	<i>Leucaena leucocephala</i>	銀合歡	8	190	10	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
T34	<i>Ficus hispida</i>	對葉榕	5	180	6	Poor	Fair	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Exposed root

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

Project Title: Topographical Survey and Tree survey at Tseung Kwan O Area 137 for Water Supplies Department

Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

T35	<i>Macaranga tanarius</i>	血桐	7	255	15	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Leaning
T38	<i>Ficus hispida</i>	對葉榕	7	140	10	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T40	<i>Macaranga tanarius</i>	血桐	6	200	10	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk; exposed root
T47	<i>Leucaena leucocephala</i>	銀合歡	8	170	7	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	Weed species	Crooked trunk
T52	<i>Celtis sinensis</i>	朴樹	5	128	4	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Exposed root
T53	<i>Macaranga tanarius</i>	血桐	5	95	5	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Leaning
T54	<i>Macaranga tanarius</i>	血桐	7	120	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T55	<i>Macaranga tanarius</i>	血桐	9	110	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T56	<i>Ficus hispida</i>	對葉榕	4	113	7	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Exposed root; double trunks (dia. 80mm,80mm)
T58	<i>Macaranga tanarius</i>	血桐	6	100	9	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T59	<i>Macaranga tanarius</i>	血桐	6	110	10	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Exposed root
T60	<i>Macaranga tanarius</i>	血桐	4	95	4	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Restricted root
T61	<i>Macaranga tanarius</i>	血桐	4	110	4	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Leaning
T75	<i>Macaranga tanarius</i>	血桐	6	233	12	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCD	-	Double trunks (dia. 160mm,170mm); bark crack
T80	<i>Ficus subpisocarpa</i> Gagnep.	筆管榕	4	182	5	Poor	Poor	Poor	Poor	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia.70mm,70mm,80mm,130mm); heavily vined; leaning
T81	<i>Ficus hispida</i>	對葉榕	5	127	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia.90mm,90mm); leaning
T82	<i>Macaranga tanarius</i>	血桐	4	95	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T83	<i>Ficus microcarpa</i>	細葉榕	7	354	9	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCD	-	Triple trunks (dia.150mm,200mm,250mm); exposed root

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

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Date of Tree Survey: December 2015 ~ March 2016

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T84	<i>Ficus hispida</i>	對葉榕	4	186	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia.80mm,90mm,100mm,100mm); leaning
T86	<i>Leucaena leucocephala</i>	銀合歡	6	130	4	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCD	Weed species	forked trunk; heavily vined; leaning
T87	<i>Macaranga tanarius</i>	血桐	4	95	4	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Leaning; wound on trunk
T88	<i>Leucaena leucocephala</i>	銀合歡	4	130	4	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Leaning
T89	<i>Macaranga tanarius</i>	血桐	4	127	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia.90mm,90mm); leaning
T90	<i>Ficus hispida</i>	對葉榕	3	95	2	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T91	<i>Macaranga tanarius</i>	血桐	4	100	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T92	<i>Macaranga tanarius</i>	血桐	5	200	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T93	<i>Ficus hispida</i>	對葉榕	4	100	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T94	<i>Macaranga tanarius</i>	血桐	4	113	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia.80mm,80mm)
T95	<i>Macaranga tanarius</i>	血桐	5	120	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T117	<i>Macaranga tanarius</i>	血桐	6	110	8	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T118	<i>Ficus hispida</i>	對葉榕	6	122	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia.70mm,100mm); leaning
T119	<i>Ficus hispida</i>	對葉榕	3	100	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia.80mm,60mm)
T120	<i>Macaranga tanarius</i>	血桐	6	150	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T121	<i>Macaranga tanarius</i>	血桐	3	110	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning; forked trunk
T122	<i>Macaranga tanarius</i>	血桐	3	110	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning; forked trunk
T143	<i>Ficus subpisocarpa</i> Gagnep.	筆管榕	6	350	6	Poor	Fair	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

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Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

T144	<i>Ficus subpisocarpa</i> Gagnep.	筆管榕	6	260	8	Poor	Fair	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 150mm,150mm,150mm)
T145	<i>Macaranga tanarius</i>	血桐	4	120	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T146	<i>Macaranga tanarius</i>	血桐	4	100	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T172	<i>Macaranga tanarius</i>	血桐	4	180	6	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T173	<i>Macaranga tanarius</i>	血桐	4	179	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 70mm,70mm,100mm,110m m)
T174	<i>Macaranga tanarius</i>	血桐	4	120	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T175	<i>Macaranga tanarius</i>	血桐	5	120	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T176	<i>Macaranga tanarius</i>	血桐	4	139	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 70mm,120mm)
T177	<i>Ficus hispida</i>	對葉榕	3	120	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T178	<i>Leucaena leucocephala</i>	銀合歡	5	120	3	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	Weed species	Leaning; exposed root
T181	<i>Macaranga tanarius</i>	血桐	6	283	9	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 200mm,200mm)
T187	<i>Leucaena leucocephala</i>	銀合歡	6	110	2	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCD	Weed species	Dead stub; crooked trunk
T187A	Dead tree	死樹	8	200	5	-	-	-	-	Low	-	N/A	Retain	AFCD	-	Leaning
T188	<i>Macaranga tanarius</i>	血桐	7	219	6	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Double trunks (dia. 90mm,200mm); crooked trunk
T189	<i>Leucaena leucocephala</i>	銀合歡	6	200	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	Weed species	Crooked trunk
T190	<i>Macaranga tanarius</i>	血桐	6	200	10	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T191	<i>Leucaena leucocephala</i>	銀合歡	6	190	5	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
T193	<i>Leucaena leucocephala</i>	銀合歡	5	190	6	Poor	Fair	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	-

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

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Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

T199	<i>Macaranga tanarius</i>	血桐	6	180	9	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Dead branches; leaning
T200	<i>Macaranga tanarius</i>	血桐	5	170	6	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Dead branches; bark crack
T201	<i>Macaranga tanarius</i>	血桐	5	150	12	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Exposed root; crooked trunk
T202	<i>Macaranga tanarius</i>	血桐	4	254	12	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Triple trunks (dia. 100mm,120mm,200mm)
T205	<i>Macaranga tanarius</i>	血桐	5	130	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T206	<i>Ficus hispida</i>	對葉榕	5	120	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T207	<i>Macaranga tanarius</i>	血桐	5	170	6	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 120mm,120mm) with included bark; heavily leaning
T208	<i>Macaranga tanarius</i>	血桐	5	175	9	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Triple trunks (dia. 80mm,110mm,110mm); wounds on trunk
T209	<i>Macaranga tanarius</i>	血桐	5	120	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T210	<i>Macaranga tanarius</i>	血桐	5	95	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk; exposed root
T211	<i>Ficus hispida</i>	對葉榕	4	185	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Exposed root; triple trunks (dia. 100mm,100mm,120mm)
T212	<i>Macaranga tanarius</i>	血桐	5	130	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T213	<i>Macaranga tanarius</i>	血桐	5	220	6	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk; exposed root
T214	<i>Ficus hispida</i>	對葉榕	4	158	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 90mm,130mm)
T215	<i>Leucaena leucocephala</i>	銀合歡	5	110	3	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	Weed species	Vined; crooked trunk
T216	<i>Macaranga tanarius</i>	血桐	4	130	4	Poor	Poor	Poor	Poor	Low	On slope	N/A	Retain	AFCD	-	Exposed root; vined; crooked trunk
T217	<i>Macaranga tanarius</i>	血桐	4	190	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined; crooked trunk
T218	<i>Macaranga tanarius</i>	血桐	4	110	4	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk

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T228	<i>Acacia confusa</i>	台灣相思	10	361	12	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 200mm,300mm)
T229	<i>Macaranga tanarius</i>	血桐	5	150	8	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T230	<i>Macaranga tanarius</i>	血桐	9	180	12	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning; bark crack
T230A	<i>Macaranga tanarius</i>	血桐	8	180	6	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCD	-	Dead branches
T594A	<i>Schefflera heptaphylla</i>	鴨腳木	4	104	3	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCD	-	Heavily leaning
T231	<i>Macaranga tanarius</i>	血桐	8	211	13	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning; double trunks (dia. 110mm,180mm)
T232	<i>Ficus hispida</i>	對葉榕	5	150	8	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T233	<i>Ficus hispida</i>	對葉榕	4	200	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 100mm,100mm,100mm,100 mm); dead stub
T234	<i>Phoenix loureiroi</i>	刺葵	4	180	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Dead frond
T235	<i>Ficus hispida</i>	對葉榕	7	100	6	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined; exposed root
T236	<i>Macaranga tanarius</i>	血桐	7	150	6	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined; bark crack
T237	<i>Macaranga tanarius</i>	血桐	6	333	13	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 100mm,130mm,150mm,170 mm,180mm); shrubby form
T238	<i>Macaranga tanarius</i>	血桐	8	250	13	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Bark crack; vined
T501	<i>Ficus hispida</i>	對葉榕	5	100	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T502	<i>Macaranga tanarius</i>	血桐	6	150	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T503	<i>Ficus hispida</i>	對葉榕	7	225	8	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Dead branch; multiple trunks (dia. 90mm,100mm,100mm,150 mm)
T504	<i>Ficus hispida</i>	對葉榕	6	110	4	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T505	<i>Phoenix loureiroi</i>	刺葵	7	180	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-

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T506	<i>Macaranga tanarius</i>	血桐	7	220	5	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCDD	-	Exposed root; crooked trunk
T507	<i>Macaranga tanarius</i>	血桐	7	230	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCDD	-	Leaning
T508	<i>Macaranga tanarius</i>	血桐	6	220	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCDD	-	Vined; crooked trunk
T509	<i>Ficus hispida</i>	對葉榕	6	150	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCDD	-	Leaning
T510	<i>Ficus hispida</i>	對葉榕	4	100	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCDD	-	-
T511	<i>Ficus hispida</i>	對葉榕	8	232	8	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCDD	-	Multiple trunks (dia. 100mm,100mm,120mm,140mm); shrubby form; dead branches
T512	<i>Macaranga tanarius</i>	血桐	8	250	6	Fair	Fair	Fair	Fair	Low	-	N/A	Retain	AFCDD	-	Vined
T514	<i>Acacia mangium</i>	馬占相思	7	150	4	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCDD	-	Broken branch; wound on trunk
T515	<i>Macaranga tanarius</i>	血桐	8	221	6	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCDD	-	Triple trunks (dia. 100mm,100mm,170mm); crooked trunk
T516	<i>Ficus hispida</i>	對葉榕	8	186	7	Poor	Poor	Poor	Poor	Low	-	N/A	Retain	AFCDD	-	Exposed root; dead branch
T517	<i>Ficus hispida</i>	對葉榕	6	144	5	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCDD	-	Restricted root; dead branch
T518	<i>Macaranga tanarius</i>	血桐	8	250	10	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCDD	-	Leaning; exposed root
T519	<i>Macaranga tanarius</i>	血桐	6	200	8	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCDD	-	Vined
T520	Dead tree	死樹	5	130	4	-	-	-	-	Low	On slope	N/A	Retain	AFCDD	-	-
T521	<i>Macaranga tanarius</i>	血桐	9	180	5	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCDD	-	Bark crack; leaning
T522	<i>Macaranga tanarius</i>	血桐	8	233	6	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCDD	-	Double trunks (dia. 120mm,200mm); bark crack
T523	<i>Macaranga tanarius</i>	血桐	6	180	5	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCDD	-	Crooked trunk; bark crack
T524	<i>Leucaena leucocephala</i>	銀合歡	8	270	6	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	CEDD	Weed species	Double trunks (dia. 150mm,225mm); leaning; uprooted

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T542	<i>Sterculia lanceolata</i>	假蒴婆	8	354	6	Fair	Fair	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Double trunks (dia. 250mm,250mm); restricted root
T543	<i>Sterculia lanceolata</i>	假蒴婆	8	156	4	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Triple trunks (dia. 90mm,90mm,90mm)
T544	<i>Macaranga tanarius</i>	血桐	7	270	7	Poor	Fair	Poor	Fair	Low	-	N/A	Retain	AFCD	-	Bark crack
T545	<i>Ficus hispida</i>	對葉榕	7	160	4	Fair	Fair	Fair	Fair	Low	-	N/A	Retain	AFCD	-	-
T546	<i>Leucaena leucocephala</i>	銀合歡	6	150	4	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
T551	<i>Celtis sinensis</i>	朴樹	8	110	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Dead branches; cross with T552
T552	<i>Celtis sinensis</i>	朴樹	7	110	3	Fair	Fair	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Cross with T551
T553	<i>Mallotus paniculatus</i>	白楸	8	240	6	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Epicormics at trunk base; leaning
T554	<i>Leucaena leucocephala</i>	銀合歡	7	130	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
T555	<i>Leucaena leucocephala</i>	銀合歡	9	110	4	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
T556	<i>Leucaena leucocephala</i>	銀合歡	7	110	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
T557	<i>Leucaena leucocephala</i>	銀合歡	7	100	2	Poor	Fair	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	-
T558	<i>Leucaena leucocephala</i>	銀合歡	7	150	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Leaning
T561	<i>Acacia confusa</i>	台灣相思	10	220	6	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk; wound on trunk
T562	<i>Acacia confusa</i>	台灣相思	11	386	7	Fair	Fair	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Double trunks (dia. 230mm,310mm); vined
T563	<i>Celtis sinensis</i>	朴樹	6	100	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
T564	<i>Acacia confusa</i>	台灣相思	10	150	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Leaning
T565	<i>Leucaena leucocephala</i>	銀合歡	10	150	4	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Leaning

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T566	<i>Macaranga tanarius</i>	血桐	8	250	7	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Bark crack
T567	<i>Macaranga tanarius</i>	血桐	8	200	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T568	<i>Celtis sinensis</i>	朴樹	7	150	4	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Exposed root
T571	<i>Celtis sinensis</i>	朴樹	7	210	4	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
T572	<i>Ficus hispida</i>	對葉榕	7	141	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 100mm,100mm); crooked trunk
T573	<i>Ficus hispida</i>	對葉榕	5	95	4	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T574	<i>Sterculia lanceolata</i>	假欖婆	7	100	4	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T575	<i>Sterculia lanceolata</i>	假欖婆	5	148	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Triple trunks (dia. 80mm,80mm,95mm); vined
T576	<i>Macaranga tanarius</i>	血桐	6	200	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T577	<i>Ficus hispida</i>	對葉榕	7	110	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T578	<i>Ficus microcarpa</i>	細葉榕	10	250	10	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T579	<i>Macaranga tanarius</i>	血桐	3	186	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 110mm,150mm); exposed root
T580	<i>Celtis sinensis</i>	朴樹	6	110	4	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Leaning
T581	<i>Leucaena leucocephala</i>	銀合歡	9	200	6	Poor	Poor	Poor	Poor	Low	On slope	N/A	Retain	AFCD	Weed species	Collapsed; wound on trunk
T582	<i>Leucaena leucocephala</i>	銀合歡	9	130	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	Weed species	Leaning
T583	<i>Macaranga tanarius</i>	血桐	6	150	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Wound on trunk
T585	<i>Macaranga tanarius</i>	血桐	8	160	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T586	<i>Macaranga tanarius</i>	血桐	8	224	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 100mm,200mm)

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T587	<i>Macaranga tanarius</i>	血桐	6	283	6	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Heavily leaning; double trunks (dia. 200mm,200mm); epicormics at trunk base
T588	<i>Macaranga tanarius</i>	血桐	4	140	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T589	<i>Ficus hispida</i>	對葉榕	4	163	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 110mm,120mm)
T590	<i>Macaranga tanarius</i>	血桐	7	200	6	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Exposed root; leaning
T591	<i>Macaranga tanarius</i>	血桐	8	200	6	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Leaning
T592	<i>Macaranga tanarius</i>	血桐	8	210	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk; dead branches
T593	<i>Macaranga tanarius</i>	血桐	4	150	8	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T594	<i>Macaranga tanarius</i>	血桐	4	190	6	Poor	Poor	Poor	Poor	Low	On slope	N/A	Retain	AFCD	-	Leaning
T595	<i>Ficus hispida</i>	對葉榕	7	150	4	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Leaning; exposed root
T596	<i>Macaranga tanarius</i>	血桐	9	280	6	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning; exposed root
T597	<i>Ficus hispida</i>	對葉榕	3	136	2	Poor	Poor	Poor	Fair	Low	-	N/A	Retain	AFCD	-	Double trunks (dia. 80mm,110mm); decay on trunk; lost of dominant leader
T598	<i>Celtis sinensis</i>	朴樹	5	150	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T938	<i>Peltophorum pterocarpum</i>	雙翼豆	10	180	10	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 100mm,150mm)
T991	<i>Ficus hispida</i>	對葉榕	5	99	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 70mm,70mm); leaning
T992	<i>Macaranga tanarius</i>	血桐	5	150	6	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T993	<i>Macaranga tanarius</i>	血桐	4	120	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T994	<i>Bridelia tomentosa</i>	土蜜樹	5	100	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T995	<i>Macaranga tanarius</i>	血桐	8	160	6	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-

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T996	<i>Mallotus paniculatus</i>	白楸	7	140	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T997	<i>Mallotus paniculatus</i>	白楸	5	100	6	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T998	<i>Macaranga tanarius</i>	血桐	5	120	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T999	<i>Ficus hispida</i>	對葉榕	5	160	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1000	<i>Macaranga tanarius</i>	血桐	6	200	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1001	<i>Schefflera heptaphylla</i>	鴨腳木	3	113	3	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (80mm,80mm); heavily vined
T1002	<i>Macaranga tanarius</i>	血桐	6	160	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk;
T1003	<i>Bridelia tomentosa</i>	土蜜樹	5	158	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 50mm,50mm,100mm,100m m)
T1004	<i>Phoenix loureiroi</i>	刺葵	3	212	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 150mm,150mm)
T1005	<i>Phoenix loureiroi</i>	刺葵	2	150	2	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1006	<i>Phoenix loureiroi</i>	刺葵	3	200	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T1007	<i>Schefflera heptaphylla</i>	鴨腳木	6	213	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (140mm,160mm)
T1008	<i>Ficus hispida</i>	對葉榕	4	120	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1009	<i>Macaranga tanarius</i>	血桐	5	130	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1010	<i>Ficus hispida</i>	對葉榕	4	120	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1011	<i>Phoenix loureiroi</i>	刺葵	3	300	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1012	<i>Sterculia lanceolata</i>	假蘋婆	4	95	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1013	<i>Sterculia lanceolata</i>	假蘋婆	6	140	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

Project Title: Topographical Survey and Tree survey at Tseung Kwan O Area 137 for Water Supplies Department

Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

T1014	<i>Macaranga tanarius</i>	血桐	5	200	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1015	<i>Sterculia lanceolata</i>	假蘋婆	7	156	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 110mm,110mm)
T1016	<i>Mallotus paniculatus</i>	白楸	7	150	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1017	<i>Mallotus paniculatus</i>	白楸	7	140	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1018	<i>Phoenix loureiroi</i>	刺葵	3	424	2	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 300mm,300mm)
T1019	<i>Celtis sinensis</i>	朴樹	6	160	4	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T1020	<i>Phoenix loureiroi</i>	刺葵	3	400	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1021	<i>Phoenix loureiroi</i>	刺葵	3	400	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1022	<i>Phoenix loureiroi</i>	刺葵	3	300	2	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1023	<i>Mallotus paniculatus</i>	白楸	7	130	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1024	<i>Schefflera heptaphylla</i>	鴨腳木	5	127	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Multiple trunks (dia. 90mm,90mm)
T1025	<i>Glochidion hirsutum</i>	厚葉算盤子	4	95	3	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1026	<i>Ficus hispida</i>	對葉榕	6	100	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1027	<i>Macaranga tanarius</i>	血桐	7	95	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1028	<i>Macaranga tanarius</i>	血桐	5	106	4	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia.70mm,80mm); leaning; vined
T1029	<i>Leucaena leucocephala</i>	銀合歡	5	122	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Double trunks (dia.70mm,100mm); leaning
T1034	<i>Ficus subpisocarpa Gagnep.</i>	筆管榕	4	100	3	Poor	Poor	Fair	Poor	Low	On slope	N/A	Retain	AFCD	-	Leaning; exposed root
T1060	<i>Leucaena leucocephala</i>	銀合歡	4	100	2	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	Weed species	Crooked trunk

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

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Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

T1061	<i>Leucaena leucocephala</i>	銀合歡	5	120	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
T1165	<i>Phoenix loureiroi</i>	刺葵	9	325	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 230mm,230mm)
T1166	<i>Ficus hispida</i>	對葉榕	4	312	9	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined; multiple trunks (dia. 110mm,150mm,150mm,200 mm)
T1167	<i>Sterculia lanceolata</i>	假蘋婆	6	110	3	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T1168	<i>Mallotus paniculatus</i>	白楸	6	130	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T1169	<i>Macaranga tanarius</i>	血桐	3	130	3	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1170	<i>Litsea glutinosa (Lour.) C. B. Rob.</i>	潺槁樹	3	130	2	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T1171	<i>Macaranga tanarius</i>	血桐	3	150	2	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T1172	<i>Macaranga tanarius</i>	血桐	8	250	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1173	<i>Macaranga tanarius</i>	血桐	7	150	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1174	<i>Macaranga tanarius</i>	血桐	7	95	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1175	<i>Litsea glutinosa (Lour.) C. B. Rob.</i>	潺槁樹	5	100	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T1176	<i>Sterculia lanceolata</i>	假蘋婆	6	136	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 80mm,110mm)
T1177	<i>Sterculia lanceolata</i>	假蘋婆	8	100	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1178	<i>Ficus hispida</i>	對葉榕	6	150	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1179	<i>Celtis sinensis</i>	朴樹	7	150	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T1180	<i>Ficus hispida</i>	對葉榕	10	130	7	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning; crooked trunk
T1181	<i>Schefflera heptaphylla</i>	鴨腳木	8	128	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (80mm,100mm)

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

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Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

T1182	<i>Macaranga tanarius</i>	血桐	6	100	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1183	<i>Mallotus paniculatus</i>	白楸	6	437	4	Poor	Fair	Poor	Poor	Low	On slope	N/A	Retain	AFCD	-	Large wound on trunk, triple trunks (dia. 170mm,200mm,350mm)
T1184	<i>Sterculia lanceolata</i>	假蘋婆	6	170	4	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (120mm,120mm); heavily vined
T1185	<i>Schefflera heptaphylla</i>	鴨腳木	8	200	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1186	<i>Phoenix loureiroi</i>	刺葵	5	250	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1187	<i>Sterculia lanceolata</i>	假蘋婆	6	160	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T1188	<i>Sterculia lanceolata</i>	假蘋婆	7	130	3	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T1189	<i>Sterculia lanceolata</i>	假蘋婆	6	150	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T1190	<i>Sterculia lanceolata</i>	假蘋婆	6	110	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1191	<i>Sterculia lanceolata</i>	假蘋婆	7	150	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 90mm,120mm)
T1192	<i>Sterculia lanceolata</i>	假蘋婆	9	180	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1193	<i>Sterculia lanceolata</i>	假蘋婆	9	110	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1194	<i>Sterculia lanceolata</i>	假蘋婆	8	130	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1195	<i>Sterculia lanceolata</i>	假蘋婆	8	110	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1196	<i>Litsea glutinosa (Lour.) C. B. Rob.</i>	潺槁樹	7	150	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1197	<i>Archidendron lucidum</i>	亮葉猴耳環	7	120	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T1198	<i>Sterculia lanceolata</i>	假蘋婆	8	110	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1199	<i>Mallotus paniculatus</i>	白楸	7	190	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-

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Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

T1200	<i>Sterculia lanceolata</i>	假蒺藜	6	120	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1201	<i>Bridelia tomentosa</i>	土蜜樹	7	198	4	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunk (dia. 140mm,140mm); vined
T1202	<i>Schefflera heptaphylla</i>	鴨腳木	5	191	5	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Triple trunks (dia. 100mm,110mm,120mm); heavily vined
T1203	<i>Ficus hispida</i>	對葉榕	6	228	5	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined; double trunks (dia. 110mm,200mm); wound on trunk
T1204	<i>Ficus hispida</i>	對葉榕	6	127	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunk (dia. 90mm,90mm); vined; broken branch
T1205	<i>Celtis sinensis</i>	朴樹	7	130	4	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T1206	<i>Celtis sinensis</i>	朴樹	6	110	5	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
T1207	<i>Celtis sinensis</i>	朴樹	6	110	4	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T1208	<i>Celtis sinensis</i>	朴樹	7	180	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1209	<i>Celtis sinensis</i>	朴樹	6	220	8	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1210	<i>Celtis sinensis</i>	朴樹	5	150	4	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning; heavily vined
T1211	<i>Macaranga tanarius</i>	血桐	6	130	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1212	<i>Macaranga tanarius</i>	血桐	7	100	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T1213	<i>Litsea glutinosa (Lour.) C. B. Rob.</i>	潺槁樹	6	130	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1214	<i>Mallotus paniculatus</i>	白楸	7	100	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1301	<i>Macaranga tanarius</i>	血桐	8	150	5	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T1302	<i>Macaranga tanarius</i>	血桐	7	110	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T1303	<i>Macaranga tanarius</i>	血桐	9	110	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-

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T1304	<i>Macaranga tanarius</i>	血桐	9	120	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1305	<i>Macaranga tanarius</i>	血桐	7	110	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1306	<i>Macaranga tanarius</i>	血桐	9	110	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T1307	<i>Mallotus paniculatus</i>	白楸	8	120	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1308	<i>Macaranga tanarius</i>	血桐	6	120	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1309	<i>Archidendron lucidum</i>	亮葉猴耳環	6	150	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1310	<i>Archidendron lucidum</i>	亮葉猴耳環	6	110	6	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1311	<i>Archidendron lucidum</i>	亮葉猴耳環	9	130	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1312	<i>Macaranga tanarius</i>	血桐	5	130	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1313	<i>Archidendron lucidum</i>	亮葉猴耳環	8	100	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1314	<i>Archidendron lucidum</i>	亮葉猴耳環	8	100	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1315	<i>Archidendron lucidum</i>	亮葉猴耳環	7	130	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1316	<i>Archidendron lucidum</i>	亮葉猴耳環	7	120	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1317	<i>Macaranga tanarius</i>	血桐	3	110	1	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T1318	<i>Archidendron lucidum</i>	亮葉猴耳環	7	130	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1319	<i>Archidendron lucidum</i>	亮葉猴耳環	3	120	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
T1320	<i>Macaranga tanarius</i>	血桐	6	110	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
T1321	<i>Archidendron lucidum</i>	亮葉猴耳環	7	140	6	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Bark crack

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

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T1322	<i>Macaranga tanarius</i>	血桐	6	110	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
T1323	<i>Ficus hispida</i>	對葉榕	7	100	4	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T1324	<i>Macaranga tanarius</i>	血桐	6	170	6	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
T1325	<i>Sterculia lanceolata</i>	假欖婆	7	250	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-

*Recommendation: All trees shall be retained within the Country Park area (no tree will be felled due to slope mitigation works).

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Tree No.	Species		Measurements			Amenity value	Form	Health condition	Structural condition	Suitability for transplanting		Conservation status	Recommendation* (Retain/Transplant/Fell)	Department to provide expert advice to LandsD	Justification	Additional Remarks
	Scientific name	Chinese name	height (m)	DBH (mm)	crown spread (m)					(good/fair/poor)						
U4	<i>Sterculia lanceolata</i>	假蒴婆	3	75	1	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily leaning
U6	<i>Sterculia lanceolata</i>	假蒴婆	7	90	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk; vined
U7	<i>Leucaena leucocephala</i>	銀合歡	6	94	2	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	Weed species	Leaning
U8	<i>Leucaena leucocephala</i>	銀合歡	5	90	2	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U10	<i>Leucaena leucocephala</i>	銀合歡	5	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U13	<i>Macaranga tanarius</i>	血桐	5	90	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
U14	<i>Leucaena leucocephala</i>	銀合歡	4	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U15	<i>Macaranga tanarius</i>	血桐	4	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
U17	<i>Leucaena leucocephala</i>	銀合歡	4	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U18	<i>Leucaena leucocephala</i>	銀合歡	4	92	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U19	<i>Macaranga tanarius</i>	血桐	4	80	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
U20	<i>Leucaena leucocephala</i>	銀合歡	2	75	1	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U21	<i>Macaranga tanarius</i>	血桐	2	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Leaning
U22	<i>Macaranga tanarius</i>	血桐	3	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
U23	<i>Leucaena leucocephala</i>	銀合歡	4	80	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U24	<i>Leucaena leucocephala</i>	銀合歡	4	90	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U25	<i>Leucaena leucocephala</i>	銀合歡	4	80	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk

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**Date of Tree Survey: December 2015 ~ March 2016**

**Surveyed by: Diana Chan (HK-0995A)**

U26	<i>Leucaena leucocephala</i>	銀合歡	5	80	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U28	<i>Leucaena leucocephala</i>	銀合歡	4	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Leaning
U29	<i>Leucaena leucocephala</i>	銀合歡	4	92	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Double trunks (dia. 70mm,60mm)
U30	<i>Leucaena leucocephala</i>	銀合歡	4	90	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U39	<i>Celtis sinensis</i>	朴樹	4	75	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
U49	<i>Acacia confusa</i>	台灣相思	3	90	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
U51	<i>Ficus hispida</i>	對葉榕	4	85	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
U61	<i>Leucaena leucocephala</i>	銀合歡	3	90	3	Poor	Poor	Poor	Poor	Low	-	N/A	Retain	CEDD	Weed species	Fungal fruiting bodies; heavily vined; uprooted; dead central leader
U104	<i>Leucaena leucocephala</i>	銀合歡	4	90	2	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	Weed species	Crooked trunk
U106	<i>Leucaena leucocephala</i>	銀合歡	3	75	2	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	Weed species	Crooked trunk
U110	<i>Leucaena leucocephala</i>	銀合歡	4	90	3	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	Weed species	Crooked trunk; large wound on trunk
U115	<i>Leucaena leucocephala</i>	銀合歡	4	90	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U128	<i>Ficus hispida</i>	對葉榕	3	75	2	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U129	<i>Macaranga tanarius</i>	血桐	4	75	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U130	<i>Macaranga tanarius</i>	血桐	4	80	3	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined; exposed root
U131	<i>Ficus hispida</i>	對葉榕	3	75	1	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk; leaning
U132	<i>Ficus hispida</i>	對葉榕	3	90	2	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
U144	<i>Macaranga tanarius</i>	血桐	4	90	3	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
U151	<i>Ficus hispida</i>	對葉榕	3	75	2	Poor	Poor	Fair	Poor	Low	-	N/A	Retain	AFCD	-	Leaning

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

Project Title: Topographical Survey and Tree survey at Tseung Kwan O Area 137 for Water Supplies Department

Date of Tree Survey: December 2015 ~ March 2016

Surveyed by: Diana Chan (HK-0995A)

U152	<i>Sterculia lanceolata</i>	假蒺藜	3	75	1	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
U165	<i>Leucaena leucocephala</i>	銀合歡	4	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Leaning
U166	<i>Ficus hispida</i>	對葉榕	2	80	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
U168	<i>Celtis sinensis</i>	朴樹	3	80	2	Fair	Fair	Fair	Fair	Low	-	N/A	Retain	AFCD	-	-
U169	<i>Leucaena leucocephala</i>	銀合歡	4	75	2	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Crooked trunk
U170	<i>Acacia confusa</i>	台灣相思	2	75	1	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	-	Crooked trunk
U174	<i>Leucaena leucocephala</i>	銀合歡	3	86	1	Poor	Poor	Fair	Fair	Low	-	N/A	Retain	AFCD	Weed species	Double trunks (dia. 50mm,70mm)
U832	<i>Macaranga tanarius</i>	血桐	3	75	2	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U833	<i>Ficus hispida</i>	對葉榕	4	75	2	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U834	<i>Ficus hispida</i>	對葉榕	5	90	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U835	<i>Schefflera heptaphylla</i>	鴨腳木	4	80	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Restricted root
U837	<i>Bridelia tomentosa</i>	土蜜樹	5	75	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Vined
U838	<i>Litsea glutinosa (Lour.) C. B. Rob.</i>	潺槁樹	7	90	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U839	<i>Schefflera heptaphylla</i>	鴨腳木	4	99	4	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	Double trunks (dia. 70mm,70mm); heavily vined
U840	<i>Sterculia lanceolata</i>	假蒺藜	5	90	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
U841	<i>Sterculia lanceolata</i>	假蒺藜	7	90	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U842	<i>Sterculia lanceolata</i>	假蒺藜	6	80	5	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U843	<i>Celtis sinensis</i>	朴樹	4	80	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Crooked trunk
U844	<i>Bridelia tomentosa</i>	土蜜樹	4	90	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-

**TREE ASSESSMENT SCHEDULE** (Site B - Country Park Area)

**Project Title: Topographical Survey and Tree survey at Tseung Kwan O Area 137 for Water Supplies Department**

**Date of Tree Survey: December 2015 ~ March 2016**

**Surveyed by: Diana Chan (HK-0995A)**

U845	<i>Sterculia lanceolata</i>	假蘇婆	4	90	3	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U900	<i>Macaranga tanarius</i>	血桐	4	80	2	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U901	<i>Sterculia lanceolata</i>	假蘇婆	6	90	4	Fair	Fair	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U902	<i>Macaranga tanarius</i>	血桐	6	80	3	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U903	<i>Macaranga tanarius</i>	血桐	6	90	4	Poor	Poor	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U904	<i>Archidendron lucidum</i>	亮葉猴耳環	5	90	3	Poor	Fair	Poor	Fair	Low	On slope	N/A	Retain	AFCD	-	-
U905	<i>Schefflera heptaphylla</i>	鴨腳木	5	80	2	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Heavily vined
U906	<i>Schefflera heptaphylla</i>	鴨腳木	5	90	3	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning
U907	<i>Macaranga tanarius</i>	血桐	5	80	4	Poor	Poor	Fair	Fair	Low	On slope	N/A	Retain	AFCD	-	Leaning

*Recommendation: All trees shall be retained within the Country Park area (no tree will be felled due to slope mitigation works).

**APPENDIX E**  
**SPECIES OF CONSERVATION IMPORTANCE**  
**IN ORIGINAL SCHEME OF SLOPE MITIGATION WORKS**

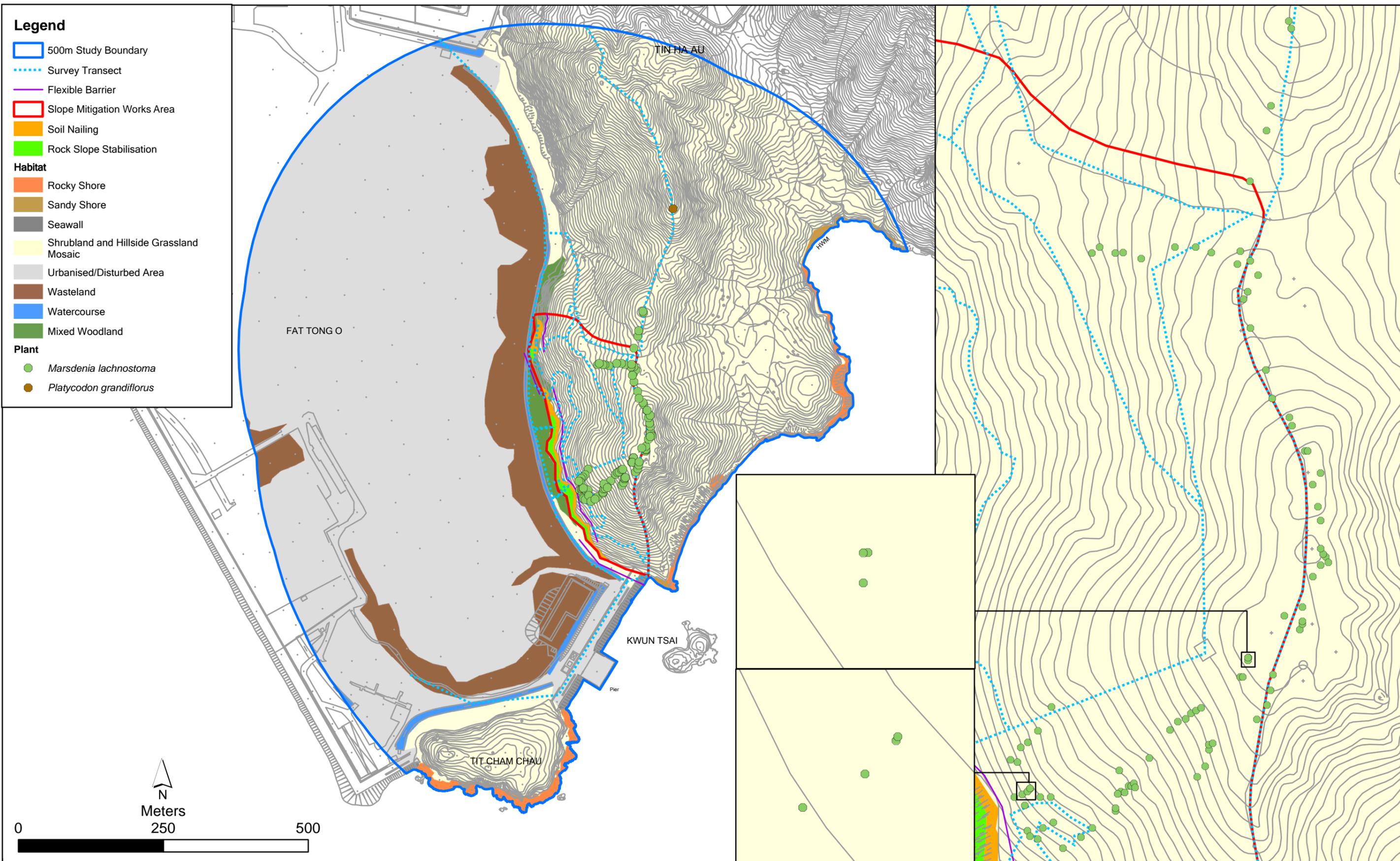


Figure 3.2

Study Area for Updated Vegetation Survey - Species of Conservation Importance (Original Slope Mitigation Works)



*Marsdenia lachnostoma*



*Platycodon grandiflorus*

**Annex A1 Relative Abundance of Plant Species Recorded Within the Study Area**

**Note:**

(1) Commonness as per Xing *et al.* Gymnosperms and angiosperms of Hong Kong. Memoirs of the Hong Kong Natural History Society (2000)

C = Common; VC = Very Common; P = Planted, VR = Very Rare, RA = Rare, RE = Restricted, NA = Not Applicable

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(3) Habitats: WL = Mixed Woodland, SG = Shrubland and Hillside Grassland Mosaic, UA = Urbanised/ Disturbed Area, WA = Wasteland and WC = Watercourse

(4) Relative abundance: 1 = scarce, 2 = common, 3 = abundant

Species Name	Chinese Name	Origin	Growth Form	Commonness ⁽¹⁾	Conservation Status ⁽²⁾	Habitat ⁽³⁾ ⁽⁴⁾					Slope Mitigation Works Area
						WL	SG	UA	WA	WC	
<i>Acacia auriculiformis</i>	耳果相思	Exotic	Tree	C, P		2			1		2
<i>Acacia confusa</i>	台灣相思	Exotic	Tree	C, P		1			1		1
<i>Acronychia pedunculata</i>	山油柑	Native	Tree	VC			1				1
<i>Adiantum flabellulatum</i>	扇葉鐵線蕨	Native	Herb	VC		1					1
<i>Adina pilulifera</i>	水團花	Native	Tree	VC		1					1
<i>Aeginetia indica</i>	野菰	Native	Herb	C		1					1
<i>Alangium chinense</i>	八角楓	Native	Tree	C		1					1
<i>Alocasia macrorrhizos</i>	海芋	Native	Herb	C		2			2		2
<i>Alpinia officinarum</i>	高良薑	Native	Herb	RE			3				3
<i>Alpinia zerumbet</i>	艷山薑	Native	Herb	VC		3					3
<i>Alternanthera paronychioides</i>	星星蝦鉗菜	Exotic	Herb	NA					3		3
<i>Alyxia sinensis</i>	鏈珠藤	Native	Climber	C		1					1
<i>Ampelopsis heterophylla</i>	牯嶺蛇葡萄	Native	Climber	C		2					2
<i>Aporosa dioica</i>	銀柴	Native	Tree	VC		2					2
<i>Archidendron clypearia</i>	猴耳環	Native	Tree	C		1					1
<i>Asparagus densiflorus</i>	非洲天門冬	Exotic	Climber	C		2	1				2
<i>Atalantia buxifolia</i>	酒餅筍	Native	Shrub	C		1					1
<i>Baeckea frutescens</i>	崗松	Native	Shrub	VC		1	2				1
<i>Bidens alba</i>	白花鬼針草	Exotic	Herb	VC		1	2	2	2		2
<i>Blechnum orientale</i>	烏毛蕨	Native	Herb	VC		1	1				1
<i>Boehmeria nivea</i>	苧麻	Exotic	Shrub	C				1	2		
<i>Breynia fruticosa</i>	黑面神	Native	Shrub	VC			1				1
<i>Bridelia insulana (Bridelia balansae)</i>	禾串樹	Native	Tree	C		1					
<i>Bridelia tomentosa</i>	土蜜樹	Native	Shrub	VC		1	1				1
<i>Cajanus scarabaeoides</i>	蔓草蟲豆	Native	Climber	C			1				1
<i>Casuarina equisetifolia</i>	木麻黃	Exotic	Tree	C				1	1		
<i>Cayratia corniculata</i>	角花烏蘘莓	Native	Climber	VC		1					1
<i>Celtis sinensis</i>	朴樹	Native	Tree	C, P		2	1				2

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(4) Relative abundance: 1 = scarce, 2 = common, 3 = abundant

Species Name	Chinese Name	Origin	Growth Form	Commonness ⁽¹⁾	Conservation Status ⁽²⁾	Habitat ^{(3) (4)}					Slope Mitigation Works Area
						WL	SG	UA	WA	WC	
<i>Cerbera manghas</i>	海杧果	Native	Tree	C					1		1
<i>Chloris barbata</i>	孟仁草	Native	Herb	VC				1	1		
<i>Choerospondias axillaris</i>	南酸棗	Native	Tree	C		1					1
<i>Cinnamomum camphora</i>	樟	Native	Tree	C, P		1					1
<i>Cleistocalyx nervosum</i>	水翁	Native	Tree	VC		1					1
<i>Cratogeomys cochinchinense</i>	黃牛木	Native	Tree	VC		1	1				1
<i>Cyclosorus acuminatus</i>	漸尖毛蕨	Native	Herb	VC		1	1		1		1
<i>Cyrtococcum patens</i>	弓果黍	Native	Herb	VC		2		1	1		2
<i>Dalbergia benthamii</i>	兩廣黃檀	Native	Climber	C		1	2				1
<i>Dalbergia hancei</i>	藤黃檀	Native	Climber	C		1	1				1
<i>Daphniphyllum calycinum</i>	牛耳楓	Native	Tree	C			1				1
<i>Desmos chinensis</i>	假鷹爪	Native	Shrub	C		1					1
<i>Dianella ensifolia</i>	山菅蘭	Native	Herb	VC			1				1
<i>Dicranopteris pedata</i>	芒萁	Native	Herb	C			3				3
<i>Elaeocarpus chinensis</i>	中華杜英	Native	Tree	C		1					1
<i>Elaeagnus loureirii</i>	羅氏胡頹子	Native	Climber/ Shrub	C			1				
<i>Embelia laeta</i>	酸藤子	Native	Climber	VC			3				3
<i>Emilia sonchifolia</i>	一點紅	Native	Herb	VC				1	1		
<i>Eriosema chinense</i>	雞頭薯	Native	Herb	C			2				2
<i>Eucalyptus citriodora</i>	檸檬桉	Exotic	Tree	C				1	1		
<i>Eucalyptus robusta</i>	大葉桉	Exotic	Tree	C				1	1		
<i>Eurya nitida</i>	細齒葉柃	Native	Shrub	VC		1	1				1
<i>Ficus hirta</i>	粗葉榕	Native	Shrub	C		2					2
<i>Ficus hispida</i>	對葉榕	Native	Tree	VC		3	1				3
<i>Ficus microcarpa</i>	細葉榕	Native	Tree	C		1			1		1
<i>Ficus subpisocarpa</i>	筆管榕	Native	Tree	C		1					1
<i>Ficus variegata</i>	青果榕	Native	Tree	C		1					1
<i>Ficus variolosa</i>	變葉榕	Native	Tree	VC		1					1
<i>Gahnia tristis</i>	黑莎草	Native	Herb	VC			1				1

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						WL	SG	UA	WA	WC	
<i>Garcinia oblongifolia</i>	嶺南山竹子	Native	Tree	VC		1					1
<i>Gardenia jasminoides</i>	梔子	Native	Shrub	VC		1	1				1
<i>Glochidion eriocarpum</i>	毛果算盤子	Native	Shrub	C			1				1
<i>Glochidion lanceolarium</i>	艾膠算盤子	Native	Tree	C			1				1
<i>Glochidion puberum</i>	算盤子	Native	Shrub	RE			1				1
<i>Gnetum luofuense</i>	羅浮買麻藤	Native	Climber	VC		1	2				2
<i>Gymnanthera oblonga</i>	海島藤	Native	Climber	C				1	1		1
<i>Helicteres angustifolia</i>	山芝麻	Native	Herb	VC			2				2
<i>Homalium cochinchinense</i>	天料木	Native	Tree	C		1	1				1
<i>Ilex asprella</i>	梅葉冬青	Native	Shrub	VC		1	1				1
<i>Ilex pubescens</i>	毛冬青	Native	Shrub	VC		1	1				1
<i>Imperata cylindrica</i>	大白茅	Native	Herb	C				3	3		3
<i>Ipomoea cairica</i>	五爪金龍	Exotic	Climber	VC				1	1		1
<i>Ipomoea nil</i>	牽牛	Exotic	Climber	C			1		3		3
<i>Itea chinensis</i>	鼠刺	Native	Shrub	VC		1					1
<i>Lantana camara</i>	馬纓丹	Exotic	Shrub	VC		1	1		1		1
<i>Leucaena leucocephala</i>	銀合歡	Exotic	Tree	C		3		1	3		3
<i>Ligustrum sinense</i>	山指甲	Native	Tree	C		1			1		1
<i>Liquidambar formosana</i>	楓香	Native	Tree	C		1					1
<i>Liriope spicata</i>	山麥冬	Native	Herb	VC		1	1				1
<i>Litsea glutinosa</i>	潺槁樹	Native	Tree	C		3	2				3
<i>Litsea rotundifolia</i>	豺皮樟	Native	Shrub	VC		1	1				1
<i>Lophatherum gracile</i>	淡竹葉	Native	Herb	VC		2			2		2
<i>Lygodium japonicum</i>	海金沙	Native	Herb	VC		1	2				2
<i>Macaranga tanarius</i>	血桐	Native	Tree	C		3		2	2		3
<i>Machilus velutina</i>	絨毛潤楠	Native	Tree	C		1					1
<i>Maesa perlaris</i>	鯽魚膽	Native	Shrub	C		1					1
<i>Mallotus paniculatus</i>	白楸	Native	Tree	C		3	2				3
<i>Marsdenia lachnostoma</i>	毛喉牛奶菜	Native	Climber	VR	CR		3				3

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Species Name	Chinese Name	Origin	Growth Form	Commonness ⁽¹⁾	Conservation Status ⁽²⁾	Habitat ^{(3) (4)}					Slope Mitigation Works Area
						WL	SG	UA	WA	WC	
<i>Melastoma sanguineum</i>	毛荳	Native	Shrub	C		1	1				1
<i>Melicope pteleifolia</i>	密茱萸	Native	Shrub	C		1					1
<i>Melodinus suaveolens</i>	山橙	Native	Climber	C		1					1
<i>Mikania micrantha</i>	薇甘菊	Exotic	Climber	C		2	2	1	2		3
<i>Millettia nitida</i>	亮葉崖豆藤	Native	Climber	VC		1	1				1
<i>Millettia speciosa</i>	美麗崖豆藤	Native	Climber	C		1	1				1
<i>Miscanthus floridulus</i>	五節芒	Native	Herb	C		2	3	1	3		3
<i>Morinda parvifolia</i>	雞眼藤	Native	Climber	VC			2				1
<i>Mussaenda pubescens</i>	玉葉金花	Native	Climber	VC		2	2				2
<i>Neyraudia reynaudiana</i>	類蘆	Native	Herb	C				2	3		3
<i>Oxalis corniculata</i>	酢漿草	Native	Herb	VC				1	1		1
<i>Oxalis corymbosa</i>	紅花酢漿草	Exotic	Herb	C				1	1		1
<i>Osbeckia chinensis</i>	金錦香	Native	Herb	C			1				1
<i>Paederia scandens</i>	雞矢藤	Native	Climber	VC		1	2		1		1
<i>Pallinhaea cernua</i>	鋪地蜈蚣	Native	Herb	VC			1				1
<i>Pandanus tectorius</i>	露兜樹	Native	Shrub	VC		1	1				1
<i>Panicum maximum</i>	大黍	Exotic	Herb	C			1	1	1		1
<i>Parthenocissus dalzielii</i>	爬牆虎	Exotic	Climber	P		1					1
<i>Passiflora foetida</i>	龍珠果	Exotic	Climber	C			1				1
<i>Phoenix hanceana</i>	刺葵	Native	Tree	C		2	1				2
<i>Phyllanthus cochinchinensis</i>	越南葉下珠	Native	Shrub	C		1	1				1
<i>Phyllanthus emblica</i>	餘甘子	Native	Tree	VC			2				2
<i>Platycodon grandiflorus</i>	桔梗	Native	Herb	RE	Cap.96; LC		1				
<i>Psychotria asiatica</i>	九節	Native	Tree	C		2	1				2
<i>Psychotria serpens</i>	蔓九節	Native	Climber	VC			2				2
<i>Pteris semipinnata</i>	半邊旗	Native	Herb	VC		3	1				3
<i>Pueraria phaseoloides</i>	三裂葉野葛	Native	Climber	VC		2	1				2
<i>Rhaphiolepis indica</i>	石斑木	Native	Shrub	VC			1				1
<i>Rhodomyrtus tomentosa</i>	桃金娘	Native	Shrub	VC		2	3				3

**Note:**

(1) Commonness as per Xing *et al.* Gymnosperms and angiosperms of Hong Kong. Memoirs of the Hong Kong Natural History Society (2000)

C = Common; VC = Very Common; P =Planted, VR = Very Rare, RA= Rare, RE = Restricted, NA = Not Applicable

(2) AFCD (2003) Rare and Precious Plants of Hong Kong

Listed in China Red Plant Databook (1992): LC = Least Concern; CR = Critically Endangered;

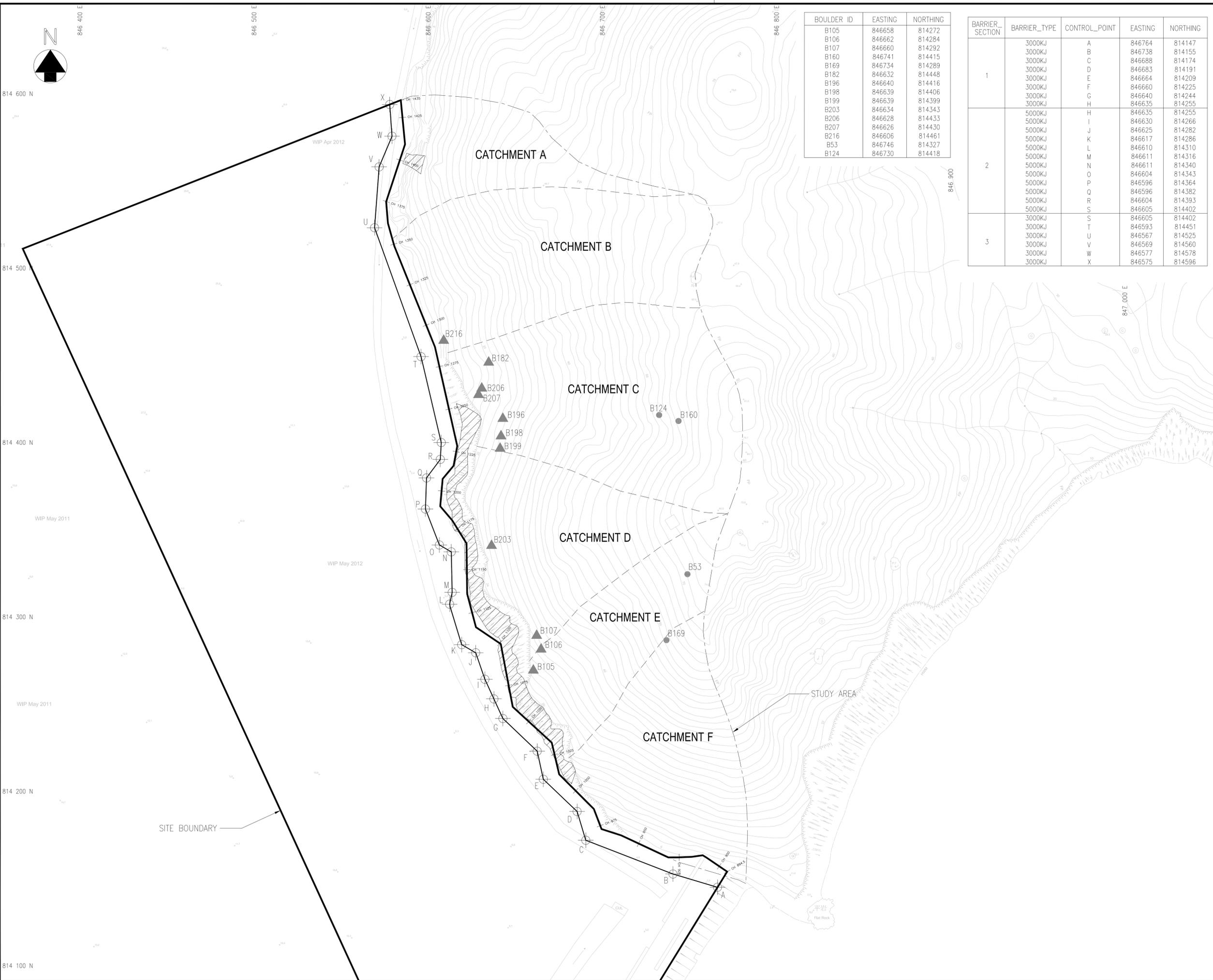
Cap. 96 = Listed in the Forests and Countryside Ordinance.

(3) Habitats: WL = Mixed Woodland, SG = Shrubland and Hillside Grassland Mosaic, UA = Urbanised/ Disturbed Area, WA = Wasteland and WC = Watercourse

(4) Relative abundance: 1 = scarce, 2 = common, 3 = abundant

Species Name	Chinese Name	Origin	Growth Form	Commonness ⁽¹⁾	Conservation Status ⁽²⁾	Habitat ⁽³⁾ ⁽⁴⁾					Slope Mitigation Works Area
						WL	SG	UA	WA	WC	
<i>Rhus hypoleuca</i>	白背漆	Native	Shrub	C		2	2				2
<i>Rhus succedanea</i>	野漆	Native	Shrub	C		2	2				2
<i>Rubus reflexus</i>	鑷毛莓	Native	Climber	VC		1	1		1		1
<i>Sapium discolor</i>	山烏柏	Native	Tree	VC		1	1				1
<i>Sapium sebiferum</i>	烏柏	Native	Tree	C		2	1				2
<i>Schefflera heptaphylla</i>	鵝掌柴	Native	Tree	C		2	2				2
<i>Schima superba</i>	木荷	Native	Tree	C		1					1
<i>Smilax china</i>	菝葜	Native	Climber	VC		1	2				2
<i>Smilax glabra</i>	土茯苓	Native	Climber	VC		1	1				1
<i>Solena amplexicaulis</i>	茅瓜	Native	Climber	VC			2				1
<i>Sterculia lanceolata</i>	假蘋婆	Native	Tree	C		3	1				3
<i>Strophanthus divaricatus</i>	羊角拗	Native	Climber	C			1				1
<i>Syzygium jambos</i>	蒲桃	Exotic	Tree	C		1					1
<i>Syzygium levinei</i>	山蒲桃	Native	Tree	C		1					1
<i>Tadehagi triquetrum</i>	葫蘆茶	Native	Shrub	VC			1				1
<i>Tetracera asiatica</i>	錫葉藤	Native	Climber	VC		1					1
<i>Tylophora ovata</i>	娃兒藤	Native	Climber	C		1					1
<i>Viburnum odoratissimum</i>	珊瑚樹	Native	Shrub	VC		1					1
<i>Vitis balanseana</i>	小果葡萄	Native	Climber	RE			2				2
<i>Vitis bryoniiifolia</i>	襲菓	Native	Climber	RA			1				2
<i>Vitis rotundifolia</i>	綿毛葡萄	Native	Climber	C		1	1				1
<i>Wikstroemia indica</i>	了哥王	Native	Shrub	C			1				1
<i>Zanthoxylum avicennae</i>	筲欖花椒	Native	Tree	C		1					1
<i>Zanthoxylum nitidum</i>	兩面針	Native	Climber	VC		1	1				1
<b>Total Number of Species:</b>		<b>139</b>				<b>93</b>	<b>80</b>	<b>19</b>	<b>32</b>	<b>0</b>	<b>130</b>

**APPENDIX F**  
**DESIGN DRAWINGS FOR THE REVISED SLOPE MITIGATION WORK**



BOULDER ID	EASTING	NORTHING
B105	846658	814272
B106	846662	814284
B107	846660	814292
B160	846741	814415
B169	846734	814289
B182	846632	814448
B196	846640	814416
B198	846639	814406
B199	846639	814399
B203	846634	814343
B206	846628	814433
B207	846626	814430
B216	846606	814461
B53	846746	814327
B124	846730	814418

BARRIER_SECTION	BARRIER_TYPE	CONTROL_POINT	EASTING	NORTHING
1	3000KJ	A	846764	814147
	3000KJ	B	846738	814155
	3000KJ	C	846688	814174
	3000KJ	D	846683	814191
	3000KJ	E	846664	814209
	3000KJ	F	846660	814225
	3000KJ	G	846640	814244
	3000KJ	H	846635	814255
2	5000KJ	I	846630	814266
	5000KJ	J	846625	814282
	5000KJ	K	846617	814286
	5000KJ	L	846610	814310
	5000KJ	M	846611	814316
	5000KJ	N	846611	814340
	5000KJ	O	846604	814343
	5000KJ	P	846596	814364
	5000KJ	Q	846596	814382
	5000KJ	R	846604	814393
3	3000KJ	S	846605	814402
	3000KJ	T	846593	814451
	3000KJ	U	846567	814525
	3000KJ	V	846569	814560
	3000KJ	W	846577	814578
	3000KJ	X	846575	814596

- NOTES:**
- EXTENTS OF WORKS AS SHOWN ARE TENTATIVE ONLY.
  - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 190495/B/DD/00-20001 TO 20011, 30001 TO 30004.
  - SETTING OUT COORDINATES ARE BASED ON HK GRID REFERENCE.
  - SETTING-OUT POINTS OF FLEXIBLE BARRIER ARE TENTATIVE. DIMENSIONS OF LENGTH, SEPARATION AND OVERLAP OF THE FLEXIBLE BARRIER SECTIONS SHALL BE SUBJECT TO THE MANUFACTURER'S RECOMMENDATION.

- LEGEND:**
- PROPOSED BOULDER TO BE IN-SITU BROKEN OFF INTO PIECES WITH ALL DIMENSIONS LESS THAN 1m AND DEPOSITED IN STABLE CONDITION
  - ▲ PROPOSED BOULDER TO BE REMOVED
  - ▨ PROPOSED ROCK SLOPE IMPROVEMENT/STABILISATION WORKS (REFER TO DRG. NO. 190495/B/DD/00-20001 TO 20011)
  - PROPOSED 4m HIGH FLEXIBLE BARRIER

Revision	Date	Description			Initial
		Designed	Checked	Drawn	Checked
Initial		KK	CKH	SZ	WLS
Date	03/17	03/17	03/17	03/17	03/17

Approved

Agreement No.  
CE 8/2015 (WS)

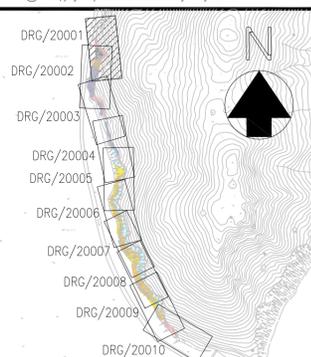
Contract Title  
FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title  
PROPOSED SLOPE MITIGATION WORKS

Drawing No. 190495/B/DD/00-10001

Scale A1 1 : 1000  
A3 1 : 2000





KEY PLAN

N.T.S.

MAP NOS. 12SW11D, 12SW12C, 12SW16B & 12SW17A

NOTE:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 190495/B/DD/ 00-10001, 20002 TO 20011 AND 30001 TO 30003.

LEGEND:

- GEOLOGICAL PROFILE (ESTIMATED)
- v- BREAK SLOPE FACE (ESTIMATED)
- R/S- ROCK/SOIL INTERFACE (ESTIMATED)
- LANDSLIDE DEBRIS TO BE CLEARED AND FOLLOWED BY ROCK SLOPE MAPPING (INDICATIVE)
- UNDERSIZE TREE (INDICATIVE)
- TREE (INDICATIVE)
- POTENTIAL UNSTABLE ROCK BLOCK AS OBSERVED ON SITE (INDICATIVE)
- 216 MEASURED ROCK JOINT AND ROCK JOINT NUMBER
- PROPOSED ROCK DOWEL
- POTENTIAL UNSTABLE ROCK BLOCK AS OBSERVED ON SITE WITH PROPOSED SCALING (INDICATIVE)
- PROPOSED WIRE MESH COVER AFTER GENERAL SCALING (WITH OPENING TO TREES TO BE RETAINED)
- PROPOSED DENTITION (WITH STONE FACING)
- PROPOSED BUTTRASS (WITH STONE FACING)

Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial	YLC	CKH	SZ	WLS	
Date	04/16	04/16	04/16	04/16	04/16

Approved

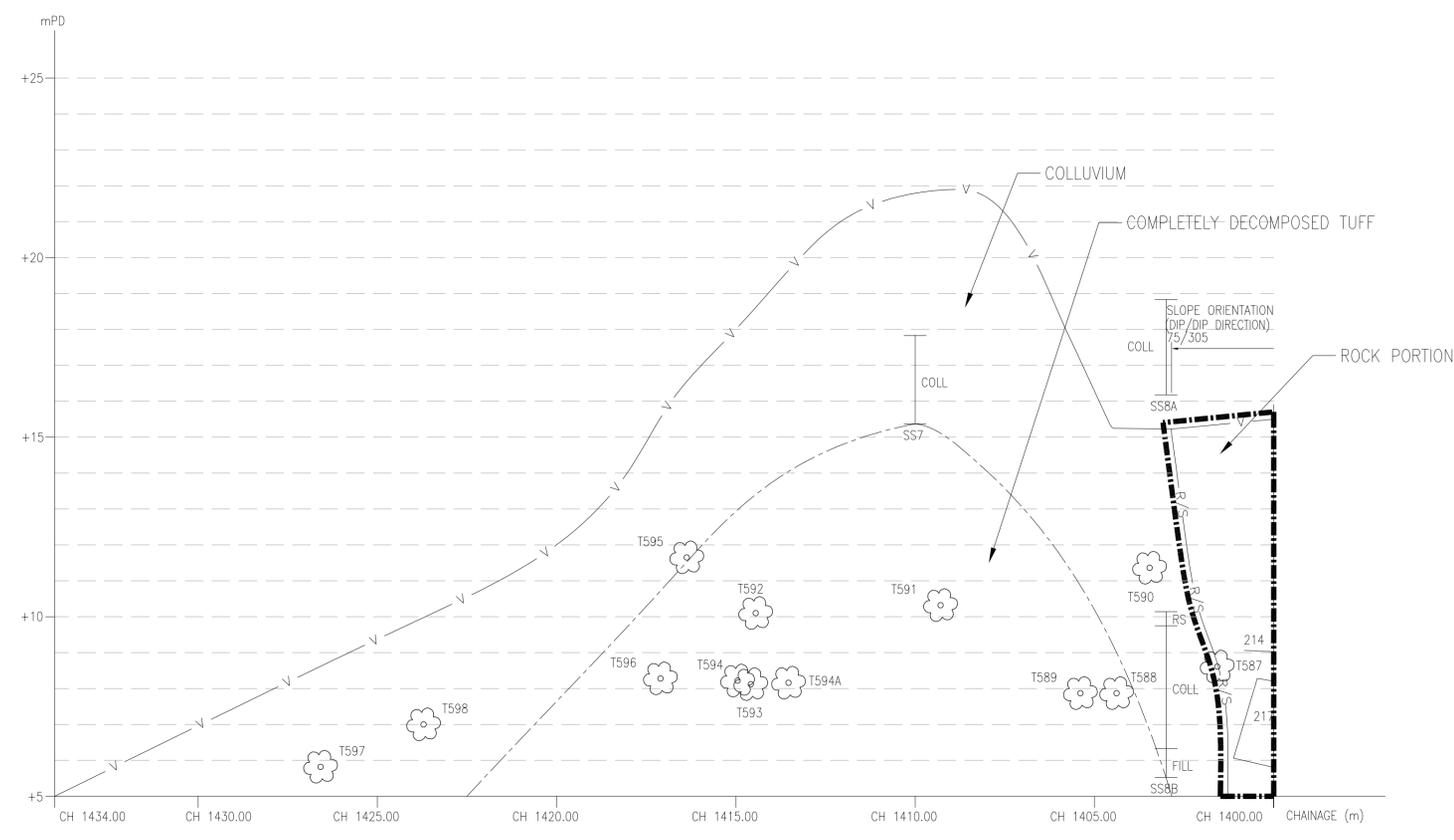
Agreement No. CE 8/2015 (WS)

Contract Title  
FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O - INVESTIGATION, DESIGN AND CONSTRUCTION

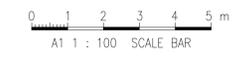
Drawing Title  
ROCK SLOPE ELEVATION (CH1434 - CH1400)

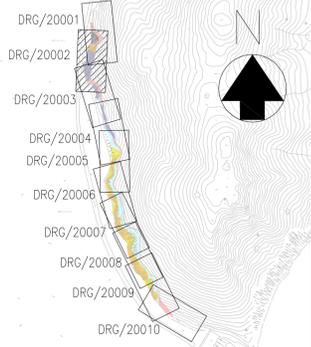
Drawing No. 190495/B/DD/00-20001

Scale AS SHOWN



ELEVATION  
SCALE A1 1:100  
A3 1:200

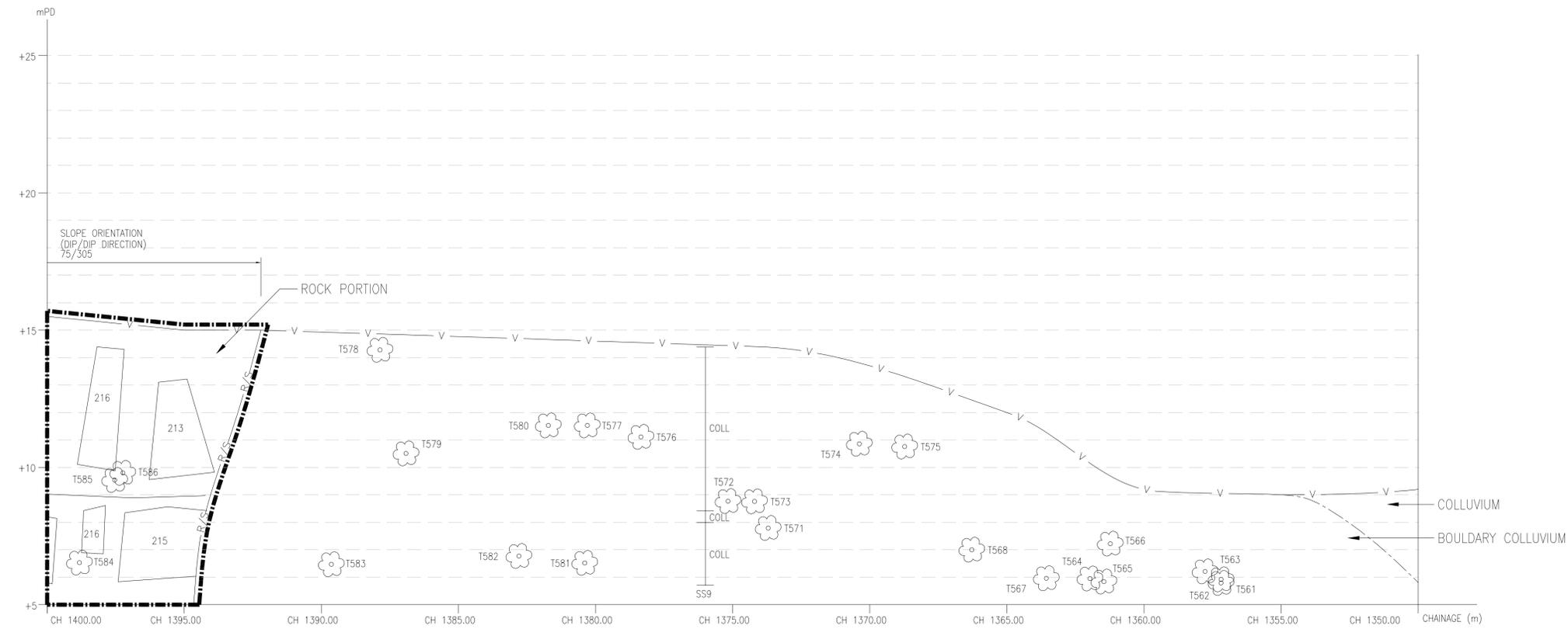




**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

**NOTE:**  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20001.



**ELEVATION**  
SCALE A1 1:100  
A3 1:200

Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial	YLC	CKH	SZ	WLS	
Date	04/16	04/16	04/16	04/16	04/16

Approved

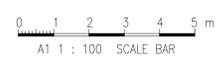
Agreement No. CE 8/2015 (WS)

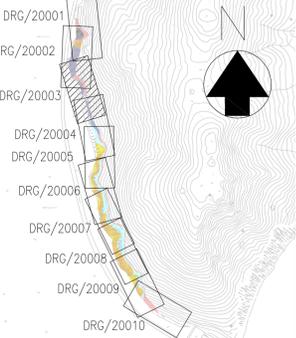
Contract Title  
FIRST STAGE OF  
DESALINATION PLANT AT  
TSEUNG KWAN O - INVESTIGATION,  
DESIGN AND CONSTRUCTION

Drawing Title  
ROCK SLOPE ELEVATION  
(CH1400 - CH1350)

Drawing No. 190495/B/DD/00-20002	Revision -
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Scale AS SHOWN

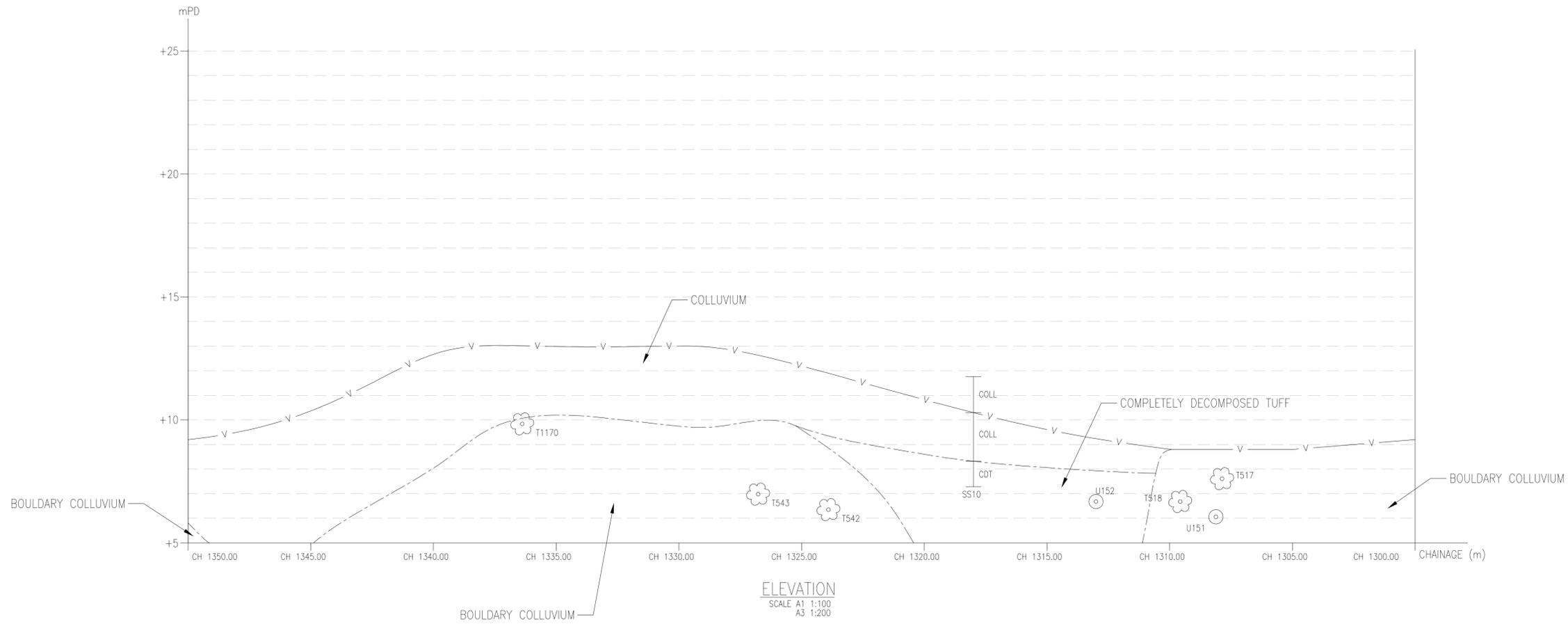




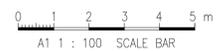
**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

**NOTE:**  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20001.



**ELEVATION**  
SCALE A1 1:100  
A3 1:200



Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial		YLC	CKH	SZ	WLS
Date	04/16	04/16	04/16	04/16	04/16

Approved

Agreement No. CE 8/2015 (WS)

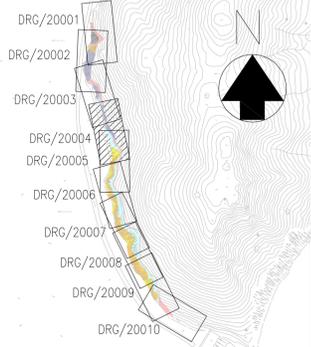
Contract Title  
FIRST STAGE OF  
DESALINATION PLANT AT  
TSEUNG KWAN O - INVESTIGATION,  
DESIGN AND CONSTRUCTION

Drawing Title  
ROCK SLOPE ELEVATION  
(CH1350 - CH1300)

Drawing No. 190495/B/DD/00-20003	Revision -
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Scale AS SHOWN

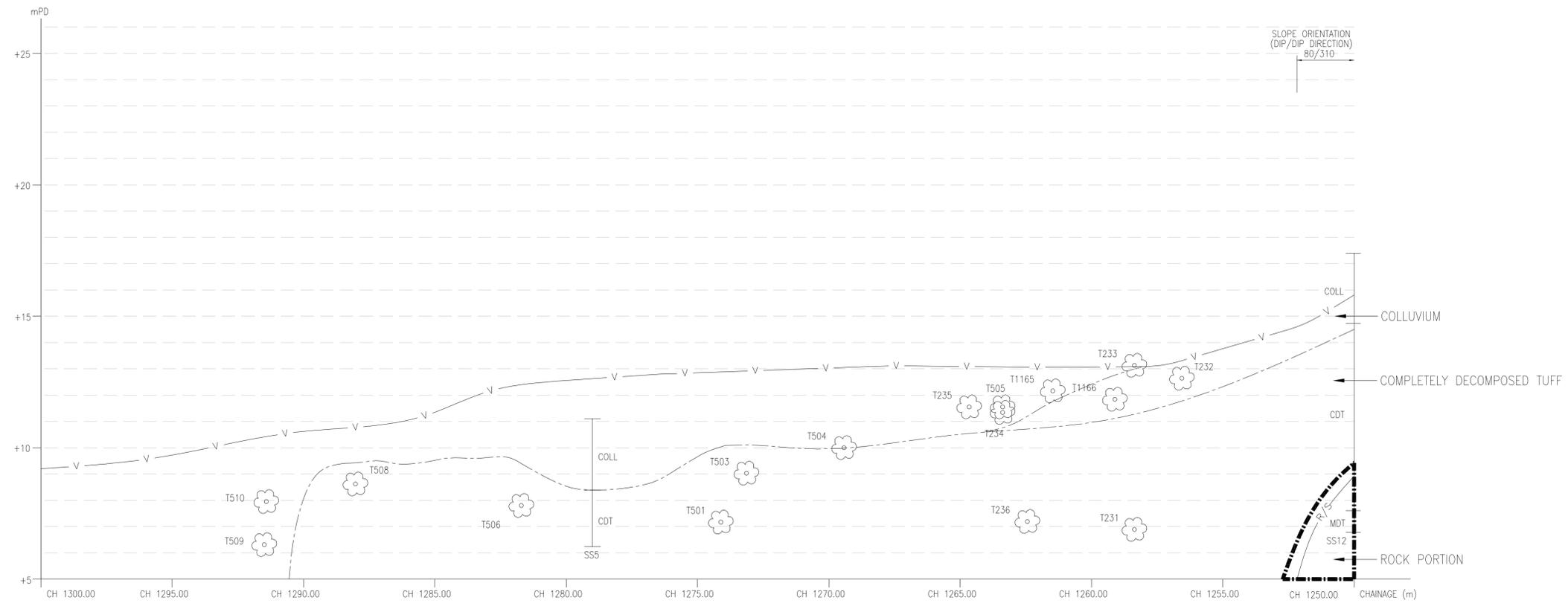




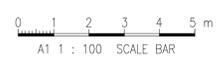
**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

**NOTE:**  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20001.



**ELEVATION**  
SCALE A1 1:100  
A3 1:200



Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial	YLC	CKH	SZ	WLS	
Date	04/16	04/16	04/16	04/16	04/16

Approved

Agreement No. CE 8/2015 (WS)

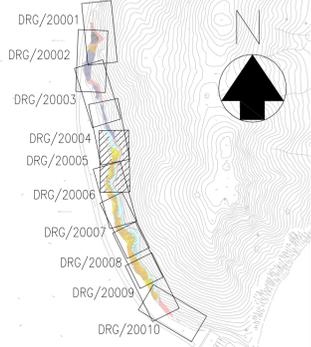
Contract Title  
FIRST STAGE OF  
DESALINATION PLANT AT  
TSEUNG KWAN O - INVESTIGATION,  
DESIGN AND CONSTRUCTION

Drawing Title  
ROCK SLOPE ELEVATION  
(CH1300 - CH1250)

Drawing No. 190495/B/DD/00-20004	Revision -
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Scale AS SHOWN

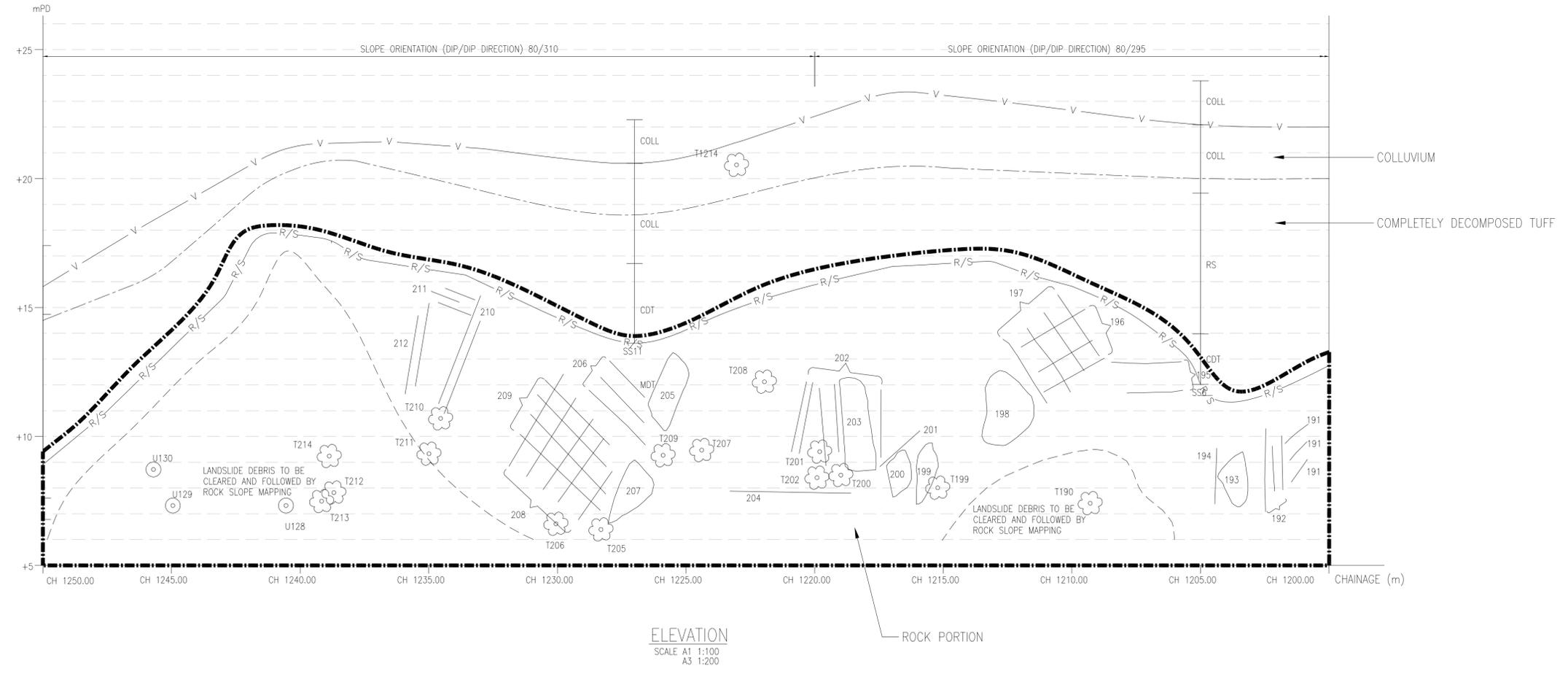




**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

**NOTE:**  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20001.



Revision	Date	Description			Initial
		Designed	Checked	Drawn	
		YLC	CKH	SZ	WLS
Date	04/16	04/16	04/16	04/16	04/16

Approved

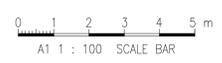
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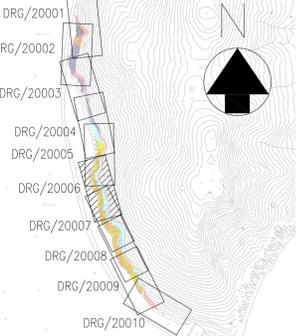
Contract Title  
FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title  
ROCK SLOPE ELEVATION (CH1250 - CH1200)

Drawing No. 190495/B/DD/00-20005	Revision -
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Scale AS SHOWN





**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

NOTE:  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20006.

Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial	YLC	CKH	SZ	WLS	
Date	04/16	04/16	04/16	04/16	04/16

Approved

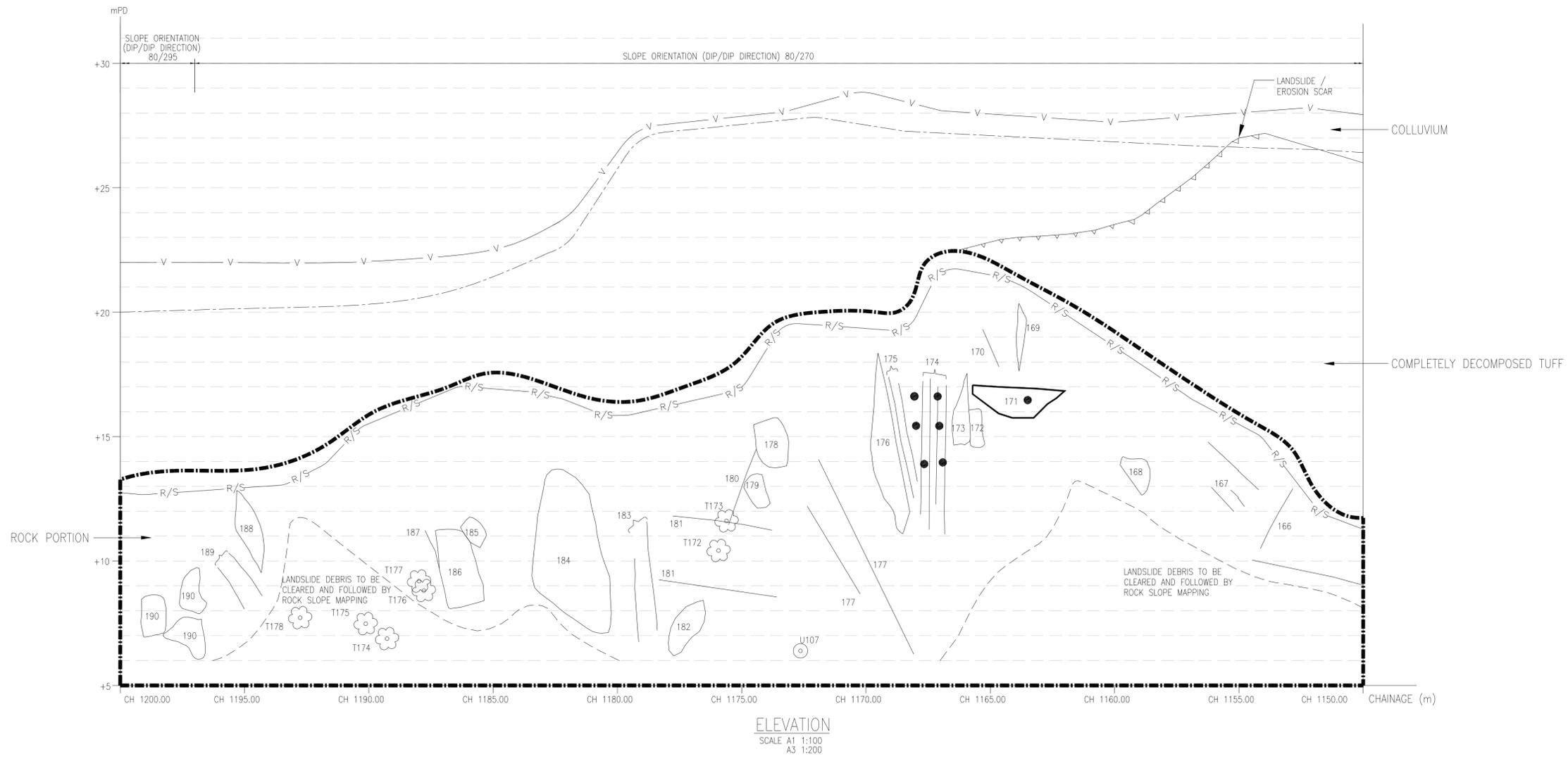
Agreement No. CE 8/2015 (WS)

Contract Title  
FIRST STAGE OF  
DESALINATION PLANT AT  
TSEUNG KWAN O - INVESTIGATION,  
DESIGN AND CONSTRUCTION

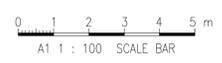
Drawing Title  
ROCK SLOPE ELEVATION  
(CH1200 - CH1150)

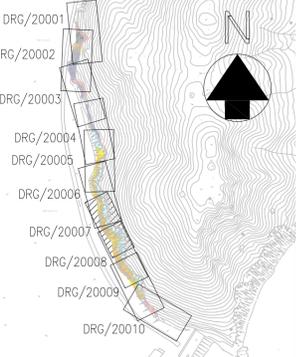
Drawing No. 190495/B/DD/00-20006	Revision -
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Scale AS SHOWN



ELEVATION  
SCALE A1 1:100  
A3 1:200

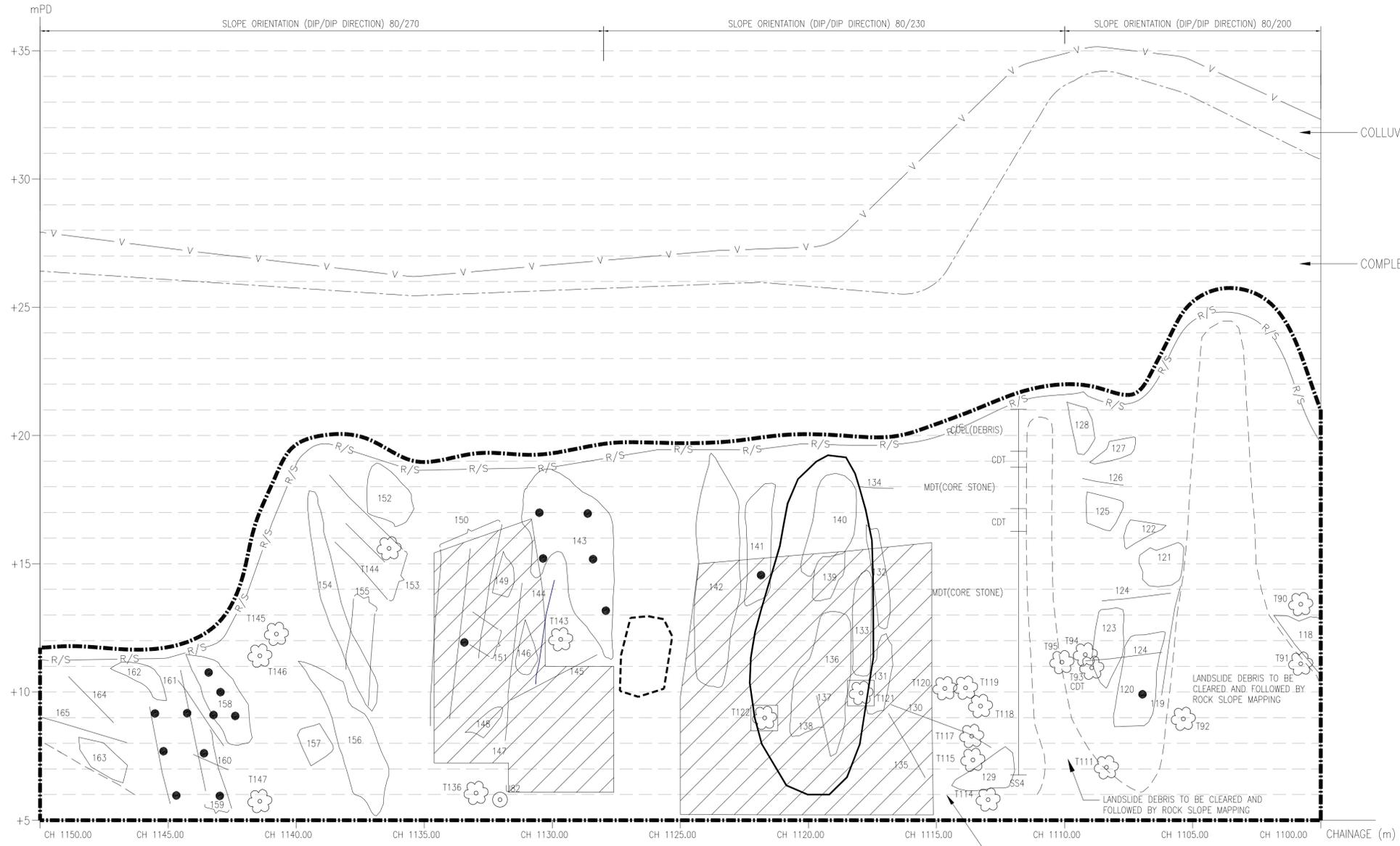




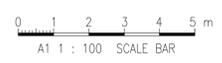
**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

**NOTE:**  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20001.



**ELEVATION**  
SCALE A1 1:100  
A3 1:200



Revision	Date	Description			Initial
		Designed	Checked	Drawn	
		YLC	CKH	SZ	WLS
Date	04/16	04/16	04/16	04/16	04/16

Approved

Agreement No. CE 8/2015 (WS)

Contract Title  
FIRST STAGE OF  
DESALINATION PLANT AT  
TSEUNG KWAN O - INVESTIGATION,  
DESIGN AND CONSTRUCTION

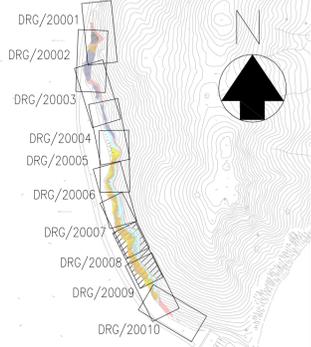
Drawing Title  
ROCK SLOPE ELEVATION  
(CH1150 - CH1100)

Drawing No. 190495/B/DD/00-20007	Revision -
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Scale AS SHOWN



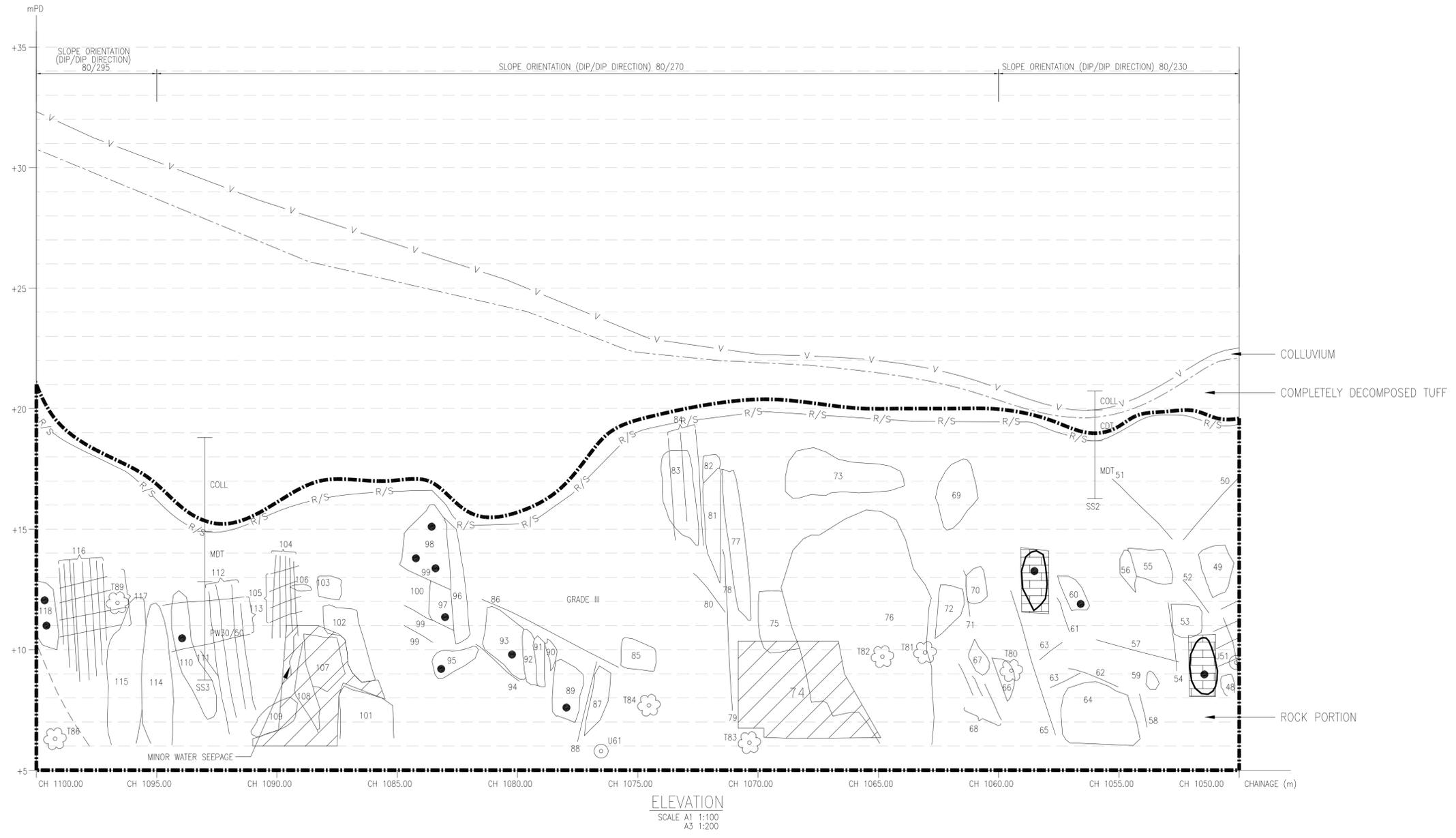
**BLACK & VEATCH HONG KONG LIMITED**  
博威工程顧問有限公司



**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

**NOTE:**  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20001.



Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial	YLC	CKH	SZ	WLS	
Date	04/16	04/16	04/16	04/16	04/16

Approved

Agreement No. CE 8/2015 (WS)

Contract Title  
FIRST STAGE OF  
DESALINATION PLANT AT  
TSEUNG KWAN O - INVESTIGATION,  
DESIGN AND CONSTRUCTION

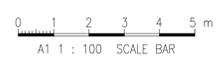
Drawing Title  
ROCK SLOPE ELEVATION  
(CH1100 - CH1050)

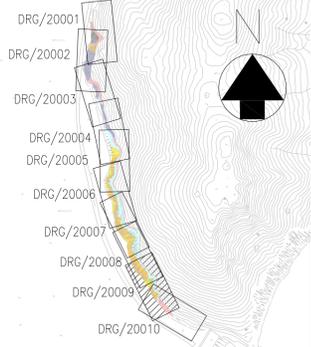
Drawing No. 190495/B/DD/00-20008	Revision -
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Scale AS SHOWN



BLACK & VEATCH HONG KONG LIMITED  
博威工程顧問有限公司

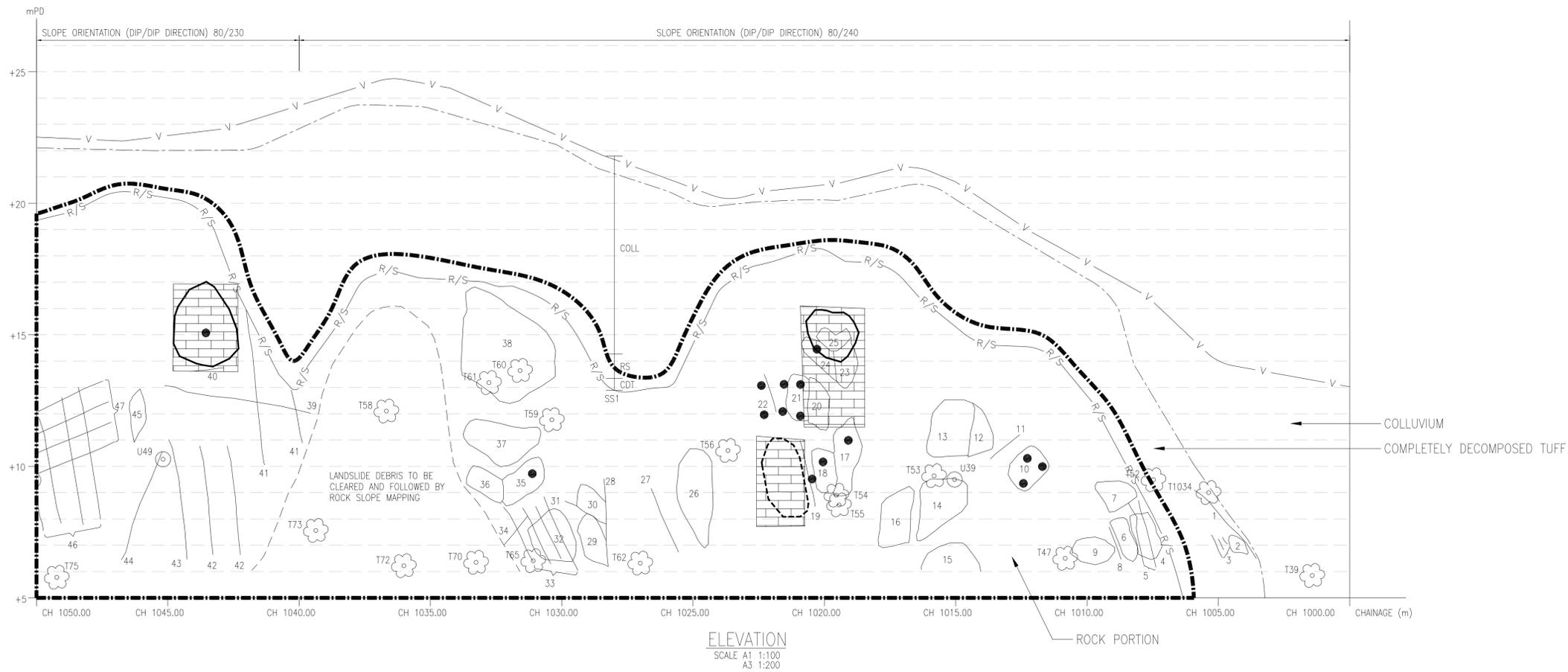




**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

**NOTE:**  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20001.



Revision	Date	Description			Initial
		Designed	Checked	Drawn	
		YLC	CKH	SZ	WLS
Date	04/16	04/16	04/16	04/16	04/16

Approved

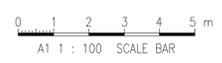
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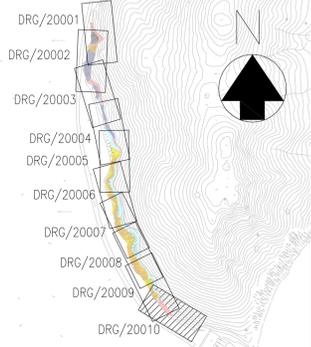
Contract Title  
FIRST STAGE OF  
DESALINATION PLANT AT  
TSEUNG KWAN O - INVESTIGATION,  
DESIGN AND CONSTRUCTION

Drawing Title  
ROCK SLOPE ELEVATION  
(CH1050 - CH1000)

Drawing No. 190495/B/DD/00-20009	Revision -
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Scale AS SHOWN





**KEY PLAN**  
N.T.S.

MAP NOS. 12SW11D, 12SW12C,  
12SW16B & 12SW17A

**NOTE:**  
1. ALL LEGEND AND NOTES REFER TO DRAWING NO. 190495/B/DD/00-20001.

Revision	Date	Description			Initial
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Initial		YLC	CKH	SZ	WLS
Date	04/16	04/16	04/16	04/16	04/16

Approved

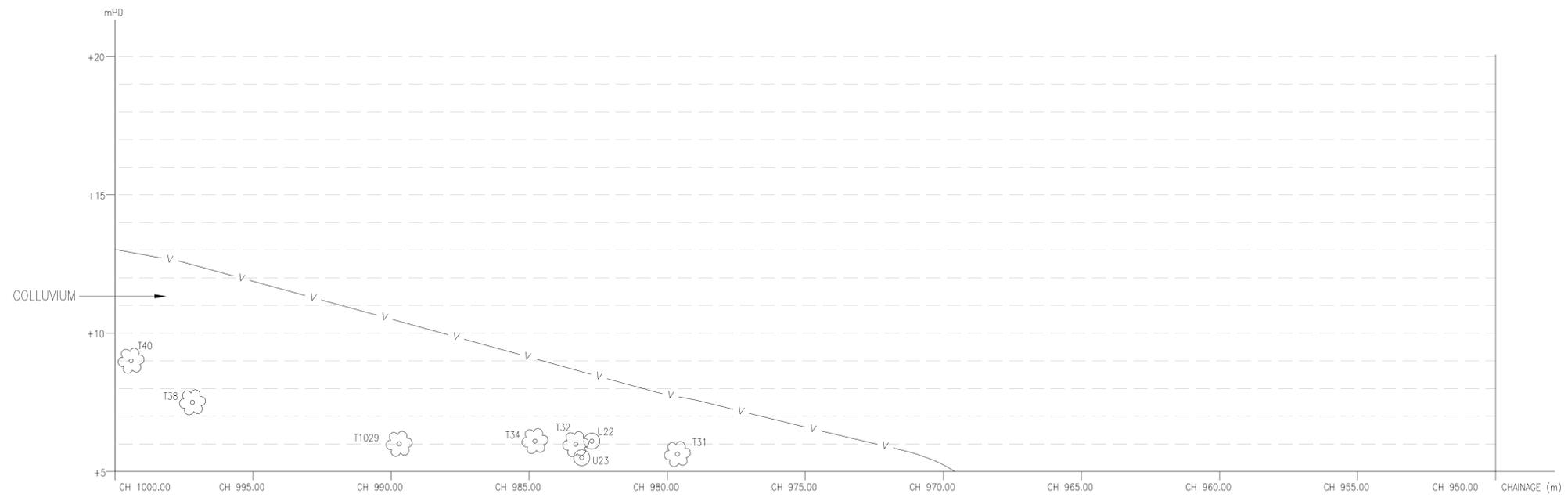
Agreement No. CE 8/2015 (WS)

Contract Title  
FIRST STAGE OF  
DESALINATION PLANT AT  
TSEUNG KWAN O -INVESTIGATION,  
DESIGN AND CONSTRUCTION

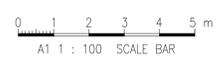
Drawing Title  
ROCK SLOPE ELEVATION  
(CH1000 - CH950)

Drawing No. 190495/B/DD/00-20010	Revision -
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Scale AS SHOWN



**ELEVATION**  
SCALE A1 1:100  
A3 1:200



NOTES:

- NOTES REFER TO DRAWING NO. 190495/B/DD/00-20011.
- EXACT LOCATIONS, INCLINATIONS, ORIENTATIONS AND LENGTHS OF ROCK DOWELS SHALL BE DETERMINED ON SITE BY THE SUPERVISING OFFICER.
- ROCK DOWEL SHALL BE WITH EMBEDMENT INTO STABLE ROCK AS DETERMINED ON SITE BY THE SUPERVISING OFFICER.

ROCK DOWEL SCHEDULE

REFERENCE CHAINAGE	REFERENCE DISCONTINUITY NO.	NUMBER OF ROCK DOWEL	INCLINATION TO HORIZONTAL (DEG)	REINFORCEMENT SIZE	MIN. LENGTH (m)	MIN. EMBEDMENT INTO STABLE ROCK (m)
1013	10	3	15	T40	5	2
1019	17	1	10	T32	3	1
1019	18	1	15	T32	3	1
1020	19	1	6	T32	3	1
1022	22	6	30	T32	3	1
1020	24	1	20	T32	3	1
1032	35	1	11	T32	3	1
1043	UNSTABLE BLOCK	1	38	T40	4	2
1053	UNSTABLE BLOCK	1	10	T40	4	2
1055	60	1	25	T32	3	1
1056	UNSTABLE BLOCK	1	10	T40	4	2
1078	89	1	12	T40	4	2
1082	93	1	15	T40	4	2
1084	95	1	36	T32	3	1
1084	97	1	13	T32	3	1
1085	98	3	15	T32	4	1
1091	110	1	10	T32	4	1
1100	118	2	15	T40	6	2
1106	120	1	10	T32	3	1
1123	141	1	10	T40	5	2
1128	143	5	30	T40	7	2
1135	150	1	0	T32	4	1
1143	158	10	9	T32	3	1
1166	171	1	40	T32	3	1
1168	175	6	46	T32	4	1

Revision	Date		Description		Initial
	Designed	Checked	Drawn	Checked	Checked
Initial	YLC	CKH	SZ	WLS	
Date	04/16	04/16	04/16	04/16	

Approved

Agreement No. CE 8/2015 (WS)

Contract Title  
FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title  
ROCK DOWEL SCHEDULE

Drawing No. 190495/B/DD/00-20011  
Revision -

Scale N.T.S.



**I. GENERAL:**

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, SKETCHES, SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE SUPERVISING OFFICER.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
- ALL LEVELS ARE IN METRES ABOVE P.D..
- THE EXACT BOUNDARY OF THE WORKS SITE AND THE WORKS AREA AND THE EXACT ALIGNMENT OF HOARDING AND SAFETY FENCE SHALL BE CONFIRMED BY THE SUPERVISING OFFICER ON SITE.
- LOCATION OF INGRESS/EGRESS POINT FOR ACCESS TO SITE SHALL BE AGREED BY THE SUPERVISING OFFICER ON SITE.
- THE NOTES ON THIS DRAWING ARE THE GENERAL REQUIREMENTS UNLESS OTHERWISE SPECIFIED OR INSTRUCTED BY THE SUPERVISING OFFICER.
- THE CONTRACTOR SHALL STRICTLY COMPLY WITH ENVIRONMENTAL PERMIT NO. EP-503/2015 AND ALL CONDITIONS AND RESTRICTIONS IMPOSED BY COUNTRY AND MARINE PARKS AUTHORITY (CMPA), AGRICULTURE, FISHERIES AND CONSERVATION DEPARTMENT (AFCD) AND ENVIRONMENTAL PROTECTION DEPARTMENT (EPD) OR OTHER AUTHORITIES FOR WORKS.

**II. UTILITIES:**

- THE PLAN OF UTILITIES HAS BEEN PREPARED FROM INFORMATION PROVIDED BY UTILITY/SERVICE PROVIDERS. NEITHER THE EMPLOYER NOR HIS AGENTS OR REPRESENTATIVES ACCEPT ANY RESPONSIBILITY WHATSOEVER FOR THE ACCURACY OR SUFFICIENCY OF THE INFORMATION. THE CONTRACTOR SHALL MAKE SUCH INQUIRIES AND INVESTIGATIONS AS ARE REQUIRED FOR HIS OWN INFORMATION.
- PRIOR TO COMMENCEMENT OF THE WORKS, THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATIONS OF THE EXISTING UTILITIES AFFECTING OR BEING AFFECTED BY THE WORKS USING INSPECTION PITS OR OTHER MEANS AS RECOMMENDED BY THE RELEVANT UTILITY/SERVICE PROVIDERS OR GOVERNMENT DEPARTMENTS.
- THE CONTRACTOR SHALL EXERCISE EXTREME CARE NOT TO DAMAGE ANY EXISTING UTILITIES OR SERVICES WITHIN OR IN THE VICINITY OF THE WORKS SITE AND WORKS AREA AND SHALL PROVIDE NECESSARY PROTECTION AND SUPPORT TO THE EXISTING UTILITIES OR SERVICES IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT UTILITY/SERVICE PROVIDERS OR GOVERNMENT DEPARTMENTS DURING THE EXECUTION OF THE WORKS. SHOULD ANY DAMAGE OCCUR TO THE UTILITIES/SERVICES DUE TO THE CONTRACTOR'S WORKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY INCURRED COST RESULTING FROM THE DAMAGE.

**III. INSPECTION OF SLOPE SURFACE:**

- EXISTING HARD SURFACING AND UNPLANNED VEGETATION ON THE SLOPE SHALL NOT BE REMOVED UNLESS AGREED OR DIRECTED BY THE SUPERVISING OFFICER.
- WHEN DIRECTED BY THE SUPERVISING OFFICER, REMOVAL OF EXISTING HARD SURFACING AND UNPLANNED VEGETATION IN THE SPECIFIED SLOPE AREAS SHALL BE CARRIED OUT FOR INSPECTION OF THE SLOPE BY THE SUPERVISING OFFICER PRIOR TO COMMENCEMENT OF ROCK SLOPE IMPROVEMENT/STABILIZATION WORKS. AFTER INSPECTION, THE EXPOSED SLOPE SURFACE SHALL BE PROPERLY REINSTATED AS DIRECTED BY THE SUPERVISING OFFICER.
- SAFE ACCESS SHALL BE PROVIDED AND INSPECTION SCAFFOLDING WITH TOE BOARD SHALL BE ERECTED AS DIRECTED BY THE SUPERVISING OFFICER ON SITE FOR INSPECTION OF THE SPECIFIED SLOPE AREAS.
- THE CONTRACTOR SHALL ALLOW IN THE WORKS PROGRAMME SUFFICIENT TIME FOR THE REQUIRED INSPECTION OF THE SLOPE BY THE SUPERVISING OFFICER.
- THE CONTRACTOR SHALL CLEAR THE LANDSLIDE DEBRIS AND CARRY OUT ROCK JOINT MAPPING FOR THE FOLLOWING ROCK SLOPES AS SHOWN IN DRAWING NO. 190495/B/DD/00-20001 TO 20011 IN ACCORDANCE WITH CONTRACT SPECIFICATIONS. ROCK SLOPE IMPROVEMENT/STABILIZATION WORKS SHALL BE CARRIED OUT AT THE EXPOSED ROCK FACE AS DIRECTED BY THE SUPERVISING OFFICER.

- REFERENCE CHAINAGE 1250 TO 1230
- REFERENCE CHAINAGE 1215 TO 1205
- REFERENCE CHAINAGE 1200 TO 1180
- REFERENCE CHAINAGE 1115 TO 1095
- REFERENCE CHAINAGE 1167 TO 1145
- REFERENCE CHAINAGE 1042 TO 1030

**IV. ROCK SLOPE IMPROVEMENT /STABILIZATION WORKS:**

- ROCK SLOPE IMPROVEMENT/STABILIZATION WORKS INCLUDING SCALING OF ROCK BLOCKS, INSTALLATION OF ROCK DOWELS AND CONSTRUCTION OF BUTTRESS AND DENITATION AND WIRE MESH PROTECTION SHALL BE CARRIED OUT AS DIRECTED BY THE SUPERVISING OFFICER ON SITE AND IN ACCORDANCE WITH DRAWINGS.
- BEFORE CONSTRUCTION, THE POSITIONS OF ROCK SLOPE IMPROVEMENT/STABILIZATION WORKS SHALL BE MARKED ON THE SLOPE SURFACE FOR THE SUPERVISING OFFICER'S VERIFICATION AND CONFIRMATION.
- EXTENTS OF ROCK SLOPE IMPROVEMENT/STABILIZATION WORKS AS SHOWN IN DRAWING NO. 190495/B/DD/00-10001 AND 20001 TO 20011 ARE INDICATIVE ONLY AND TO BE DETERMINED ON SITE BY THE SUPERVISING OFFICER.
- DETAILS OF ROCK SLOPE IMPROVEMENT/STABILIZATION WORKS SHALL BE IN ACCORDANCE WITH DRAWING NO.190495/B/DD/00-30002 AND 30003.

**V. PROTECTION AND PRESERVATION OF EXISTING VEGETATION/LANDSCAPE WORKS:**

- WHERE EXISTING SPRAYED CONCRETE IS TO BE REMOVED, CARE SHALL BE TAKEN NOT TO DISTURB TREE ROOTS IMMEDIATELY UNDERLYING THE SLOPE SURFACE.
- AS AGREED OR DIRECTED BY THE SUPERVISING OFFICER, ALIGNMENT OF HOARDING, FENCING, NEW CHANNELS AND MAINTENANCE STAIRWAY WALKWAY SHALL BE ADJUSTED ON SITE TO AVOID DAMAGE TO EXISTING TREES.
- ALL THE EXISTING TREES AND ALL INDIVIDUALS OF PLANT SPECIES OF CONSERVATION IMPORTANCE WITHIN THE COUNTRY PARK AREA ARE TO BE RETAINED AND NO TREE FELLING IS ANTICIPATED.

- ADEQUATE TEMPORARY WORKS AS SUBJECT TO THE SUPERVISING OFFICER SHALL BE PROVIDED TO SUPPORT AND PROTECT TREE AND PLANT SPECIES OF CONSERVATION IMPORTANCE FROM DAMAGE IN ACCORDANCE WITH THE CONTRACT SPECIFICATION.
- THE CONTRACTOR SHALL CONFIRM THE LOCATIONS OF THE EXISTING TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE WITHIN THE WORKS SITE AND WORKS AREA. THE CONTRACTOR SHALL CHECK, RECORD AND TAKE PHOTOS OF THE CONDITION OF THE EXISTING TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE WITHIN THE WORKS SITE AND WORKS AREA AND LABEL THE TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE CLEARLY AND VISIBLY ON SITE. A REPORT OF THE CONDITIONS OF THE EXISTING TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE, INCLUDING COLOUR PHOTOS, PLAN OF LOCATIONS AND BRIEF DESCRIPTIONS OF ANY DEFECTS OR DAMAGE OF TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE OBSERVED, SHALL BE SUBMITTED TO THE SUPERVISING OFFICER FOR RECORD AT LEAST 2 WEEKS PRIOR TO COMMENCEMENT OF THE WORKS.
- THE EXTENT AND CONSTRUCTION METHODS OF THE PROPOSED WORKS WITHIN THE COUNTRY PARK AREA SHALL BE SUBJECT TO THE ACTUAL SITE CONDITIONS AND THE AGREEMENT OF AFCD. PRIOR WRITTEN CONSENT OF COUNTRY AND MARINE PARKS AUTHORITY (CMPA) SHALL BE OBTAINED BEFORE THE COMMENCEMENT OF THE WORKS. THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED WORKS INCLUDING NOT BE LIMITED TO THE SCOPE OF THE WORKS, METHODOLOGY AND USE OF MATERIALS, WORKS SCHEDULE, POTENTIAL IMPACTS AND MITIGATION MEASURES TO COUNTRY PARKS FOR CMPA'S CONSIDERATION. THE CONTRACTOR SHALL DEPLOY HANDHELD MACHINERY AND MANUAL HANDLING INSIDE COUNTRY PARK AS FAR AS POSSIBLE.
- CONSTRUCTION METHOD SUBMITTED BY THE CONTRACTOR SHALL COMPLY WITH CONDITIONS OF THE ENVIRONMENTAL PERMIT NO. EP-503/2015.
- UNLESS OTHERWISE APPROVED BY THE SUPERVISING OFFICER, NO WORKS WITHIN THE COUNTRY PARK AREA SHALL BE CARRIED OUT.

**VI. BOULDER REMOVAL/IN-SITU BREAK-OFF WORKS:**

- BEFORE THE WORKS, DETAILED METHOD STATEMENT OF BOULDER REMOVAL/IN-SITU BREAK-OFF WORKS (INCLUDING THE DETAILS OF TEMPORARY ACCESS TO THE SUBJECT BOULDERS AND PROTECTION/MITIGATION MEASURES TO THE PLANT SPECIES OF CONSERVATION IMPORTANCE AND EXISTING TREES) SHALL BE SUBMITTED TO THE SUPERVISING OFFICER, AFCD, CMPA AND RELEVANT PARTIES FOR ACCEPTANCE.
- THE TRANSECT OF THE TEMPORARY ACCESS SHALL BE DESIGNED TO AVOID AFFECTING THE RARE FLORA/PLANT SPECIES AND EXISTING TREES ON SITE.
- BOULDERS SHALL BE REMOVED OR IN-SITU BROKEN-OFF IN ACCORDANCE WITH DRAWING NO. 190495/B/DD/00-10001.
- THE WORKS TO BE CARRIED OUT FOR REMOVAL OF BOULDERS SHALL COMPRISE SPLITTING OF BOULDERS INTO PIECES, REMOVAL OF BOULDER PIECES OR DIRECT REMOVAL OF BOULDERS FROM THE SITE.
- THE WORKS TO BE CARRIED OUT FOR IN-SITU BREAKING-OFF OF BOULDERS SHALL COMPRISE THE BREAKING-OFF OF BOULDERS INTO PIECES WITH ALL DIMENSIONS LESS THAN 1 M AND TO BE DEPOSITED ON SITE IN STABLE CONDITIONS AS DETERMINED BY THE CONTRACTOR'S EXPERIENCED AND QUALIFIED GEOLOGIST OR GEOTECHNICAL ENGINEER. THE DETAILS AND LOCATIONS OF BROKEN-OFF BOULDER PIECES TO BE DEPOSITED ON SITE SHALL BE AGREED BY THE SUPERVISING OFFICER.

**VII. MISCELLANEOUS:**

- ANY SOFT SPOTS SHALL BE REMOVED AND ANY VOIDS SHALL BE BACKFILLED WITH SUITABLE MATERIALS AS DIRECTED BY THE SUPERVISING OFFICER.
- WHERE REQUIRED, THE CONTRACTOR SHALL SUBMIT THE DETAILS OF CONSTRUCTION METHOD, SEQUENCE AND THE PROPOSED PRECAUTIONARY MEASURES AGAINST DUST, SILTATION, NOISE NUISANCE, HEAVY RAINFALL, PEDESTRIAN DIVERSION AND TEMPORARY TRAFFIC MEASURES (TTM) PROPOSAL TO THE SUPERVISING OFFICER AND THE GOVERNMENT DEPARTMENTS CONCERNED FOR COMMENT PRIOR TO IMPLEMENTATION OF THE WORKS.
- THE CONTRACTOR SHALL SUBMIT DETAILED METHOD STATEMENTS FOR CARRYING OUT THE WORKS. NO WORKS SHALL BE COMMENCED PRIOR TO ACCEPTANCE OF THE METHOD STATEMENTS BY THE SUPERVISING OFFICER.
- WHERE REQUIRED, PROPOSAL OF SITE CLEARANCE PROCEDURES AND STRIPPING TO SLOPE SURFACE AND SUBSEQUENT TEMPORARY SURFACE PROTECTION MEASURES SHALL BE SUBMITTED TO THE SUPERVISING OFFICER FOR APPROVAL PRIOR TO COMMENCEMENT OF THE WORKS.
- WHEN THE SLOPE WORKS IS COMPLETED, THE CONTRACTOR SHALL ERECT SLOPE REGISTRATION NUMBER PLATES/WALL REGISTRATION PLATES IN ACCORDANCE WITH CEDD DRAWING NO. C2505/1/C, C2505/2/C, AND WBTC NO. 10/2000.

**VIII. PRECAUTIONARY MEASURES AGAINST HEAVY RAINFALL:**

- AS FAR AS PRACTICABLE, THE WORKS INCLUDING MATERIALS FOR USE IN THE WORKS SHALL BE KEPT FREE OF WATER AND PROTECTED FROM DAMAGE DUE TO WATER, TEMPORARY DRAINAGE, PUMPING SYSTEMS OR OTHER EFFECTIVE MEASURES SHALL BE PROVIDED BY THE CONTRACTOR AND APPROVED BY THE SUPERVISING OFFICER. SILT AND DEBRIS SHALL BE INTERCEPTED WITH TRAPS BEFORE WATER IS DISCHARGED FROM THE SITE. THE DISCHARGE POINTS OF THE TEMPORARY DRAINAGE AND PUMPING SYSTEMS SHALL BE APPROVED BY THE SUPERVISING OFFICER.
- THE CONTRACTOR SHALL ADOPT A METHOD OF WORKING IN WHICH THE MINIMUM OF BARE SOIL IS EXPOSED AT ANY TIME.
- THE CONTRACTOR SHALL PROTECT THE TEMPORARY BARE SLOPE FROM HEAVY RAINFALL WITH IMPERMEABLE SHEETING WELL-SECURED AGAINST THE WIND AND, IF NECESSARY, PROVISION OF TEMPORARY DRAIN.

**IX. FLEXIBLE BARRIER**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DETAILED DESIGN OF THE PROPOSED FLEXIBLE BARRIER. DIMENSIONS OF LENGTH, SEPARATION AND OVERLAP OF THE FLEXIBLE BARRIER SECTIONS SHALL BE MADE TO SUIT THE SITE CONDITIONS AND MANUFACTURER'S RECOMMENDATION.
- THE FLEXIBLE BARRIER SHALL BE A PROPRIETARY PRODUCT CAPABLE TO RETAIN THE LANDSLIDE DEBRIS AND BOULDERS, AND SUBJECT TO THE SUPERVISING OFFICER'S APPROVAL PRIOR TO THE COMMENCEMENT OF WORKS.
- THE SEQUENCE OF INSTALLATION AND THE CONNECTION DETAILS OF BARRIER COMPONENTS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AND THE METHOD STATEMENT APPROVED BY THE SUPERVISING OFFICER.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL THE FLEXIBLE BARRIER SYSTEMS AT LOCATIONS INDICATED ON THE DRAWING NO. 190495/B/DD/00-10001. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL MARK THE ALIGNMENT OF THE BARRIERS AND THE POSITIONS OF THE STEEL POSTS AND THE ANCHORAGE POINTS FOR WIRE ROPES ON SITE FOR THE SUPERVISING OFFICER'S VERIFICATION, THE BARRIER LOCATION AND THE ANCHORAGE POINTS FOR WIRE ROPES SHALL NOT BE ADJUSTED WITHOUT THE SUPERVISING OFFICER'S APPROVAL.
- TESTS SHALL BE CARRIED OUT TO DEMONSTRATE COMPLIANCE OF THE MAIN COMPONENTS OF THE FLEXIBLE BARRIER SYSTEM WITH THE MATERIAL REQUIREMENT SPECIFIED:

ELEMENTS	MANUFACTURER CERTIFICATE	TYPE OF TESTS ⁽¹⁾	RATE OF TESTS		NATIONAL/ INTERNATIONAL STANDARDS OR EQUIVALENT HONG KONG STANDARDS ⁽²⁾
			SIZE OF BATCH	MINIMUM NO. OF TESTS	
(A) PRINCIPAL NETS	THE CERTIFICATE SHALL INCLUDE THE FOLLOWING:  (a) MANUFACTURER CERTIFICATE REFERENCE NO. (b) MANUFACTURER'S NAME AND ADDRESS (c) MANUFACTURER'S ISO 9001:2008 CERTIFICATION NO. AND THE APPROVAL REFERENCE NO. ISSUED BY THE CERTIFYING AUTHORITY	TENSILE TEST (TO DETERMINE THE BREAK LOAD)	0-30 TONNES	3	BS 5896 :1980 OR BS 302 - 1:1987 OR BS EN 10002 - 1:2001 OR EQUIVALENT AS APPROPRIATE.
(B) WIRE ROPES OR WIRE ROPE ANCHORS			EACH ADDITIONAL 30 TONNES OR PART THEREOF	1	
(C) SHACKLES, WIRE ROPE CLIPS (INCLUDING COMPONENTS OF THE ASSEMBLY E.G. MAIN BODY, PIN, U - BOLT AND FASTENER), BOLTS AND NUTS	(d) STEEL GRADE AND COMPLIANCE STANDARD IN MANUFACTURING  (e) MANUFACTURER'S TEST RECORDS (GEOMETRICAL PROPERTIES, TENSILE STRENGTH, ELONGATION AT MAXIMUM LOAD, LOAD - EXTENSION DIAGRAM, WHERE APPLICABLE ETC.)	COATING THICKNESS	0-30 TONNES	3	BS EN ISO 1461 :2009 OR BS EN 10244 - 2:2009
			EACH ADDITIONAL 30 TONNES OR PART THEREOF	1	
(D) STEEL POST AND GROUND PLATES	(f) CORROSION PROTECTION (E.G. COATING THICKNESS OF GALVANIZATION AND METHOD OF APPLICATION OF GALVANIZATION, AND COMPLIANCE STANDARD)	COATING THICKNESS	0-30 TONNES	3	BS EN ISO 1461 :2009
			EACH ADDITIONAL 30 TONNES OR PART THEREOF	1	
(E) BAR ANCHORS AND CONNECTORS	(g) CUSTOMER'S ORDER NO. OR OTHER REFERENCE  (h) BATCH NO. OR LOT NO.  (i) PRODUCT DESCRIPTION AND QUANTITY SUPPLIED	STRENGTH TEST FOR STEEL BARS	CLAUSE 15.32 AND TABLE 15.2 OF GS: 2006		CS2:2012 - SECTION 5  CLAUSE 15.35 OF GS:2006
			TENSILE TEST FOR CONNECTORS		
(F) OTHER ABOVE - GROUND COMPONENTS IF APPLICABLE (E.G. SECONDARY MESH, RUNNING WHEELS, THIMBLES ETC.)	(j) DATE OF DISPATCH	COATING THICKNESS	0-30 TONNES	3	BS EN ISO 1461 :2009
			EACH ADDITIONAL 30 TONNES OR PART THEREOF	1	

- THESE TESTS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT STANDARDS AND THE TEST RESULTS ISSUED ON HOKLAS ENDORSED TEST CERTIFICATES WHERE AVAILABLE.
- BS 302-1:1987 - STRANDED STEEL WIRE ROPES. PART 1: SPECIFICATION FOR GENERAL REQUIREMENTS  
BS 5896:1980 - SPECIFICATION FOR HIGH TENSILE STEEL WIRE AND STRAND FOR THE PRESTRESSING OF CONCRETE  
BS EN 10002-1:2001 - METALLIC MATERIALS - TENSILE TESTING. PART 1: METHOD OF TEST AT AMBIENT TEMPERATURE  
BS EN 10244-2:2009 - STEEL WIRE AND WIRE PRODUCTS - NON-FERROUS METALLIC COATINGS ON STEEL WIRE (PART 1 & 2)  
BS EN ISO 1461:2009 - HOT DIP GALVANIZED COATINGS ON FABRICATED IRON AND STEEL ARTICLES  
CS2:2012 - CONSTRUCTION STANDARD 2 - STEEL REINFORCING BARS FOR THE REINFORCEMENT OF CONCRETE  
ETAG 27 - GUIDELINE FOR EUROPEAN TECHNICAL APPROVAL OF FALLING ROCK PROTECTION KITS  
GS:2006 - GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS (2006 EDITION)  
TESTS ON OTHER ELEMENTS TO BE SPECIFIED BY THE DESIGNER AND AGREED BY THE ENGINEER AS NECESSARY.

6. TESTS FOR TENSION ANCHORS SHALL BE CARRIED OUT:

- PULL-OUT TESTS USING THE SAME SET-UP AND LOADING APPARATUS AS FOR SOIL NAILS (CLAUSE 7.138 OF THE GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS (2006 EDITION)) SHALL BE PERFORMED TO VALIDATE THE BOND STRENGTH OF THE TENSION ANCHORS. THE TESTING PROCEDURES SHALL FOLLOW THE DETAILS GIVEN IN FIGURE 6.3 OF GEOGUIDE 7 WITH THE MAXIMUM TEST LOAD APPLIED TO BE TD2 (I.E.THE ALLOWABLE PULL-OUT RESISTANCE TIMES THE FACTOR OF SAFETY AGAINST PULLOUT FAILURE AT SOIL-GROUT INTERFACE). THE OBJECTIVE OF THE PULL-OUT TESTS IS TO VALIDATE THE DESIGN ASSUMPTION (E.G. THERE IS A MINIMUM FACTOR OF SAFETY OF 1.5 OR 2 FOR THE BOND STRENGTH AT SOIL-GROUT INTERFACE), AND HENCE TESTING THE ANCHOR TO TD2 IS REQUIRED. THE ANCHORS TESTED SHALL NOT BE USED AS WORKING ANCHORS.
  - THE GROUTED SECTION OF A TENSION ANCHOR PREPARED FOR THE PULL-OUT TEST SHALL BE AT LEAST 2M. THE MATERIAL AND SIZE OF REINFORCEMENT, HOLE DIAMETER AND INCLINATION, AND THE TYPE OF GROUT OF THE TEST ANCHOR SHALL BE THE SAME AS THAT OF THE WORKING ANCHOR. THE TOP OF THE GROUTED SECTION SHALL BE AT LEAST 5M INTO THE GROUND ALONG THE DIRECTION OF THE DRILLED HOLE. THIS AVOIDS TESTING THE TOP FEW METRES OF A GROUTED ANCHOR SECTION WHICH WILL BE SUBJECT TO THE INFLUENCE OF THE COMPRESSIVE STRESSES FROM THE PULL-OUT TEST SET-UP ON THE GROUND. THE TEST SECTION CHOSEN SHALL BE REPRESENTATIVE OF THE AVERAGE GROUND CONDITIONS.
  - THE NUMBER OF PULL-OUT TESTS TO BE CARRIED OUT SHOULD BE 5% OF THE NUMBER OF WORKING TENSION ANCHORS BUT NOT LESS THAN 2 FOR EACH ENTIRE CONTINUOUS STRETCH OF BARRIER. THE TESTS SHALL BE CARRIED OUT AT LOCATIONS REPRESENTATIVE OF THE GROUND CONDITIONS OF THE STRETCH OF BARRIER.
- TESTS FOR POST ANCHORS TAKING COMPRESSIVE LOAD SHALL BE CARRIED OUT:
    - PULL-OUT TESTS SHALL BE DONE AT REPRESENTATIVE LOCATIONS FOLLOWING THE SAME REQUIREMENTS FOR TENSION ANCHORS.
  - ZINC-RICH PRIMING PAINT SHALL BE APPLIED TO ALL PARTS OF SHACKLES, WIRE ROPE CLIPS, BOLTS AND NUTS AFTER THEIR ASSEMBLY, AS WELL AS TO ANY REPAIRS TO GALVANIZATION COATING FOR OTHER PARTS OF THE FLEXIBLE BARRIERS. THE ZINC-RICH PRIMING PAINT SHALL COMPLY WITH BS 4652:1995 AS APPROVED BY THE SUPERVISING OFFICER. DETAILS OF PAINT APPLICATION METHODS SHALL BE SUBMITTED TO THE SUPERVISING OFFICER FOR APPROVAL.
  - NON-DESTRUCTIVE TESTS IN THE FORM OF TIME DOMAIN REFLECTOMETRY (TDR) TESTS SHALL BE CARRIED OUT ON ALL WORKING ANCHORS, INCLUDING ANCHORS TAKING COMPRESSIVE LOAD, FOR CHECKING THE INTEGRITY OF THE ANCHORS AND CONSTRUCTION QUALITY CONTROL.

**X. GOOD SITE PRACTICES/MITIGATION MEASURES INSIDE COUNTRY PARK**

- THE CONTRACTOR SHALL SET OUT FLEXIBLE BARRIER, ROCK SLOPE IMPROVEMENT/STABILISATION WORKS AND OTHER WORKS TO AVOID EXISTING TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE. THE CONTRACTOR SHALL MARK THE SETTING-OUT POINTS ON SITE FOR THE SUPERVISING OFFICER'S CONFIRMATION.
- THE CONTRACTOR SHALL DEPLOY HANDHELD MACHINERY AND MANUAL HANDLING INSIDE COUNTRY PARK AS FAR AS POSSIBLE.
- THE ANCHORAGES FOR THE TEMPORARY WORKING PLATFORM AND TEMPORARY ELEVATED ACCESS FOR CONSTRUCTION OF ROCK SLOPE IMPROVEMENT/STABILISATION WORKS AND BOULDER REMOVAL/IN-SITU BREAKING-OFF WORKS SHALL BE ERECTED TO AVOID TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE. DETAILS SHALL BE SUBMITTED TO CMPA FOR CONSIDERATION.
- THE CONTRACTOR SHALL APPOINT A QUALIFIED PLANT ECOLOGIST TO SET OUT THE LOCATIONS OF PLANT SPECIES OF CONSERVATION IMPORTANCE ALONG THE DIRECT FOOTPRINT OF THE SLOPE MITIGATION WORKS ON SITE AND TO RECORD THEIR CURRENT CONDITIONS BEFORE COMMENCING SITE CLEARANCE AND ANY WORKS INSIDE CLEARWATER BAY COUNTRY PARK. THE CONTRACTOR SHALL RECORD THE EXTENTS AND CONDITIONS OF THE PLANT SPECIES OF CONSERVATION IMPORTANCE ON DRAWINGS PROVEN BY RECORD PHOTOGRAPHS FOR SUBMISSION TO THE SUPERVISING OFFICER FOR AGREEMENT.
- TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE SHALL BE CLEARLY AND VISIBLY LABELLED ON SITE.
- THE CONTRACTOR SHALL ESTABLISH THE PROTECTION ZONES AT LEAST 1M RADIUS FROM THE IDENTIFIED PLANT SPECIES OF CONSERVATION IMPORTANCE TO SEPARATE THEM FROM THE WORKS PRIOR TO SITE CLEARANCE AND THROUGHOUT THE CONSTRUCTION. THE CONTRACTOR SHALL ESTABLISH THE PROTECTION FENCES OF AT LEAST 1M HEIGHT TO SURROUND THE PROTECTION ZONES AND LABEL THE FENCES FOR CLEAR IDENTIFICATION OF THE PROTECTION ZONES.
- THE CONTRACTOR SHALL PROVIDE INDUCTION TRAINING TO ALL SITE STAFF ON THE PROTECTION AND MITIGATION MEASURES FOR TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE AND THE LOCATIONS OF TREES TO BE RETAINED AND THE PLANT SPECIES OF CONSERVATION IMPORTANCE.
- WHERE VEGETATION CLEARANCE AND/OR TRIMMING IS REQUIRED, THE CONTRACTOR SHALL APPOINT A QUALIFIED ECOLOGIST/ARBORIST TO PROVIDE ON-SITE SUPERVISION AND MONITORING TO ENSURE NO TREE CANOPY OR TREE ROOTS TO BE ADVERSELY IMPACTED.
- THE CONTRACTOR SHALL IMPLEMENT THE FOLLOWING STANDARD GOOD SITE PRACTICES INSIDE COUNTRY PARK AS FAR AS POSSIBLE TO MINIMISE THE POTENTIAL DISTURBANCE TO THE COUNTRY PARK :

- ALL CONSTRUCTION MATERIALS SHALL BE STOCKPILED OFFSITE;
- CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED TO THE CLEARLY DEMARCATED WORKS AREAS;
- BOULDERS REMOVAL/IN-SITU BREAKING-OFF WORKS SHALL BE CARRIED OUT BY HANDHELD TOOL TO MINIMISE THE WORKS AREA. NO EXCAVATION WORKS, TREE FELLING AND REMOVAL OF VEGETATION SHALL BE ALLOWED DURING THE BOULDER REMOVAL/IN-SITU BREAK-OFF WORKS.
- TREE PRESERVATION AND PROTECTION MEASURES SHALL BE IMPLEMENTED AS SPECIFIED IN G.S. SECTION 26 AND EMPLOYER'S REQUIREMENTS, SUCH AS PROVISION OF TEMPORARY PROTECTIVE FENCING AND ARMOURING AND MULCHING TO PRESERVED TREES.

- ENVIRONMENTAL TEAM SHALL MONITOR THE CONDITION OF TREES AND PLANT SPECIES OF CONSERVATION IMPORTANCE WITHIN THE PROTECTION ZONES DURING THE CONSTRUCTION PERIOD ON A **WEEKLY** BASIS AND PRESENT THE REPRESENTATIVE PHOTOGRAPHIC RECORDS IN THE MONTHLY MONITORING REPORT OF ENVIRONMENTAL MONITORING & AUDIT (EM&A).

- THE CONTRACTOR SHALL BE RESPONSIBLE TO REINSTATE THE VEGETATION IN ALL TEMPORARILY DISTURBED AREAS DUE TO CONSTRUCTION WORKS TO ITS ORIGINAL CONDITION. WHERE NECESSARY, HYDROSEEDING SHALL BE APPLIED TO RESTORE THE GREEN APPEARANCE OF THE SITE.

**XI. SITE SAFETY MEASURES**

- THE CONTRACTOR SHALL SUBMIT THE JOB METHOD STATEMENT, SAFETY RISK ASSESSMENT, JOB HAZARDS ASSESSMENT FOR THE CONSTRUCTION OF SLOPE MITIGATION WORKS TO THE SUPERVISING OFFICE FOR APPROVAL BEFORE COMMENCEMENT OF THE WORKS.
- THE CONTRACTOR SHALL PROVIDE APPROPRIATE PROTECTION MEASURES, SUCH AS SAFE AND RIGID WORKING SHELTER OR BARRIER, TO SAFEGUARD AND SHIELD THE PERSONNEL WORKING INSIDE THE SLOPE MITIGATION WORKS ZONE FROM THE POSSIBLE LANDSLIDE HAZARDS. THE TEMPORARY WORKS SHALL BE CERTIFIED BY AN INDEPENDENT CHECKING ENGINEER WHO SHALL BE A CORPORATE MEMBER OF THE HKIE IN THE GEOTECHNICAL OR CIVIL DISCIPLINE, OR EQUIVALENT, AS APPROVED BY THE SUPERVISING OFFICER.
- THE CONTRACTOR SHALL PROVIDE APPROPRIATE PROTECTION MEASURES, SUCH AS TEMPORARY SAFETY BARRIER AND SETBACK ZONE SEPARATING THE SLOPE MITIGATION WORKS ZONE AND THE MAIN SITE OF DESALINATION PLANT, TO SAFEGUARD AND SHIELD THE PERSONNEL WORKING OUTSIDE THE SLOPE MITIGATION WORKS ZONE FROM THE POSSIBLE LANDSLIDE HAZARDS. THE TEMPORARY WORKS SHALL BE CERTIFIED BY AN INDEPENDENT CHECKING ENGINEER WHO SHALL BE A CORPORATE MEMBER OF THE HKIE IN THE GEOTECHNICAL OR CIVIL DISCIPLINE, OR EQUIVALENT, AS APPROVED BY THE SUPERVISING OFFICER.

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	KK	CKH	SZ	WLS	
Date	04/17	04/17	04/17	04/17	

Approved

Agreement No.  
**CE 8/2015 (WS)**

Contract Title  
**FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O - INVESTIGATION, DESIGN AND CONSTRUCTION**

Drawing Title

**NOTES ON GEOTECHNICAL WORKS**

Drawing No.	Revision
190495/B/DD/00/30001	-

Scale  
N.T.S.

水務署  
Water Supplies Department

BLACK & VEATCH HONG KONG LIMITED  
博威工程顧問有限公司

**NOTES ON ROCK SLOPE IMPROVEMENT /STABILISATION WORKS**

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CEMENT GROUT SHALL HAVE 28 DAYS STRENGTH OF 30MPA UNLESS OTHERWISE STATED. WATER CEMENT RATIO SHALL NOT EXCEED 0.45.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 190495/B/DD/00-10001, 20001 TO 20011 AND 30001 AND 30003.

**NOTES FOR DENTITION:**

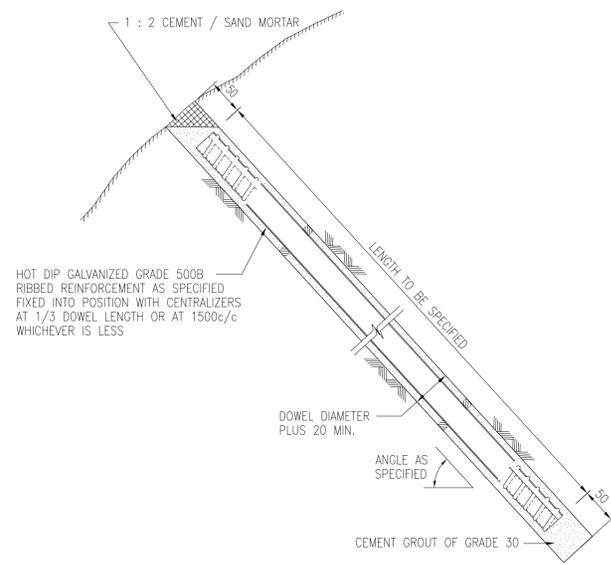
1. EXACT LOCATION, DIMENSIONS, DEPTH AND EXTENT OF DENTITION, DOWEL REQUIREMENT, RELIEF DRAIN REQUIREMENT AND REINFORCEMENT REQUIREMENT SHALL BE DETERMINED ON SITE BY THE SUPERVISING OFFICER.
2. MINIMISE PROTRUDING SURFACES, SO THAT CONCRETE SURFACE OF DENTITION IS AS FLUSH WITH SURROUNDING ROCK FACES AS POSSIBLE.
3. FOR SPECIFICATION OF FITTER FABRIC, SEE G.S. CLAUSE 7.198(7).

**NOTES FOR WIRE MESH:**

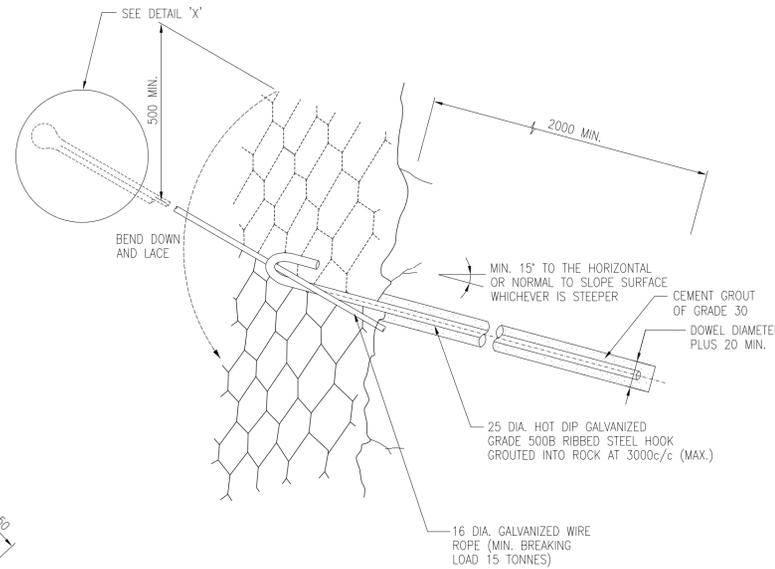
1. PVC THICKNESS OF WIRE MESH SHALL BE 0.4MM MINIMUM.
2. COLOUR OF PVC COATING OF WIRE MESH SHALL BE SPECIFIED BY THE SUPERVISING OFFICER TO MATCH WITH COLOUR OF ROCK FACE WHERE POSSIBLE.
3. SPACING OF THE STEEL HOOKS OR EQUIVALENT ANCHOR BOLTS FOR WIRE MESH SHALL BE REDUCED WHERE APPROPRIATE TO ENSURE THAT THE WIRE MESH CLOSELY FOLLOWS THE ROCK SLOPE PROFILE PARTICULARLY ON RUGGED ROCK SURFACE.
4. STEEL WIRE TENSILE STRENGTH OF THE MESH SHALL BE AT LEAST 1770 N/mm² AND THE MESH SHALL HAVE PUNCTURING RESISTANCE NOT LESS THAN 10 KN IN ACCORDANCE WITH ASTM A975 SECTION 13.1.4 OR SIMILAR APPROVED TEST.

**NOTES FOR ROCK DOWEL:**

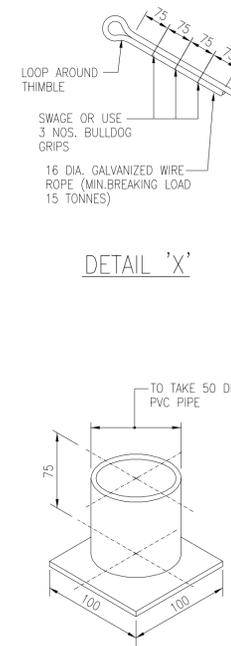
1. EXACT LOCATIONS, ANGLES AND LENGTHS OF ROCK DOWELS SHALL BE DETERMINED ON SITE BY THE SUPERVISING OFFICER.



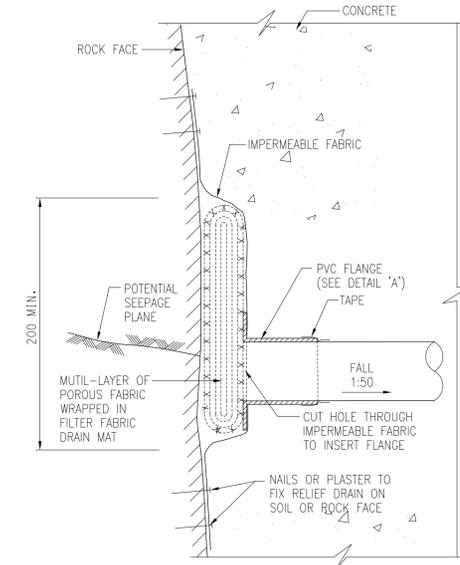
TYPICAL ARRANGEMENT OF ROCK DOWEL



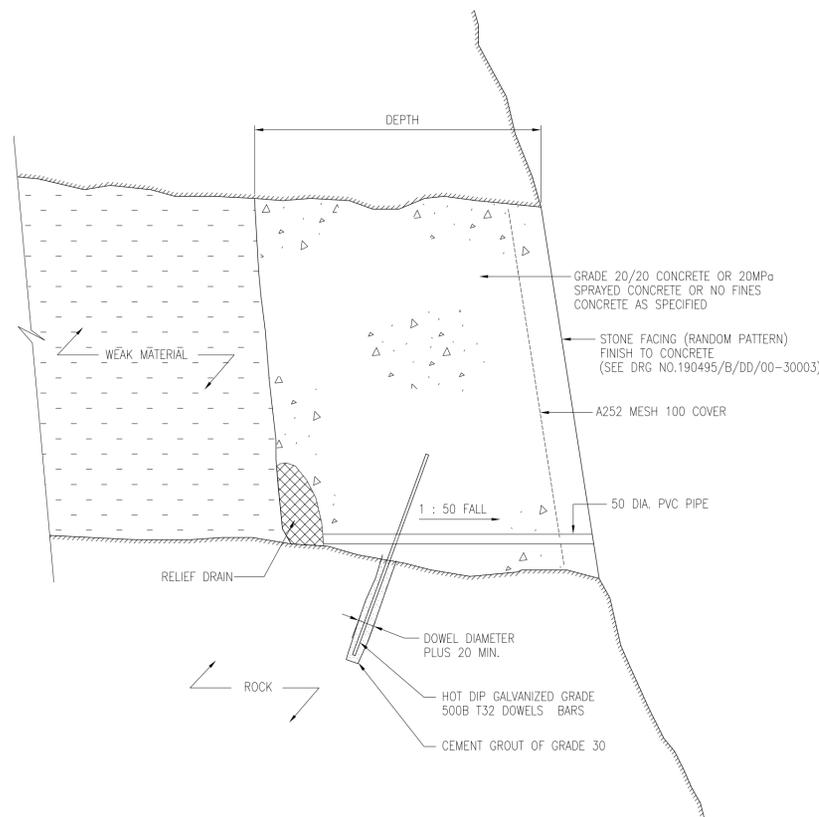
FIXING WIRE MESH AT TOP OF ROCK FACE



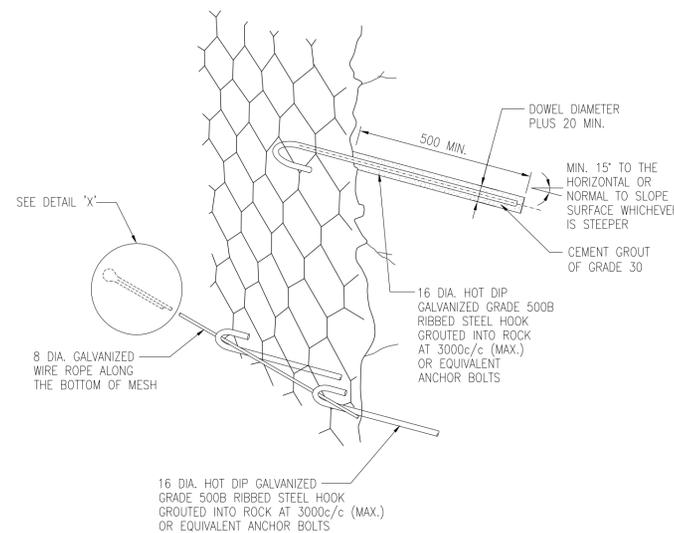
DETAIL 'A'



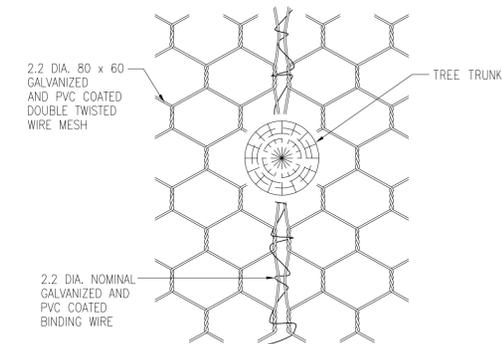
RELIEF DRAIN DETAIL



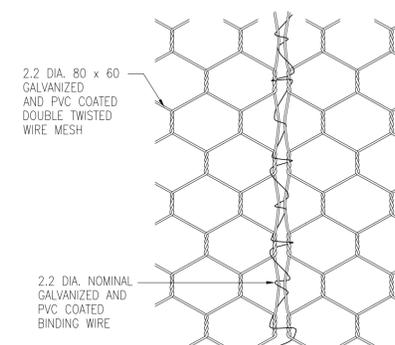
TYPICAL ROCK FACE DENTITION



FIXING WIRE MESH TO ROCK FACE AND AT BOTTOM OF ROCK FACE



LACING OF ADJACENT WIRE MESH SHEETS (WITH OPENING TO TREE)



LACING OF ADJACENT WIRE MESH SHEETS

Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial		KK	CKH	SZ	WLS
Date	04/17	04/17	04/17	04/17	04/17

Approved				
Agreement No. CE 8/2015 (WS)				

Contract Title				
FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O - INVESTIGATION, DESIGN AND CONSTRUCTION				

Drawing Title				
DETAILS OF GEOTECHNICAL WORKS (ROCK SLOPE IMPROVEMENT/STABILISATION WORKS)				
Drawing No. 190495/B/DD/00/30002				Revision
				-

Scale	N.T.S.
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**NOTES:**

1. THIS DRAWING SHOULD READ IN CONJUNCTION WITH DRAWING NOS 190495/B/DD/00-10001 20001 TO 20011 AND 30001 AND 30002.
2. ALL DIMENSIONS ARE IN MILLIMETRES.

**NOTES FOR BUTTRISS:**

1. BUTTRISS TO SUPPORT ROCK OR ROCK FACE SHALL BE CONSTRUCTED AT THE LOCATIONS AND TO THE DIMENSIONS DIRECTED BY THE SUPERVISING OFFICER ON SITE.
2. DIMENSIONS, SURFACE INCLINATION OR OUTLINE OF BUTTRISS ON ROCK FACE SHALL BE DETERMINED ON SITE BY THE SUPERVISING OFFICER.
3. CEMENT GROUT SHALL HAVE 28 DAYS STRENGTH OF 30MPa UNLESS OTHERWISE STATED. WATER CEMENT RATIO SHALL NOT EXCEED 0.45.
4. AT EACH BUTTRISS LOCATIONS, THE CONTRACTOR SHALL SCALE OFF LOOSE BLOCKS AND TRIM THE SLOPE TO LINES AND LEVELS DIRECTED BY THE SUPERVISING OFFICER ON SITE.
5. FOUNDATION OF THE BUTTRISS SHALL BE CLEARED OF LOOSE SOIL AND ROCK AND SHALL BE COMPACTED BEFORE CAST OF CONCRETE.
6. EXTENT OF RELIEF DRAINS AND WEEPHOLES SHALL BE DETERMINED ON SITE BY THE SUPERVISING OFFICER.
7. FOR SMOOTH SURFACE FINISH, A GROOVE SHALL BE FORMED FROM THE RELIEF DRAIN PIPE TO LEAD THE WATER DOWN TO THE BOTTOM OF THE BUTTRISS. GROOVE TO BE CO-ORDINATED WITH ANY SURFACE PATTERN.
8. MINIMISE PROTRUDING SURFACES, SO THAT SURFACE OF BUTTRISS IS AS FLUSH WITH SURROUNDING ROCK FACES AS POSSIBLE.
9. BUTTRISS SHALL BE FOUNDED ON GRADE III OR BETTER ROCK, OTHERWISE SUPERVISING OFFICER SHALL MAKE ANY NECESSARY CHANGES TO SUIT SITE CONDITIONS.
10. GENERAL DETAILS OF DOWEL ARE SHOWN ON THIS DRAWING. SUPERVISING OFFICER SHALL MAKE ANY NECESSARY CHANGES TO SUIT SITE CONDITIONS.

**NOTES FOR STONE FACING:**

1. A TRIAL PANEL OF SIZE 1m X 1m SHALL BE PREPARED FOR THE SUPERVISING OFFICER'S APPROVAL.
2. WEEPHOLES SHALL BE PROVIDED AS APPROPRIATE.

Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial		KK	CKH	SZ	WLS
Date	04/17	04/17	04/17	04/17	04/17

Approved

Agreement No. CE 8/2015 (WS)

Contract Title  
FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O - INVESTIGATION, DESIGN AND CONSTRUCTION

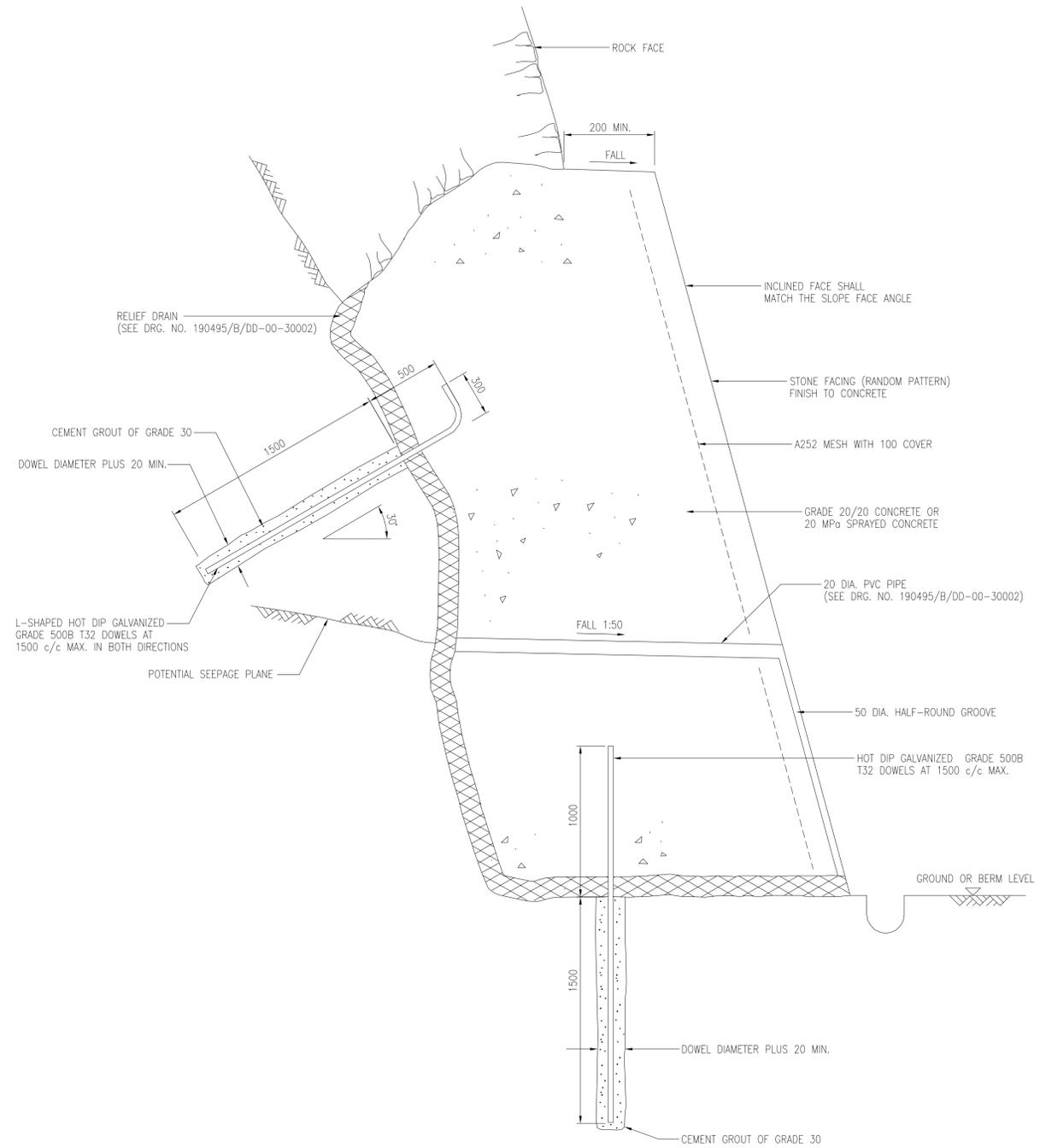
Drawing Title  
DETAILS OF GEOTECHNICAL WORKS (ROCK SLOPE IMPROVEMENT/STABILISATION WORKS)

Drawing No. 190495/B/DD/00/30003

Scale AS SHOWN

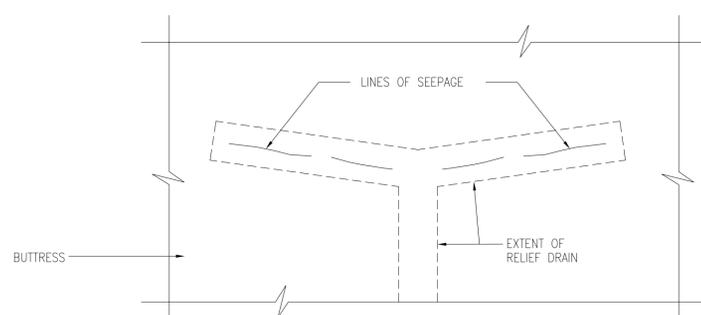


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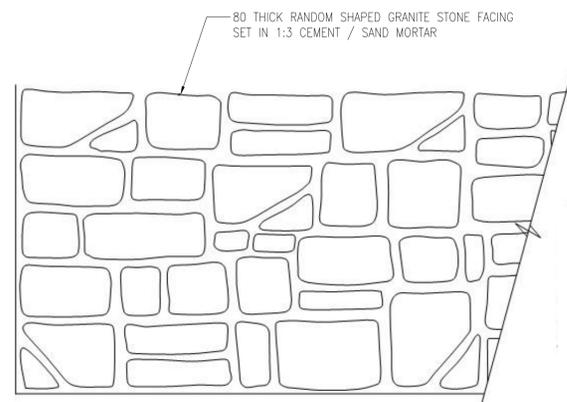
TYPICAL DETAILS OF CONCRETE BUTTRISS

SCALE A1 1 : 20  
A3 1 : 40



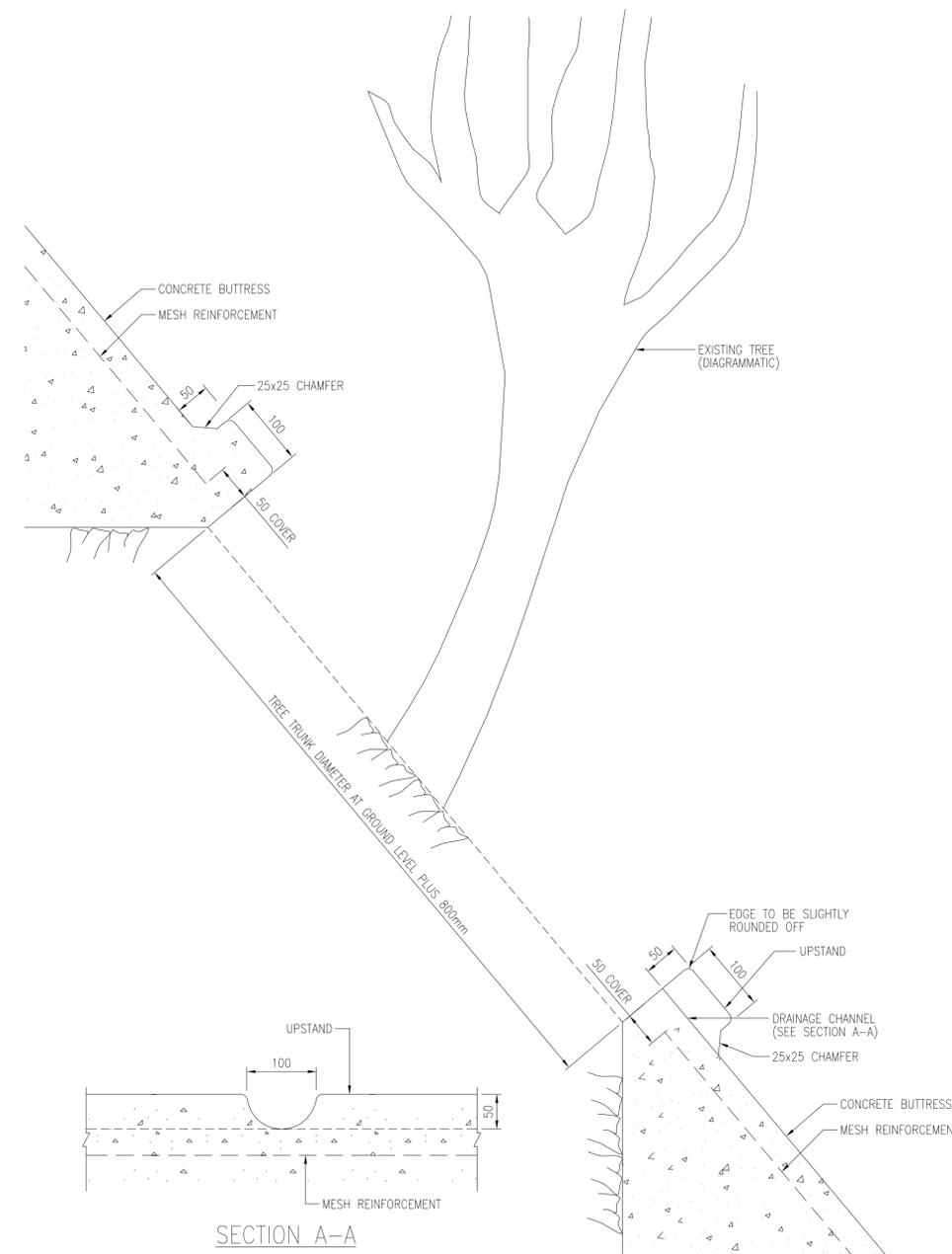
TYPICAL ELEVATION OF RELIEF DRAIN

SCALE A1 1 : 20  
A3 1 : 40



ELEVATION OF STONE FACING (RANDOM PATTERN)

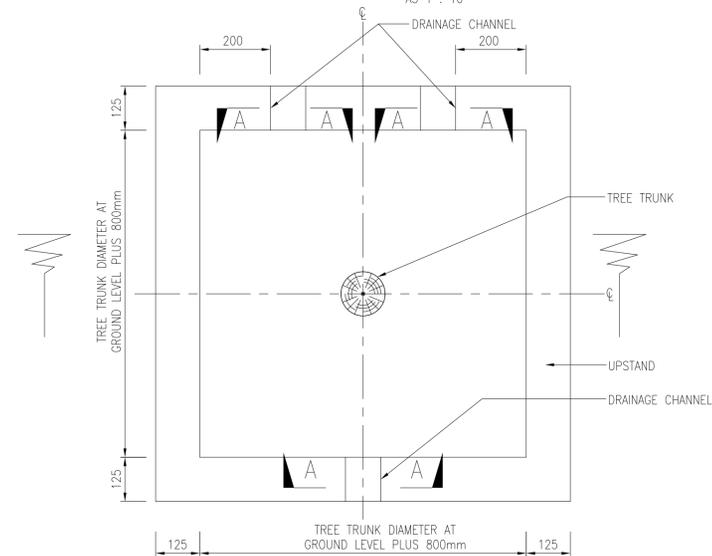
SCALE A1 1 : 20  
A3 1 : 40



SECTION A-A

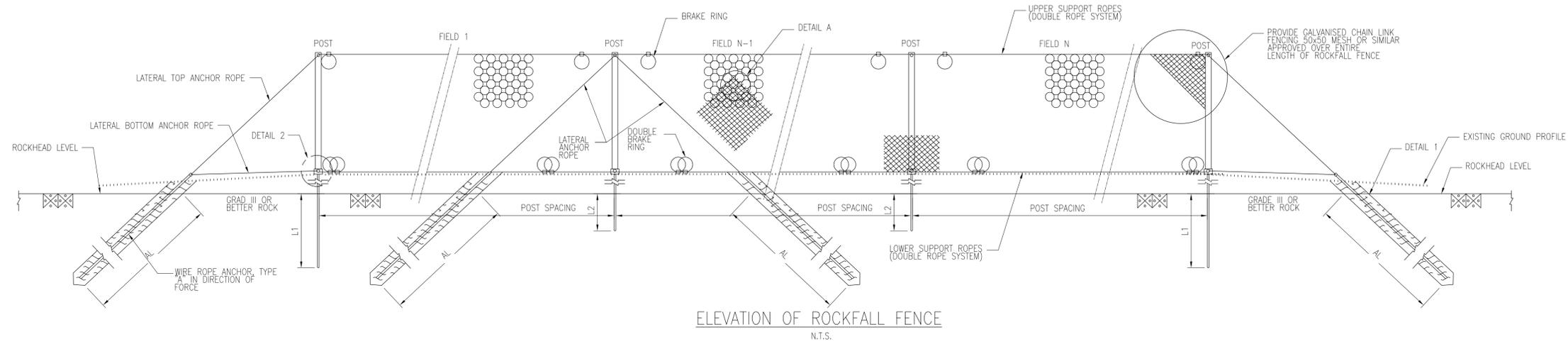
SECTION OF TREE RING

SCALE A1 1 : 5  
A3 1 : 10

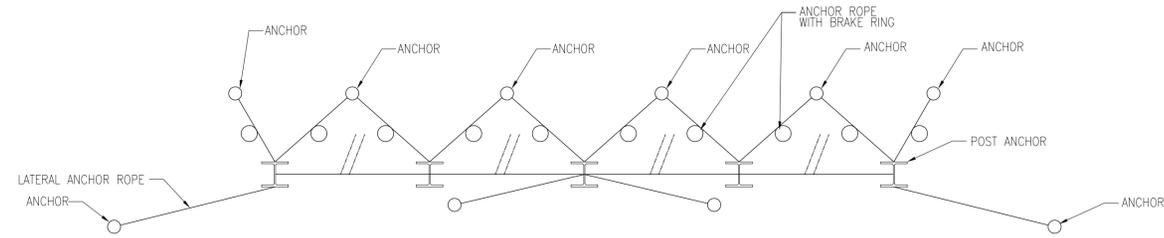


PLAN OF TREE RING

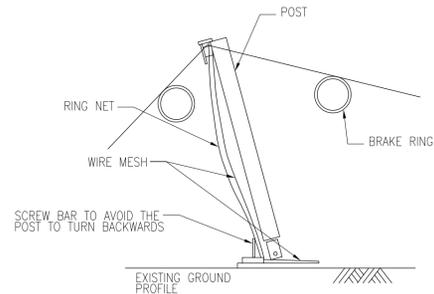
SCALE A1 1 : 10  
A3 1 : 20



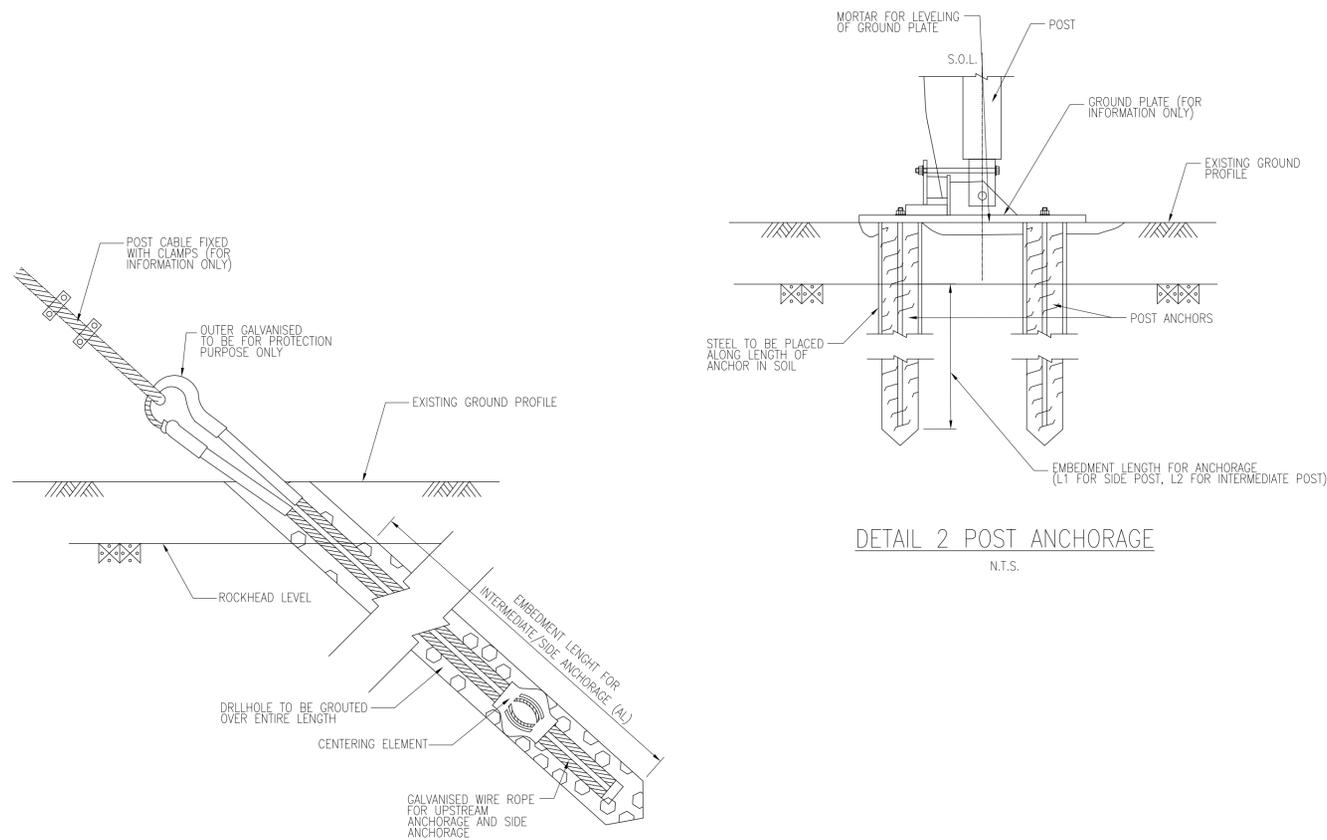
ELEVATION OF ROCKFALL FENCE  
N.T.S.



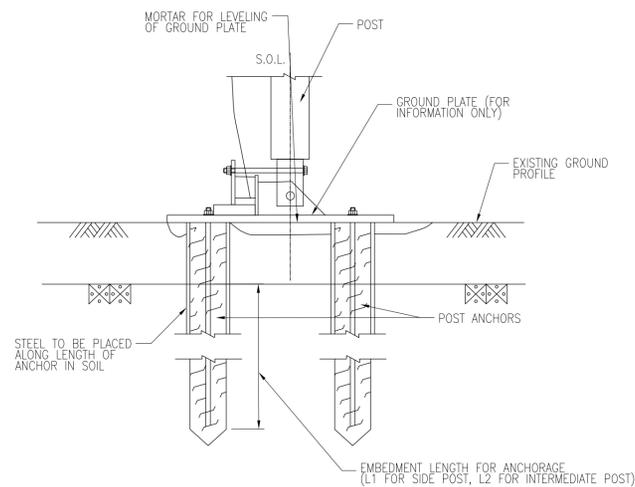
LAYOUT OF ANCHOR POINTS  
N.T.S.



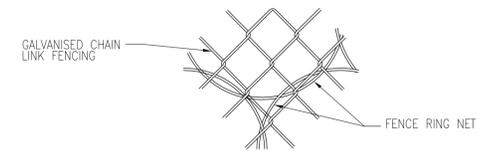
LAYOUT OF ANCHOR POST  
N.T.S.



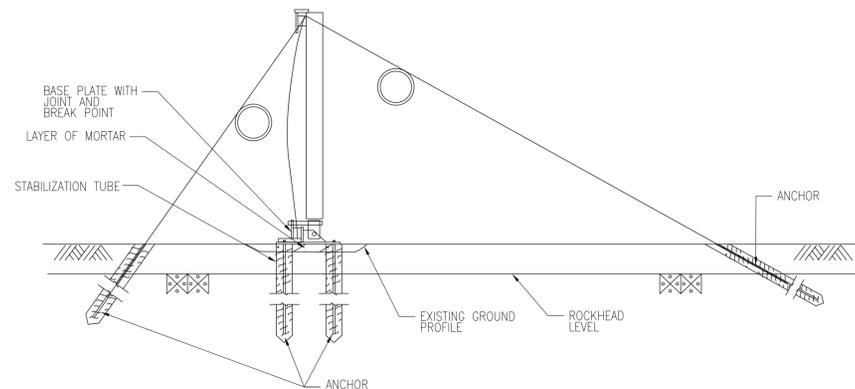
DETAIL 1 WIRE ROPE ANCHORAGE  
N.T.S.



DETAIL 2 POST ANCHORAGE  
N.T.S.



DETAIL A CHAIN LINK FENCE  
N.T.S.



ANCHORING TYPE "A"  
N.T.S.

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DETAILED DESIGN OF THE PROPOSED FLEXIBLE BARRIER. THE FLEXIBLE BARRIER SHALL ALLOW DEFORMATION DURING IMPACT. THE MINIMUM DESIGN CRITERIA FOR THE FLEXIBLE BARRIER SHALL BE CAPABLE FOR MIN. 3000KJ OR MIN. 5000KJ KINETIC ENERGY OF IMPACT WITH MIN. HEIGHT OF 4m AS SPECIFIED AND TO RETAIN THE LANDSLIDE DEBRIS AND BOULDERS.
2. THE PROPOSED FLEXIBLE BARRIER DETAILS SHOWN IN THE DRAWING IS FOR CONTRACTOR'S REFERENCE ONLY. THE EXACT TYPE AND INSTALLATION DETAILS OF THE FLEXIBLE BARRIER SHALL BE PROPOSED AND DESIGNED BY THE CONTRACTOR. THE FLEXIBLE BARRIER SHALL BE A PROPRIETARY PRODUCT AND SUBJECT TO THE SUPERVISING OFFICER'S APPROVAL PRIOR TO THE COMMENCEMENT OF WORKS.
3. DIMENSIONS OF LENGTH, SEPARATION AND OVERLAP OF THE FLEXIBLE BARRIER SECTIONS SHALL BE MADE TO SUIT THE SITE CONDITIONS AND MANUFACTURER'S RECOMMENDATIONS.
4. THE ROPE ANCHORAGE LENGTH (AL), POST FOUNDATION (L1 & L2), POST SIZE AND POST SPACING, ETC. AS SHOWN IN DRAWING SHALL BE DESIGNED BY THE CONTRACTOR SUBJECT TO THE ADOPTED FLEXIBLE BARRIER TYPE.
5. GROUND INVESTIGATION WORKS SUCH AS VERTICAL DRILLHOLES AND TRIALPIITS SHALL BE CARRIED OUT BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE TO VERIFY THE GEOLOGICAL PROFILE FOR CARRYING OUT DETAILED DESIGN OF FOUNDATION AND ANCHORAGE.

Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial		KK	CKH	SZ	WLS
Date	02/17	02/17	02/17	02/17	02/17

Approved

Agreement No. CE 8/2015 (WS)

Contract Title  
FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title  
FLEXIBLE BARRIER GENERAL ARRANGEMENT (NOT FOR CONSTRUCTION)

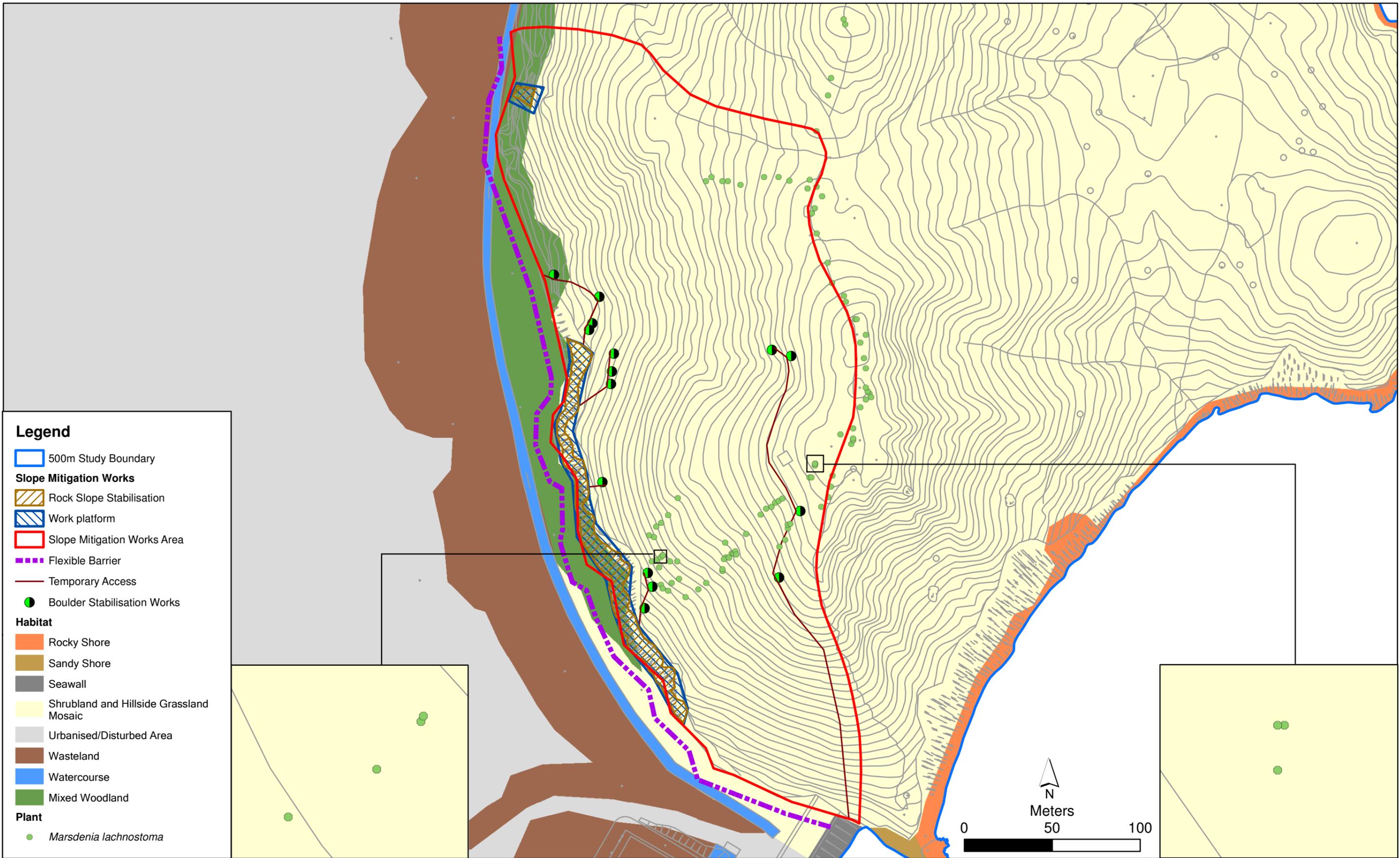
Drawing No. 190495/B/DD/00-30004  
Revision -

Scale A1 1 : 200  
A3 1 : 400



**APPENDIX G**

**SPECIES OF CONSERVATION IMPORTANCE  
IN THE REVISED SCHEME OF SLOPE MITIGATION WORKS  
AND RECOMMENDED TEMPORARY ACCESS AND WORKING PLATFORM**



Appendix G

Species of Conservation Importance in the Revised Scheme of Slope Mitigation Works and Recommended Temporary Access and Working Platform

File: T:\GIS\CONTRACT\0332378\Mxd\0332378_new slope scheme+species_JY.mxd  
Date: 14/7/2017

Environmental  
Resources  
Management

