

Issue No. : Issue 3
Issue Date : June 2021
Project No. : 1825



DETAILED LANDCAPE PLAN

FOR

PORT SHELTER PHASE 3, PO TOI O SEWERAGE TREATMENT PLANT EM&A

Prepared by

Allied Environmental Consultants Limited

COMMERCIAL-IN-CONFIDENCE

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DETAILED LANDSCAPE PLAN

FOR

PORT SHELTER PHASE 3, PO TOI O SEWERAGE TREATMENT PLANT EM&A

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COMMERCIAL-IN-CONFIDENCE

Certified
by:

A handwritten signature in black ink, appearing to read 'Timmy Wong', written over a horizontal line.

Timmy Wong
Environmental Team
Leader

Verified
by:

A handwritten signature in black ink, appearing to read 'F.C. Tsang', written over a horizontal line.

F.C. TSANG
Independent Environmental
Checker

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Drainage Services Department
Special Duty Division
42/F, Revenue Tower, 5 Gloucester Road,
Wan Chai, Hong Kong.

Attention: Ms. Wing W.Y. Law

15 June 2021

Dear Wing,

Sewerage Works at Po Toi O
Detailed Landscape Plan

I refer to the email from the ET concerning the captioned. I have no adverse comment on the Detailed Landscape Plan (Issue 3). In accordance with Condition 2.14 of the Environmental Permit with permit No EP-516/2016, I hereby verify that this document has conformed to the relevant information, requirements and recommendations contained in the approved EIA Report (Register No. AEIAR-206/2017).

Yours faithfully,

F.C. Tsang
Independent Environmental Checker

cc. ETL – Timmy WONG

Document Verification



Project Title Port Shelter Phase 3, Po Toi O Sewerage Treatment Plant EM&A **Project No.** 1825

Document Title Detailed Landscape Plan

Issue No.	Issue Date	Description	Prepared by	Checked by	Approved by
1	February 2021	1 st Submission	Timmy Wong	Joanne Ng	Grace Kwok
2	June 2021	2 nd Submission	Timmy Wong	Joanne Ng	Grace Kwok

Three handwritten signatures are shown in a row. The first signature is 'Timmy Wong', the second is 'Joanne Ng', and the third is 'Grace Kwok'. Each signature is written in black ink and is positioned below the corresponding 'Prepared by', 'Checked by', and 'Approved by' columns of the table above.

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Issue No.: Issue 3
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DETAILED LANDSCAPE PLAN
FOR
PORT SHELTER SEWERAGE, STAGE3 - SEWERAGE WORKS AT PO TOI O

PREPARED BY:
ALLIED ENVIRONMENTAL CONSULTANTS LTD.
COMMERCIAL-IN-CONFIDENCE

Issue No.: Issue 3
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DETAILED LANDSCAPE PLAN
FOR
PORT SHELTER SEWERAGE, STAGE3 - SEWERAGE WORKS AT PO TOI O

PREPARED BY:
ALLIED ENVIRONMENTAL CONSULTANTS LTD.

COMMERCIAL-IN-CONFIDENCE



Certified by:


Mr. Aloysius WONG
Registered Landscape Architect

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Timmy Wong
Environmental Team
Leader

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F.C. TSANG
Independent Environmental
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TABLE OF CONTENT

1. INTRODUCTION.....4

1.1 OBJECTIVE4

1.2 REQUIREMENT ENVIRONMENTAL LEGISLATION, STANDARDS AND CRITERIA4

1.3 SCOPE AND LOCATION OF THE PROJECT4

2. LANDSCAPE AND VISUAL IMPACT AND MITIGATION MEASURES4

2.1 LANDSCAPE RESOURCES AND LANDSCAPE CHARACTER AREAS TO BE AFFECTED4

2.2 MITIGATION MEASURES FOR LANDSCAPE RESOURCES AND LANDSCAPE CHARACTER AREAS4

2.3 VISUALLY SENSITIVE RECEIVERS TO BE AFFECTED8

2.4 MITIGATION MEASURES FOR VISUALLY SENSITIVE RECEIVERS8

3. SUMMARY OF TREE TREATMENT AND COMPENSATION9

3.1 SUMMARY OF RETAIN/FELL TREE/COMPENSATORY TREE9

3.2 TREE PROTECTION AND LANDSCAPE WORKS10

4. SUMMARY10

5. APPENDIX.....11

APPENDIX A – PROJECT LOCATION PLAN12

APPENDIX B – LRS AND LCRS LOCATION PLAN13

APPENDIX C – IMPLEMENTATION & MAINTENANCE AND MANAGEMENT SCHEDULE14

APPENDIX D – VSR LOCATION AND PHOTOMONTAGE OF VIEWPOINTS15

APPENDIX E – GENERAL LAYOUT ON THE IMPLEMENTATION OF CMS AND OMS.....16

APPENDIX F – TREE ASSESSMENT SCHEDULE AND TREE SURVEY LOCATION17

APPENDIX G – COMPENSATORY TREE PLANTING AND PLANTING LOCATION18

APPENDIX H – SECTION 26 OF PARTICULAR SPECIFICATION19

APPENDIX I – SECTION 3 OF PARTICULAR SPECIFICATION20

APPENDIX J – TEMPORARY WORKING PLATFORM AT ROCKY SHORE21

APPENDIX K – ARCHITECTURAL DESIGN OF PTOSTP22

APPENDIX L – SITE HOARDING AND NOISE BARRIER23

APPENDIX M – LIGHTING DETAILS OF PTOSTP24

1. INTRODUCTION

1.1 Objective

Port Shelter Sewerage, Stage3 - Sewerage Works at Po Toi O is a designated project under the Environmental Impact Assessment Ordinance (EIAO), Environmental Permit No. EP-516/2016 (the EP) is granted to Drainage Services Department (the Project Proponent). The purpose of this plan is to fulfil the requirement as stipulated in Condition 2.14 of 516/2016 to submit a Landscape Plan (LP) to the Director of Environmental Protection (DEP) for approval in at least 3 months before the commencement of the corresponding parts of landscape works.

This LP also aims to address landscape and visual impacts arising from this designated project, and hence to suggest relevant mitigation measures in accordance with recommendations from approved environmental impact assessment report (Register No. AEIAR-206/2017) (hereinafter referred to as the “EIA Report”) and Environmental Monitoring and Audit Manual (EM&A Manual).

1.2 Requirement Environmental Legislation, Standards and Criteria

With reference to condition 2.14 of the EP, the Landscape Plan shall include the following details: protection, preservation and transplantation of existing trees, landscape reinstatement, compensatory planting as well as new planting for the works of the Project with clear indication of location, size, number or spacing and plant species, design details; implementation programme; maintenance and management schedules of the landscape and visual mitigation measures recommended in the approved EIA Report.

1.3 Scope and Location of the Project

The project comprises a sewage treatment plant on Po Toi O Chuen Road, associated sewage mains and a submarine outfall into Clear Water Bay, the project layout plan is shown in **Appendix A**.

2. LANDSCAPE AND VISUAL IMPACT AND MITIGATION MEASURES

2.1 Landscape Resources and Landscape Character Areas to be affected

According to the approved EIA Report Table 10-5, Landscape Resources (LRs) including LR-01, LR-03, LR-04 and Landscape Character Areas (LCAs) including LCA-01, LCA-02 and LCA-04 are affected by both construction and operation stage of the Project, their locations are presented in **Appendix B**.

2.2 Mitigation measures for Landscape Resources and Landscape Character Areas

The landscape mitigation measures are recommended in the approved EIA Report Table 10-6 and Table 10-7 to reduce potential impact during construction phase and operation phase, The implementation, maintenance and management schedule of respective CMs and OM(s) are detailed in **Appendix C**. With the recommended mitigation measures, the impact significance can be lowered to insubstantial or none when during operation. The recommended mitigation measures for construction phase – CM(s) and mitigation measures for operation phase – OM(s) for the identified LRs and LCAs of the Project are summarized in Table 2.2.1 and detail descriptions on CMs and OM(s) are summarized in Table 2.2.2a and Table 2.2.2b. A general layout of CMs and OM(s) implementation are illustrated in **Appendix E**.

Table 2.2.1 Recommended mitigation measures for LRs and LCAs

ID No.	Landscape Resource / Character Areas	Impact Significance Threshold BEFORE Mitigation (None, Insubstantial, Slight, Moderate, Substantial)		Recommended Mitigation Measures	Recommended Mitigation Measures
		Construction	Operation	Construction Phase	Operation Phase
Landscape Resources					
LR1	Coastal Waters	Moderate	None	CM1	-
LR3	Natural Rocky Coastline	Moderate	Slight	CM1, CM7, CM8	- *
LR4	Natural Coastal Upland Vegetation	Slight	Slight	CM1, CM7	OM4, OM5
Landscape Character Area					
LCA1	Coastal Upland and Hillside Landscape	Moderate	Moderate	CM1, CM7	OM4, OM5
LCA2	Bay Landscape	Moderate	None	CM1	-
LCA4	Coastal Village Landscape	Slight	Slight	CM1, CM7, CM8	-
*No tree felling at LR3.					

Table 2.2.2a Details of CMs

Landscape and Visual Mitigation Measures for Construction Phase	Description of mitigation measures
CM1 - The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape. All slope excavation shall take place from within the work boundary to minimise impacts on adjacent slopes.	Tree impacts will be minimised and limited to the footprint of the PTOSTP.
CM2 - Reduction of construction period to practical minimum.	-
CM3 - Construction traffic (land and sea) including construction plant, construction vessels and barges should be kept to a practical minimum.	-
CM4 - Erection of decorative mesh screens or construction hoardings and/or temporary noise barriers around works areas in visually unobtrusive colours.	During construction, site hoarding will be erected in two stages, i.e. stage 1 setting out during slope cutting works (February 2021 to November 2021), stage 2 setting after slope cutting works (November 2021 to March 2024). Movable noise barrier will be adopted when and where necessary. Refer to Appendix L for the details of decorative hoardings and noise barriers.
CM5 - Avoidance of excessive height and bulk of site buildings and structures.	-
CM6 - Control of night-time lighting by hooding all lights and through minimisation of night	-

Landscape and Visual Mitigation Measures for Construction Phase	Description of mitigation measures
working periods.	
<p>CM7 - All existing trees shall be carefully protected during construction.</p> <p>A Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. Tree risk assessment shall be undertaken to all existing trees within the project site.</p>	<p>Total 42 no. of existing tree are located within the project area, among which 36 no. of them will be carefully protected. Location plan of existing tree and tree schedule is shown in Appendix F. Contract Specification on tree protection including tree protection method is shown in Appendix H.</p>
<p>CM 8 - Protective materials to be provided to natural rocky coastline to prevent damage to existing landform from plant and machinery during temporary drilling operations. Reinstatement following removal of plant & equipment to original or improved condition shall be undertaken.</p>	<p>Temporary working platform at rocky shore will be erected at rocky shore to facilitate pipe-laying, several major boulders will be temporarily removed to level the base of the proposed platform, and geotextile sheet will be laid on the surface to protect the natural rocky shore. Upon the completion of construction works, the temporary working platform will be demolished and the rocky shore will be reinstated. The work sequences and platform sections are shown in Appendix J.</p>

Table 2.2.2b Details of OMs

Landscape and Visual Mitigation Measures for Operation Phase	Description of mitigation measures
OM1 - Sensitive design of sewage treatment plant in terms of scale, height and bulk (visual weight) to integrate the building into the existing topography.	Sensitive design is adopted at PTOSTP to mitigate visual impact, building elevation is shown in Appendix K .
<p>OM2 - Use of appropriate building materials and colours for sewage treatment plant to complement surroundings*</p> <p>*Appropriate building materials and colours include use of non-reflective finishes such as textured render for the building and recessive colours that blend with the natural tones of the landscape backdrop (refer to Figure 10.14 of Appendix D – VSR Location and Photomontage of Viewpoints of the Detailed Landscape Plan).</p>	<p>Façade treatment will be adopted for the external wall of the PTOSTP to integrate the building with the backdrop landscape; W01 faïence concrete with F5 finishing, W02 decorative external coating with granite and groove line finish, and W03 artificial granite wall tiles (grey color). Depending on various parts of the building, different types of treatment will be adopted. Further façade details and graphics are shown in Appendix K.</p>
OM3 - Lighting units to be directional and minimise unnecessary light spill and glare.	Mainly three types of lighting will be adopted externally, and three types of lightings will be adopted internally. Lighting fitting schedule and installation layout plan are shown in Appendix M . The selected types of lighting are all downward lighting to minimize unnecessary light spill and glare especially for external lighting.

Landscape and Visual Mitigation Measures for Operation Phase	Description of mitigation measures
OM4 - Greening measures to reinstate the landscape which are appropriate to the context, including tree and shrub planting, as well as vertical greening shall be implemented.	All the soft landscape works will strictly comply with the relevant sections of the Particular Specification and the contract drawings. Trees and shrubs planting will be implemented at PTOSTP to integrate the building with the landscape. Design drawings of the greening are shown in Appendix K . Climbing plants will be implemented at the façade of the building and the retaining wall, serving as vertical greening to mitigate visual impact arise from the structure. Minimal 600mm fabricated soil depth and irrigation system will be provided. Detail design drawings of the vertical greening and irrigation system are shown in Appendix K
OM5 - Compensatory tree planting for all felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under the relevant technical circulars. Tree risk assessment shall be undertaken to all existing trees within the project site as per “Guidelines for Tree Risk Assessment and Management Arrangement”. Planting at Sewage Treatment Plant Planting at temporary drilling site for Submarine Outfall	Among 42 nos. of existing tree located within the project area, 6 nos. of tree which are located within the footprint of PTOSWP will be fell due to their direct conflict with permanent works and their low suitability for transplanting. Location plan of tree to be fell and tree schedule is shown in Appendix F . 10 nos. compensatory tree will be planted to compensate the tree loss in accordance with ETWB TCW No. 7/2015. Location plan of compensatory tree is shown in Appendix G .

2.3 Visually Sensitive Receivers to be affected

The visual sensitive receivers (VSRs) that are potentially affected by this Project in the construction and operation phase are listed in Table 2.4. Location of VSRs is presented in **Appendix D**.

2.4 Mitigation Measures for Visually Sensitive Receivers

The visual mitigation measures are recommended in the approved EIA Report Table 10-10 to reduce potential visual impact arisen during construction phase and operation phase. The

recommended CMs and OMs to corresponding affected VSRs are listed in Table 2.4.

With the implementation of mitigation measures illustrated in **Appendix E**, visual impacts to most of the VSRs can be reduced to slight or insubstantial when the proposed landscape works become mature during year 10 of operation. Photomontages illustrating the potential visual impact during operation with and without mitigation measures from representative VSRs due to the Project are shown in **Appendix D**.

Table 2.4. Recommended mitigation measures for VSRs.

VSR Type & ID.	Key Visually Sensitive Receiver (VSR)	Impact Significance Threshold BEFORE Mitigation (None, Insubstantial, Slight, Moderate, Substantial)		Recommended Mitigation Measures	Recommended Mitigation Measures
		Construction	Operation	Construction Phase)	Operation Phase)
Residential VSRs					
RES-1	Residents in Po Toi O Village	Moderate	Moderate	CM1- 6	OM1- 6
RES-2	Residents at Tai Wong Kung	Moderate	Moderate	CM1- 6	OM1- 6
RES-3	Residents of Cala d’Or	Moderate	Moderate	CM1- 6	OM1- 6
RES-4	Residents of Fairway Vista	Moderate	Slight	CM1- 6	OM1- 6
RES-5	Residents at Tai Au Mun	Insubstantial	Insubstantial	CM1- 6	OM1- 6
REC-1	Hikers on Tin Ha Shan	Moderate	Moderate	CM1- 6	OM1- 6
REC-2	Players in Clear Water Bay Golf Course	Slight	Slight	CM1- 6	OM1- 6
REC-3	Visitors to Clear Water Bay Country Park Visitor Centre	Insubstantial	Insubstantial	CM1- 6	OM1- 6
REC-4	Hikers on Tai Leng Tung	Insubstantial	Insubstantial	CM1- 6	OM1- 6
REC-5	Recreational Craft in Clear Water Bay	Moderate	Insubstantial	CM1- 6	OM1- 6
REC-6	Visitors to Seafood Restaurants in Po Toi O	Slight	Insubstantial	CM1- 6	OM1- 6
REC-7	Hikers at Junk Peak	Insubstantial	Insubstantial	CM1- 6	OM1- 6
REC-8	Users of Clear Water Bay First Beach	Insubstantial	Insubstantial	CM1- 6	OM1- 6
REC9	Users of Clear Water Bay Second Beach	Insubstantial	None	CM1- 6	OM1- 6

VSR Type & ID.	Key Visually Sensitive Receiver (VSR)	Impact Significance Threshold BEFORE Mitigation (None, Insubstantial, Slight, Moderate, Substantial)		Recommended Mitigation Measures	Recommended Mitigation Measures
		Construction	Operation	Construction Phase)	Operation Phase)
Travelling VSRs					
T-1a	Drivers/Passengers along Tai Au Mun Road	Slight	Slight	CM1- 6	OM1- 6
T-1b	Drivers/Passengers along Tai Au Mun Road	Insubstantial	None	CM1- 6	OM1- 6
T-2	Drivers Passengers along Po Toi O Chuen Road	Substantial	Substantial	CM1- 6	OM1- 6
T-3	Drivers/Passengers along Clear Water Bay Road to Tai Hang Tun	Insubstantial	Insubstantial	CM1- 6	OM1- 6
Occupational VSRs					
O-1	Fishermen in Po Toi O	Slight	Slight	CM1- 6	OM1- 6
O-2	Workers/Staff at Clear Water Bay Country Park Visitor Centre	Insubstantial	Insubstantial	CM1- 6	OM1- 6
O-3	Workers in Seafood Restaurants in Po Toi O	Slight	Insubstantial	CM1- 6	OM1- 6

3. Summary of Tree Treatment and Compensation

3.1 Summary of Retain/Fell Tree/Compensatory Tree

A detail tree survey was conducted to identify trees within the project area, the tree assessment schedule and location is shown in **Appendix F**. A total of 42 nos. of existing tree are identified in the Project area, among which 6 nos. of existing tree within LR-04 would be fell due to conflicts with the permanent works of POTSTP; 36 nos. of existing trees to be retained, no trees would be transplanted. A summary table of tree survey and tree treatment is presented in Table 3.1. To compensate the tree loss in accordance with DEVB TC(W) No. 7/2015, a total of 10 nos. of compensatory trees will be planted at

PTOSTP. Compensatory tree planting schedule and planting location are shown in **Appendix G**.

Table 3.1 Summary of Tree Survey and Tree Treatment

Po Toi O	No. of existing trees surveyed	No. of trees proposed for felling	No. of trees to be retained	Tree No.	Departments for expertise advices
Within PTOSTP	6	6	0	T99 to T104	HyD
Slope No. 12SWA/CR91(2)	9	0	9	T128 to T133 T138 to T140	LandsD
Slope No. 12SWA/CR96	10	0	10	T105 to T112 T134 to T135	HyD
Other locations surrounding PTOSTP	3	0	3	T125 to T127	AFCD
Other locations	14	0	14	T113 to T123 T141 to T142 T144	LandsD
Total	42	6	36		

3.2 Tree protection and landscape works

To protect the existing tree in the project area, the Contractor is required to comply with tree protection and preservation requirement specified in Section 26 of Particular Specification shown in **Appendix H** and landscape works requirement specified in Section 3 of Particular Specification shown in **Appendix I**.

4. Summary

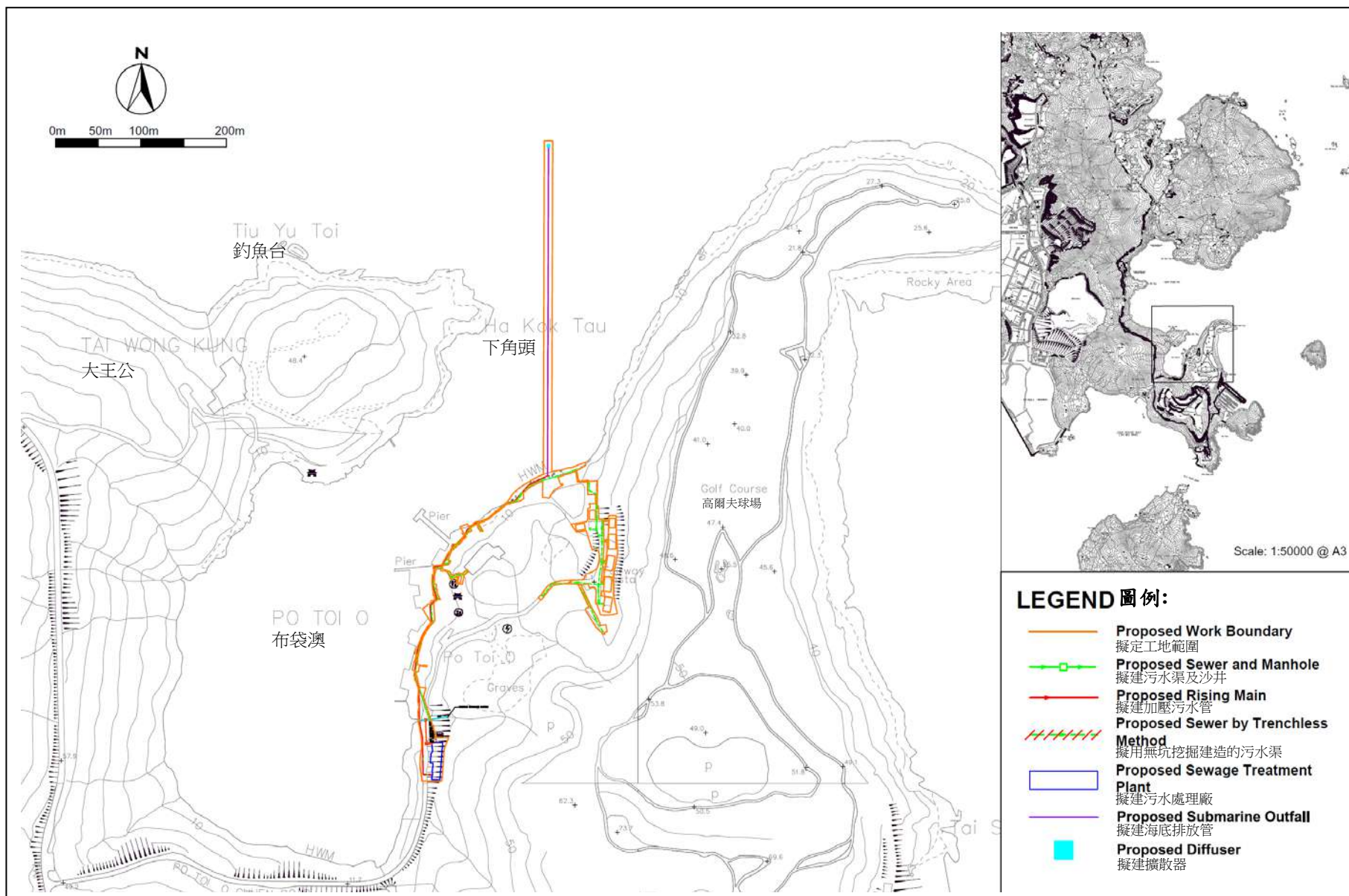
This LP submission is prepared in fulfilment condition 2.14 of the EP. This LVP submission demonstrates the design objectives of the proposed Sewerage Works at Po Toi O and associated building structures in the Project.

All landscape and visual mitigation measures during the construction and operation phase as stated in Section 10 of the approved EIA Report shall be considered and adopted into the Project as far as practicable. The overall implementation of landscape and visual mitigation measures will be regularly monitored by the RLA at monthly interval during

construction phase and on a bi-monthly basis during 12-month tree establishment period to ensure that mitigation measures have become established and self-sustainable in order to provided long term landscape and visual mitigation as intended.

5. APPENDIX

APPENDIX A – PROJECT LOCATION PLAN



Project Title: Port Shelter Sewerage, Stage 3 – Sewerage Works at Po Toi O
 工程項目名稱：牛尾海污水收集系統第三階段 - 布袋澳污水收集系統工程
 Layout Plan of Proposed Sewerage Works
 污水收集系統工程平面圖

Plan originated from the Figure 1A of approved EIA Report: AEIAR-206/2017
 圖則源自已批准環評報告-AEIAR-206/2017 內的圖 1A

APPENDIX B – LRS AND LCRS LOCATION PLAN

APPENDIX C – IMPLEMENTATION & MAINTENANCE AND MANAGEMENT SCHEDULE

EIA Ref.	EM &A Ref.	Landscape and Visual Mitigation Measures	Description of mitigation measures	Implementation Location / Timing	Implementation Agency	Funding Agency	Relevant Legislation & Guidelines	Environmental Performance
Table 10-6	App A	CM1 - The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape. All slope excavation shall take place from within the work boundary to minimise impacts on adjacent slopes.	Tree impacts will be minimised and limited to the footprint of the PTOSTP.	Entire Project Area / Construction phase	Contractor	DSD	Detailed Design drawings and particular specifications	For construction phase, site inspections by appointed RLA at monthly interval to closely monitor all these aspects of work.
Table 10-6	App A	CM2 - Reduction of construction period to practical minimum.	-	Entire Project Area / Construction phase	Contractor	DSD	NA	
Table 10-6	App A	CM3 - Construction traffic (land and sea) including construction plant, construction vessels and barges should be kept to a practical minimum.	-	Entire Project Area / Construction phase	Contractor	DSD	Particular Specification	
Table 10-6	App A	CM4 - Erection of decorative mesh screens or construction hoardings and/or temporary noise barriers around works areas in visually unobtrusive colours.	During construction, site hoarding will be erected in two stages, i.e. stage 1 setting out during slope cutting works (February 2021 to November 2021), stage 2 setting after slope cutting works (November 2021 to March 2024). Movable noise barrier will be adopted when and where necessary. Refer to Appendix L for the details of decorative hoardings and noise barriers	Entire Project Area / Construction phase	Contractor	DSD	Particular Specification	
Table 10-6	App A	CM5 - Avoidance of excessive height and bulk of site buildings and structures.	-	PTOSTP and temporary drilling site for submarine outfall / Construction phase	Contractor	DSD	Particular Specification	
Table 10-6	App A	CM6 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	-	Entire Project Area / Construction phase	Contractor	DSD	Particular Specification	

EIA Ref.	EM &A Ref.	Landscape and Visual Mitigation Measures	Description of mitigation measures	Implementation Location / Timing	Implementation Agency	Funding Agency	Relevant Legislation & Guidelines	Environmental Performance
Table 10-6	App A	CM7 - All existing trees shall be carefully protected during construction. A Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. Tree risk assessment shall be undertaken to all existing trees within the project site.	Total 42 no. of existing tree are located within the project area, among which 36 no. of them will be carefully protected. Location plan of existing tree and tree schedule is shown in Appendix F . Contract Specification on tree protection including tree protection method is shown in Appendix H .	Entire Project Area / Construction phase	Contractor	DSD	Tree Protection Particular Specification, DEVB TC (W) No.10/2013 and Guidelines for Tree Risk Assessment and Management Arrangement	
Table 10-6	App A	CM 8 - Protective materials to be provided to natural rocky coastline to prevent damage to existing landform from plant and machinery during temporary drilling operations. Reinstatement following removal of plant & equipment to original or improved condition shall be undertaken.	Temporary working platform at rocky shore will be erected at rocky shore to facilitate pipe-laying, several major boulders will be temporarily removed to level the base of the proposed platform, and geo-textile sheet will be laid on the surface to protect the natural rocky shore. Upon the completion of construction works, the temporary working platform will be demolished and the rocky shore will be reinstated. The work sequences and platform sections are shown in Appendix J .	Temporary drilling site for submarine outfall / Construction phase	Contractor	DSD		

EIA Ref.	EM &A Ref.	Landscape and Visual Mitigation Measures	Description of mitigation measures	Implementation Location / Timing	Implementation Agent	Maintenance Agent	Relevant Legislation & Guidelines	Environmental Performance
Table 10-7	App A	OM1 - Sensitive design of sewage treatment plant in terms of scale, height and bulk (visual weight) to integrate the building into the existing topography.	Sensitive design is adopted at PTOSTP to mitigate visual impact, building elevation is shown in Appendix K.	PTOSTP / Design Phase	DSD	-	Detailed Design Drawings and Specifications	For operation phase, monitoring by appointed RLA at bi-monthly interval during 12-month tree establishment period
Table 10-7	App A	OM2 - Use of appropriate building materials and colours for sewage treatment plant to complement surroundings* *Appropriate building materials and colours include use of non-reflective finishes such as textured render for the building and recessive colours that blend with the natural tones of the landscape backdrop (refer to Figure 10.14 of Appendix D – VSR Location and Photomontage of Viewpoints of the Detailed Landscape Plan).	Façade treatment will be adopted for the external wall of the PTOSTP to integrate the building with the backdrop landscape. W01 fair face concrete with F5 finishing, W02 decorative external coating with granite and groove line finish, and W03 artificial granite wall tiles (grey color). Depending on various parts of the building, different types of treatment will be adopted. The façade details and graphics are shown in Appendix K.	PTOSTP / Design Phase PTOSTP / Construction Phase PTOSTP / Operational Phase	DSD Contractor Building Operator / DSD	- Building Operator / DSD	Detailed Design Drawings and Specifications	
Table 10-7	App A	OM3 - Lighting units to be directional and minimise unnecessary light spill and glare.	Mainly three types of lighting will be adopted externally, and three types of lightings will be adopted internally. Lighting fitting schedule and installation layout plan are shown in Appendix M.	PTOSTP / Design Phase PTOSTP / Construction Phase & first operation year PTOSTP / Operation Phase	DSD Constructor Building Operator / DSD	Highways Department	Detailed Design Drawings and Specifications	

EIA Ref.	EM &A Ref.	Landscape and Visual Mitigation Measures	Description of mitigation measures	Implementation Location / Timing	Implementation Agent	Maintenance Agent	Relevant Legislation & Guidelines	Environmental Performance
Table 10-7	App A	OM4 - Greening measures to reinstate the landscape which are appropriate to the context, including tree and shrub planting and vertical greening, shall be implemented.	All the soft landscape works will strictly comply with the relevant sections of the Particular Specification and the contract drawings. Tree and shrubs planting, as well as vertical greening will be implemented at PTOSTP to integrate the building with the landscape. Design drawings of the greening are shown in Appendix K .	PTOSTP / Design Phase PTOSTP / Construction Phase & first operation year PTOSTP / Operational Phase	DSD Constructor Building Operator / DSD	- Constructor Building Operator / DSD	Detailed Design Drawings and Specifications	
Table 10-7	App A	OM5 - Compensatory tree planting for all felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under the relevant technical circulars. Tree risk assessment shall be undertaken to all existing trees within the project site as per “Guidelines for Tree Risk Assessment and Management Arrangement”. Planting at Sewage Treatment Plant Planting at temporary drilling site for Submarine Outfall	Among 42 nos. of existing tree located within the project area, 6 nos. of tree which are located within the footprint of PTOSWP will be fell due to direct conflict with permanent works and their low suitability for transplanting. Location plan of tree to be fell and tree schedule is shown in Appendix F . 10 nos. compensatory tree will be planted to compensate the tree loss in accordance with ETWB TCW No. 7/2015. Location plan of compensatory tree is shown in Appendix G .	PTOSTP / Design Phase PTOSTP/ Construction Phase & first operation year PTOSTP / Operational Phase	DSD Constructor Building Operator / DSD	- Constructor Building Operator / DSD	As per approved Tree Removal Application, Detailed Design Drawings, Tree Protection Particular Specification and Guidelines for Tree Risk Assessment and Management Arrangement	

APPENDIX D – VSR LOCATION AND PHOTOMONTAGE OF VIEWPOINTS

LEGEND

- PROJECT BOUNDARY
- EXTENT OF VISUAL IMPACT
- ZONE OF VISUAL INFLUENCE DURING OPERATION PHASE
- REC-1 VSRs ID
- P1 PHOTOMONTAGE VIEWPOINTS

Residential VSRs

RES-1	Residents in Po Toi O Village
RES-2	Residents in Tai Wong Kung
RES-3	Residents of Cala d'Or
RES-4	Residents in Fairway Vista
RES-5	Residents at Tai Au Mun

Recreational VSRs

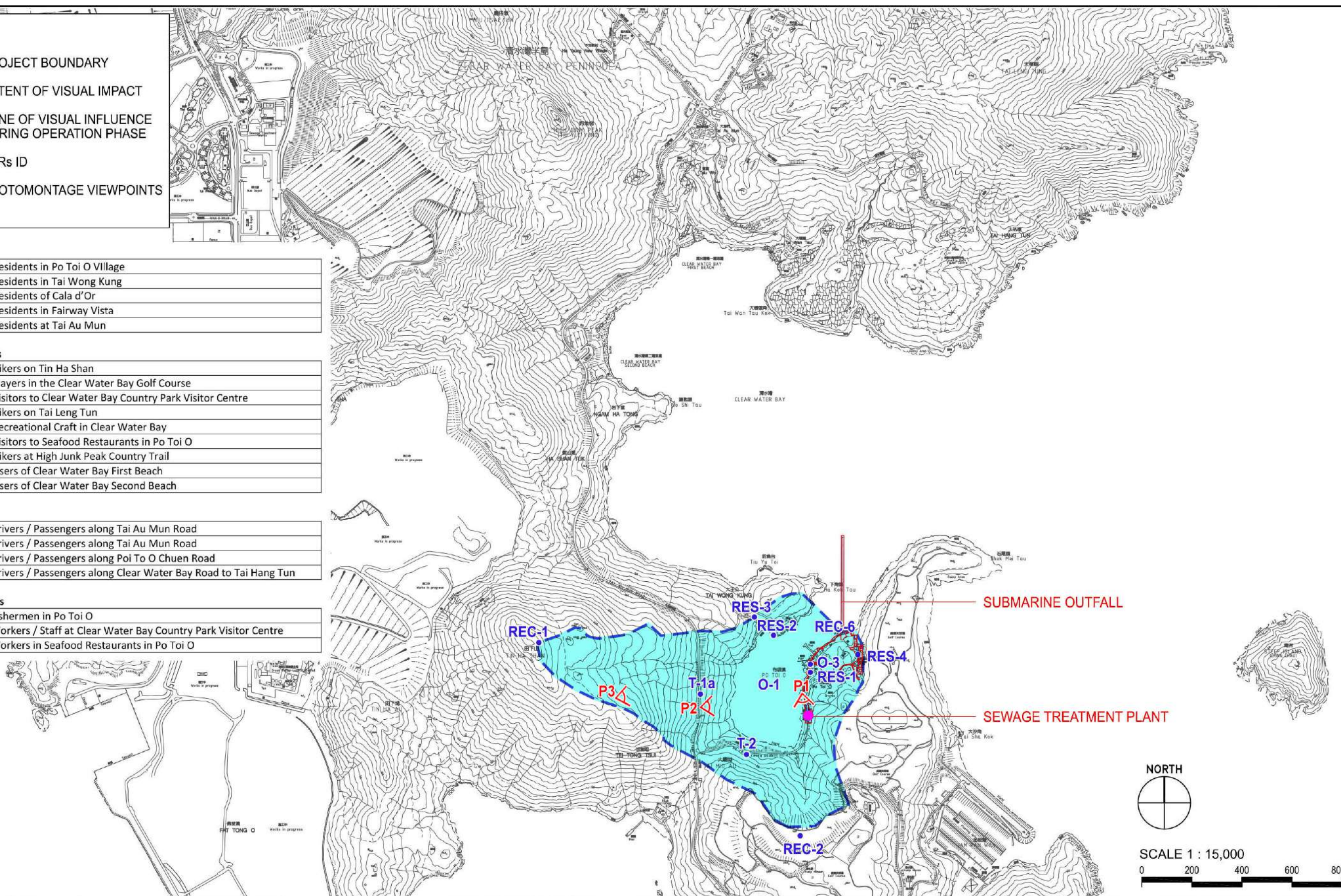
REC-1	Hikers on Tin Ha Shan
REC-2	Players in the Clear Water Bay Golf Course
REC-3	Visitors to Clear Water Bay Country Park Visitor Centre
REC-4	Hikers on Tai Leng Tun
REC-5	Recreational Craft in Clear Water Bay
REC-6	Visitors to Seafood Restaurants in Po Toi O
REC-7	Hikers at High Junk Peak Country Trail
REC-8	Users of Clear Water Bay First Beach
REC-9	Users of Clear Water Bay Second Beach

Travelling VSRs

T-1a	Drivers / Passengers along Tai Au Mun Road
T-1b	Drivers / Passengers along Tai Au Mun Road
T-2	Drivers / Passengers along Poi To O Chuen Road
T-3	Drivers / Passengers along Clear Water Bay Road to Tai Hang Tun

Occupational VSRs

O-1	Fishermen in Po Toi O
O-2	Workers / Staff at Clear Water Bay Country Park Visitor Centre
O-3	Workers in Seafood Restaurants in Po Toi O



						Job Title	FIGURE No.	
						Agreement No. CE 41/2013 (EP) Port Shelter Sewerage, Stage 3 - Sewerage Works at Po Toi O Environmental Impact Assessment Studies - Investigation	10.10	
						Drawing Title	Scale	
						ZONE OF VISUAL INFLUENCE (ZVI) AND VISUALLY SENSITIVE RECEIVERS (VSRs) DURING OPERATION PHASE	1:15000	
Amendment No.	Date	Description	Drawn by	Checked by	Approved by	Drawn by	Job. No.	CTCL1
C	4/12/15	ZONE OF VISUAL INFLUENCE EXTENDED	PN	TO	TO	PL		
B	28/7/15	PROJECT BOUNDARY UPDATED	MC	TO	TO	KB		
A	18/6/15	VIEWPOINTS UPDATED	MC	TO	TO	TO		
						Date	2015-03-27	

LEGEND

- PROJECT BOUNDARY
- EXTENT OF VISUAL IMPACT
- TEMPORARY ZONE OF VISUAL INFLUENCE DURING CONSTRUCTION PHASE
- REC-1 VSRs ID
- P1 PHOTOMONTAGE VIEWPOINTS

Residential VSRs

RES-1	Residents in Po Toi O Village
RES-2	Residents in Tai Wong Kung
RES-3	Residents of Cala d'Or
RES-4	Residents in Fairway Vista
RES-5	Residents at Tai Au Mun

Recreational VSRs

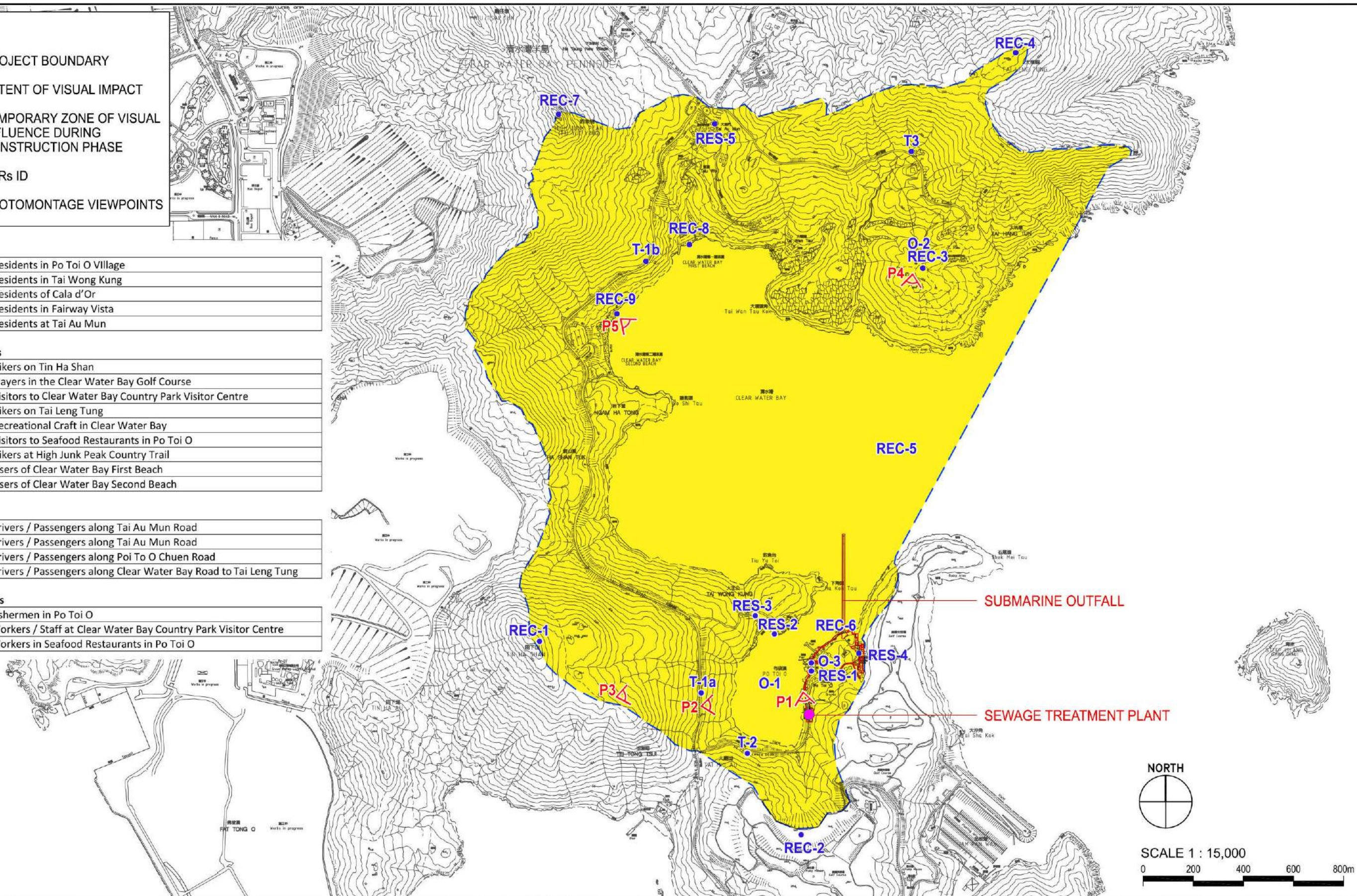
REC-1	Hikers on Tin Ha Shan
REC-2	Players in the Clear Water Bay Golf Course
REC-3	Visitors to Clear Water Bay Country Park Visitor Centre
REC-4	Hikers on Tai Leng Tung
REC-5	Recreational Craft in Clear Water Bay
REC-6	Visitors to Seafood Restaurants in Po Toi O
REC-7	Hikers at High Junk Peak Country Trail
REC-8	Users of Clear Water Bay First Beach
REC-9	Users of Clear Water Bay Second Beach

Travelling VSRs

T-1a	Drivers / Passengers along Tai Au Mun Road
T-1b	Drivers / Passengers along Tai Au Mun Road
T-2	Drivers / Passengers along Poi To O Chuen Road
T-3	Drivers / Passengers along Clear Water Bay Road to Tai Leng Tung

Occupational VSRs

O-1	Fishermen in Po Toi O
O-2	Workers / Staff at Clear Water Bay Country Park Visitor Centre
O-3	Workers in Seafood Restaurants in Po Toi O



						Job Title	FIGURE No.	
						Agreement No. CE 41/2013 (EP) Port Shelter Sewerage, Stage 3 - Sewerage Works at Po Toi O Environmental Impact Assessment Studies - Investigation	10.9	
C	29/3/16	VIEWPOINT P1 ADDED	PN	TO	TO	Drawing Title	Scale	
B	28/7/15	VIEWPOINT P5 ADDED	MC	TO	TO	ZONE OF VISUAL INFLUENCE (ZVI) AND VISUALLY SENSITIVE RECEIVERS (VSRs) DURING CONSTRUCTION PHASE	1:15000	
A	18/6/15	VSRs AND VIEWPOINTS UPDATED	MC	TO	TO			
Amendment No.	Date	Description	Drawn by	Checked by	Approved by	Drawn by	Job. No.	CTCL1
						PL	2015-03-27	
						KB		
						TO		
						Date	2015-03-27	



EXISTING CONDITIONS




DAY 1 WITHOUT MITIGATION MEASURES



DAY 1 WITH MITIGATION MEASURES



YEAR 10 WITH MITIGATION MEASURES

						Job Title	FIGURE No.	
						Agreement No. CE 41/2013 (EP) Port Shelter Sewerage, Stage 3	10.14	
						- Sewerage Works at Po Toi O Environmental Impact Assessment		
						Studies - Investigation		
						Drawing Title	Scale	
						PHOTOMONTAGE VIEWPOINT 1 FROM	N.T.S.	
						PO TOI O CHUEN ROAD LOOKING SOUTH		
Amendment No.	Date	Description	Drawn by	Checked by	Approved by	Drawn by	Job. No.	
D	2016-06-03	VERTICAL GREENING ADDED	MC	TO	TO	PL	CTCL1	
C	2016-03-30	GRASSCRETE ADDED	PN	TO	TO	KB		
B	2015-12-28	GENERAL REVISION	OO	TO	TO	TO		
A	2015-06-16	GENERAL REVISION	LW	TO	TO	TO		
						Date		
						2014-12-01		



EXISTING CONDITIONS




DAY 1 WITHOUT MITIGATION MEASURES



DAY 1 WITH MITIGATION MEASURES

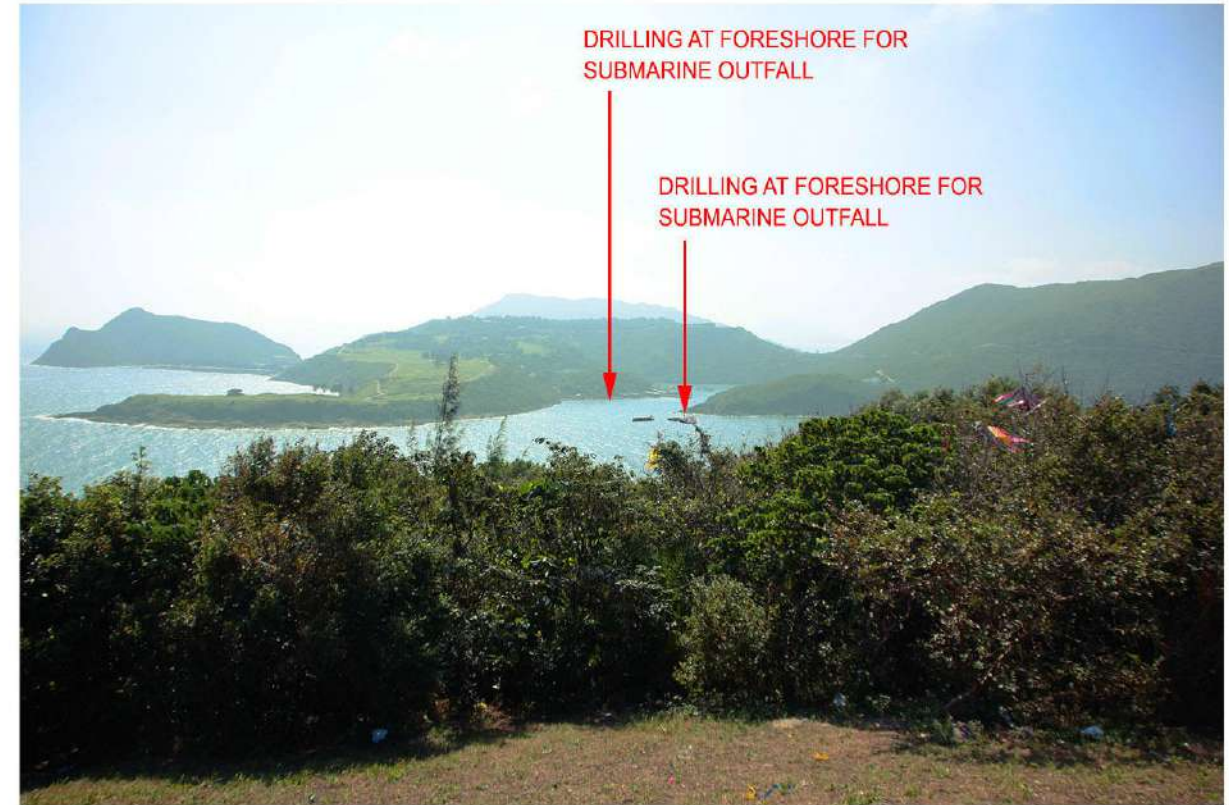


YEAR 10 WITH MITIGATION MEASURES

						Job Title Agreement No. CE 41/2013 (EP) Port Shelter Sewerage, Stage 3 - Sewerage Works at Po Toi O Environmental Impact Assessment Studies - Investigation							FIGURE No. 10.15		 Planning, Urban Design, Landscape, Golf & Environmental Consultants Urbis Limited, 11/F Siu On Centre, 188 Lockhart Road, Wan Chai, Hong Kong. Tel : 2802 3333 Fax : 2802 8662
C	2016-06-06	YEAR 10 GREENING UPDATED	MC	TO	TO	Drawing Title PHOTOMONTAGE VIEWPOINT 2 FROM TAI AU MUN ROAD LOOKING EAST							Scale N.T.S.		
B	2016-03-29	ANNOTATIONS ADDED	PN	TO	TO										
A	2015-06-16	GENERAL REVISION	LW	TO	TO										
Amendment No.	Date	Description	Drawn by	Checked by	Approved by	Drawn by	PL	Checked by	KB	Approved by	TO	Date	2014-12-01	Job. No.	



EXISTING CONDITIONS




DURING CONSTRUCTION WITHOUT MITIGATION MEASURES



DURING CONSTRUCTION WITH MITIGATION MEASURES



DAY 1 AND YEAR 10 WITH MITIGATION MEASURES

						Job Title					FIGURE No.					
						Agreement No. CE 41/2013 (EP) Port Shelter Sewerage, Stage 3 - Sewerage Works at Po Toi O Environmental Impact Assessment Studies - Investigation					10.17					
						Drawing Title					Scale					
B	29/3/16	ANNOTATIONS ADDED	PN	TO	TO	PHOTOMONTAGE VIEWPOINT 4 FROM CLEAR WATER					NTS					
A	28/7/15	MOVING BARGE ADDED	MC	TO	TO	BAY COUNTRY PARK VISITOR CENTRE LOOKING SOUTH										
Amendment No.	Date	Description	Drawn by	Checked by	Approved by	Drawn by	PL	Checked by	KB	Approved by	TO	Date		2015-06-16	Job. No.	CTCL1
Urbis Limited, 11/F Siu On Centre, 188 Lockhart Road, Wan Chai, Hong Kong. Tel : 2802 3333 Fax : 2802 8662																



EXISTING CONDITIONS



DURING CONSTRUCTION WITHOUT MITIGATION MEASURES



DURING CONSTRUCTION WITH MITIGATION MEASURES




DAY 1 AND YEAR 10 WITH MITIGATION MEASURES

						Job Title	FIGURE No.	
						Agreement No. CE 41/2013 (EP) Port Shelter Sewerage, Stage 3	10.18	
						- Sewerage Works at Po Toi O Environmental Impact Assessment		
						Studies - Investigation		
						Drawing Title	Scale	
						PHOTOMONTAGE VIEWPOINT 5 FROM CLEAR WATER	1:15000	
						BAY SECOND BEACH LOOKING SOUTH EAST		
A	2016-03-29	ANNOTATIONS ADDED	PN	TO	TO			Planning, Urban Design, Landscape, Golf & Environmental Consultants
Amendment No.	Date	Description	Drawn by	Checked by	Approved by	Drawn by	Job. No.	Urbis Limited, 11/F Siu On Centre, 188 Lockhart Road, Wan Chai, Hong Kong. Tel : 2802 3333 Fax : 2802 8662
						PL	CTCL1	
						Checked by		
						KB		
						Approved by		
						TO		
						Date		
						2015-03-27		

APPENDIX E – GENERAL LAYOUT ON THE IMPLEMENTATION OF CMS AND OMS

KEY PLAN

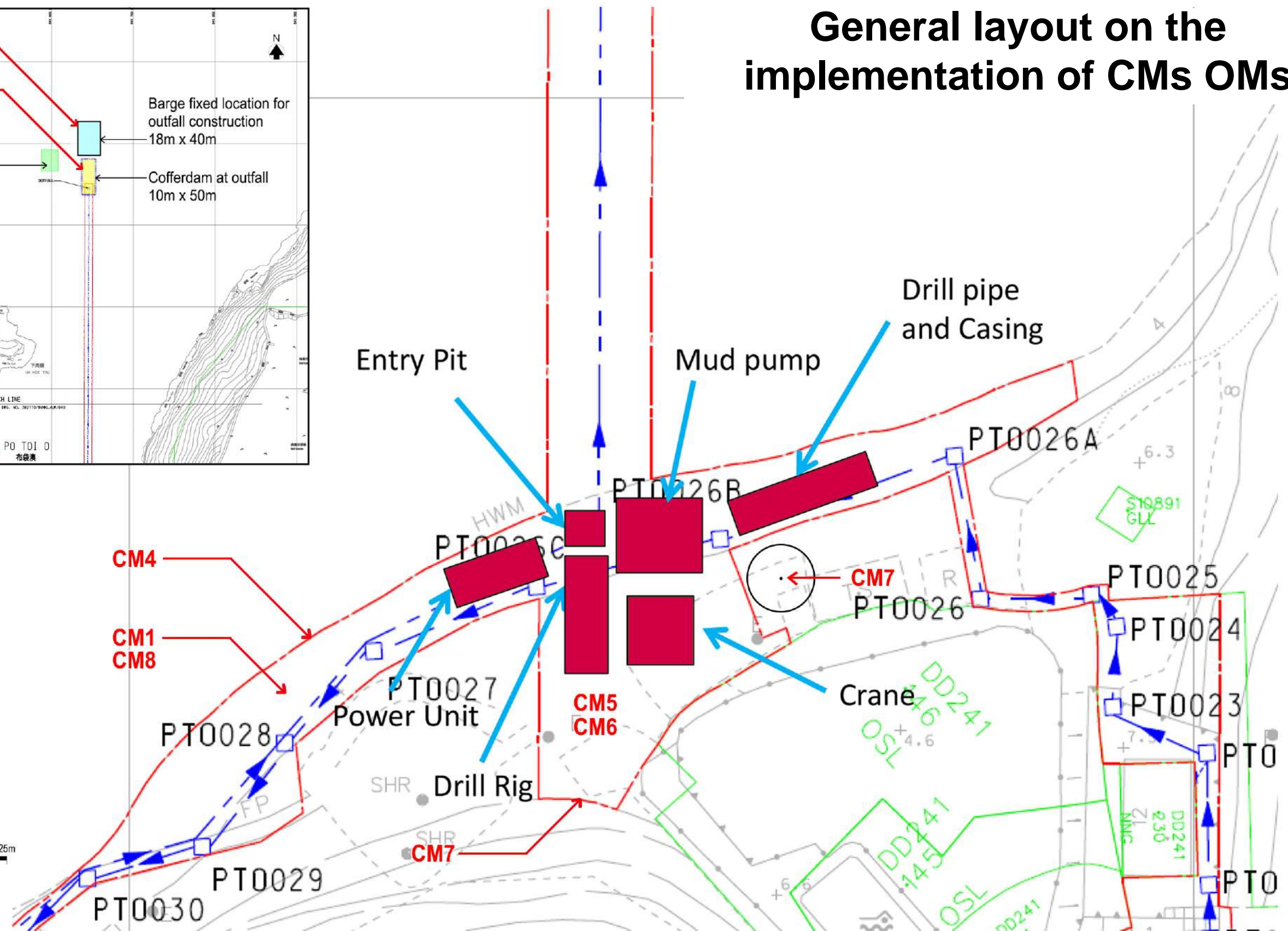



A north arrow pointing upwards, labeled "NORTH". Below it is a scale bar with markings at 0, 5, 10, 15, 20, and 25m.

NORTH

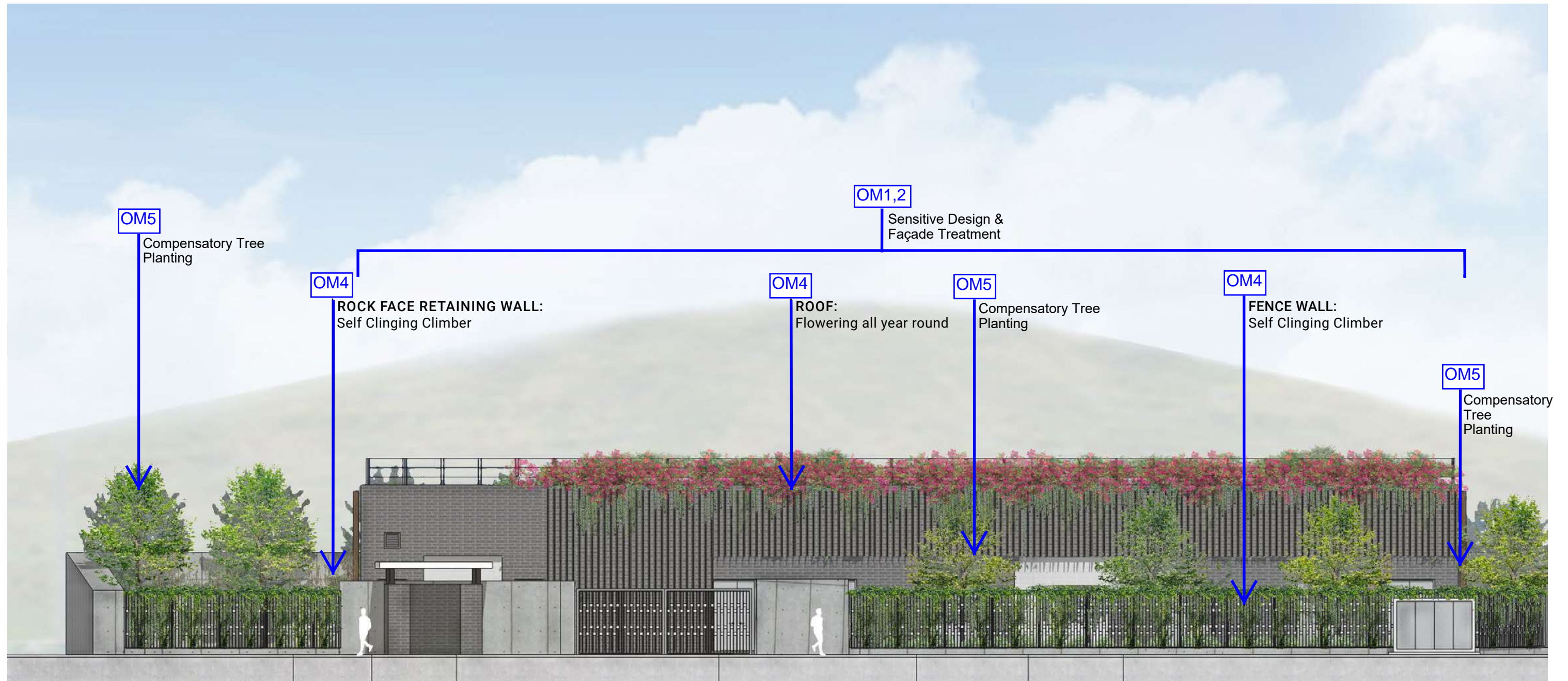
SCALE 1 : 400

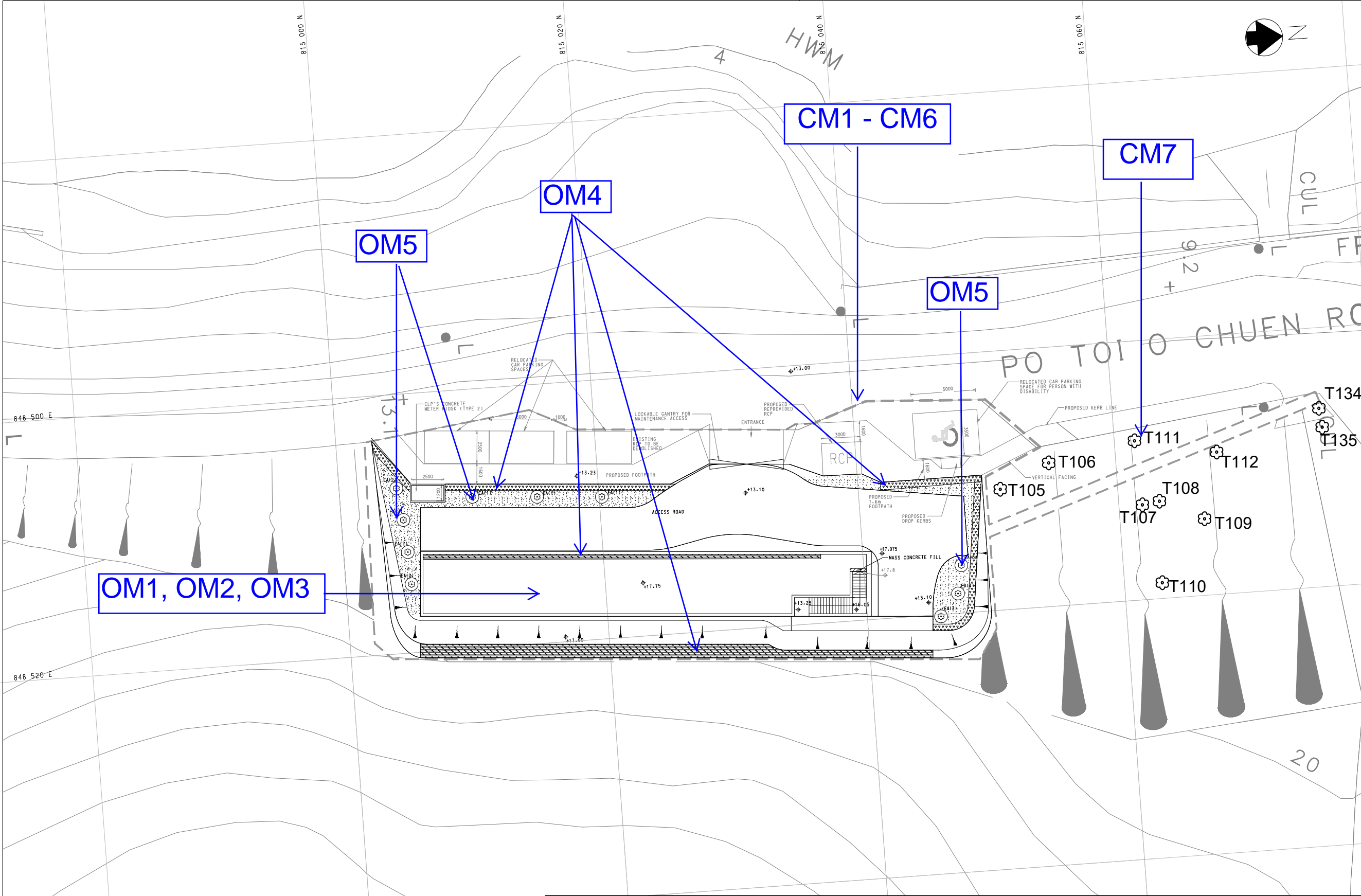
0 5 10 15 20 25m



						Job Title Agreement No. CE 41/2013 (EP) Port Shelter Sewerage, Stage 3 - Sewerage Works at Po Toi O Environmental Impact Assessment Studies - Investigation							Drawing No. 10.19a		 Urban Design Limited Planning, Urban Design, Landscape, Golf & Environmental Consultants Urbis Limited, 11/F Siu On Centre, 188 Lockhart Road, Wan Chai, Hong Kong. Tel : 2802 3333 Fax : 2802 8662
						Drawing Title LANDSCAPE AND VISUAL MITIGATION PLAN - SUBMARINE OUTFALL, CONSTRUCTION STAGE							Scale 1:400		
B	25/7/16	CM7 ADDED; FIGURE RE-NUMBERED	PN	TO	TO										
A	28/7/15	KEY PLAN UPDATED AND RENUMBERED	MC	TO	TO										
Amendment No.	Date	Description	Drawn by	Checked by	Approved by	Drawn by	PL	Checked by	KB	Approved by	TO	Date	2015-4-1	Job. No.	

General layout on the implementation of CMs OMs





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NOTES:

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO. 382770/B&V/GN/000.
2. ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (mPD).
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

LEGEND:

- ELAEOCARPUS APICULATUS
- APPLICATION SITE
- ZOYSIA JAPONICA
- BOUGAINVILLEA GLABRA
- FICUS PUMILA
- Retain Tree

Revision	Date	Description	Initial
	Designed	Checked	Drawn
Initial	WC	WL	SZ
Date	03/20	03/20	03/20
Approved			

Contract no. DC/2019/09

Contract title
PROVISION OF VILLAGE SEWERAGE
IN SAI KUNG

Drawing title
PO TOI O SEWAGE TREATMENT PLANT
- LANDSCAPE LAYOUT PLAN
AT GROUND FLOOR

Drawing no.	Revision
382770/B&V/PTOSTP/TR/103-1	-

Scale A1 1:150
A3 1:300

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

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

TREE PLANTING SCHEDULE

SPECIES (SCIENTIFIC NAME)	CHINESE COMMON NAME	QUANTITY (NO.)	REVISED DBH (mm)	SPACING (mm)
ELAEOCARPUS APICULATUS (1)	尖葉杜英樹	3	300	5000
ELAEOCARPUS APICULATUS (2)	尖葉杜英樹	4	300	2500
ELAEOCARPUS APICULATUS (3)	尖葉杜英樹	3	300	2200

GROUND COVER SCHEDULE

SPECIES (SCIENTIFIC NAME)	CHINESE COMMON NAME	MINIMUM SIZE (mm * mm)	SPACING (mm)	REMARKS
ZOYSIA JAPONICA	結縷草	-	-	-
Bougainvillea glabra	簕杜鵑	700(H) X 600(W)	550	-
FICUS PUMILA	薛荔	-	150	-

Plot Date = \$DATE\$

CAD Filename = \$FILE\$

APPENDIX F – TREE ASSESSMENT SCHEDULE AND TREE SURVEY LOCATION

Tree Assessment Schedule

Tree No.	Species Name		Coordinate		Size			Ground Level at the Trunk Base	Health Condition	Form	Amenity Value	Conservation Status*	OVT	Survival Rate after Transplantation	Recommendation	Justification for Tree Felling (Note 1)	Department to provide expert advice to LandsD (Note 2)	Native/Exotic	Remarks
					Height (m)	Diameter at breast height (mm)	Crown Spread (m)												
	Scientific Name	English Common Name	Easting (m)	Northing (m)															
T98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tree tag not used
T99	<i>Sapitum sebiferum</i>	Chinese Tallow Tree	848504.678	815009.549	07	300	05	11.587	Fair	Fair	Poor	-	N	Low	Fell	a,b	HyD	N	
T100	<i>Cratogeomys cochinchinense</i>	Yellow Cow Wood	848507.879	815032.211	03	130	05	12.064	Fair	Fair	Poor	-	N	Low	Fell	a,b	HyD	N	
T101	<i>Tabebuia chrysantha</i>	Yellow Pui	848507.907	815038.072	04	130	04	12.482	Fair	Fair	Poor	-	N	Low	Fell	a,b	HyD	E	
T102	<i>Ficus superba</i>	Japanese Superb Fig	848508.845	815045.719	08	300	07	11.843	Fair	Fair	Poor	-	N	Low	Fell	a,b	HyD	N	
T103	<i>Acacia confusa</i>	Taiwan Acacia	848510.448	815040.621	04	330	04	13.126	Fair	Fair	Poor	-	N	Low	Fell	a,b	HyD	E	
T104	<i>Tabebuia chrysantha</i>	Yellow Pui	848515.419	815044.470	03	130	04	14.037	Fair	Fair	Poor	-	N	Low	Fell	a,b	HyD	E	
T105	<i>Ficus variegata</i>	Common Red-stem Fig	848510.755	815051.250	04	130	05	12.250	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	N	
T106	<i>Sapitum discolor</i>	Mountain Tallow Tree	848509.196	815054.825	02	110	02	9.847	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	N	
T107	<i>Schefflera heptaphylla</i>	Ivy Tree	848512.815	815061.961	04	300	06	11.390	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	N	
T108	<i>Mallotus apelta</i>	White-back Leaf Mallotus	848512.533	815063.497	04	250	06	11.587	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	N	
T109	<i>Sterculia nobilis</i>	Noble Bottle-tree	848513.918	815066.512	03	110	05	11.615	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	E	
T110	<i>Sterculia nobilis</i>	Noble Bottle-tree	848518.936	815063.141	03	110	05	14.192	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	E	
T111	<i>Ficus microcarpa</i>	Chinese Banyan	848507.720	815061.616	03	100	04	9.846	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	N	
T112	<i>Ficus microcarpa</i>	Chinese Banyan	848508.934	815067.761	05	350	08	9.910	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	N	
T124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tree tag not used
T125	<i>Celtis sinensis</i>	Chinese Hackberry	848497.865	815091.522	07	500	07	10.461	Fair	Fair	Poor	-	N	Low	Retain	-	AFCD	N	
T126	<i>Sterculia nobilis</i>	Noble Bottle-tree	848501.683	815103.275	05	100	03	11.534	Fair	Fair	Poor	-	N	Low	Retain	-	AFCD	E	
T127	<i>Sterculia nobilis</i>	Noble Bottle-tree	848499.841	815106.216	05	220	06	10.086	Fair	Fair	Poor	-	N	Low	Retain	-	AFCD	E	
T128	<i>Sterculia nobilis</i>	Noble Bottle-tree	848500.087	815107.951	05	100	04	10.137	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	E	
T129	<i>Macaranga tanarius</i>	Elephant's Ear	848500.854	815108.571	07	330	01	10.568	Dead	-	-	-	N	Low	Retain	-	LandsD	N	
T130	<i>Macaranga tanarius</i>	Elephant's Ear	848501.617	815109.301	02	300	03	10.799	Dead	-	-	-	N	Low	Retain	-	LandsD	N	
T131	<i>Sterculia nobilis</i>	Noble Bottle-tree	848495.797	815110.557	03	180	06	7.451	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	E	
T132	<i>Sterculia nobilis</i>	Noble Bottle-tree	848496.131	815110.040	01	180	02	8.124	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	E	
T133	<i>Sterculia nobilis</i>	Noble Bottle-tree	848495.103	815109.512	03	200	05	7.886	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	E	
T134	<i>Macaranga tanarius</i>	Common Macaranga	848506.155	815075.878	02	100	03	10.011	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	N	
T135	<i>Macaranga tanarius</i>	Common Macaranga	848507.890	815076.185	04	220	05	9.076	Fair	Fair	Poor	-	N	Low	Retain	-	HyD	N	
T136	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tree tag not used
T137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tree tag not used
T138	<i>Sterculia nobilis</i>	Noble Bottle-tree	848501.697	815114.934	04	200	04	9.942	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	E	
T139	<i>Macaranga tanarius</i>	Elephant's Ear	848497.975	815113.641	04	250	06	8.569	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T140	<i>Macaranga tanarius</i>	Elephant's Ear	848497.293	815113.596	03	130	03	7.816	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	

NT=Rare and Precious Plants of Hong Kong (Status in China)

V=China Plant Red Data Book

Note:

1. Justification for Tree Felling

- a. In direct conflict with the proposed permanent works or area required for construction;
- b. low suitability for transplanting;
- c. With poor health, form and amenity value;

2. Department to provide expert advice to LandsD

Department to provide expert advice to LandsD is summarized in accordance with DEVB TCW No.7/2015 Tree Preservation

Tree Assessment Schedule

Tree No.	Species Name		Coordinate		Size			Ground Level at the Trunk Base	Health Condition	Form	Amenity Value	Conservation Status*	OVT	Survival Rate after Transplantation	Recommendation	Justification for Tree Felling (Note 1)	Department to provide expert advice to LandsD (Note 2)	Native/Exotic	Remarks
	Scientific Name	English Common Name	Easting (m)	Northing (m)	Height (m)	Diameter at breast height (mm)	Crown Spread (m)	(mPD)	Good/Fair/Poor/Dead	Good/Fair/Poor	Good/Fair/Poor		Y/N	High/Med/Low	Retain/Transplant/Fell			N/E	
T113	<i>Macaranga tanarius</i>	Elephant's Ear	848680.346	815354.370	04	130	06	5.952	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T114	<i>Macaranga tanarius</i>	Elephant's Ear	848681.652	815354.165	03	130	05	5.666	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T115	<i>Macaranga tanarius</i>	Elephant's Ear	848682.195	815353.137	04	220	06	5.760	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T116	<i>Macaranga tanarius</i>	Elephant's Ear	848647.032	815346.410	04	220	05	5.057	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T117	<i>Macaranga tanarius</i>	Elephant's Ear	848643.336	815347.197	05	130	05	5.108	Dead	-	-	-	N	Low	Retain	-	LandsD	N	
T118	<i>Macaranga tanarius</i>	Elephant's Ear	848651.051	815340.893	04	100	04	5.189	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T119	<i>Celtis sinensis</i>	Chinese Hackberry	848649.008	815342.807	06	110	03	5.179	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T120	<i>Celtis sinensis</i>	Chinese Hackberry	848646.972	815342.295	05	660	05	4.990	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T121	<i>Ficus hispida</i>	Rough-leaved stem fig	848644.783	815342.137	04	110	03	4.940	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T122	<i>Macaranga tanarius</i>	Elephant's Ear	848641.577	815343.162	05	500	06	4.906	Dead	-	-	-	-	-	Retain	-	LandsD	N	
T123	<i>Macaranga tanarius</i>	Elephant's Ear	848640.213	815345.282	07	250	05	4.841	Dead	-	-	-	-	-	Retain	-	LandsD	N	
T141	<i>Macaranga tanarius</i>	Elephant's Ear	848642.371	815337.395	07	350	10	5.378	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T142	<i>Macaranga tanarius</i>	Elephant's Ear	848633.551	815344.886	03	150	05	4.863	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tree tag not used
T144	<i>Pandanus tectorius</i>	Screw Pine	848631.040	815346.471	03	120	05	4.461	Fair	Fair	Poor	-	N	Low	Retain	-	LandsD	N	
T145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tree tag not used

NT=Rare and Precious Plants of Hong Kong (Status in China)

V=China Plant Red Data Book

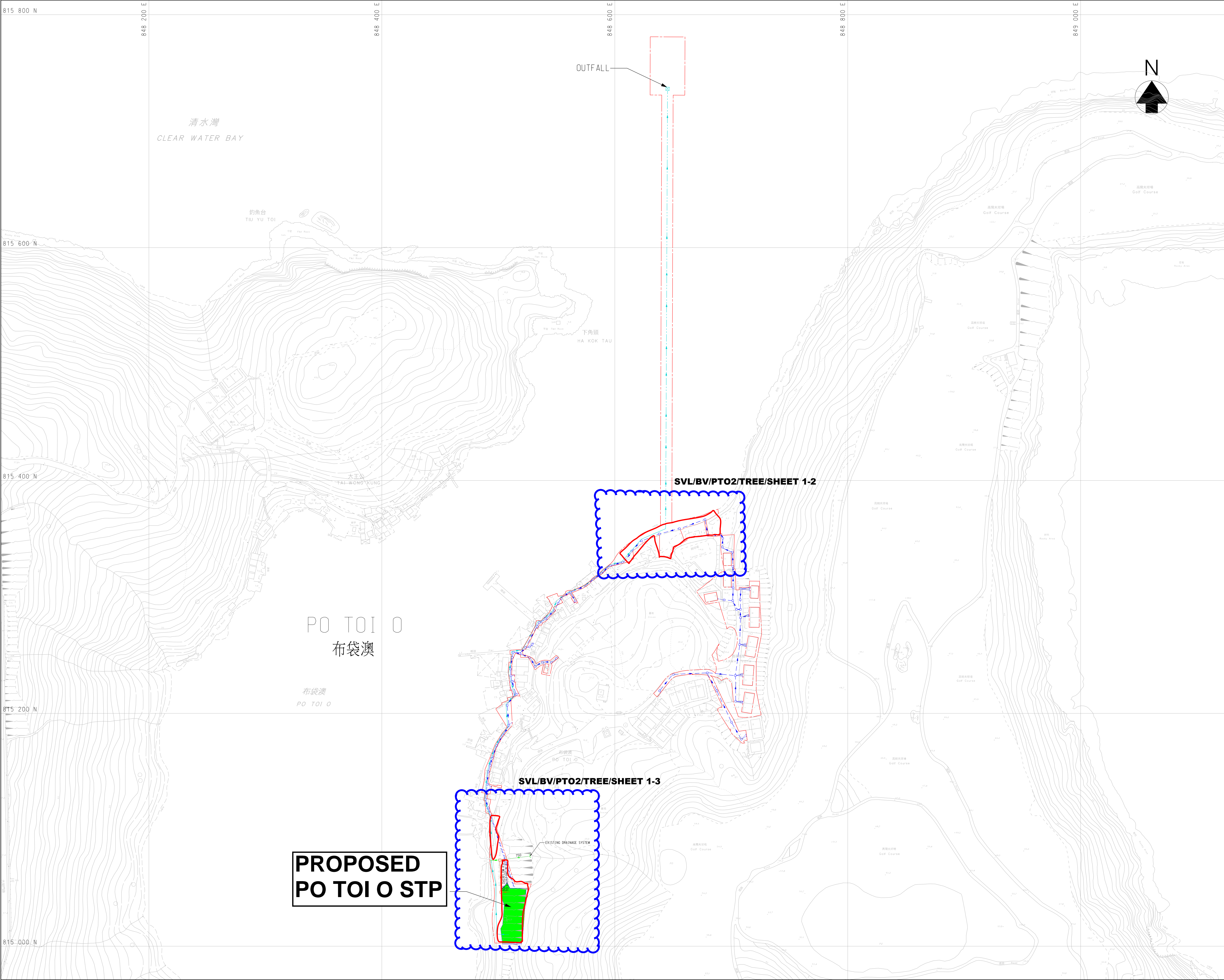
Note:

1. Justification for Tree Felling

- a. In direct conflict with the proposed permanent works or area required for construction;
- b. low suitability for transplanting;
- c. With poor health, form and amenity value;

2. Department to provide expert advice to LandsD

Department to provide expert advice to LandsD is summarized in accordance with DEVB TCW No.7/2015 Tree Preservation



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LEGEND:

- PROPOSED PROJECT BOUNDARY
- PROPOSED SEWER AND MANHOLE
- PROPOSED RISING MAINS
- PROPOSED SUBMARINE OUTFALL

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	YCM	CHL	SZ	CSC	
Date	10/18	10/18	10/18	10/18	

Approved

PRELIMINARY

Contract no.
CE 65/2006 (DS)

Contract title
PORT SHELTER SEWERAGE
STAGE 2 AND STAGE 3
DESIGN AND CONSTRUCTION

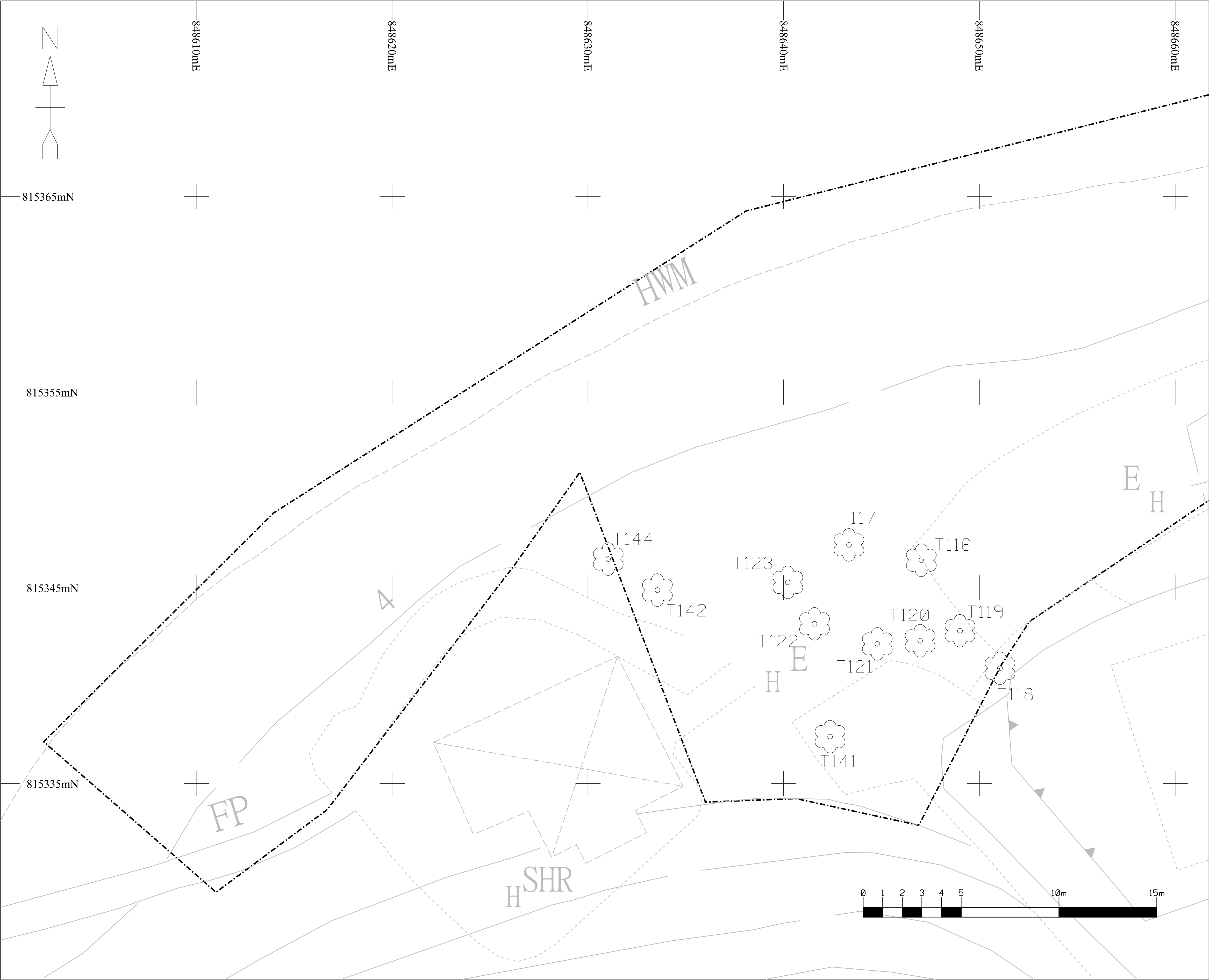
Drawing title
GENERAL LAYOUT PLAN
(PO TOI O)

Drawing no.	Revision
382770/SKETCH/004	-

Scale
A1 1 : 1500
A3 1 : 3000

 香港特別行政區政府渠務署
THE GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

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



Notes :

1. Horizontal Datum
The coordinates are in Hong Kong 1980 Grid as a local rectangular grid system based on the Hong Kong 1980 Geodetic Datum and Transverse Mercator projection. The unit is in metre.

2. Vertical Datum
The elevations are in Principal Datum (approximately 1.23 metres below Mean Sea Level). The unit is in metre.

LEGEND:

Barriers	Gate
Building Outline	Grating
Fence	Inspection Chamber
Footpath	Lamp Post
Free Standing Wall	Letter Box
Hedge	Lighting Pit
Kerb	Manhole
Lot Boundary	Manhole Foul
Paved Footpath	Manhole Storm
Pipeline	Manhole Telephone
Railing	Manhole Waterworks
Noise Barrier	Monument
Slope Top / Slope Bottom	Platform
Stream Course / River	Septic Tanks
Stepped Channel	Spot Height
Survey Boundary	Sign Board
U-Channel	Sign Pole
Vertical Cutting / Retaining Wall	Step Edge / Stair
Artificial Slope	Temporary Structure
Balcony/ Canopy	Telephone Pole
Bench	Traffic Light
Bollard at Quay	Traffic Light Control Box
Bollard at Road	Tree
Boulder / Rock	Tree with Crown Size
Catch Pit	Valve
Column	F Valve Fire
Draw Pit	G Valve Gas
Electric Pit	W Valve Waterworks
Electric Transformer	Water Point
Fire Hydrant	
Flower Bed	

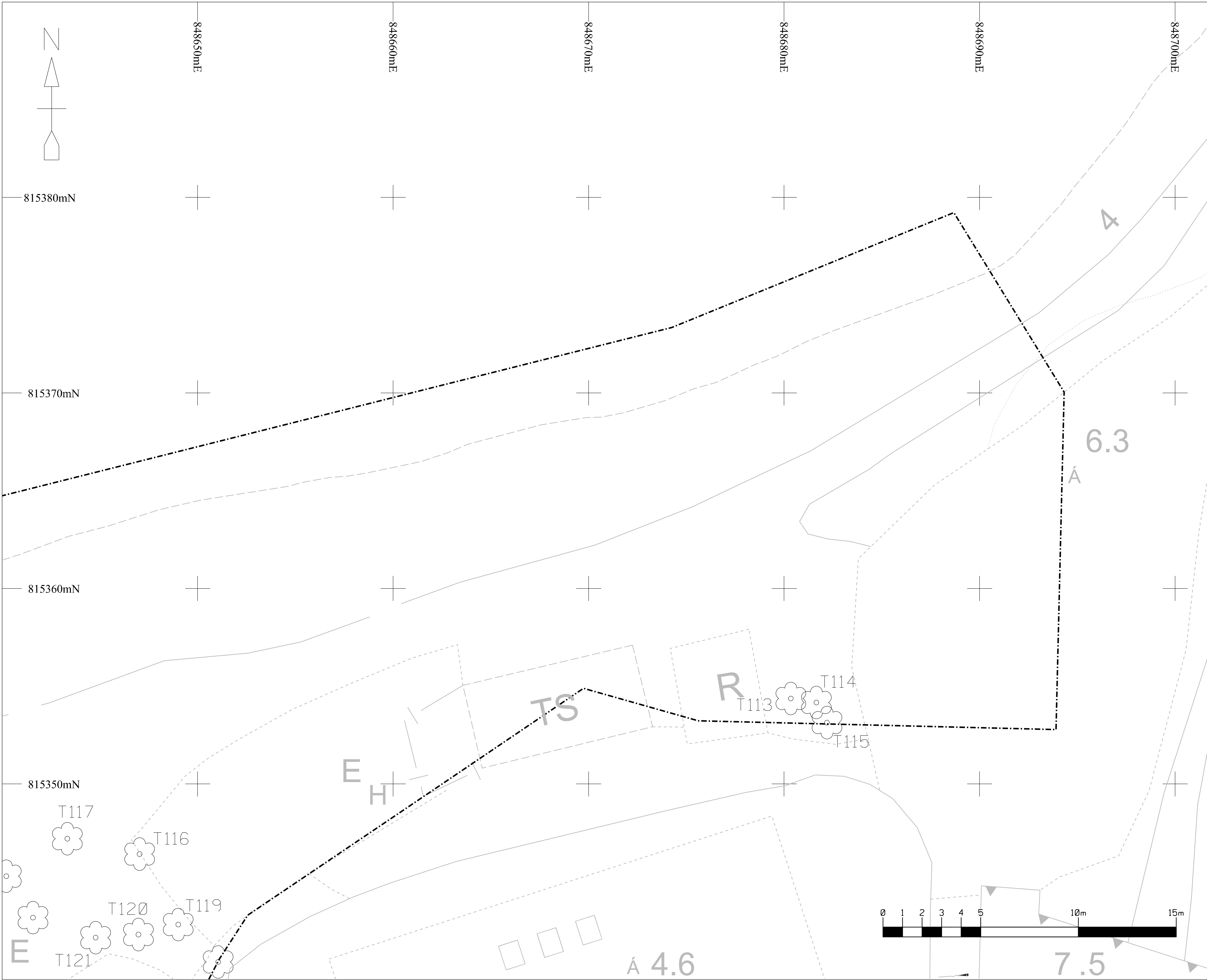
KEY PLAN:

TITLE: Tree Survey
For Port Shelter Sewerage Stage 2 & Stage 3 (Package 3) (Tender Ref.CM 06/2018)
at Area 1
Po Toi O, Hong Kong

SCALE: 1:100 (in A1)

PLAN NO.: SVL/BV/TREE/PTO1 SHEET 1 OF 2

COMPANY: STAR VISION LIMITED



Notes :

1. Horizontal Datum
The coordinates are in Hong Kong 1980 Grid as a local rectangular grid system based on the Hong Kong 1980 Geodetic Datum and Transverse Mercator projection. The unit is in metre.

2. Vertical Datum
The elevations are in Principal Datum (approximately 1.23 metres below Mean Sea Level). The unit is in metre.

LEGEND:

—X—X— Barriers	⋈ Gate
—— Building Outline	▢ Grating
—— Fence	▢ IC Inspection Chamber
—— Footpath	• L Lamp Post
—●— Free Standing Wall	• LB Letter Box
⋈ Hedge	▢ LP Lighting Pit
—— Kerb	▢ Manhole
- · - · Lot Boundary	▢ Manhole Foul
== Paved Footpath	○ Manhole Storm
—— Pipeline	▢ T Manhole Telephone
—— Railing	▢ W Manhole Waterworks
- · - · Noise Barrier	⊙ Monument
—— Slope Top / Slope Bottom	▢ Platform
—— Stream Course / River	⊙ ST Septic Tanks
—— Stopped Channel	+ ^{28.6} Spot Height
- · - · Survey Boundary	● Sign Board
—— U-Channel	• SP Sign Pole
▼ Vertical Cutting / Retaining Wall	▢ Step Edge / Stair
Artificial Slope	▢ Temporary Structure
▢ Balcony / Canopy	• T Telephone Pole
▢ BN Bench	• TL Traffic Light
⊙ Bollard at Quay	▢ TB Traffic Light Control Box
⊙ Bollard at Road	⊙ Tree
⊙ Boulder / Rock	⊙ Tree with Crown Size
▢ Catch Pit	▢ Valve
▢ CO Column	▢ F Valve Fire
▢ DP Draw Pit	▢ G Valve Gas
▢ EP Electric Pit	▢ W Valve Waterworks
▢ ET Electric Transformer	• W Water Point
• H Fire Hydrant	
▢ FB Flower Bed	

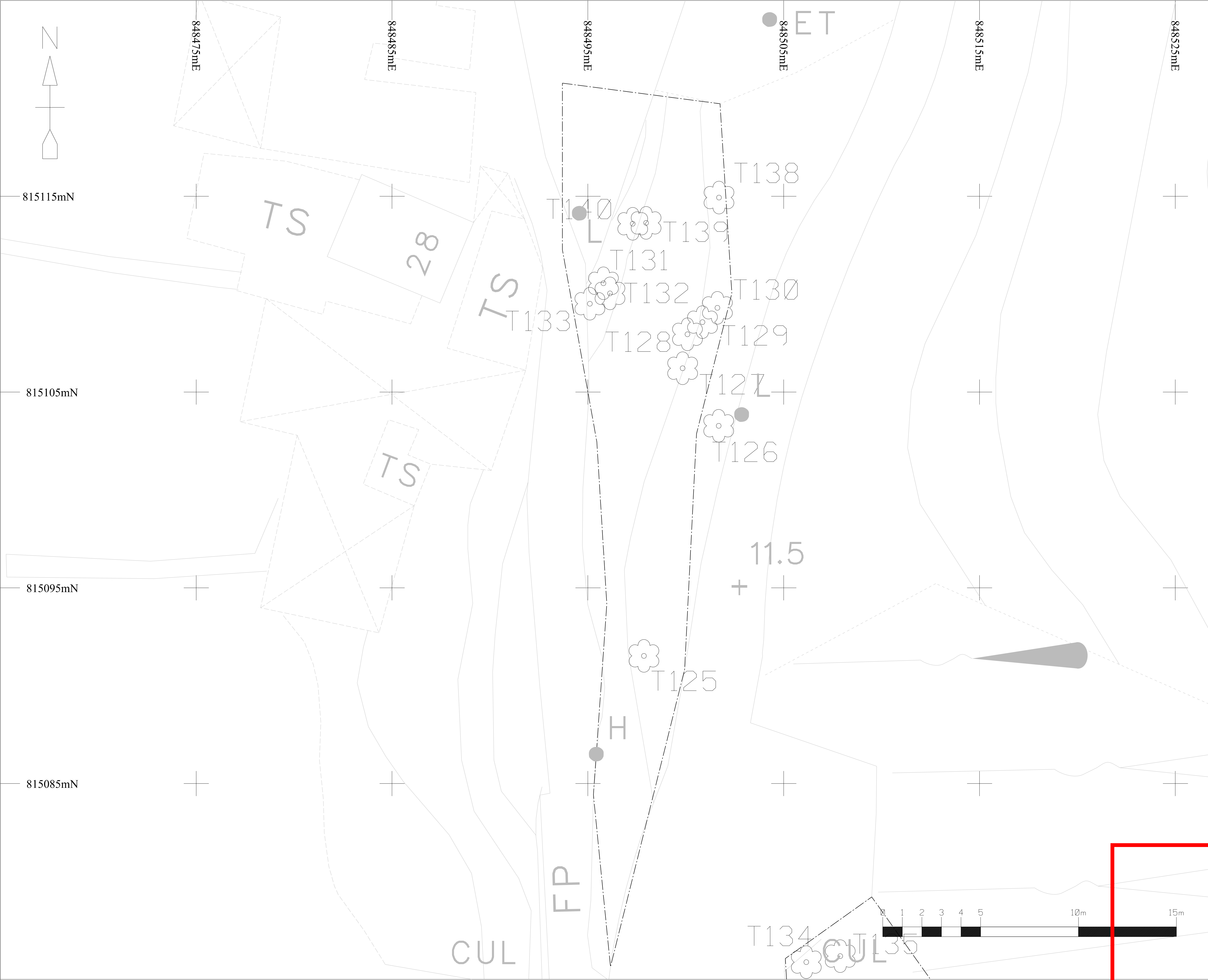
KEY PLAN:

TITLE: Tree Survey
For Port Shelter Sewerage Stage 2 & Stage 3 (Package 3) (Tender Ref.CM 06/2018)
at Area 1
Po Toi O, Hong Kong

SCALE: 1:100 (in A1)

PLAN NO.: SVL/BV/TREE/PTO1/SHEET 2 OF 2

COMPANY: STAR VISION LIMITED



Notes :

1. Horizontal Datum
The coordinates are in Hong Kong 1980 Grid as a local rectangular grid system based on the Hong Kong 1980 Geodetic Datum and Transverse Mercator projection. The unit is in metre.

2. Vertical Datum
The elevations are in Principal Datum (approximately 1.23 metres below Mean Sea Level). The unit is in metre.

LEGEND:

Barriers	Gate
Building Outline	Grating
Fence	Inspection Chamber
Footpath	Lamp Post
Free Standing Wall	Letter Box
Hedge	Lighting Pit
Kerb	Manhole
Lot Boundary	Manhole Foul
Paved Footpath	Manhole Storm
Pipeline	Manhole Telephone
Railing	Manhole Waterworks
Noise Barrier	Monument
Slope Top / Slope Bottom	Platform
Stream Course / River	Septic Tanks
Stepped Channel	Spot Height
Survey Boundary	Sign Board
U-Channel	Sign Pole
Vertical Cutting / Retaining Wall	Step Edge / Stair
Artificial Slope	Temporary Structure
Balcony/ Canopy	Telephone Pole
Bench	Traffic Light
Bollard at Quay	Traffic Light Control Box
Bollard at Road	Tree
Boulder / Rock	Tree with Crown Size
Catch Pit	Valve
Column	F Valve Fire
Draw Pit	G Valve Gas
Electric Pit	W Valve Waterworks
Electric Transformer	Water Point
Fire Hydrant	
Flower Bed	

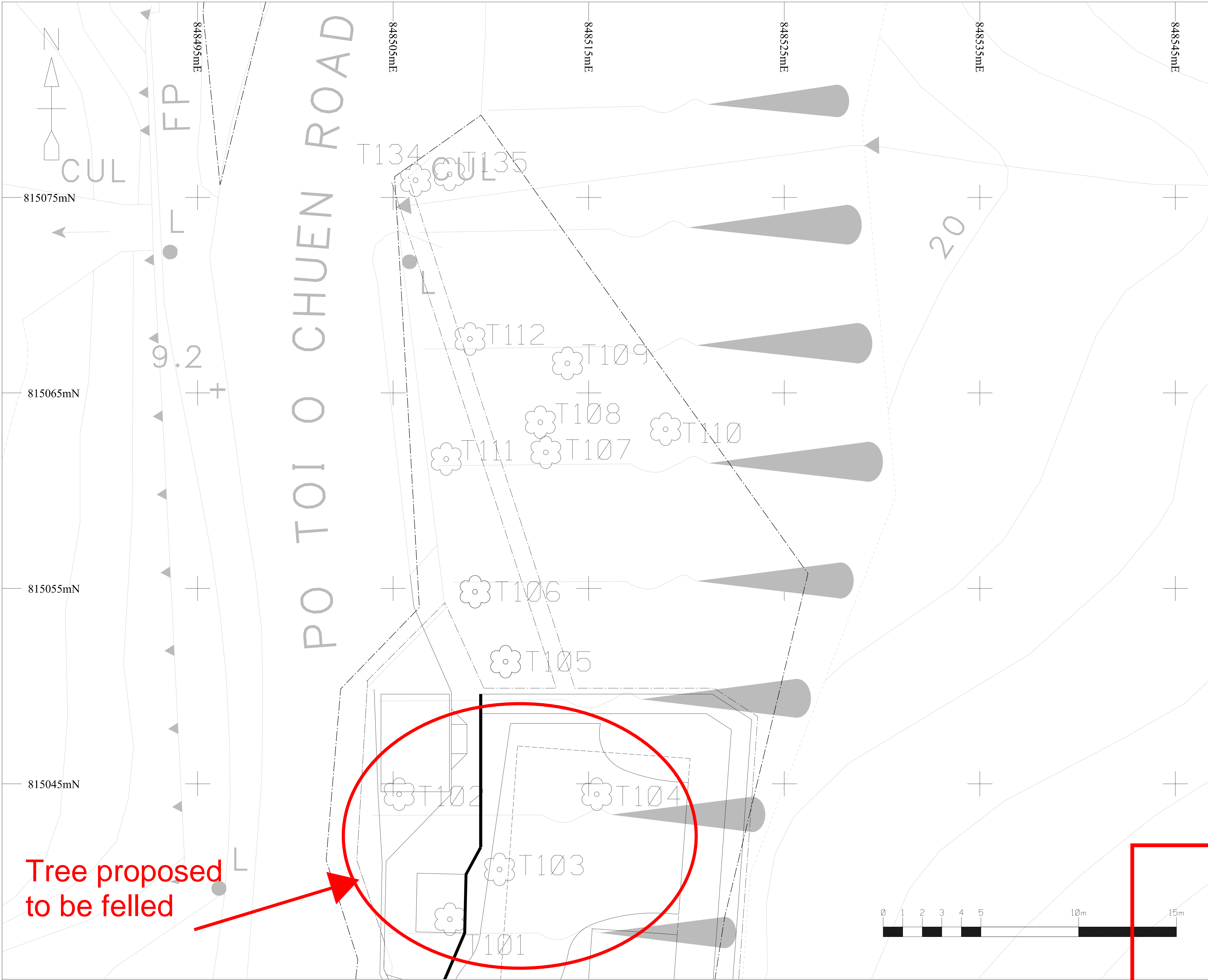
KEY PLAN:

TITLE: Tree Survey
For Port Shelter Sewerage Stage 2 & Stage 3 (Package 3) (Tender Ref:CM 06/2018)
at Area 2
Po Toi O, Hong Kong

SCALE: 1:100 (in A1)

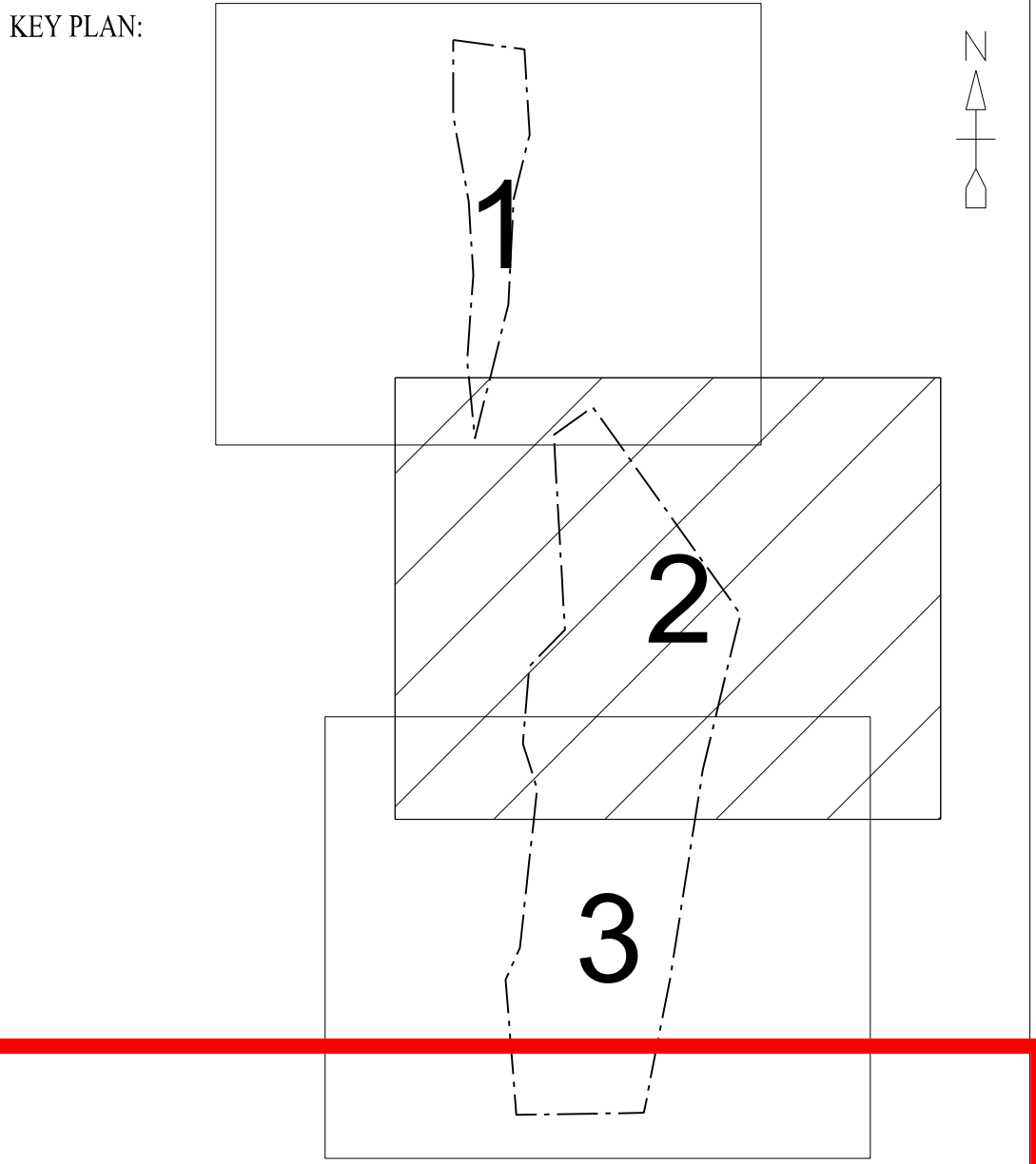
PLAN NO.: SVL/BV/PTO2/TREE/SHEET 1 OF 3

COMPANY: STAR VISION LIMITED

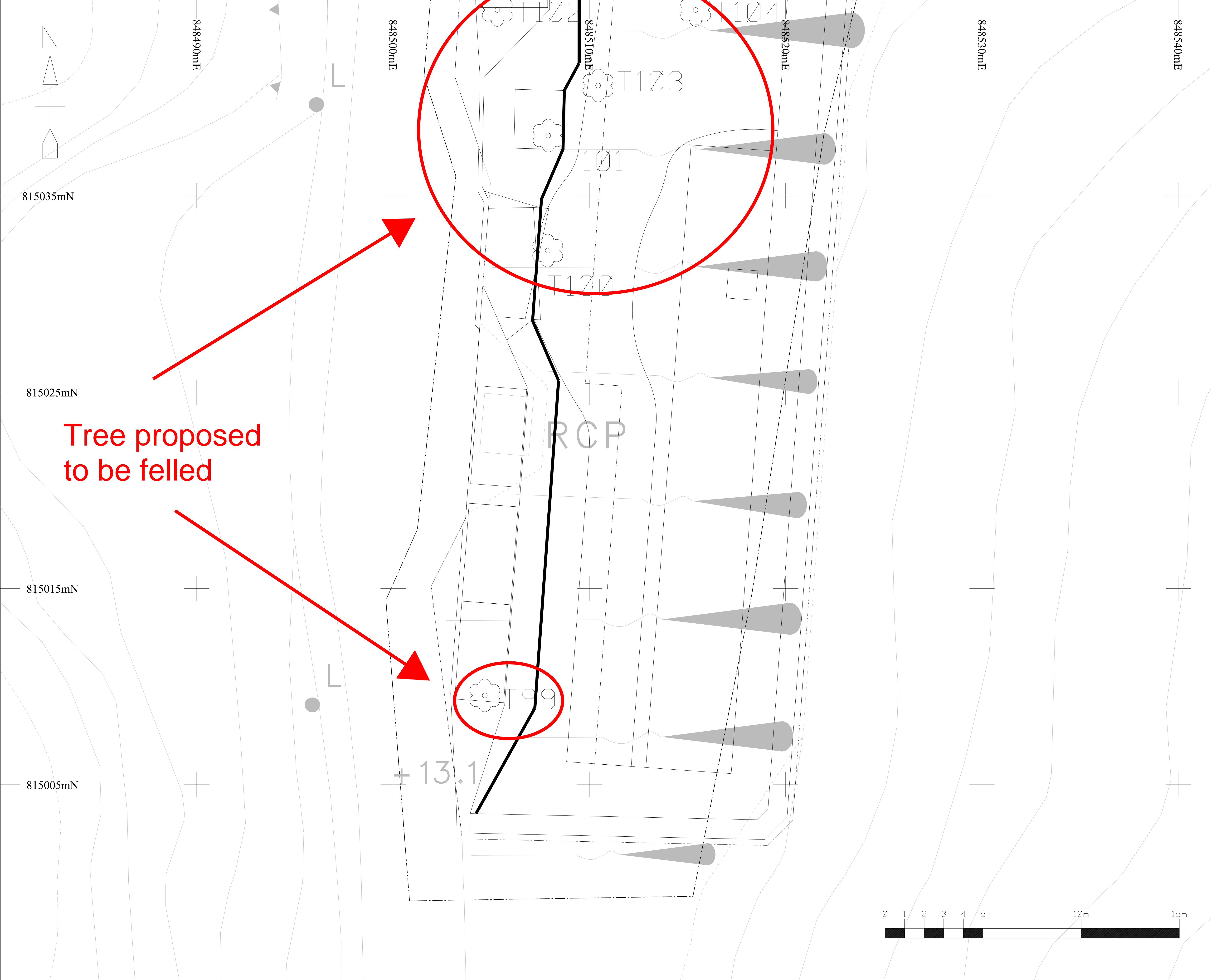


Notes :
1. Horizontal Datum
The coordinates are in Hong Kong 1980 Grid as a local rectangular grid system based on the Hong Kong 1980 Geodetic Datum and Transverse Mercator projection. The unit is in metre.
2. Vertical Datum
The elevations are in Principal Datum (approximately 1.23 metres below Mean Sea Level). The unit is in metre.

LEGEND:	
	Barriers
	Building Outline
	Fence
	Footpath
	Free Standing Wall
	Hedge
	Kerb
	Lot Boundary
	Paved Footpath
	Pipeline
	Railing
	Noise Barrier
	Slope Top / Slope Bottom
	Stream Course / River
	Stepped Channel
	Survey Boundary
	U-Channel
	Vertical Cutting / Retaining Wall
	Artificial Slope
	Balcony/ Canopy
	Bench
	Bollard at Quay
	Bollard at Road
	Boulder / Rock
	Catch Pit
	Column
	Draw Pit
	Electric Pit
	Electric Transformer
	Fire Hydrant
	Flower Bed
	Gate
	Grating
	Inspection Chamber
	Lamp Post
	Letter Box
	Lighting Pit
	Manhole
	Manhole Foul
	Manhole Storm
	Manhole Telephone
	Manhole Waterworks
	Monument
	Platform
	Septic Tanks
	Spot Height
	Sign Board
	Sign Pole
	Step Edge / Stair
	Temporary Structure
	Telephone Pole
	Traffic Light
	Traffic Light Control Box
	Tree
	Tree with Crown Size
	Valve
	F Valve Fire
	G Valve Gas
	W Valve Waterworks
	Water Point



TITLE: Tree Survey For Port Shelter Sewerage Stage 2 & Stage 3 (Package 3) (Tender Ref:CM 06/2018) at Area 2 Po Toi O, Hong Kong	
SCALE:	1:100 (in A1)
PLAN NO.:	SVL/BV/PTO2/TREE/SHEET 2 OF 3
COMPANY:	STAR VISION LIMITED



Tree proposed to be felled

Notes :

1. Horizontal Datum
The coordinates are in Hong Kong 1980 Grid as a local rectangular grid system based on the Hong Kong 1980 Geodetic Datum and Transverse Mercator projection. The unit is in metre.

2. Vertical Datum
The elevations are in Principal Datum (approximately 1.23 metres below Mean Sea Level). The unit is in metre.

LEGEND:

—X—X— Barriers	— Gate
— Building Outline	— Grating
— Fence	— IC Inspection Chamber
— Footpath	• L Lamp Post
— Free Standing Wall	• LB Letter Box
— Hedge	— LP Lighting Pit
— Kerb	— M Manhole
— Lot Boundary	— Manhole Foul
— Paved Footpath	— Manhole Storm
— Pipeline	— T Manhole Telephone
— Railing	— W Manhole Waterworks
— Noise Barrier	— M Monument
— Slope Top / Slope Bottom	— Platform
— Stream Course / River	— T Septic Tanks
— Stepped Channel	— 28.6 Spot Height
— Survey Boundary	• Sign Board
— U-Channel	• SP Sign Pole
— Vertical Cutting / Retaining Wall	— Step Edge / Stair
— Artificial Slope	— Temporary Structure
— Balcony/ Canopy	• T Telephone Pole
— BN Bench	• TL Traffic Light
• B Bollard at Quay	— TB Traffic Light Control Box
• A Bollard at Road	• Tree
• Boulder / Rock	• Tree with Crown Size
— Catch Pit	— Valve
— CO Column	— F Valve Fire
— DP Draw Pit	— G Valve Gas
— EP Electric Pit	— W Valve Waterworks
— ET Electric Transformer	• W Water Point
• H Fire Hydrant	
— FB Flower Bed	

KEY PLAN:

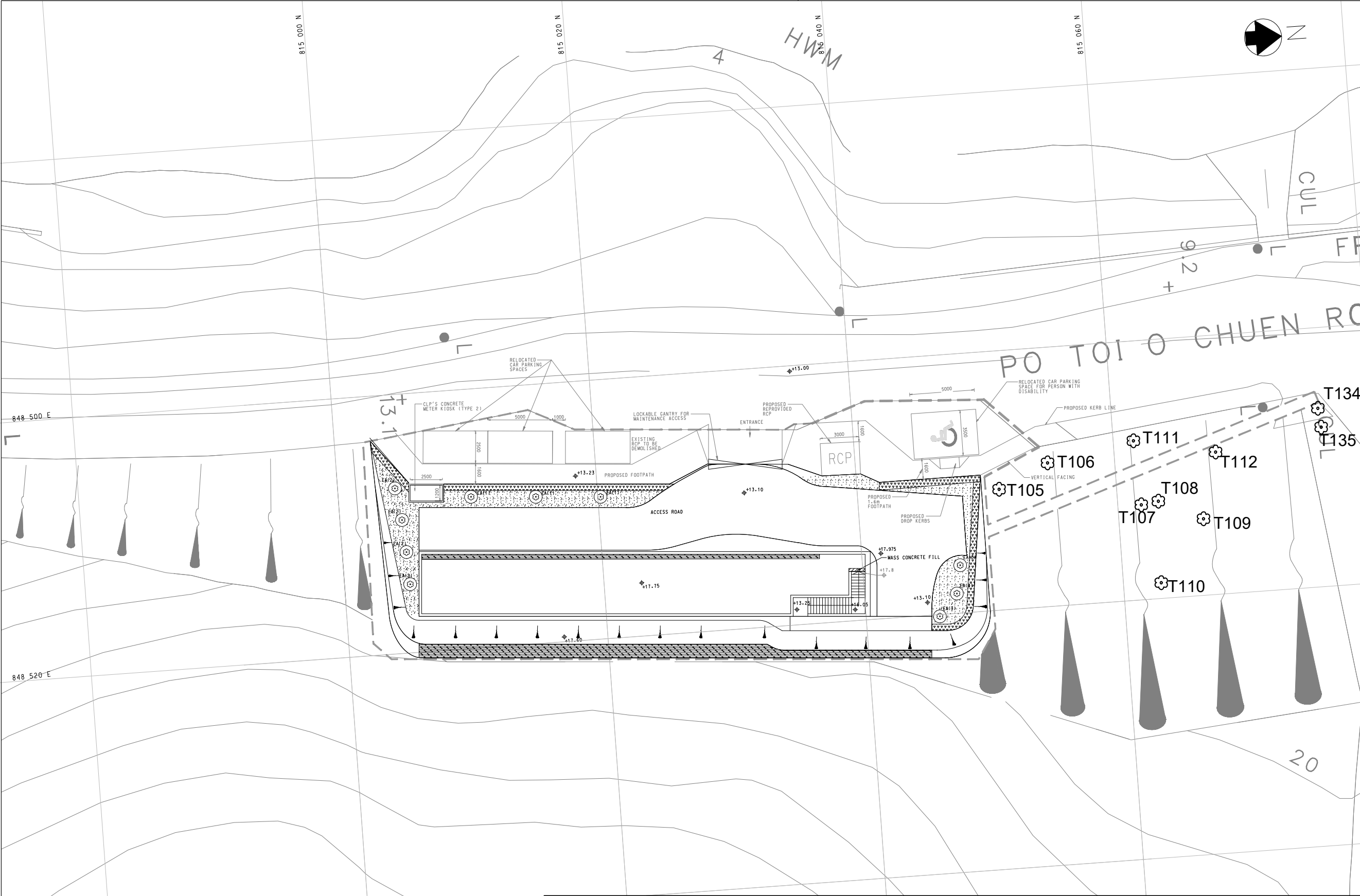
TITLE: Tree Survey
For Port Shelter Sewerage Stage 2 & Stage 3 (Package 3) (Tender Ref.CM 06/2018)
at Area 2
Po Toi O, Hong Kong

SCALE: 1:100 (in A1)

PLAN NO.: SVL/BV/PTO2/TREE/SHEET 3 OF 3

COMPANY: STAR VISION LIMITED

APPENDIX G – COMPENSATORY TREE PLANTING AND PLANTING LOCATION



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NOTES:

- FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO. 382770/B&V/GN/000.
- ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (mPD).
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

LEGEND:

- EA ELAEOCARPUS APICULATUS
- APPLICATION SITE
- ZOYSIA JAPONICA
- BOUGAINVILLEA GLABRA
- FICUS PUMILA
- Retain Tree

Revision	Date	Description	Initial
	Designed	Checked	Drawn
Initial	WC	WL	SZ
Date	03/20	03/20	03/20
Approved			

Contract no. DC/2019/09

Contract title
PROVISION OF VILLAGE SEWERAGE IN SAI KUNG

Drawing title
PO TOI O SEWAGE TREATMENT PLANT - LANDSCAPE LAYOUT PLAN AT GROUND FLOOR

Drawing no.	Revision
382770/B&V/PTOSTP/TR/103-1	-

Scale A1 1:150 A3 1:300

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

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

TREE PLANTING SCHEDULE

SPECIES (SCIENTIFIC NAME)	CHINESE COMMON NAME	QUANTITY (NO.)	REVISED DBH (mm)	SPACING (mm)
ELAEOCARPUS APICULATUS (1)	尖葉杜英樹	3	300	5000
ELAEOCARPUS APICULATUS (2)	尖葉杜英樹	4	300	2500
ELAEOCARPUS APICULATUS (3)	尖葉杜英樹	3	300	2200

GROUND COVER SCHEDULE

SPECIES (SCIENTIFIC NAME)	CHINESE COMMON NAME	MINIMUM SIZE (mm * mm)	SPACING (mm)	REMARKS
ZOYSIA JAPONICA	結縷草	-	-	-
Bougainvillea glabra	簕杜鵑	700(H) X 600(W)	550	-
FICUS PUMILA	薛荔	-	150	-

Plot Date = \$DATE\$

CAD Filename = \$FILE\$

Appendix H – Section 26 of Particular Specification

PARTICULAR SPECIFICATION

SECTION 26

PRESERVATION AND PROTECTION OF TREES

GENERAL

**General
requirements**

26.02

- (1)S The *Contractor* shall implement the necessary tree felling and compensation planting in accordance with the locations stated in the Drawings unless otherwise accepted by the *Project Manager*. In case the *Contractor* has to alter the details of the proposal, in terms of number, size, species, etc., for completion of the *works*, the *Contractor* shall submit a Tree Preservation and Protection Plan and render all necessary assistance to the *Project Manager* in the tree felling and transplanting application for approval by the relevant Authorities before commencing relevant works on site, which may affect any tree. For avoidance of doubt, the cost and time for the preparation of the Tree Preservation and Protection Plan and subsequent coordination to facilitate approval of the Plan shall not constitute a compensation event and shall include in the *Contractor's* programme and the *Contractor* shall have full allowance in his programme for such work.
- (3)S The *Contractor* shall assign a competent member of the site supervisory staff to oversee and supervise tree works related to arboricultural operations and preservation of trees within the Site, including, but without limitation to, planting, transplanting, tree surgery work and control of pest and disease affecting trees on the Site. The person assigned shall be working full-time on the Site but not necessarily working solely on trees. The assigned person shall have attended relevant training on arboriculture organised by local/overseas training institutes (e.g. Construction Industry Council Training Academy, Vocational Training Council) with cumulative training of at least 30 hours in the past 3 years, and have at least two years practical experience in arboriculture. The *Contractor* shall submit to the *Project Manager* for acceptance within 30 days of the date of the *Employer's* letter of acceptance of the Tender particulars of the assigned person (including his name, experience and position) together with a copy of the certificate(s) issued by the training institute(s) confirming "his satisfactory completion of the relevant courses" and supporting documents on the required experience.
- (5) The *Contractor* shall comply with the Guidelines for Tree Risk Assessment and Management Arrangement on an Area Basis and on a Tree Basis and Guideline for Auditing of Tree Risk Assessment for Tree Management Departments (the Guidelines) throughout the course of the *works*. The *Contractor* shall be responsible for conducting tree risk assessment and tree audit by appropriate personnel in accordance with the Guidelines. The

number of hours spent on site inspection in association with conducting tree basis risk assessment using Form 1 – tree group inspection form or Form 2 – tree assessment form, shall mean the time spent physically on site for inspection, and shall be agreed by the *Project Manager*. The Guidelines for Tree Risk Assessment and Management Arrangement on an Area Basis and on a Tree Basis would be updated from time to time by the Authority and can be referred to in the website, <http://www.trees.gov.hk/en/home/index.html>.

- (6) The auditing of tree risk assessment in accordance with PS Appendix 26.2 shall only be carried out when it is instructed by the *Project Manager*. The auditor deployed for carrying out the auditing of tree risk assessment shall be independent of the personnel carrying out the tree risk assessment, and shall be agreed by the *Project Manager*.

<i>Specialist contractor</i>	26.02B	If the <i>Contractor</i> is not included in the “List of Approved Suppliers of Materials and Specialist Contractors for Public Works” under the category of “Landscaping: Class I – General Landscape Work”, he shall enter into a written sub-contract with a specialist contractor pursuant to Clause SCC 14 of the Special Conditions of contract to carry out the arboricultural work to trees, including but not limited to planting, replanting, transplanting, tree surgery work, and control of pest and disease.
<i>Programming</i>	26.02C	The <i>Contractor</i> shall fully allow the effects of preservation and protection of existing trees in his programme, the method of operation and construction, and the vehicular access for the <i>works</i> .

SURVEY AND IDENTIFICATION OF EXISTING TREES

<i>Labelling of trees</i>	26.04	(3) The <i>Contractor</i> shall remove the identification labelling or marking systems from the Site upon completion of the Section 3 of the <i>works</i> , or earlier if so directed by the <i>Project Manager</i> .
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REMOVAL OF EXISTING TREES

<i>Felling of existing trees</i>	26.05	(2) (e)A Remove the stumps and rootballs of the felled trees carefully to avoid causing damage to the roots of the nearby plants to be retained, where it is necessary to have such removal as directed by the <i>Project Manager</i> ;
---	-------	---

PRESERVATION AND PROTECTION OF EXISTING TREES

<i>Protection of preserved trees from physical</i>	26.09	(1)S The <i>Contractor</i> shall erect, secure and maintain in good condition temporary protective fencing to protect the preserved trees. Details of the temporary protective fencing are shown in Drawing No. TP1 appended in PS Appendix 26.3. The
---	-------	---

**damage and
soil
compaction**

Contractor shall submit method statements including construction details to the *Project Manager* for acceptance and obtain such acceptance before commencing the erection of the protective fencing.

- (5) (a)S The *Contractor* shall provide temporary protective hessian armouring around tree trunks to protect the preserved trees. When instructed by the *Project Manager*, the *Contractor* shall provide temporary protective hessian and plank armouring as an alternative to the same trees for enhanced protection. Details of the temporary protective hessian armouring and hessian and plank armouring are shown in Drawing No. TP2 appended in PS Appendix 26.3. The minimum height of the Hessian armouring or Hessian and plank armouring from the ground shall be 1.5 m. The *Contractor* shall submit details of the temporary protective Hessian armouring and Hessian and plank armouring to the *Project Manager* for acceptance and obtain such acceptance before commencing installing such protection measures.
- (b)S Unless otherwise agreed by the *Project Manager*, the ground of the tree protection zones of the trees referred to in the sub-clause (5)(a) of this Clause shall be protected from damage by construction activities through the use of temporary protective mulching to cover the entire tree protection zone. When instructed by the *Project Manager*, double, overlapping, thick metal sheet coverings, or other materials of equivalent strength as agreed by the *Project Manager*, shall be laid on top of the temporary protective mulching to provide additional protection from soil compaction due to passage or parking of vehicles or operation of equipment or machinery. Details of the temporary protective mulching are shown in Drawing No. TP3 appended in PS Appendix 26.3. The *Contractor* shall submit details of the temporary protection mulching to the *Project Manager* for acceptance and obtain such acceptance before commencing installing such protection measures.

**Protection of
preserved
trees from
changes in
ground levels**

- 26.10 (2) (a)S construct a retaining wall as shown in Drawing No. TP4 appended in PS Appendix 26.3 or implement the measures agreed by the *Project Manager* to accommodate reduction in the existing ground level and to ensure the stability of the tree,
- (3) (a)S construct a dry well and soil aeration system as shown in Drawing No. TP5 appended in PS Appendix 26.3 or implement the measures agreed by the *Project Manager* to accommodate minor to moderate rise of up to 300 mm in the existing ground level around the

				tree,
			(b)S	construct a dry well and soil aeration system as shown in Drawing No. TP6 appended in PS Appendix 26.3 or implement the measures agreed by the <i>Project Manager</i> to accommodate major rise of more than 300 mm in the existing ground level around the tree,
			(c)S	before commencing implementation of the measures to accommodate raising the ground level pursuant to sub-clause (3)(a) or (3)(b) of this Clause, the <i>Contractor</i> shall submit method statements, including the necessary engineering design, construction details, and associated precautionary works for the measures for <i>Project Manager's</i> acceptance, and
			(d)	commence the construction of the measures only after the <i>Project Manager's</i> acceptance to the method statements.
<i>Protection of preserved trees from excavation including trenching</i>	26.11	(1)	(c)B	excavate the trench on the paved side of the tree if one exists,
			(c)C	in case the service is to be installed by tunnelling or other trenchless methods in lieu of trench excavation, tunnel the service in the following manner and as shown in Drawing No. TP7 appended in PS Appendix 26.3 close to the tree trunk on one side:
			(i)	excavate a trench as narrow as possible directly towards the tree along a radius to not closer than 1.0 m from the trunk or where roots larger than 25 mm in diameter are encountered, whichever distance is farther away from the trunk,
			(ii)	tunnel straight beneath the tree at a depth of not less than 750 mm and in a way to avoid damaging any tap root, sinker roots or support roots,
			(iii)	exit on the opposite side along another radius, and
			(iv)	sleeve the service where it passes beneath the tree to reduce the risk of damage to the service and facilitate future servicing and repair,

REFERENCES

***Other
references***

26.17

- (1) The *Contractor's* attention is also drawn to the latest editions of the following British Standards and British Standard Code of Practice for general reference:

BS 3998	Recommendations for tree work
BS 4043	Recommendations for transplanting root balled trees
BS 4428	Code of practice for general landscape operations (excluding hard surfaces)
BS 5837	Guide for tree in relation to construction

- (2) The provisions contained in this Particular Specification and the Drawings shall prevail over the provisions contained in the documents listed in the sub-clause (1) of this Clause.

END OF PS SECTION 26

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APPENDIX I – SECTION 3 OF PARTICULAR SPECIFICATION

PARTICULAR SPECIFICATION

SECTION 3

LANDSCAPE SOFTWARES, GREEN ROOF AND ESTABLISHMENT WORKS

GENERAL

Weather conditions for planting

- 3.06A (1) Soiling, cultivation, planting and other similar landscape softworks and establishment works operations shall be carried out in suitable weather conditions. Planting shall not take place in weather conditions which will result in initial drying out of root systems and/or scorching of leaves. Ideally planting shall take place in overcast or moist conditions. If planting has to be carried out in sun or drying winds, plants awaiting planting shall at all times be covered to prevent drying out.
- (2) The *Contractor* shall cease planting immediately when in the opinion of the *Project Manager* the weather conditions are not as defined above.

The following is added after G.S. Clause 3.06 :-

Sub-soil drainage layer

- 3.06B Sub-soil drainage layer shall be applied to all closed bottom planters or planting areas that are located above structural slab. The *Contractor* shall submit a mark-up plan showing all locations of the drainage layer where they shall be applied, and shall submit such drawings, including a material sample, for the *Project Manager*'s acceptance prior to order and purchasing of materials.

The drainage layer system shall conform to the followings:

- (i) Modular drainage system shall be in dimensions (approximate) 30mmHT x 400mmW x 600mmL for easy installation and maintenances, with a flow rate of (not less than) 240L/min. @ 1% gradient (405mm side), crushing strength of (not less than) 101 t/m², made from 100% recycled polypropylene in black color. For example, *Atlantis Drainage Cell, manufacture by; Atlantis Corporatis Pty. Ltd.* or products and materials having equal functions and performance accepted by the *Project Manager*.
- (ii) Filter fabric shall be a permeable non-woven, geotextile which is resistant to all naturally occurring soil alkalis, soil acids; unaffected by bacteria and fungi; the tensile strength of the filter fabric decrease with increase in temperature, but recovers fully when the geotextile is returned to normal ambient temperature; resistant to UV sunlight and humidity. For example, "*Terram 1000*" or products and materials having equivalent functions and performance accepted by *Project Manager*.
- (iii) Sand for use in the layer on top of the filter fabric shall be coarse,

		double washed, river bed sand of minimum particle size 0.2mm and free from foreign and deleterious matter and any other substance or matter which may be harmful to plants. Sand from salt water sources shall not be acceptable.
	(iv)	Perforated PVC inspection pipe shall be 150mm diameter with 20mm diameter drain holes at minimum 50mm centres. Pipe shall be sleeved within filter fabric as specified and capped with a removable cap.
	(v)	Drainage aggregate shall be clean, washed, rounded stone, 15-30mm in diameter.
Specialist Landscape Contractor	3.07A	In addition to the requirements specified in Clause C3 and Clause D7 of the additional conditions of contract, the <i>Contractor</i> shall demonstrate that the proposed specialist <i>Contractor</i> has sufficient experienced and skilled labour to undertake the landscape softworks and establishment works of this contract.
Programming	3.07B	The <i>Contractor</i> shall fully allow the effects of preservation and protection of existing trees in his programme, the method of operation and construction, and the vehicular access for the <i>works</i> .
Acceptable Tree and Shrub Forms	3.07C	Plants shall be rejected by the <i>Project Manager</i> if in his opinion such plants do not conform to the acceptable forms as illustrated in Appendix 3.01 of this PS. Rejected plants shall be removed off the Site and be replaced within the period instructed by the <i>Project Manager</i> .

MATERIALS

Heavy Standard Trees	3.15	(b)S Stem diameter not less than 120 mm measured at a height of 1300 mm from soil level, (d)S Overall height above the root collar exceeding 3500 mm but not exceeding 6000 mm,
		G.S. Clause 3.19(e) is deleted and replaced by :-
Conifers	3.19	(e) Grown and supplied in a container with dimensions not less than 500mm diameter and 500 mm deep for small conifers, and 750mm in diameter and 600mm deep for large conifer.
Ground Covers	3.23	Add the following sub-clauses after GS Clause 3.23(e): (f) well developed healthy shoots, (g) a well developed healthy root system, (h) an average diameter between 100 mm and 350 mm, and (i) grown and supplied in a container not less than 125 mm diameter and 150 mm deep.

The following is added after G.S. Clause 3.25 :-

Origin of plants	3.25A	(1)	The <i>Contractor</i> shall state the origin of all trees, shrubs, turfs, sprigs and plant materials; in good time before planting that the <i>Supervisor</i> may inspect the nursery and agree on a selection of all plant material for acceptance. All plant material subsequently delivered to the Site shall be to at least the same standard in all respects as that accepted. The <i>Contractor</i> shall note that in order to provide all the plant material as specified it may be necessary for him to grow the material in his own nursery in advance of commencing planting works on Site.
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Grass seed	3.26	(1)	All seed shall be covered by an appropriately numbered seed analysis report or certificate undertaken on seed actually delivered to site. The numbered certificate shall always refer to the number on the seed sacks delivered to site. The report or certificate shall have been issued within six months of the date of the use of the seed.
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G.S. Clause 3.27(1) and (2) is deleted and replaced by :-

Turf	3.27	Delete Clause 3.27 and substitute the following:	
		(1)	Turf shall consist of a combination of three or all of the following grass species, unless otherwise specified :
			Axonopus compressus (Carpet Grass)
			Cynodon dactylon (Bermuda Grass)
			Eremochloa ophiuroides (Centipede Grass)
			Leptochloa chinensis (Field Grass)
		(2)	Turf shall be free from weeds and any other impurities. The grass shall be of even density and green in colour, forming a turf which is sufficiently fibrous to hold together when handled. The grass shall be free from pest or disease. Turf shall be supplied with dimensions 300mm by 300mm with a minimum thickness of 40mm. A sample of turf consisting of 10 turves shall be supplied to the <i>Project Manager</i> or <i>Supervisor</i> for his acceptance

G.S. Clause 3.28 is deleted and replaced by :-

Sprigs	3.28	Sprigs shall be stoloniferous grasses and, unless otherwise specified, shall be either :	
			Axonopus compressus (Carpet Grass)
			Eremochloa ophiuroides (Centipede Grass)

Sprigs shall be a minimum 150mm in length, and shall be kept moist and in shade. They shall be planted within 36 hours of lifting. Samples of material to be used shall be submitted to the *Project Manager* or *Supervisor* for acceptance before any material is brought in for use on site. The source of material shall be stated by the *Contractor*.

Soil-Mix

3.30S

(1) The *Contractor* shall prepare soil-mix and lightweight soil-mix on the Site. Mixing shall not take place during periods of heavy rain, nor when the soil is saturated. Mixing shall cease if the moisture content is too high to achieve even through mixing.

(2) Soil-mix shall consist of friable, completely decomposed granite (or volcanic) and soil conditioner in the proportions of 3:1 by volume. Soil-mix shall be free of grass or weed growth, roots, pathogens, sticky clay, salt, chemical contamination, and any other deleterious materials and stones exceeding 25 mm diameter in any direction.

(3) Lightweight soil-mix for all elevated structures not in contact with the ground shall consist of friable, completely decomposed granite, expanded clay or vermiculite pellets with a maximum particle size of 5 mm and soil conditioner in the proportions of 2:1:1 by volume, and shall have a maximum weight of 1000 kg per m³. Lightweight soil-mix shall be free of grass or weed growth, sticky clay, salt, chemical contamination, and any other deleterious materials and stones exceeding 25 mm diameter in any direction.

(4) Soil-mix / lightweight soil-mix shall possess the following properties:

- (a) PH value between 5.5 and 7.5;
- (b) Organic matter more than 10%;
- (c) Organic carbon content 2.0% to 3.0%;
- (d) Nitrogen (N) content 0.09% to 0.15%;
- (e) Carbon:Nitrate ratio 25:1 to 45:1;
- (f) Extractable phosphorous (P) content 70 mg/kg to 100 mg/kg;
- (g) Extractable potassium (K) content 150 mg/kg to 300 mg/kg;
- (h) Extractable magnesium (Mg) content more than 80 mg/kg;

- (i) Cation Exchange Capacity 16 to 20 m.e. %, and
- (j) Soil texture content:
 - Sand (0.05 - 2.0 mm) at the range of 20% - 75%;
 - Silt (0.002 - 0.05 mm) at the range of 5% - 60%;
 - Clay (< 0.002 mm) at the range of 5% - 25%.

(5) Soil-mix / lightweight soil-mix delivered and installed on the site shall be tested for N.P.K. value, organic matter content, Cation Exchange Capacity ratio, organic carbon, pH value, physical content of sand, silt and clay, and water content. Soil testing shall be arranged by the *Contractor* and carried out by an approved reputable firm or institute, and the report shall be submitted to the *Project Manager* for acceptance.

(6) Should the results of the soil analysis show that the soil-mix does not meet the nutrient and organic status required for soil-mix, the *Contractor* shall make good the soil-mix by bringing it to the nutrient and organic status as specified. The *Contractor* shall obtain acceptance for his proposed remedial measures from the *Project Manager* before undertaking any work.

(7) If the period between the analysis of the soil-mix as above and the commencement of any deposition of soil-mix exceeds 12 months, then the *Contractor* shall carry out a second analysis of the soil-mix. If this second analysis shows that the soil-mix has deteriorated in the nutritional requirements for soil-mix, the *Contractor* shall make good the soil-mix by bringing it to the nutrient and organic status as specified.

(8) The *Contractor* shall give the *Project Manager* four weeks notice of his intention to commence deposition of soiling operations in order to allow for the results of the analysis to be available before commencing soiling.

(9) No change in the source of soil-mix shall be allowed without the prior acceptance of the *Project Manager* based on such tests and samples as specified herein.

(10) The minimum depth of soil-mix shall be 150 mm for hydroseeding areas unless otherwise specified. For tree transplanting, the entire destination pit shall be backfilled with soil-mix.

Soil Conditioner 3.31

- (1) (e)S Not capable of raising the temperature of the treated soil more than 5°C above the temperature of the untreated soil,

Add the following sub-clauses after GS Clause 3.31(1):

		(2) Further to GS Clause 3.31(1), the <i>Contractor</i> shall produce a certificate of analysis stating the composition, physical and chemical characteristics. The analysis shall be carried out by a laboratory accepted by the <i>Project Manager</i> and shall include, but not limited to, the following data: composition, pH value, moisture content, organic matter content, carbon content, nitrogen content and carbon : nitrogen ratio.
<i>Completely Decomposed Granite</i>	3.31A	Completely Decomposed Granite (CDG) is granite which has been completely decomposed by weathering in place, the texture of which is still recognisable. CDG shall be friable and free from grass or weed growth, sticky clays, salt, stones exceeding 25 mm and other deleterious material.
<i>Imported Subsoil</i>	3.31B	Imported subsoil is friable, fine grained, decomposed granite or volcanic rocks which shall be free from impurities including chemicals, oil, cement, sticky clays and stones exceeding 25 mm in diameter. Subsoil shall be submitted to the <i>Project Manager</i> for acceptance before importation and use.
<i>Water Retaining Crystals</i>	3.31C	<p>(1) Water retaining crystals shall be a cross linked polyacrylamide copolymer such as “POLYGRO” or products having equivalent functions and performance accepted by the <i>Project Manager</i>.</p> <p>(2) Water retaining crystal shall be supplied in sealed, waterproof containers and kept dry at all times.</p> <p>(3) Water retaining crystals shall be added to all planting areas at the rates of application specified by the <i>Project Manager</i> or by the manufacturer.</p>
<i>Peat</i>	3.31D	Peat shall be of partially decomposed fibrous or cellular stems and leaves of Sphagnum Mosses having a porous fibrous texture, fairly elastic and substantially homogenous with a pH value of not less than 4.5 and not greater than 6.0. It shall be baled and free of decomposed colloidal residue, wood, sulphur and iron, be brown in colour and finely shredded and suitable for horticultural purposes. Shredded particles shall not exceed 6mm in size.
<i>Root activator</i>	3.31E	Root activator shall be a chemical which contains plant hormones Gibberellic Acid., and Indoleacetic Acid, and which can activate root growth such as 'Rootone' or equal and approved.
<i>Sealant</i>	3.31F	Sealant shall be an approved fungicidal bituminous sealing compound such as 'Arbrex' or equal and approved.
<i>Mulch</i>	3.32S	Mulch shall be a fully composted stable organic material either as

		stated in GS Clause 3.31 for soil conditioner or granulated tree bark or wood shaving, with a nominal length of 40 – 70 mm and normal width of 23-30 mm. It shall be free from impurities and shall be heavy enough to prevent dispersal by wind.
Fertilizer	3.34S	<p>(1) Fertilizer for trees and shrubs shall be 20:15:10:2:7:3:7 (nitrogen/phosphate/potassium/calcium/magnesium/sulphur/trace element salts) in the form of slow release fertilizer tablets. The tablet shall release nutrients into the soil consistently over three years. Fertilizer tablets shall be “Fertimel” or products having equivalent functions and performance as accepted by the <i>Project Manager</i>.</p> <p>(2) Hydroseeding fertilizer shall be 15:15:15 (nitrogen/phosphorus/potassium) or products having equivalent functions and performance accepted by the <i>Project Manager</i>.</p> <p>(3) Fertilizer shall be supplied in sealed waterproof containers.</p>
Stakes, Ties and Guys	3.36	<p>(2)S Bamboo tripod staking shall be used in soft planting areas for tree planting and shall comprise three nos. of 50 mm diameter x 1800 mm long bamboo poles or as specified to suit the height of the plant being supported. Stakes shall be secured to the tree with trunk protection material like minimum 2 mm thick flexible rubber pad so as not to cause any chafing or abrasion of the tree to restrict its growth,</p> <p>(7) Further to GS Clause 3.36, the method of staking shall be subjected to the acceptance by the <i>Project Manager</i>.</p>
Root barriers around tree pits, raised planter bed and roadside planting	3.36A	(1) As specified on contract drawings or direct by <i>Project Manager</i> on site, the root barrier shall be 5mm thick copper lined root resistant bitumen membrane such as “Bauder Rootbar” or other equal and approved product. Sample shall be submitted for <i>Project Manager</i> ’s acceptance prior to bulk purchasing and installation.
	3.36B	Not used.
Sacks, bags, containers etc.	3.36C	(1) The <i>Contractor</i> shall retain for inspection by the <i>Project Manager</i> all sacks, bags, containers and the like in which fertiliser, mulch, grass-seed, pesticides, herbicides and the like are supplied and shall not dispose of these without the consent of the <i>Project Manager</i> .
	3.36D	Not used.
Latin names	3.36E	(1) On planting plans, where Latin names and Chinese Characters are given for plants; the Latin name shall always take precedence.
Serpentine Boulders	3.37A	Serpentine Boulders to be strongly veined blue and white, except when specified otherwise, hard metamorphic rock consisting of various sizes ranging from a minimum of 500 x 500 x 500 mm to a maximum size of

1800 x 1200 x 900 mm. (Normally obtained from Taiwan).

**Temporary
Protective
Fencing**

3.37B

(1) Temporary protective fencing shall be 1200 mm high comprising straining posts with struts, intermediate posts with galvanised line wire, galvanised twisted wire and approved split bamboo pales.

- (a) Straining posts shall be installed at corners, ends of runs and at intermediate positions 30 meter apart maximum. Posts shall be 1800 mm long by 150 mm diameter or 150 mm square. Struts shall be 1700 mm long by 150 mm diameter or 150 mm square and shall be housed and securely nailed to all straining posts in the direction of each line of fencing.
- (b) Intermediate posts shall be installed at 2.5 metres apart maximum and shall be 1800 mm long by 100 mm diameter or 100 mm square;
- (c) All posts and struts shall be for approved timber treated with approved preservative and shall be driven into the ground for a depth of 600 mm minimum.
- (d) Two stands of 3.15 mm high tensile galvanised steel wire to BS 4102 shall be strained and stapled with 38 x 4 mm galvanised staples and fixed 150 mm from top of post and 150 mm above ground level. Each line wire shall be strained tightly by means of a ratchet strainer. All line wires shall be secured to intermediate posts by one staple drive to a running fit and to straining posts by two complete turns round the post with the wire twisted back on itself and staple drive tightly into the post.
- (e) Pales shall be hand-riven from bamboo poles approximately 30 mm diameter. Pales shall be straight, pointed at the top as shown and notched 80 mm from top and bottom.
- (f) The wire for wiring shall be not less than 2 mm diameter galvanised mild steel wire conforming to BS 4102. Each line of wiring shall consist of two wires twisted together between the pales.
- (g) Pales to be positioned with not more than 50 mm spacing between pales. One line of wire shall be fixed 80 mm from the top of the pales and one 80 mm

from the bottom. Every 500 mm top and bottom strained wires shall be bound to twisted wires on bamboo paling by means of wire twists of 2 mm gauge galvanised wire.

3.37C Not used.

3.37D Not used.

3.37E Not used.

SUBMISSIONS

**Particulars of
Seed Mixture,
Turf, Springs,
Soil
Conditioner,
Soil-Mix and
Water**

- | | | | |
|------|-----|------|--|
| 3.38 | (1) | (d)S | <p>A certificate of analysis for soil conditioner including details of the composition and results of tests for the properties stipulated for compliance in Clause 3.31(1) and the following properties:</p> <ul style="list-style-type: none"> - pH value - moisture content - carbon/nitrogen ratio - organic matter - organic carbon content (using loss of ignition ‘Ashing’ Method of testing), and - nitrogen content (using ‘Kjeldahl’ Method). |
| | | (e)S | <p>A certificate of analysis for soil-mix including details of the composition and results of tests for the properties stipulated for compliance in Clause 3.30(2), including but not limited to:</p> <ul style="list-style-type: none"> - organic matter - nitrogen (N) - available phosphate (P₂O₅) - exchangeable potassium (K₂O₅) - pH, and - total soluble salts. |

Add the following sub-clause after GS Clause 3.38(1)(f):

- (g) a sample of 2 kilograms of mulch and 2 kilograms of soil conditioner shall be made available for inspection.

(2)S The particulars shall be submitted to the *Project Manager* at least 28 days before the relevant work starts.

**Samples of
Materials**

- | | | |
|-------|-----|--|
| 3.40S | (1) | <p>At least one month prior to the intended date of planting on the Site, the <i>Contractor</i> shall submit photos of all specified plant materials and shall be placed at a local nursery for the <i>Project Manager</i>’s inspection and acceptance. Materials that have not been accepted shall be removed and replaced at the <i>Contractor</i>’s expense. All plant materials should be well</p> |
|-------|-----|--|

kept in good and tidy manner with regular watering at the nursery.

(2) Samples of the following proposed materials shall be submitted to the *Project Manager* for acceptance at the same time as particulars of the material are submitted and before confirming orders, and delivery to and use on the Site:

- (a) 0.27 m³ sample of soil-mix with analysis report;
- (b) 0.27 m³ sample of soil conditioner with analysis report;
- (c) 0.27 m³ sample of each mulch;
- (d) 0.5 kg sample of each fertilizer with certificate;
- (e) A sample of tree guying and staking system; and
- (f) A sample of geotextile filter with manufacturer's specification.

(3) The *Contractor* shall not deliver the relevant materials to the Site, unless the written acceptance of the *Project Manager* for the particulars referred to in sub-clause (1) of this Clause is obtained.

(4) The *Project Manager's* confirmation of acceptance with the sample will not preclude the right of the *Project Manager* to reject any imported material which in the opinion of the *Project Manager* falls below the Specification or the accepted standard.

(5) The *Project Manager* may also take and test or analyse samples of materials referred to in sub-clause (1) of this Clause to verify compliance with the Specification or the accepted standard. Any material tested or analysed which does not conform to the Specification or the accepted standard shall be rejected by the *Project Manager*, and shall be replaced by the *Contractor* with the material complying with the Specification or the accepted standard. Rejected materials shall be immediately removed from the Site.

(6) The accepted samples shall be kept in good condition on site or at other locations as agreed by the *Project Manager* for the *Project Manager's* inspection and comparison with the materials brought to the Site.

**Technical
Information**

3.40B

(1) The *Contractor* shall submit, for the acceptance of the *Project Manager*, full particulars of the following technical submission within 28 days of the *starting date* of the contract:

- (i) works programme for Landscape Softworks;

- (ii) works programme for setting up and management of Holding Nursery;
- (iii) works programme for tree transplanting works, if any;
- (iv) technical methodology for management and operation of Holding Nursery;
- (v) site details and photos of the proposed Holding Nursery;
- (vi) landscape Subcontractor's organisation chart;
- (vii) landscape Subcontractor's job references; and
- (viii) CV of all key personnel of the landscape Subcontractor.

HANDLING, STORAGE AND TRANSPORT

***Handling and
storage of
rootballed stock/
Nursery stock***

3.41

(1) Root pruning and undercutting of the root system of root-ball stock to the specified size of root-ball shall be carried out as instructed by the *Supervisor* before lifting from the nursery. It shall be carried out 12 months before lifting from nursery.

(2) Plants grown in the open ground shall be well watered prior to lifting and shall be lifted carefully to ensure the specified root ball is obtained. At the time of lifting, the root ball and the trunk from Soil level to the lower branches of trees shall be securely wrapped to prevent loss of Soil and moisture using hessian or straw. The wrapping material shall not be removed until the plant is required for planting.

The following is added after G.S. Clause 3.41(2):

(3) Damaged plant material may be rejected by the *Supervisor* and the *Contractor* shall replace such damaged material. Damaged material which is not rejected by the *Supervisor* shall be carefully pruned using sharp clean implements to give a single flat sloping face cuts and wounds shall be painted with a fungicidal bituminous sealing compound, accepted by the *Supervisor*.

The following is added after G.S. Clause 3.44(2):

Storage of plants

3.44

(3) The *Contractor* shall seek the written acceptance of the *Project Manager* on the storage of plants, method, equipment and storage facilities on Site.

(4) Trees and shrubs which are not immediately planted in their permanent positions shall be supported upright on level ground, regularly

watered and maintained in good condition.

(5) Any bare-rooted plant material shall be heeled into the ground with all the roots covered by soil-mix.

***Storage of Trees
and Shrubs***

3.45A

Renumber GS Clause 3.45 as sub-clause 3.45(1) and add the following sub-clause after GS Clause 3.45(1):

(2) Any bare-rooted plant material shall be heeled into the ground with all the roots covered by soil-mix.

PRE-PLANTING WORKS

***Preparation
works***

3.49S

(1) Before soiling or planting for landscape softworks and establishment works starts, preparatory works shall be carried out by one or more of the treatments stated in GS Clauses 3.50 to 3.57, as appropriate or as stated elsewhere in this contract.

(2) The details and extent of the preparatory works to be carried out shall be proposed by the *Contractor* and agreed by the *Project Manager*. No preparatory works shall be carried out without the *Project Manager*'s acceptance.

***Insect and
disease control***

3.49A

(1) The *Contractor* shall regularly check for any insect attraction or fungal infestation particularly during known periods of activity.

(2) The *Contractor* shall report to the *Project Manager* any such occurrence and shall carry out remedial eradication by use of sprayed insecticide or fungicide, used in accordance with the manufacturer's instruction. Use of such sprays is to be with care and to have due regard to the safety and convenience of the general public and be in accordance with the Hong Kong Government Environmental Guidelines. Spraying shall be carefully controlled to avoid unnecessary dispersion.

(3) The *Contractor* shall conduct thorough inspections for any signs of "Red Imported Fire Ants" and ant mounds on the selected plant materials at the nursery prior to delivery to the Site and again on Site prior to planting the selected plant materials.

(4) If any "Red Imported Fire Ants" and / or any mounds are identified, the *Contractor* shall immediately report the findings to the "Special Task Force" set up by the Agriculture, Fisheries and Conservation Department to deal with the Red Fire Ants and shall immediately report the same findings to the *Project Manager*.

***Cleaning
Ground***

3.50S

Weeds, rubbish, litter, stones exceeding 15 mm diameter, stumps, construction wastes, concrete spillage and all deleterious material shall be removed from the surface of the ground. Vegetation shall be cleared

		without using herbicide unless permitted by the <i>Project Manager</i> . If permitted, the herbicide shall be a proprietary type accepted by the <i>Project Manager</i> and shall be applied in accordance with the manufacturer's recommendations.		
Soiling	3.53S	<p>(1) When required by the <i>Project Manager</i>, the existing ground shall be graded to the planting base level of the planting area as stated in this contract. Any voids shall be backfilled with completely decomposed granite.</p> <p>(2) When required by the <i>Project Manager</i>, the planting base of the planting area shall be broken up prior to spreading soil-mix or light-weight soil-mix to prevent hard-pan and water-logging.</p> <p>(3) Soil-mix or lightweight soil-mix shall be spread and levelled to the depth stated in this contract. The depth of uncompacted soil-mix or lightweight soil-mix shall be sufficient to allow the level of the area to comply with finished levels after natural settlement has taken place. Placing and spreading of soil-mix or special soil-mix shall not take place during periods of heavy rain, nor when the soil-mix or special soil-mix is saturated. After soiling, the <i>Contractor</i> shall take all necessary preventative measures to control erosion and siltation and prevent the area from compaction.</p>		
Control of Erosion	3.53A	The <i>Contractor</i> shall take all necessary preventative measures to control erosion and siltation. The <i>Contractor</i> shall restore or replace any portion of the Site, including those which have been both the subject of a certificate of completion of a Section or a part of the <i>works</i> and on which broadcast seeding or hydroseeding is required to be carried out, which erodes, silts up or is otherwise damaged.		
Soil Depth	3.53B	<p>(1) The soil whose depths are described below shall consist of topsoil/soil-mix plus subsoil and shall not include mulch or the drainage layer.</p> <p>(2) Topsoil depth shall be 1000 mm unless otherwise specified in this contract.</p>		
Cultivation	3.54	<p>Add the following sub-clauses after GS Clause 3.54(3):</p> <p>(4) All planting areas shall be cultivated. Cultivation shall be carried out by accepted mechanical or manual means to the following minimum depths:</p> <table><tr><td>Areas with 1000 mm deep soil-mix to be planted with trees -</td><td>300 mm</td></tr></table> <p>(5) Ground at a slope exceeding 15° to the horizontal shall not be cultivated. Pre-planting fertilizer and soil conditioner shall be spread to a</p>	Areas with 1000 mm deep soil-mix to be planted with trees -	300 mm
Areas with 1000 mm deep soil-mix to be planted with trees -	300 mm			

thickness of 100 mm over the surface before cultivation.

(6) Cultivation shall take place only when the seeding or planting operations can begin immediately after cultivation. No cultivation is to take place in weather or ground conditions where operations may destroy the soil structure.

Scarifying

3.55

The following is added after G.S. Clause 3.55 (1):

(2) All slopes to be hydroseeded or grassed by other methods shall be scarified. Ground at a slope exceeding 15° to the horizontal shall be scarified parallel to the slope.

**Works near
Existing Trees**

3.57A

(1) Where excavation is required near existing trees for construction of the *works*, the following precautions shall be taken to protect the roots:

- (a) roots exposed during excavation shall be wrapped with straw or hessian during the construction of the *works*. Cutting of the roots shall be kept to a minimum.
- (b) before backfilling, roots shall be cut cleanly back to living tissue and sealed with an approved wound sealant, and
- (c) excavation shall be backfilled with topsoil including sufficient slow release fertilizer to ensure a rate of application of 500 g/m³.

(2) Trench excavation for services, including drainage and sewerage, shall be kept to a minimum of 1.5 metres from the tree trunk. Detailed location of services shall be agreed with the *Project Manager* before excavation commences if this minimum cannot be achieved. Large roots exposed in trench excavation and above the final line of the installation shall be preserved, and excavation close to trees shall be carried out with particular care to ensure this. Following installation of the services, severed roots shall be cut back cleanly to living tissue and sealed with an approved wound sealant. Trenches shall be backfilled as specified.

(3) Existing trees and woodland areas shall be protected during this contract *works* by temporary bamboo pale fencing.

(4) In respect of all existing trees and woodland the *Contractor* shall ensure, for the whole duration of this contract, the following:

- (a) no unnecessary intrusion into areas of woodland or scrubland is made,
- (b) all access routes to construction areas which need to pass through woodland or scrub shall be accepted by the *Project Manager*,

- (c) the limits of site clearance are to be agreed by the *Project Manager* on Site before site clearance commences. All trees to be felled in accordance with the Drawings shall be marked by the *Contractor* and accepted by the *Project Manager* before felling,
- (d) no nails or other fixings shall be driven into trees,
- (e) no fencing or signs shall be attached to trees,
- (f) no materials or machinery shall be stored under or against trees,
- (g) no workshop, canteens, or similar shall be installed beneath trees, nor shall equipment maintenance etc. be carried out under trees, and
- (h) no trees shall be used as anchors for ropes or chains used in guying, pulling and the like.

(5) The *Contractor* shall exercise the greatest care during the progress of the *works* to avoid damage to any tree which this contract does not require to be felled.

(6) As soon as the Site or any part thereof becomes available the *Contractor* shall erect temporary protective fencing around each such tree or group of trees. The *Contractor* shall inform the *Project Manager* if works are to be carried out within such fenced area and, save with the express permission of the *Project Manager* or on his order, all such works shall be executed using only hand-held tools.

Tree Felling

3.57B

Prior to starting any tree felling works all trees to be retained shall be identified and the necessary tree protection fencing installed.

Felling of trees to be removed shall involve the complete removal of trees indicated, including stumps, by one of the following methods to be accepted by the *Project Manager* before work commences.

- (a) **Bulldozer**
A bulldozer shall be used to push over the whole tree which shall then be cut by chain saw and removed from site. The method shall only be used where no trees are to be retained.
- (b) **Winches**
Power mounted or hand winches shall be used for pulling over the whole tree, the main support roots having first being severed either by mechanical means or by hand grubbing. Preserved trees shall

not be used as anchor points for winching without approved adequate protection.

- (c) Chain Saws
Felling by this method shall be in accordance with BS 3998 (1989), either felling the whole tree at once or in sections. The stump shall be removed by hand grubbing and winching, stump cutting machine, hydraulic lifting or another method accepted by the *Project Manager* before work commences.

PLANTING

<i>Use of Excavated Material</i>	3.59	Add “Soil tests for all the excavated material shall be carried out as stated in Clause 3.30(5).” at the end of this Clause.
<i>Plantings</i>	3.60	Add the following sub-clause after GS Clause 3.60(3): (4) On planting palms, where Latin names and Chinese characters are given for plants, the Latin name shall always take precedence.
<i>Origin of Plant Material</i>	3.60A	The <i>Contractor</i> shall state the origin of all seeds and plant materials prior to planting so that the <i>Project Manager</i> may inspect the nursery and agree on a selection of plant material for acceptance. All plant material subsequently delivered to the Site shall be to at least the same standard as that accepted. The <i>Contractor</i> shall note that in order to provide all the plant material as specified it may be necessary for him to grow the material in his own nursery in advance of commencing planting works on Site.
<i>Use of Chemicals</i>	3.60B	No chemicals shall be used on Site without the prior acceptance of the <i>Project Manager</i> . Such chemicals shall not be toxic to humans, birds or animals and shall be applied according to the manufacturer's instructions. The <i>Contractor</i> shall be entirely responsible for the storage, mixing, application and use of chemicals, including the proper disposal of product containers.
<i>Substitution of Plant Material</i>	3.60C	(1) In the event of plant material as specified herein not being available, the <i>Contractor</i> shall notify the <i>Project Manager</i> at the beginning of this contract in order that suitable substitutes can be considered. The <i>Contractor</i> shall propose substitutes which are similar in height, shape, flowering characteristics and function as the original species. (2) The <i>Contractor</i> shall have photographs taken of approved samples for each species and plant size to be used. The photographs shall be used as a standard to which similar species to be supplied and planted in this contract shall be equivalent. (3) Not used.

		(4) No substitution shall be made without the prior written acceptance of the <i>Project Manager</i> .
Material to be as Specified	3.60D	All plant material shall be true to species and shall not be less than the minimum size specified. Plants having any habit or growth other than specified shall be considered unacceptable.
Notice and Instructions	3.60E	In respect to Landscape Softworks, the <i>Contractor</i> shall give forty-eight hours notice to the <i>Project Manager</i> , of his intention to commence any one of the following operations: ground preparations, soiling, setting out, planting, seeding, hydroseeding, pruning of existing and newly planted vegetation, fertilizing, visits to carry out Establishment Works. The <i>Contractor</i> shall undertake any remedial Landscape Softworks within twenty-four hours of notice by the <i>Project Manager</i> .
Cultural Operations Prior to the Date for Commencement of Establishment Works	3.60F	During the period between planting and the <i>starting date</i> of Establishment Works, the <i>Contractor</i> shall perform all works as specified for the healthy establishment of plants in accordance with requirements as specified.
Replacement Planting Prior to the Date for Commencement of Establishment Works	3.60G	The <i>Contractor</i> shall ensure that on the <i>starting date</i> of Establishment Works all planted areas are clean, free of rubbish and weeds in a healthy growing condition. The <i>Contractor</i> shall be responsible for any replacement planting which is necessary prior to the onset of the Establishment Period as defined under PS Clause 3.79(4).
Setting Out	3.60H	<p>(1) The <i>Contractor</i> shall be responsible for accurately setting out all areas to be planted to the satisfaction of the <i>Project Manager</i> prior to the commencement of planting. The <i>Contractor</i> shall rectify errors in setting out at his own expenses. Any discrepancy in Site area between that shown on the plans and the actual area on the ground shall be notified to the <i>Project Manager</i> as soon as it is discovered and prior to commencement of any relevant operations.</p> <p>(2) Tree and shrub areas shall be marked in outline with pegs, space not less than 15 m apart. The pegs shall not be less than 750 mm long and 50 mm in thickness and shall be firmly driven into the ground. The top 300 mm of each peg shall be painted white.</p> <p>(3) The <i>Contractor</i> shall mark out the required planting interval with canes, stones, chalk or other suitable markers along the longest edge of the area to be planted.</p> <p>(4) The first row of plants shall be the required distance from this</p>

edge and directly in line with each marker. In the case of planting areas edged by kerbs or walls, the first row of plants shall be planted as close to the edge as foundations will permit. In the case of planting areas adjacent to other planting areas, the first row of plants shall be planted at a distance which is half the specified planting distance for the species from the edge. The second row shall be the required distance from the first. The pattern will be repeated over the whole planting area.

(5) The approximate numbers of plants to be planted per half day shall be set out laying them down beside the hole in which they are to be planted. Plants shall not be removed from their containers until planting is taking place. All setting out shall be to the acceptance of the *Project Manager*.

(6) During the setting out of the planting, the *Contractor* shall notify the *Project Manager* of the position of any tree or group of trees which occur within the following tolerance:

- (a) trees within 5 metres of a road lamp stand,
- (b) trees which because their location serves to obscure traffic signs, signals etc.,
- (c) trees within 1 metre of any drainage u-channel,
- (d) trees and large shrubs within 1.5 metres radius of a manhole cover,
- (e) planting within 1 metre of a fire hydrant, or piezometer, and
- (f) planting within 1.5 metres of any hydrant valve covers or WSD valve covers.

The *Contractor* shall notify the *Project Manager* of any of the above situations prior to carrying out any relevant works in those areas.

***Staking, tying
and guying***

3.61

(1) The method of staking shall be subject to acceptance on site by the *Project Manager* or *Project Manager's Representative* before it is used.

The following is added after G.S. Clause 3.61 (3):

(4) When specified wire guys shall be used as an alternative to staking. Care shall be taken that the tree shall not be damaged by the guys by using rubber hose protective sleeving or similar. Three guys per tree are required and guys shall be adjustable. Wire guys shall be fixed to the tree trunk immediately above the lowest branch and to three no. 750mm long stakes driven 600mm into the ground.

(5) Tree ties shall be 7 strand galvanized wire threaded through

		rubber tubing, so as to protect the tree/palm trunk, and clipped with 4 no. galvanized rope grips.		
Mulching	3.62S	<p>(1) After planting and watering, mulch shall be spread to a consolidated thickness of at least 75 mm in all planted areas except slopes exceeding 15° and area previously hydroseeded.</p> <p>(2) Mulch shall be dishd around the base of the plants. The <i>Contractor</i> shall take care not to damage the plant material during mulching operations. Mulch shall be applied after planting and watering have taken place.</p>		
Pit planting of light standard and standard trees	3.65S	<p>(1) The size of pit for standard trees shall be 200 mm greater than the rootball or container diameter and 100 mm deeper than the rootball or container. The bottom of the pit shall be broken up a depth of 150 mm. 150 g of pre planting fertilizer and 50 grams of dry, water retaining crystals shall be thoroughly mixed with the backfill.</p> <p>(2) Each tree shall be secured using a bamboo tripod.</p>		
Pit Planting of Heavy Standard Trees and Semi-mature Trees	3.66	<p>(1)S The width of planting pits for heavy standard trees and semi-mature trees shall be 1.5 times the diameter of the rootball at the surface and the sides of pits hold should be scarified. The depth of the pits shall be sufficiently deep to accommodate the root system of the plants, but without too deep planting and in any case the root collar shall not be buried. The bottom of the pit shall be broken up to a depth of 150 mm, and prior to the planting, backfill the base of the pit with soil-mix to allow soil settlement and to avoid planting too deep. 250 g of pre-planting fertilizer shall be mixed into the soil-mix. Where the existing materials excavated form the pits shall be used as backfilling materials, the excavated materials and soil conditioner shall be mixed in the proportions of 2:1 by volume before backfilling as and when instructed by the <i>Project Manager</i>.</p>		
GRASSING				
Grass seed	3.69A	<p>(1) All seed shall be covered by an appropriately numbered seed analysis report or certificate. The numbered certificate shall always refer to the number on the seed sacks. The report or certificate shall have been issued within six months of the date of use of the seed. All seed used must be true to label. Seed quality shall be gauged by purity, germination percentage and freedom from weeds and disease.</p> <p>(2) The minimum germination percentage of the grass seeds over a 7-day test period shall be 90% for each grass species.</p>		
Standard hydroseeding mix	3.69B	<p>(1) Between April and August inclusive, the minimum spreading rate shall be 25g/m2. The mix proportions shall lie within the following limits:</p> <table><tr><td>Cynodon dactylon (Bemuda grass)</td><td>13 - 15 g/m²</td></tr></table>	Cynodon dactylon (Bemuda grass)	13 - 15 g/m ²
Cynodon dactylon (Bemuda grass)	13 - 15 g/m ²			

Paspalum notatum (Bahia grass)	8 - 10 g/m ²
Other species from list below	1 - 4 g/m ²
Chloris gayana (Rhodes grass) Eragrostis curvula (weeping love grass)	2% maximum
Eremochloa ophiuroides (Centipede grass)	
Cenchrus ciliaris (Buffel grass)	
Total	25 g/m ² (minimum)

(2) Between September and March inclusive the minimum spreading rate shall be 30 g/m² and shall consist of :

Cynodon dactylon (Bermuda grass)	15g /m ²
Paspalum notatum (Bahia grass)	10g/m ²
Lolium perenne (Manhattan Rye grass)	5g/m ²
Total	30g/m ² (minimum)

Application of hydroseeding

3.72

(2S) The area to be treated shall be moistened immediately prior to hydroseeding.

(3S) At the time of spraying, fertiliser shall be applied at a minimum rate of 100g/m². Mulch shall be applied at a minimum rate of 200 g/m². Soil binders shall be applied at a minimum rate of 25 g/m² or at the rate recommended by the manufacturer, modified as necessary to suit conditions in Hong Kong. Dye shall be used to demonstrate that adequate cover has been achieved, unless in the opinion of the *Project Manager* runoff or water course will be coloured to an unacceptable level. Where used, dye shall be added at a maximum recommended rate of 0.50g/m².

The following is added after G.S. Clause 3.72:

(6) After spraying, the *Contractor* shall water the hydroseeded areas as often as is required to keep the ground evenly moist.

Protective material

3.73

The following is added after G.S. Clause 3.73:

(2) Protective material should be submitted to the *Project Manager* for acceptance with material content and degradable rate specified.

(3) The protective material shall be biodegradable non-toxic, porous, translucent and 1 mm or less thick.

ESTABLISHMENT WORKS

Establishment Works

3.79 Add the following sub-clauses after GS Clause 3.79(3):

(4) The *Contractor* shall submit a programme to the *Project Manager* one month before the commencement of the Establishment Works. The programme shall include all items of operations to be carried out during Establishment Works period, as scheduled below as applicable to all planting areas in accordance with this Specification:

Operation	Frequency of Operation
Inspection	Minimum once a month or as required
Watering	Minimum three times a week or as required
Weeding	Minimum once every two months or as required
Pruning	Minimum twice a year or as required
Fertilizer application	Minimum twice a year or as required
Adjust stakes, ties & guys	Minimum twice a year or as required
Pesticide application	As required
Clear rubbish	As required
Firm up	As required

(5) The *Contractor* shall report to the *Project Manager* before and after carrying out any Establishment Works monthly. Reports shall be submitted in duplicate on forms provided by the *Contractor* and of a style accepted by the *Project Manager* with photographic records.

Clearing of Rubbish in Soft Landscape Areas during the Establishment Period

3.79A

(1) The *Contractor* shall be responsible for keeping soft landscape areas clean and tidy throughout the establishment period.

(2) Rubbish on soft landscape areas shall be collected and disposed of:

- (a) prior to each joint site inspection of landscape softworks;
- (b) within 24 hours of each replacement planting, pruning, grass cutting or weeding operation;
- (c) within 24 hours after each typhoon signal no. 3 or above

is lowered.

(3) In any event the frequency of clearing rubbish on soft landscape areas shall not be less than once per week unless otherwise agreed by the *Project Manager*.

***Inspection of
Establishment
Works***

3.80S

(1) An inspection of landscape softworks and establishment works shall be carried out jointly by the *Contractor* and the *Project Manager* at monthly intervals. The *Project Manager* may instruct the *Contractor* to carry out establishment works which in the opinion of the *Project Manager* are necessary; the work instructed shall be completed within 14 days of the date of the *Project Manager's* instruction.

(2) The *Contractor* shall carry out inspection in interval based on the accepted programme as stated in PS Clause 3.25. Monthly inspection report shall be submitted to the *Project Manager* within 7 days from the inspection date with adequate record photos to illustrate the followings in a reasonable manner:

- (a) overall condition of landscape areas including preserved trees;
- (b) operations of the establishment works being carried out in the past month. Photos illustrating the ‘before’ and ‘after’ situation of the establishment operations are required; and
- (c) recommended operations of establishment works for the coming month.

***Replacement of
Plants and
Grass***

3.81

(1)S Plants that in the opinion of the *Project Manager* are dead, dying or otherwise unsatisfactory shall be replaced by the *Contractor*. Replacement planting shall be carried out in season as stated in GS Clause 3.58(2) using plant material of a similar size to that already established. Measures shall be taken to ensure satisfactory establishment of the replacement plants before the end of the period for the Establishment Works.

***Repair of
Damage by
Typhoon Signal
No. 8 or above***

3.81A

(1) (a) Within 48 hours of typhoon signal No. 8 being lowered, the *Contractor* shall complete firming up and tightening of stakes, ties and guys to secure all dislodged plants, and replanting of all blown-over plants.

(b) Within 72 hours of typhoon signal No. 8 being lowered, the *Contractor* shall provide the *Project Manager* with a report comprising the following information for all plants that have been damaged by the typhoon, including those being blown over, dying or having structural damage:

- (i) Locations of the damaged plants;

- (ii) Nature of the damage;
- (iii) Photographic records of the damage;
- (iv) Photographic records showing completion of the work of repair required in sub-clause (1)(a) of this Clause, and
- (v) Other proposed works of repair of damage that will be carried out, including plant surgery to remove and treat the damaged parts and replacement of plants that are dead, dying or having irreparable damage.

(2) Within five days of submission of the report required in sub-clause (1)(b) of this Clause unless otherwise agreed by the *Project Manager*, the *Contractor* shall complete other works of repair of damage proposed in the report and clear the Site of all damaged plants that have been replaced and all other debris, and shall provide the *Project Manager* with a report including photographic records showing the completion.

(3) The *Contractor* shall be responsible for undertaking the works of repair referred to in sub-clauses (1) to (2) of this Clause. The *Contractor* shall bear the cost of the works of repair unless he meets the following requirements, in which case he will be paid for the works of replacement of plants:

- (a) Submitting his claim in writing to the *Project Manager* within one month of the end of the typhoon; and
- (b) Complying with the requirements in sub-clauses (1) to (2) of this Clause and completing the required works of repair to the satisfaction of the *Project Manager*.

***Repair of
Damage by
Vandalism***

3.81B

(1) Within the same day of discovery of the damage by vandalism, the *Contractor* shall notify the *Project Manager* in writing of the vandalism.

(2) Within two days of discovery of the damage by vandalism, the *Contractor* shall provide the *Project Manager* with a report comprising information to prove that the damage was caused by circumstances beyond his control and also the following information of the damage:

- (a) Location of the damage;
- (b) Nature of the damage;
- (c) Photographic records of the damage; and
- (d) Proposed works of repair of damage.

(3) Within five days of submission of the report required in sub-clause (2) of this Clause unless otherwise agreed by the *Project Manager*, the *Contractor* shall complete the works of repair of damage proposed in the report and clear the Site of all damaged plants that have been replaced and all other debris, and shall provide the *Project Manager* with a report including photographic records showing the completion.

(4) The *Contractor* shall be responsible for undertaking the works of repair referred to in sub-clauses (2) and (3) of this Clause. The *Contractor* shall bear the cost of the works of repair unless he meets the following requirements, in which case he will be paid for the works of replacement of plants:

- (a) Submitting his claim in writing to the *Project Manager* within one month of the discovery of the damage by vandalism; and
- (b) Complying with the requirements in sub-clauses (1) to (3) of this Clause, proving to the satisfaction of the *Project Manager* that the damage was caused by circumstances beyond his control, and completing the required works of repair to the satisfaction of the *Project Manager*.

***Firming up
Plants***

3.83A

Renumber GS Clause 3.83 as sub-clause 3.83(1) and add the following sub-clause after GS Clause 3.83(1):

(2) The *Contractor* shall inspect the Site regularly for this purpose and after each storm or typhoon to assess damage, which shall be reported to the *Project Manager*. Any damaged branches shall be carefully pruned and the wounds sealed.

***Temporary
Protective
fencing to
planted areas***

3.83B

(1) Protective fencing shall be erected where newly planted areas are adjacent to and at the same level as public footpaths.

(2) The *Contractor* shall maintain the temporary protective fencing in good repair and subsequently remove it. Removal will be subject to the permission of the *Project Manager* which will not normally be given earlier than the substantial completion of an adjacent and substantial part of *works* other than Landscape Softworks:

(3) Provided that the *Contractor* may seek permission to remove the fencing temporarily if its removal is necessary for the satisfactory execution of the *works* but he will be required to reinstate it as soon as possible.

- (4) Temporary Protective Fencing shall be removed at the end of the contract, unless otherwise directed by the *Project Manager's* Representative.
- Watering** 3.84 Add the following sub-clauses after GS Clause 3.84(3):
- (4) All planted areas shall be watered to ensure successful establishment of the plants with the following minimum rates per time:
- (a) 10 litres/m² for shrubs, ground covers, herbaceous plants, grasses;
 - (b) 15 litres/m² for light standard trees, whips, seedlings, palms, bamboos, climbers; and
 - (c) 50 litres/m² for conifer, standard trees, heavy standard trees, semi-mature trees and mature trees.
- (5) For planting in open areas:
- (a) During the wet season (i.e. April to August inclusive) when total rainfall of that district is less than 35 mm in a period of 7 days, watering shall be carried out at least once per week.
 - (b) During the dry season (i.e. September to March inclusive) and the first 3 months of the Establishment Period, watering shall be carried out 3 times per week.
- (6) When required, an analysis of water to be used shall be obtained by the *Contractor* for acceptance by the *Project Manager*.
- (7) The *Contractor* shall complete watering operation within 24 hours of an inspection which deems watering to be necessary.
- Weeding** 3.85 Add the following sub-clauses after GS Clause 3.85(3):
- (4) The *Contractor* shall not use chemical or fire for weeding operation, unless otherwise instructed by the *Project Manager*.
- (5) The *Contractor* shall weed areas as necessary and shall complete weeding within seven days of inspection.
- (6) All areas within 300 mm radius of the base of each planting shall be kept in a weed/grass free and tidy condition.
- Pruning** 3.86 (2)S All pruning work shall be carried out in accordance with good horticultural practice and the recommendations of BS 3998 or ANSI A300 (Part 1). Sufficient photo records illustrating the before and after situation

of the trees shall be submitted to the *Project Manager*.

(9)S Unless otherwise instructed by the *Project Manager*, any cuts or wounds shall be left uncovered instead of being painted with wound dressing or coating to avoid water retention and disease development.

Add the following sub-clauses after GS Clause 3.86(10):

(11) The *Contractor* shall prune trees and whips during the Establishment Period in order to maintain them in a safe and disease free condition and as specifically directed by the *Project Manager*.

(12) Pruning and removal of branches shall be done-using sharp, clean implements.

(13) Plant and equipment shall be appropriate for the task and in well maintained order. Tools shall be surface sterilised after use on trees which are known or suspected to be diseased.

(14) Final cuts shall be made into living wood and shall have a single flat, sloping face. Ragged edges to bark or wood shall be trimmed with a sharp knife. All cut surfaces over 25 mm in diameter shall be treated as soon as possible or within the same day with an approved fungicidal, bituminous sealing compound ('Arbrex' or products having equivalent functions and performance accepted by the *Project Manager*) biochemical growth stimulant or latex paint to improve callus growth.

(15) Pruning operations shall take into account the natural appearance of the tree and public safety. Large branches shall be removed to avoid splintering or tearing of bark without exaggerating the size of the wound and with the final cut leaving a small collar at the base of the branch to allow for the formation of callus.

(16) Plant material produced as a result of pruning, felling and cavity work performed on trees shall be collected and removed from Site to tips provided by the *Contractor*. No material pruned from trees shall be burned on Site unless prior permission has been given by the *Project Manager* in writing.

(17) The *Contractor* shall notify the *Project Manager* before work is to commence and when work is completed.

(18) Any adjacent areas affected by the pruning work shall be reinstated.

(19) The removal of foliage should not exceed 25 percent of the crown.

The following is added after G.S. Clause 3.87 (1):

Grass cutting	3.87	(1)(a) Grass in all hydroseeded areas shall be reduced by cutting to a height of 100mm when it reaches 300mm high. The <i>Contractor</i> shall cut as often as necessary to maintain the height in this range. (1)(b) Grass areas shall be weed free in accordance with Clause 3.81 before any grass cutting is carried out.
Litter collection	3.88S	(1) All litter exposed by grass cutting shall be gathered up and disposed of within 24 hours. (2) All litter and rubbish in the planting areas shall be removed from the site. Litter and rubbish removal shall be completed within seven days of inspection.
Post-planting Fertilizer	3.89S	Unless otherwise directed or agreed by the <i>Project Manager</i> , post-planting fertilizers shall be applied not less than 100 days, and not more than 300 days, after planting. The fertilizer shall be applied uniformly in accordance with good horticultural or arboriculture practice at the following rates: (a) 200 g per heavy standard tree, large conifer and large palm; (b) 100 g per standard tree, light standard tree, feature plant, small conifer, medium palm and small palm; (c) 50 g per plant to bamboo; and (d) 25 g per shrub, ground cover, herbaceous plants and climber.
Mulching	3.92A	Renumber GS Clause 3.92 as sub-clause 3.92(1) and add the following sub-clause after GS Clause 3.92(1): (2) During the Establishment Period, the <i>Contractor</i> shall carry out three applications of mulch each to a thickness necessary to bring the total depth of mulch of 75 mm unless otherwise specified after the application. The final mulching operation is to be carried out in the last month of the Establishment Period.

PART A – AUTOMATIC IRRIGATION SYSTEM FOR LANDSCAPING WORKS

GENERAL

Scope of work	3.104	(1) The <i>Contractor</i> shall design, supply, delivery, install, test and commission and submission of the automatic irrigation system to the <i>Project Manager's</i> and the maintenance authorities' approval. It includes labour and materials as prescribed or as necessary except where expressly specified to be provided by
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others. It shall not only include the major items of plant and equipment shown or specified but also include all the incidental sundry components necessary together with the labour for installing such components for the complete execution of the works and for the proper operation of the installation, whether or not these sundry components to satisfy employer's requirement.

- (2) The *works* shall be carried out by a competent irrigation specialist *Contractor* in a manner consistent with good practice in Hong Kong, and to the satisfaction of the *Project Manager*.
- (3) The specification of the pumps and associated E & M works for the automatic irrigation system can be referred to that in the building services specification of the employer's requirements.
- (4) The *Contractor* shall be responsible for demonstrations and for verbal & written instructions to be given to the maintenance authorities in the operation and maintenance of the system.
- (5) The irrigation system involves the manually operated irrigation system and automatic irrigation system at the locations shown on the Drawings. Both systems shall comprise of distribution pipework, standpipe, perforate pipes, lockable water points, and any necessary parts required by the maintenance authorities giving approval to the *Contractor's* irrigation system proposal.

Design criteria

3.105

- (1) The *Contractor* shall provide a fully automatic drip irrigation system, with automatic timer and zone switch arrangements for the planting area. The dripping pipes of the system should be placed at appropriate distance for even coverage with zone/time switching arrangements.
 - (a) Operation of the drip system can be worked concurrently with the operation of manual stand pipe coupled with quick coupling valves.
 - (b) Rain sensors shall be provided for interlock with the automatic irrigation operation such that the automatic irrigation system will determine the precipitation density of each cyclic operation when the rain sensor is wetted. Such rain sensor interlock function shall be deactivated by means of a rain sensor bypass switch at the automatic irrigation controller.
 - (c) The *Contractor* is required to submit calculations to show the water consumption for the system and the time for one operation for the equipment they offer.
 - (d) All equipment shall be tropicalised for use in conditions of up to 40 deg C ambient air temperature and 100% saturation.

- (e) The *Contractor* shall provide the underground water tank for the irrigation system. The *Contractor* shall submit their calculation of the water tank capacity to the *Project Manager*.

MATERIALS

- | | | |
|-----------------------------------|-------|---|
| <i>Details of works</i> | 3.106 | <p>(1) The <i>Contractor</i> shall submit for the acceptance of the <i>Project Manager</i> the full details of the proposed automatic irrigation system including shop drawings, detail specifications, catalogue about details of the components of the irrigation system or an approved equivalent product.</p> <p>(2) The automatic irrigation shall consist of, manual quick coupling valves, solenoid valves, pumps & controller and the pipework distributed & accessories, pressure switch, flow switch, UPVC water pipes & fittings, gate valve, cable, wiring, automatic controller and rain check, painting of all metal work and pipework detailed or approved equivalent.</p> <p>(3) The water supply for the system shall be obtained through the irrigation water tanks for all required planting area. The <i>Contractor</i> shall provide all necessary equipment or material required for the automatic irrigation system after the outgoing of irrigation water tanks.</p> <p>(4) The <i>Contractor</i> shall be responsible for the design of the whole irrigation system to meet the design criteria as stated above and the requirements to the acceptance of the <i>Project Manager</i>. The <i>Contractor</i> shall submit detailed calculations, manuals and technical information to substantiate the system design to the <i>Project Manager</i> for acceptance before ordering of equipment.</p> <p>(6) The <i>Contractor</i> shall be responsible to provide adequate temporary protection to the installed irrigation system in the field for the protection required during construction.</p> |
| <i>Plastic pipes and fittings</i> | 3.107 | <p>(1) The <i>Contractor</i> shall be responsible for the testing and commissioning of the Automatic Irrigation Systems to the satisfaction of the <i>Project Manager</i>. The <i>Contractor</i> shall provide all labour and equipment to the <i>Employer</i> for the testing and commissioning of the installation necessary to be carried out outside normal working hours. The entire installation shall be tested after completion. The pipework shall be hydraulic tested with the working pressure and electrical work shall be tested in accordance with wiring regulations, to demonstrate the precipitation density complying with the design criteria. The rain sensor shall also be commissioned to demonstrate that the control system is able to response to the amount of rain. Method statement of testing and</p> |

commissioning the system shall be submitted to the *Project Manager* for acceptance. The latest result shall be submitted after testing commissioning.

- (2) Upon the completion of the installation, the *Contractor* shall be responsible for training plant operators from the *Employer* to enable him successfully and smoothly operating the installation. Detail requirements of the testing equipment shall be accepted by the *Employer* and /or the *Project Manager*.
- (3) The *Contractor* shall submit for the acceptance of the *Project Manager* and the maintenance authorities their proposed method of testing the irrigation systems.

**Water supply
pipework** 3.108

- (1) Water supply pipework shall comply with Section 22 of the Specification. The pipe size shall be 50 mm or larger. Gate valve and non-return valve shall be provided before meter position. The meter box shall be 300 mm above ground level.

**Quick coupling
valves** 3.109

- (1) The quick coupling valve shall be of robust construction suitable for underground installation, complete with locking cover and key, time-proven UV-resistant plastic and corrosion resistant stainless steel parts with assurance of long product life, using products high quality and satisfactory functions and performance accepted by the *Project Manager*.
- (2) Valves shall be spaced at a minimum distance of 30 m apart.

**Plastic pipes and
fittings** 3.110

- 1) PRESSURE COMPENSATED (PC) DRIP LINES WITH CHECK VALVE (CV) CV PC dripline can be installed above or below grade
- 2) CV PC dripline in-line emitter check valves prevent drainage from the dripline when water pressure drops below 1.5 PSI. This feature protects the dripline from the siphoning of small soil particles into the drippers, making it ideal for sub-surface drip installation
- 3) Available in two flow rates to provide maximum flexibility in a variety of applications
- 4) Flow uniformity regardless of operating pressure and variation along the line.
- 5) The dripper and the diaphragm are self contained units that are molded to the interior wall of the polyethylene tubing.
- 6) In-line emitter check valves prevent drainage from the dripline when water pressure drops below 1.5 PSI. This feature protects the dripline from the siphoning of small soil particles into the drippers, making it ideal for sub-surface drip installation.
- 7) Pressure compensation: all drippers deliver equal flow at a wide range of operating pressures.
- 8) CV PC dripline' s turbulent flow through large labyrinth water passages leads water into the flow control chamber

- where a sensitive floating silicon diaphragm regulates and maintains a constant flow rate at variable inlet pressures. The silicon diaphragm allows pressure to build up within the chamber and flush any debris that was not captured by the intake filter.
- 9) CV PC dripline includes one inlet and two outlets per emitter.
 - 10) The intake inlet has a number of raised grooves that act as a secondary filter.
 - 11) The design of the filter intake area, continuously flushed by water flow through the operation of the system, gives the dripper its resistance to clogging.
 - 12) The dual, oppositely oriented, directional outlets act as physical roots and debris barriers, as the water exits the drip emitter and the polyethylene tubing from opposite locations
 - 13) Two outlets per dripper ensure less chance of clogging.
 - 14) Resistant to chemicals and fertilizers commonly used in landscaping sites
 - 15) Flexible tubing for easy installation.
 - 16) The dripline is marked with flow rate and size for easy identification.
 - 17) Manufactured using DOW FINGERPRINT 7510 resin with 5% carbon black to ensure maximum UV-protection.
 - 18) Conform to BS6920:2000 standard
 - 19) Flow rates: 0.6 GPH (2.3 l/h) color code – orange
 - 20) Dripline color: Dark Green (Avocado Green color)
 - 21) Operating Pressure: 12-50 PSI (.8-3.5 Bar)
 - 22) Check valve sealing pressure: 1.5 PSI (0.11 BAR)
 - 23) Check valve opening pressure: 4.3 PSI (0.3 BAR)
 - 24) Have emitter spacing of: 12" (30.5cm)
 - 25) Have tubing Size of ½", .570 ID x .670 OD (14.4 mm ID x 17mm OD)
 - 26) Have a minimum Bending radius of 5' (1.5M).
 - 27) Be fitted with UV resistant 0.600 ID (17mm) Insert fittings or 0.700 OD Compression Fittings.
- (2) The entire piping system after installation shall be capable of withstanding the operating pressure of the system taking due consideration of any surge/back up pressure that can arise due to the closing of valves. Furthermore, the piping system shall also be capable of withstanding the pressure applied during testing.

SUBMISSIONS

Particulars of irrigation system	3.111	(1) The <i>Contractor</i> shall submit for the acceptance of the <i>Project Manager</i> the full details of the proposed irrigation system including shop drawings, specifications, catalogue about details of pipes, valves, drawings of proposed pipework layouts, control schematics and calculations.
		(2) The <i>Contractor</i> shall submit copies of these documents to the DSD and other relevant departments via the <i>Project Manager</i> for their acceptance of the proposed irrigation system.
Shop drawings	3.112	One sepia and three copies of the shop drawings shall be submitted to the <i>Project Manager</i> at least 21 days prior to installation of the system.
As-built drawings	3.113	(1) The <i>Contractor</i> shall submit as built drawings to the <i>Project Manager</i> which outline the pipe routes, location of the main joints within the pipework system, stand pipe locations, etc. in accordance with the Specification.
Trenching and backfilling	3.114	(1) The <i>Contractor</i> shall construct general valve chambers and 'quick coupling valve' chambers associated with the irrigation system as required or as directed by the <i>Project Manager</i> . All valve chambers shall be located in 'soft' areas and their covers shall be capable of carrying pedestrian traffic. Valve chambers shall only be located in hard paved areas when absolutely necessary and where accepted by the <i>Project Manager</i> . In such situations covers shall be of a 'double' type.
		(2) Where irrigation pipework, fittings and valve chambers are located near or adjacent to other pipes or service installations, thrust blocks, valve chambers or catch pits, the <i>Contractor</i> shall ensure that all such works are fully co-ordinated and that every individual installation is inspected and tested to the acceptance of the <i>Project Manager</i> prior to commencement of any backfilling operation.
Testing of irrigation system	3.115	(1) The <i>Contractor</i> shall submit for acceptance of the <i>Project Manager</i> and the maintenance authorities their proposed method of testing the irrigation systems.

PART B – DRAINAGE FOR LANDSCAPING WORKS (PAVEMENT TREE PITS AND RAISED PLANTERS)

Drainage aggregate	3.116	(1) Drainage aggregate shall be clean crushed rock 6-19 mm nominal size.
Filter membrane	3.117	(1) Filter Membrane shall be a permeable non-woven, geotextile which is resistant to all naturally occurring soil alkalis, soil acids; unaffected by bacteria and fungi; the tensile strength of the filter fabric decrease with increase in temperature, but

			recovers fully when the geotextile is returned to normal ambient temperature; resistant to UV sunlight and humidity. For example, “ <i>Terram 700</i> ” or products and materials having equivalent functions and performance accepted by <i>Project Manager</i> .
<i>Spreading of drainage aggregate in planter beds</i>	3.118	(1)	Drainage holes in planters shall be identified, cleared of all soil and debris and tested for drainage. Drainage material shall be spread to a minimum depth of 100 mm over the entire base of all planter beds, levelled and lightly compacted.
<i>Laying of filter membrane in planter beds</i>	3.119	(1)	Filter membrane shall be laid over the surface of the drainage material, and lapping up the sides of the planter as indicated on the drawings, and secured in position prior to inspection. No topsoil shall be spread until the drainage and filter membrane laying operations have been accepted by the <i>Project Manager</i> .
	3.120		Not used.
	3.121		Not used.
<i>Concrete baffles</i>	3.122	(1)	Precast reinforced concrete baffles shall be installed in accordance with the latest revision of the Highways Department Standard detail (Drawing No. H5108), and to the specification for concrete slabs set out in specification or approved equivalent. One concrete baffle unit shall be installed in each pavement pit to protect adjacent utility services.

PART C – (PROPRIETARY) GREEN ROOF SYSTEM

GENERAL

<i>Scope of work</i>	3.123	(1)	The <i>Contractor</i> shall be responsible for the detailed design, provision, installation, testing and commissioning and submission for the <i>Project Manager</i> ’s and the maintenance authorities’ approval for the green roof system according to the PS section 3.123 to 3.128 or accepted equivalent.
		(2)	The <i>Contractor</i> shall submit for the acceptance of the <i>Project Manager</i> the full details of the proposed green roof system including shop drawings, detail specifications, catalogue about details of the components of the (proprietary) green roof system according to the PS section 3.122 to 3.128 and typical section of green roof system as shown on the Drawings.

Components/ installation	3.124	(1)	The <i>Contractor</i> shall supply and install a proprietary green roof system complying with CE-marked Green Roof System BS EN 13252 or similar approved. This shall include Root Barrier 0.5mm thick or similar approved, Drainage Composite 25mm thick, Water Reservoir Panel 50mm thick or similar approved, Top Soil 150mm thick or similar approved and Vegetation Layer on top; Inspection Chamber should be installed on all roof outlet for inspection purpose; all installation details as accordance with the manufacturer's recommendation. The topsoil and vegetation layer shall be installed within 14 days after the installation of root barrier, drainage composite layer and water reservoir panel according to the PS section 3.123 to 3.128 and typical section of green roof system as shown on the Drawings.
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MATERIAL

Root Barrier	3.125	(1)	FLL certified plastic sheet that protects the waterproofing membrane of an extensive green roof build-up from potential damage caused by roots that may grow through.
		(6)	Application: Extensive green roofs; Material: modified LDPE –virgin material; Color: black; Thickness: 0.5mm; Weight: 475g/m ² .
Drainage Composite	3.126	(1)	25mm high CE marked in accordance with <i>drainage composite</i> consisting of a dimpled perforated sheet of high impact polystyrene (HIPS) with a non-woven filter fabric bonded to each dimple. The Drainage Composite is provided with a pressure dividing damp diffusion open filter fabric on the back. The Drainage Composite comprises the filter layer, the drainage layer and the separation and protection layer as one integrated unit. Filter fabric has an overlapped on both sides. The material is delivered on rolls with 1.25(W) x 20m(L).
		(2)	Application: Extensive green roofs / Intensive green roofs / planters; Dimpled sheet: high impact polystyrene (HIPS); Filter fabric: non-woven polypropylene (PP) > 140g/m ² ; Backing: non-woven separation fabric polypropylene (PP) > 125g/m ² ; Thickness: 25mm; Weight: 1,280g/m ² ; Compressive strength: >330kN/ m ² ; Water retention capacity: 3.2 liters/ m ² ; Drainage Capacity: 0.3L/sm at fall ratio 1 in 500 with loading 10kpa (in accordance with DIN4095) after 50 years.
Water Reservoir Panel	3.127	(1)	BS EN13252 Water Reservoir Panel or similar approved, water absorbing mineral wool panels with a high water retention capacity that are placed as the growing medium substitute within the build-up of green roof.

		(2)	Application: Extensive green roofs planters; Material: hydrophilic mineral wool; Density: 120kg/m ³ ; Thickness: 50mm; Water retention capacity: 40 l/m ² = 80Vol.%; Air volume: 16%; pH value: 7-8; Weight: dry 6kg/ m ² , saturated 46kg/m ²
Planting substrates	3.128	(1)	Content of approx. 150mm thick soil include 30% completely decomposed granite (CDG), 30% soil mix and 10% mixture of slow release fertilizers, moisture retaining crystal, light-weight aggregates, soil texture improving substances and other light weight materials (such as Perlite). This layer shall perform good balance of air-water ratio, low frequency of irrigation, minimize problems of flooding and blockage of drainage, hygienic benefits, long durability, environmental friendly & recyclable.
Vegetation layer	3.129	(1)	Recommended mixture of groundcover species create interesting pattern on the roof. They are in low maintenance requirement and low soil depth requirement of 150mm. The <i>Contractor</i> shall provide planting species specified in roof planting plans refer relevant contract drawings. The <i>Contractor</i> shall submit samples of planting materials refer PS section 3.40 and planting works requirement in PS section 3.59 to 3.66.

DRAINAGE

Green roof drainage	3.130	(1)	The green roof shall drain and overflow directly into the site surface drainage system.
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MAINTENANCE

1-year plant establishment services	3.131	(1)	The <i>Contractor</i> shall provide 1-year plant establishment services including site visit 1–2 times per month; to provide plant cutting, average once per 3 months; to provide fertilization, if necessary; to provide replacement for the dead plants; to replace dead plants and providing labour required for remedial works as a result of damage from typhoon or rainstorm or inclement weather or from other causes including not limited to vandalism and fire.
Access for regular maintenance	3.132	(1)	Maintenance access shall be provided as shown in the Drawings for regular inspection.

ROOF FINISHES

- | | | |
|--|-------|---|
| Wood Float
Finish to Roof
Footpaths | 3.133 | Footpaths on the roofs shall be finished with a wood float finish with ruled joints to the pattern shown on the Drawings. |
| Green
Lightweight
Gravel | 3.134 | Lightweight aggregate shall be green clean clinker, 25-50mm diameter with a maximum density of 500kg per m ³ when compacted, or other approved equivalent material. The <i>Contractor</i> shall submit a sample of this material to the <i>Project Manager</i> for acceptance. |

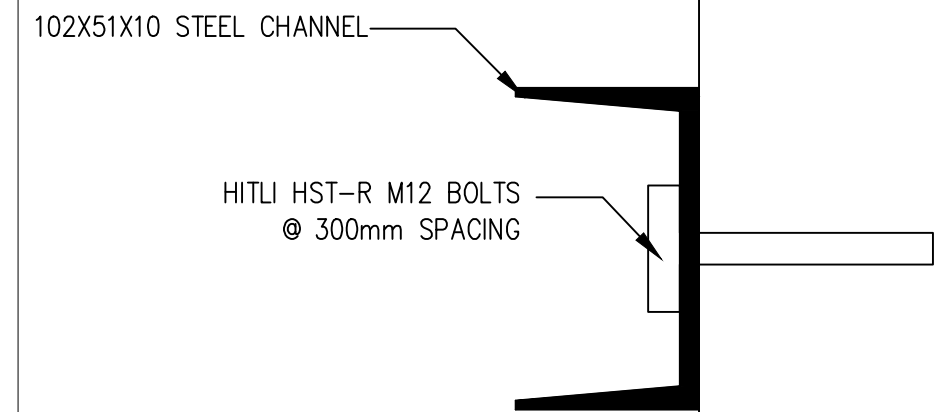
OTHER REFERENCES

- | | | | | | | | | | | | | | | |
|-----------------------------|---------|---|-----|---------|-----------------------------|-----|---------|---|-----|---------|---|-----|---------|---|
| Other
References | 3.135 | <p>(1) The <i>Contractor's</i> attention is also drawn to the latest editions of the following British Standards and British Standard Code of Practice and the guidelines issued by the Greening, Landscape and Tree Management Section of Development Bureau for general reference:</p> <table border="0"><tr><td style="vertical-align: top; text-align: center;">(a)</td><td style="vertical-align: top; text-align: center;">BS 3998</td><td>Tree Work – Recommendations</td></tr><tr><td style="vertical-align: top; text-align: center;">(b)</td><td style="vertical-align: top; text-align: center;">BS 4043</td><td>Recommendations for transplanting root-balled trees</td></tr><tr><td style="vertical-align: top; text-align: center;">(c)</td><td style="vertical-align: top; text-align: center;">BS 4428</td><td>Code of practice for general landscape operations (excluding hard surfaces)</td></tr><tr><td style="vertical-align: top; text-align: center;">(d)</td><td style="vertical-align: top; text-align: center;">BS 5837</td><td>Trees in relation to construction – Recommendations</td></tr></table> <p>(2) The provisions contained in the GS, this Particular Specification and the Drawings shall prevail over the provisions contained in the documents listed in sub-clause (1) of this Clause.</p> | (a) | BS 3998 | Tree Work – Recommendations | (b) | BS 4043 | Recommendations for transplanting root-balled trees | (c) | BS 4428 | Code of practice for general landscape operations (excluding hard surfaces) | (d) | BS 5837 | Trees in relation to construction – Recommendations |
| (a) | BS 3998 | Tree Work – Recommendations | | | | | | | | | | | | |
| (b) | BS 4043 | Recommendations for transplanting root-balled trees | | | | | | | | | | | | |
| (c) | BS 4428 | Code of practice for general landscape operations (excluding hard surfaces) | | | | | | | | | | | | |
| (d) | BS 5837 | Trees in relation to construction – Recommendations | | | | | | | | | | | | |

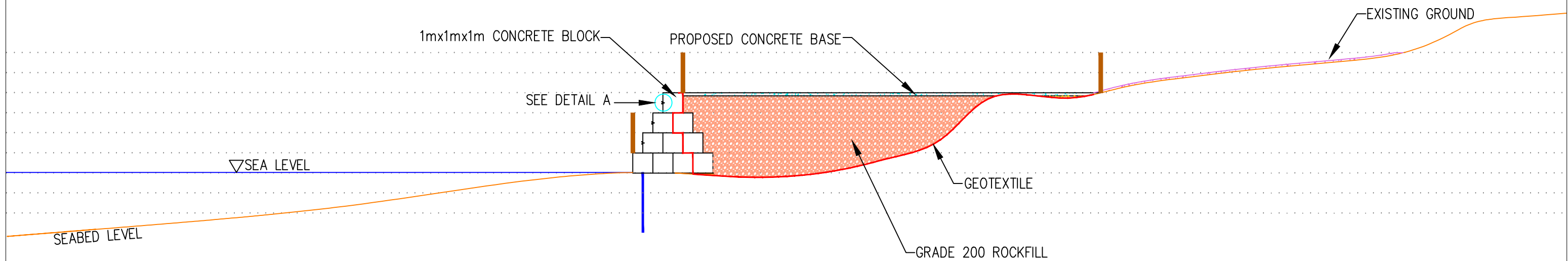
END OF PS SECTION 3

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APPENDIX J – TEMPORARY WORKING PLATFORM AT ROCKY SHORE



DETAIL A
SCALE : 1:2.5 (A3)



LEGENDS:



SETTING UP LINE

NOTE: ALL DIMENSIONS IN METERS (m) UNLESS OTHERWISE STATED.

TYPICAL SECTION OF TEMPORARY WORKING PLATFORM

SCALE : 1:200 (A3)

Records for Previous Project in Chau Kung To



Before Construction Works



Construction of Working Platform



Completion of Working Platform



Condition after Reinstatement



綠化資源有限公司

HIGH PERFORMANCE NON-WOVEN POLYPROPYLENE GEOTEXTILE

GeoFilter "GX35"

Supplied by

Geoscape & Environmental Limited

4, 11/F, Wah Lai Ind Ctr, Kwei Tei St, Fotan, Hong Kong

T 2690 1532 F 2690 4101

E geoscape@geotech.imsbiz.com.hk

CHARACTERISTICS OF THE PRODUCT

- High quality non-woven geotextile
- Possess high tensile strength of 17kN/m
- High coefficient of permeability of over 50×10^{-3} m/s

APPLICATIONS

- As a filtration layer wrapping around the subsoil raking drains to prevent the clogging of conduits
- As a separation layer in planters and other various application
- Used in the construction of embankment

TECHNICAL DATA

Product Code	GX35
Product Description	Non-woven geotextile
Material	Polypropylene
Color	Medium Grey / White
Tensile Strength	$\geq 17\text{kN/m}$
Elongation at break	40 – 80%
Apparent opening size, O_{95}	70 – 200 μm
Coefficient of permeability at 100mm head (BS 6906 : Part 3 : 1989)	$\geq 50 \times 10^{-3}$ m/s
Water flow rate at pressure of 2kN/m^2 (In-house method)	≥ 195 L/m ² s

PRODUCT DESCRIPTION

Product Code	GX35
Mass per unit area	350 g/m ²
Thickness	Approx. 2.5 mm
Roll width	2 m
Roll length	50 m
Roll weight	Approx. 40 kg
Packaging	Secured plastic wrapping to keep the geotextile dry and protect it from damage & contamination

Telephone
2690 1532
Facsimile
2690 4101

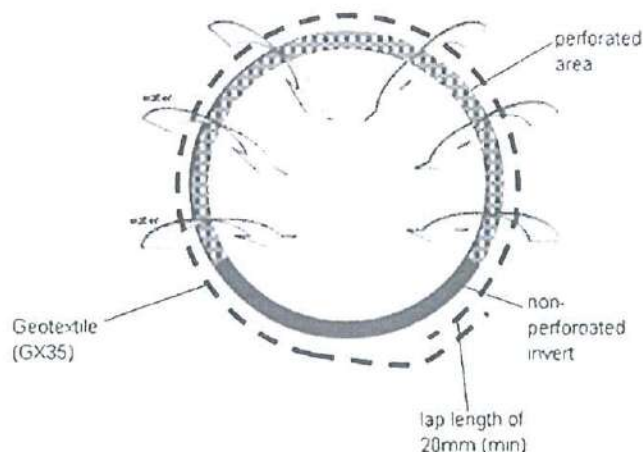
Room 3, 11/F.,
Wah Lai Ind. Centre,
10-14 Kwei Tei Street,
Fotan, N.T., H.K.



INSTALLATION GUIDELINE

For Raking Drains

1. Wrap the raking drain pipes with GX35.
2. If in-situ joining is necessary, an overlapping length of at least 20mm is needed.



For Planters

1. Cut a piece of GX35 of appropriate size and put it into the trench.
2. If in-situ joining is necessary, an overlapping length of at least 50mm is needed.

Cutting & Joining

1. Cut with a sharp scissors or other tools and provide lap length of at least 50mm at perimeter.
2. Avoid tearing the geotextile.

Repairing Small Batches

3. Cut another piece of GX35 so as to provide lap length of at least 50mm at perimeter.
4. Stitch the repairing piece of GX35 to the torn area with nylon tying wire.

TRANSPORTATION AND STORAGE GUIDELINE

1. Each roll of geotextile is of dimension 2m (length) x approximately 40cm (diameter), packed in plastic bags and weighs approximately 30kg.
2. Better store the geotextile under shaded area.
3. Alternatively, the geotextile rolls can be stored under tarpaulin sheets.
4. Store on a level surface and keep in a secure and dry condition to avoid damage or contamination.
5. Better store on elevated ground if the storage area may be affected by water.
6. The geotextile rolls can be stockpiled to height in order to reduce storage area.
7. Store in a dry & clean environment.
8. Avoid vehicles or heavy machinery to run over the geotextile directly.
9. Keep away from fire or any activities that can induce fire or fire sparks.

Telephone
2690 1532

Facsimile
2690 4101

Room 3, 11/F.,
Wah Lai Ind. Centre,
10-14 Kwei Tei Street,
Fotan, N.T., H.K.

Test Certificate**Determination of wide width tensile strength of geotextiles
(Test Method Based on BS 6906 : Part 1)**

Date of issue: 14-06-2013

Page 1A of 6 pages

Castco LRN : GTX0130514-2-WWTT

Details as supplied by the customer:

Customer : Geoscape & Environmental Ltd.

Customer's ref. no.: --

Address : Room 3, 11/F., Wah Lai Ind. Ctr., No. 10-14 Kwei Tei Street, Fotan, N.T. Hong Kong

Job title : --

Contract no.: --

Sample description : Non-woven polypropylene geotextiles

Manufacturer/Country of origin : --

Colour: Light grey

Sample type: GX35

Identification : Geotextiles (GX35)

Direction of specimen: --

Laboratory test results:

Date sample received: 14-05-2013

Date of test: 15-05-2013

Initial jaw separation : 250mm x 200mm

Ambient temperature: 20.1 °C

Minimum nos. of tensile elements within 1m : --

Condition of sample : dry

Specimen no.	1	2	3	4	5	Average	Standard deviation	Coefficient of variation
Maximum load (kN)	5.290	5.433	5.791	5.407	5.669	5.518	0.21	3.72
Breaking load (kN)	5.290	5.433	5.791	5.407	5.669	5.518	0.21	3.72
Specimen nominal width (m)	0.2	0.2	0.2	0.2	0.2	0.2	--	--
Nos. of tensile elements	--	--	--	--	--	--	--	--
Maximum load per metre length (kN/m)	26.45	27.17	28.96	27.04	28.35	27.59	1.03	3.72
Breaking load per meter length (kN/m)	26.45	27.17	28.96	27.04	28.35	27.59	1.03	3.72
Elastic limit (kN/m)	--	--	--	--	--	--	--	--
Specified load	--	--	--	--	--	--	--	--
Strain at specified load (%)	--	--	--	--	--	--	--	--
Offset strain at specified load (%)	--	--	--	--	--	--	--	--
Specified strain (%)	10	10	10	10	10	10	--	--
Offset modulus (kN/m)	--	--	--	--	--	--	--	--
Secant modulus (kN/m)	37.1	33.9	30.4	24.6	27.0	30.6	5.05	16.51

Equipment used : Manufacturer : Tanher Testing Machine Co. Ltd.

Model : WDW-10K

Type of jaw : --

Type of jaw face : --

Dimension of jaw : 200 x 75

Initial jaw separation : --

Type of deformation-measuring system : --

- Remarks : 1) Test results relate only to the specimens tested.
2) Strain rate of 7% to 13% per min in the gauge length.
3) This page no. 1A of test certificate supersedes page no. 1 of the previous test certificate of Castco LRN: GTX0130514-2-PER issued on 22-05-2013.

Checked by : _____

Certified by : _____

Form No. GEOTXT_WWTT_BS_1a dd 25/09/2009

TSUI PO
Technical Manager**CHOI TZE WING**
C. Eng., MHKIE, MICE
Quality Manager

香港粉嶺安居街33號

33, On Kui Street, Fanling, Hong Kong.

Tel : 2677 2138

香港粉嶺安全街29A號

29A, On Chuen Street, Fanling, Hong Kong.

Fax: 2677 0351

E-mail: castco@netvigator.com Website: www.castco.com.hk

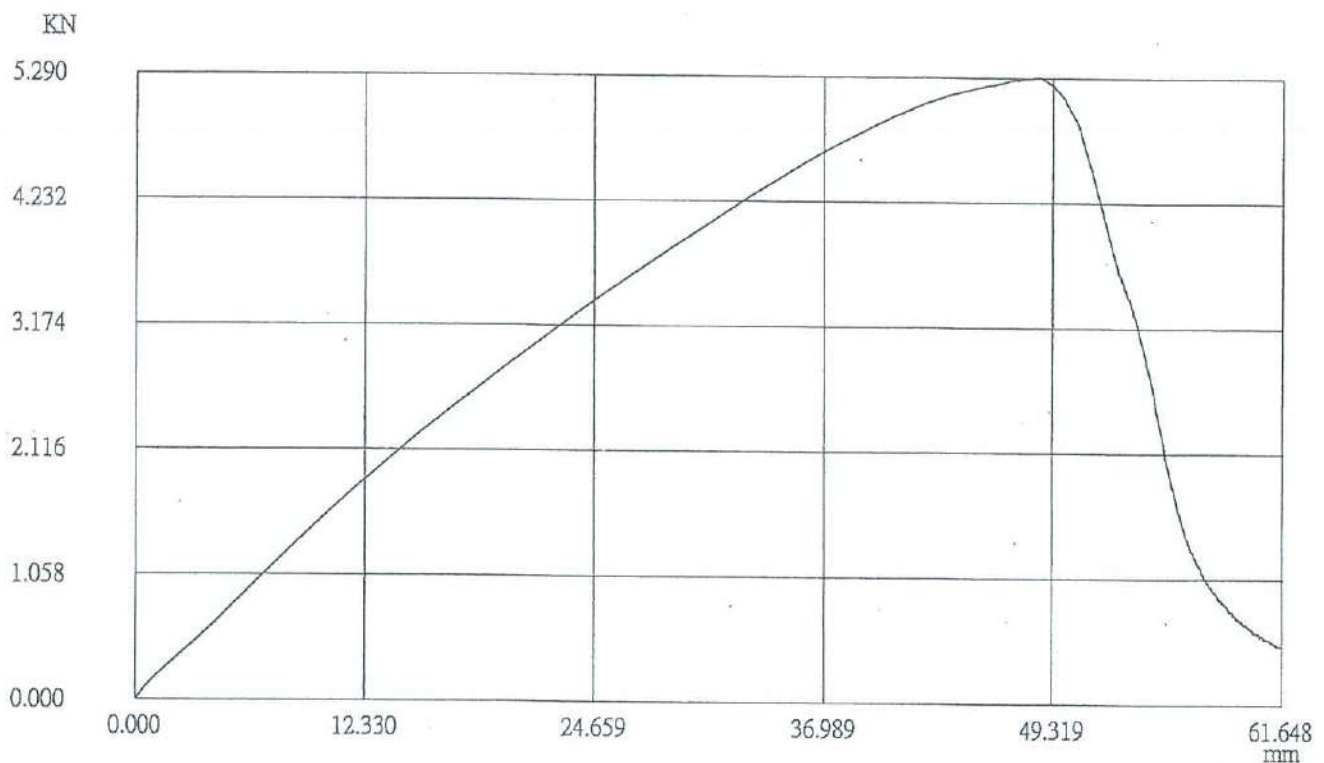
Test Certificate
Determination of wide width tensile strength of geotextiles
(Test Method Based on BS 6906 : Part 1)

Date of issue: 22-05-2013

Page 2 of 6 pages

Castco LRN : GTXT0130514-2-WWTT

Specimen no. : 1

Load - Elongation Curve

Form No. GEOTXT_WWTT_BS_T1b dd 25/09/2009

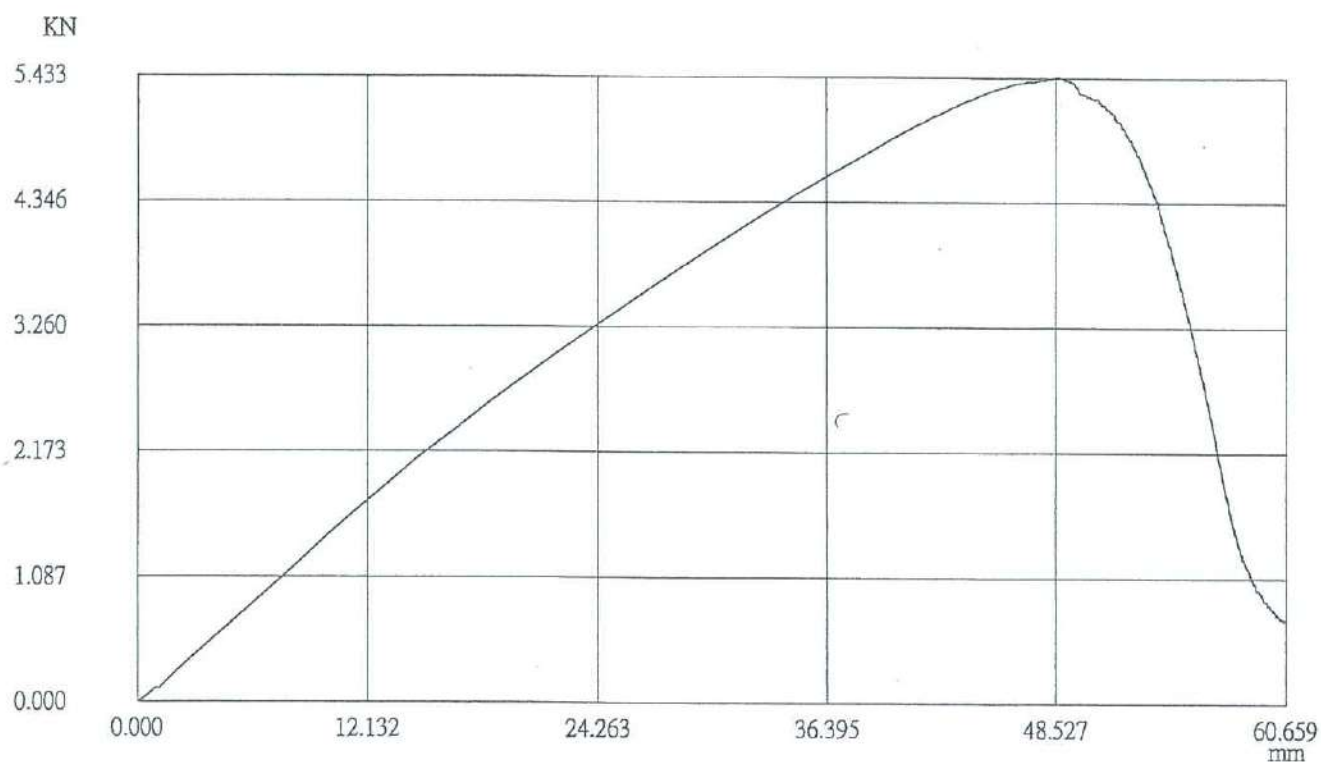
Test Certificate**Determination of wide width tensile strength of geotextiles**
(Test Method Based on BS 6906 : Part 1)

Date of issue: 22-05-2013

Page 3 of 6 pages

Castco LRN: GTX0130514-2-WWTT

Specimen no. : 2

Load - Elongation Curve

Form No. GEOTXT_WWTT_BS_T1b dd 25/09/2009

Test Certificate
Determination of wide width tensile strength of geotextiles
(Test Method Based on BS 6906 : Part 1)

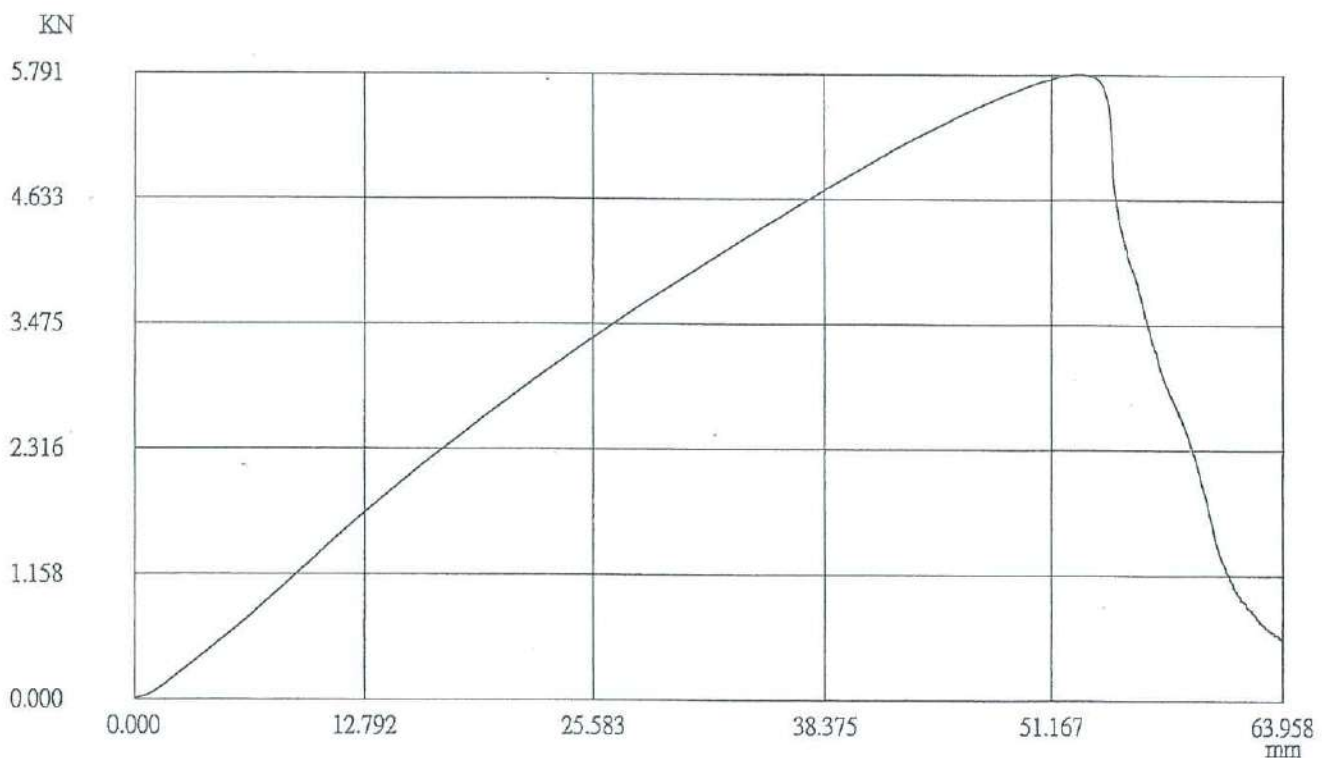
Date of issue: 22-05-2013

Page 4 of 6 pages

Castco LRN : GTXT0130514-2-WWTT

Specimen no. : 3

Load - Elongation Curve



Form No. GEOTXT_WWTT_BS_T1b dd 25/09/2009

Test Certificate
Determination of wide width tensile strength of geotextiles
(Test Method Based on BS 6906 : Part 1)

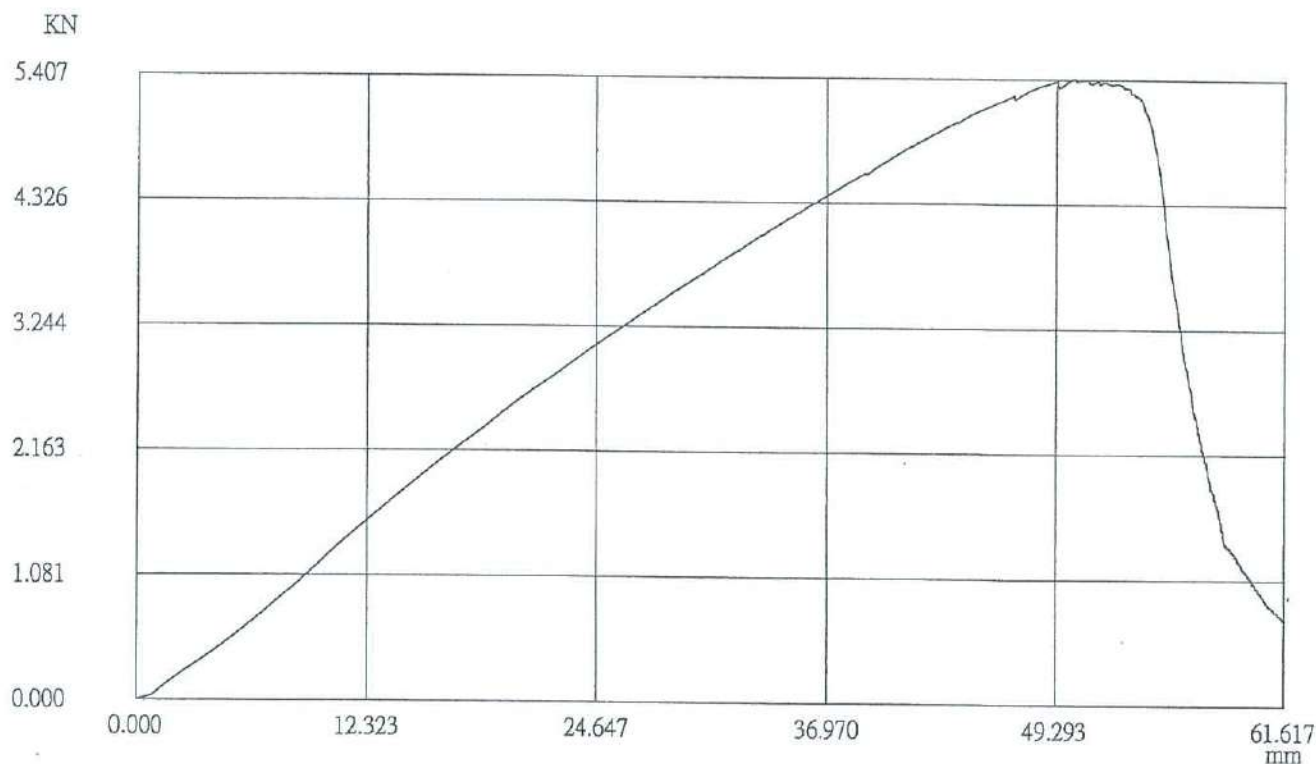
Date of issue: 22-05-2013

Page 5 of 6 pages

Castco LRN : GTXT0130514-2-WWTT

Specimen no. : 4

Load - Elongation Curve



Form No. GEOTXT_WWTT_BS_T1b dd 25/09/2009

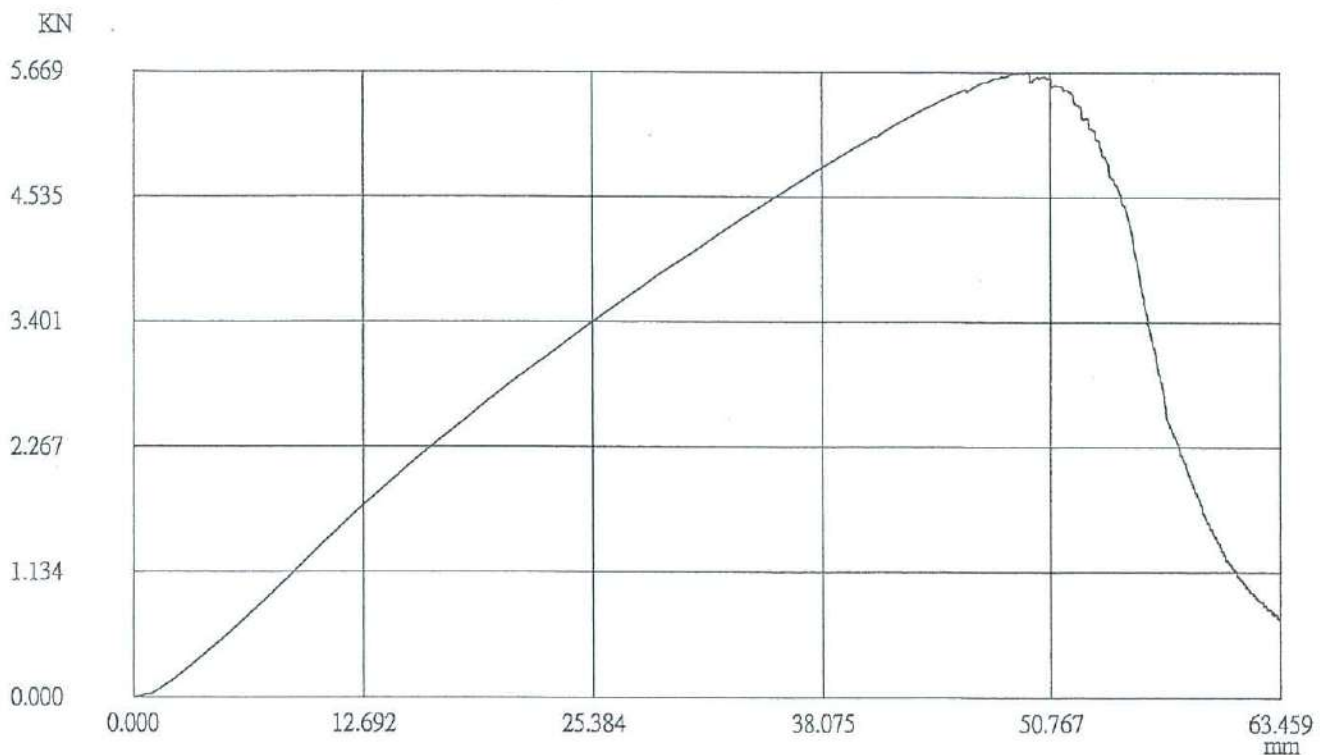
Test Certificate
Determination of wide width tensile strength of geotextiles
(Test Method Based on BS 6906 : Part 1)

Date of issue: 22-05-2013

Page 6 of 6 pages

Castco LRN : GTXT0130514-2-WWTT

Specimen no. : 5

Load - Elongation Curve**End of Report**

Form No. GEOTXT_WWTT_BS_T1b dd 25/09/2009

Test Certificate

Determination of apparent pore size distribution of geotextile by dry sieving
(Test Method Based on BS 6906 : Part 2)

Date of issue : 14-06-2013

Page 1A of 2 pages

Castco LRN : GTX0130514-1-AOS

Details as supplied by client

Client : Geoscape & Environmental Ltd.

Client's Ref. No. : --

Job title : --

Contract No. : --

Sample description : Non-woven polypropylene geotextiles

Manufacturer/Country of origin : --

Colour: Light grey

Sample type: GX35

Identification : Geotextiles (GX35)

Laboratory test results

Date of sample received : 14-05-2013

Date of test : 20-05-2013

Ambient temperature : 20.1 °C

A. Designation of glass beads (mean particle size) = 128 μ m (150 to 106 μ m)

Specimen no.	1	2	3	4	5
Mass of glass beads : (g)	50	50	50	50	50
Mass of empty vessel + specimen (g)	711.87	713.18	712.09	714.61	713.51
Mass of empty vessel + specimen + beads (after shaking) (g)	760.30	762.04	761.11	763.53	762.06
Mass of glass beads retained on and within specimen (g)	55.62	56.91	55.80	58.35	57.30
Percentage retained & within :%	96.86	97.72	98.04	97.84	97.10
				Mean (%)	97.51

B. Designation of glass beads (mean particle size) = 90.5 μ m (106 to 75 μ m)

Specimen no.	1	2	3	4	5
Mass of glass beads : (g)	50	50	50	50	50
Mass of empty vessel + specimen (g)	712.02	713.31	712.2	714.75	713.7
Mass of empty vessel + specimen + beads (after shaking) (g)	748.27	750.45	747.82	751.29	750.38
Mass of glass beads retained on and within specimen (g)	36.25	37.14	35.62	36.54	36.68
Percentage retained & within :%	72.50	74.28	71.24	73.08	73.36
				Mean (%)	72.89

Remark(s) :

- Test results relate only to the specimens tested.
- Page no. 1A and 2A this test report superseded page no. 1 and 2 of the previous test report of Castco LRN: GTX0130514-1-AOS issued on 22-05-2013.

Test Certificate

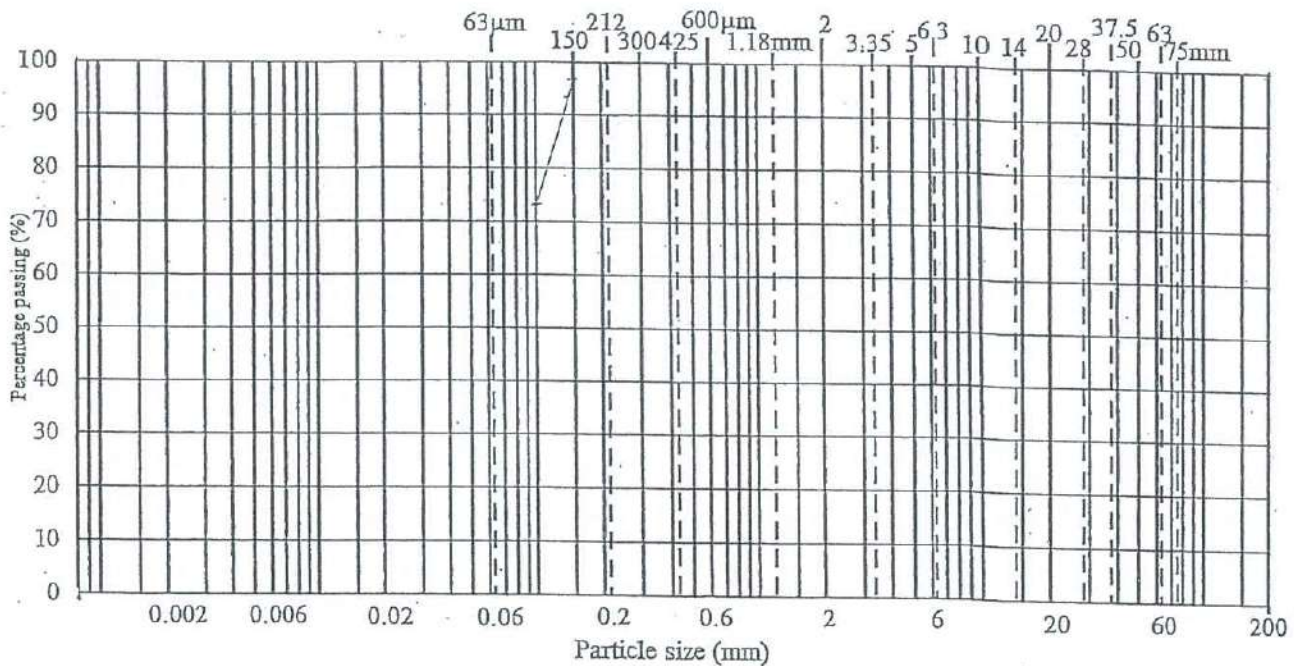
Determination of apparent pore size distribution of geotextile by dry sieving
(Test Method Based on BS 6906 : Part 2)

Date of issue : 14-06-2013

Page 2A of 2 pages

Castco LRN : GTXT0130514-1-AOS

Apparent Opening Size Plot

Apparent pore size for 95% of glass beads retained on
and within the geotextile (O_{95})

140 µm

Remark: 1. Test results relate only to the specimens test.

2. Page no. 1A and 2A this test report superseded page no. 1 and 2 of the previous test report of Castco LRN :
GTXT0130514-1-AOS issued on 22-05-2013.

Checker :

TSUI PO
Technical Manager

Certified by :

CHOI TZE WING
C. Eng., MHKIE, MICE
Quality Manager

End of Report

Form No. : GEOTXT APPSD_BS_T dd 28 09 2007

香港粉嶺安居街33號
香港粉嶺安全街29A號33, On Kui Street, Fanling, Hong Kong.
29A, On Chuen Street, Fanling, Hong Kong.

E-mail: castco@netvigator.com Website: www.castco.com.hk

Tel: 2677 2138
Fax: 2677 0351



**CMA Testing
and Certification
Laboratories**

廠商會檢定中心

TEST REPORT

Report No : AT0043852(0)

Date: 14 Jul 2015

Application No : LT023458(0)

Applicant : GEOSCAPE & ENVIRONMENTAL LIMITED
RM. 3, 11/F, WAH LAI INDUSTRIAL CENTRE,
NO.10-14 KWEI TEI STREET,
FOTAN, N.T.

Sample Description : One (1) submitted sample of fabric in white colour stated to be 'Geotextile "Geo Filter"' with Article No.: GX35.

Date Received : 05 Jun 2015

Test Period : 05 Jun 2015 to 14 Jul 2015.

Test details requested by the applicant :

Test Item	Method	Applicant's Requirement	Test Result	Comment
Water flow rate test	In-house Method : Water flow rate was measured at pressure of 2 kN/m ²	Flow rate: >195 L/m ² s	Flow rate: 238 L/m ² s	Passed

Remark : L/m² s denotes litre per metre square per second
> denotes greater than
kN/m² denotes kilo Newton per metre square

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Ko Chi Hung, Keith
Senior Technical Officer - Softlines Division

Page 1 of 1

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CMA Industrial Development Foundation Limited
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Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: <http://www.cmatcl.com>

CASTCO TESTING CENTRE LIMITED

佳力高試驗中心有限公司

TECHNO CENTRE, 33, ON KUI STREET, ON LOK TSUEN, PANLING, NEW TERRITORIES, HONG KONG

29A, ON CHUEN STREET, ON LOK TSUEN, PANLING, NEW TERRITORIES, HONG KONG

香港新界粉嶺安樂村安居街33號得利中心 / 香港新界粉嶺安樂村安全街29號A

Telephone No.: (852) 2677 2032, 2677 2138

E-mail: castco@netvigator.com

Facsimile: (852) 2677 0351

Website: www.castco.com.hk

FACSIMILE TRANSMISSION

TO:	COMPANY:	Geoscape
	FOR THE ATTENTION OF:	Ms Tang
	FAX No:	2690 0351 (Tel. 2690 0992)

FROM: Dr. K. Cyen (Number of pages: 1+1 including this page).

SENDER'S MESSAGE

DATE: 24/8/06

The flow rate of say 65 l/s m^2 can be converted to:

$$\begin{aligned}
 & 65 \times 1000 \text{ cm}^3 / \text{s} (100)^2 \text{ cm}^2 \\
 & = 65 \times 10^{-1} \text{ cm/s} \\
 & = 65 \times 10^{-3} \text{ m/s}
 \end{aligned}$$

REMARKS:

TO CONVERT SAY 104 l/s m^2 ,

$$= 104 \times 10^{-3} \text{ m/s} \geq 50 \times 10^{-3} \text{ m/s} \quad \text{OK!}$$

Test Certificate

Geotextiles - Determination of water flow normal to the plane under a constant head
(Test Method Based on BS 6906 : Part 3)

Date of issue : 14-06-2013

Page 1A of 1 page

Castco LRN : GTX0130514-3-PER

Details as supplied by client

Client : Geoscape & Environmental Ltd.

Job title : --

Sample description : Non-woven polypropylene geotextiles

Manufacturer/country of origin : --

Sample type : GX35

Client's ref. no. : --

Contract no. : --

Colour : Light Grey

Identification : Geotextiles (GX35)

Laboratory test results

Date sample received : 14-05-2013

Date of test : 21-05-2013

Specimen no.	1	2	3	4	5
Diameter	50	50	50	50	50
Area	0.00196	0.00196	0.00196	0.00196	0.00196
Mass (ϕ 150mm)	6.249	6.431	7.071	7.124	7.158
Mass per unit area	354	364	400	403	405
Breakthrough head	30	28	31	35	34
Water head	100	100	100	100	100
Flow volume	3310	3205	3236	3411	3328
Time	15.1	15.5	15.3	15.3	15.2
Water temperature	21.3	21.3	21.3	21.3	21.3
Flow rate	107.59	101.49	103.81	109.42	106.01
Mean	104.3	109.1	109.7	104.6	105.9
Coefficient of variation	2.37				

Remark : 1. Test results relate only to the specimens tested.

2. This page no. 1A of test certificate supersedes page no. 1 of the previous test certificate of Castco LRN: GTX0130514-3-PER issued on 22-05-2013.

Checker :

TSUI PO
Technical Manager

Form No. : GEOTXT WaterFP 06S T dtd 28.09.2007

Certified by :

End of Report

Item no. GE 0103

CHAO TZE WING
C. Eng., M.H.K.E., M.I.C.E.
Quality Manager

GEOSCAPE & ENVIRONMENTAL LIMITED **Job Reference for GeoFilter "GX35"**

<i>Contract No.</i>	<i>Project</i>	<i>Consultant / Client</i>	<i>Main Contractor</i>	<i>Date</i>
GE/2013/30	Landslip Prevention and Mitigation Programme, 2010, Package F, Landslip Prevention and Mitigation Works in Lantau Material Submission-Geotextile Material for Raking Drain	Jacobs China Limited	Geotech Engineering Ltd.	Jan-14
GE/2013/29	Landslip Prevention and Mitigation Programme, 2010, Package G and 2011 Package C, Landslip Prevention and Mitigation Works in Kowloon and the New Territories	Civil Engineering & Development Department (CEDD)	Geotech Engineering Ltd.	Jan-14
GE/2013/13	Landslip Prevention and Mitigation Programme, 2011, Package I, Landslip Prevention and Mitigation Works in Hong Kong Island and the New Territories	C M Wong & Associates Ltd	Tai Kam construction Engineering Co.Ltd	Oct-13
GE/2012/08	Landslip Prevention and Mitigation Programme, 2010, Package A-Landslip Prevention and Mitigation Works in Hong Kong Island West	C M Wong & Associates Ltd	Geotech Engineering Ltd.	Nov 12
GE/2012/09	Landslip Prevention and Mitigation Programme, 2011, Package L, Landslip Prevention and Mitigation Works along Tai Hang Road and Mount Davis Road	AECOM Asia Co. Ltd.	Geotech Engineering Ltd.	Aug-12
GE/2011/04	Landslip Prevention and Mitigation Programme, 2009, Package B, Landslip Prevention and Mitigation Works in Hong Kong Island	Halcrow China Ltd.	Yick Hing Construction Co. Ltd.	Nov-11
1/LANDS/11	Slope Maintenance & Improvement Works over Hong Kong Island and Islands, Kowloon, Sai Kung, Tsuen Wan and Kwai Tsing Districts	Lands Department	Geotech Engineering Ltd.	Apr-11
2/LANDS/10	Upgrading / Improvement Works to Lands Department Slopes in the Northern Regions	Fugro (Hong Kong) Ltd	Marshall-Karson Construction & Engineers Ltd.	Apr-11
GE/2010/12	Landslip Prevention and Mitigation Programme, 2008, Package H, Landslip Prevention and Mitigation Works in North, Tsuen Wan, Tuen Mun and Yuen Long	Jacobs China Ltd	China Geo-Engineering Corporation	Feb-11
GE/2010/14	LPMit Programme, 2008, Package G, Landslip Prevention & Mitigation Works in Kowloon, Kwai Tsing and Sha Tin	C M Wong & Associates Ltd	Tai Kam Construction Engineering Co. Ltd.	Feb-11
GE/2011/15	Landslip Prevention and Mitigation Programme, 2008, Package M, Landslip Prevention and Mitigation Works in Wan Chai	C M Wong & Associates Ltd	Geotech Engineering Ltd.	Jan-11

GEOSCAPE & ENVIRONMENTAL LIMITED **Job Reference for GeoFilter “GX35”**

Contract No.	Project	Consultant / Client	Main Contractor	Date
GE/2008/25	Landslip Prevention and Mitigation Programme, 2008, Package O, Natural Terrain Hazard Mitigation Works at Yu Tung Road in Tung Chung, Lantau	AECOM	Marshall-Karson Construction & Engineers Ltd.	Jan-11
C2214.B-08C	Slope Improvement Works Along EAL - Phase II	MTR	Paul Y Construction Co. Ltd.	Oct-10
GE/2010/05	LPMit Programme, 2008, Package E, Landslip Preventive Works on Government Slopes and Retaining Walls in Hong Kong Island	C M Wong & Associates Ltd	Tai Kam Construction Engineering Co. Ltd.	Sep-10
HY/2007/09	Reconstruction and Improvement of Tuen Mun Road Eastern Section	AECOM	Gammon Construction Ltd.	Mar-10
08/HY/2008	Highways Department Term Contract (Management and Maintenance of Roads in New Territories West 2009-2015)	Highways Department	Shun Yuen Construction Co Ltd.	Jul-09
GE/2007/38	10-year Extended LPM Project, Phase 7, Package N – Landslip Preventive Works for Slopes and Retaining Walls in Hong Kong Island & New Territories (Batch A)	Fugro (Hong Kong) Ltd	Rankine Engineering Co. Ltd.	May-09
GE/2008/22	10-year Extended LPM Project, Phase 8, Package F – Landslip Preventive Works for Slopes and Retaining Walls in Hong Kong Island & New Territories	C M Wong & Associates Ltd	Geotech Engineering Ltd.	Apr-09
GE/2007/30	10-year Extended LPM Project, Phase 5, Package M – Landslip Preventive Works for Slopes and Retaining Walls in Sha Tin, Kowloon & Kwai Tsing (Batch B)	Maunsell Geotechnical Services Ltd.	Geotech Engineering Ltd.	Apr-09
GE/2008/21	10-year Extended LPM Project, Phase 7, Package G – Landslip Preventive Works for Catchwater Slopes in Sha Tin & Tsuen Wan (Batch B)	Halcrow China Ltd	China Geo-Engineering Corporation	Aug-09
GE/2007/37	10-year Extended LPM Project, Phase 7, Package M – Landslip Preventive Works for Slopes in Outlying Islands and the New Territories	C M Wong & Associates Ltd	Geotech Engineering Ltd.	Jun-08
GE/2007/23	10-year Extended LPM Project, Phase 6, Package K – Landslip Preventive Works for Slopes in Hong Kong Island (Batch B)	C M Wong & Associates Ltd	Geotech Engineering Ltd.	May-08

GEOSCAPE & ENVIRONMENTAL LIMITED **Job Reference for GeoFilter “GX35”**

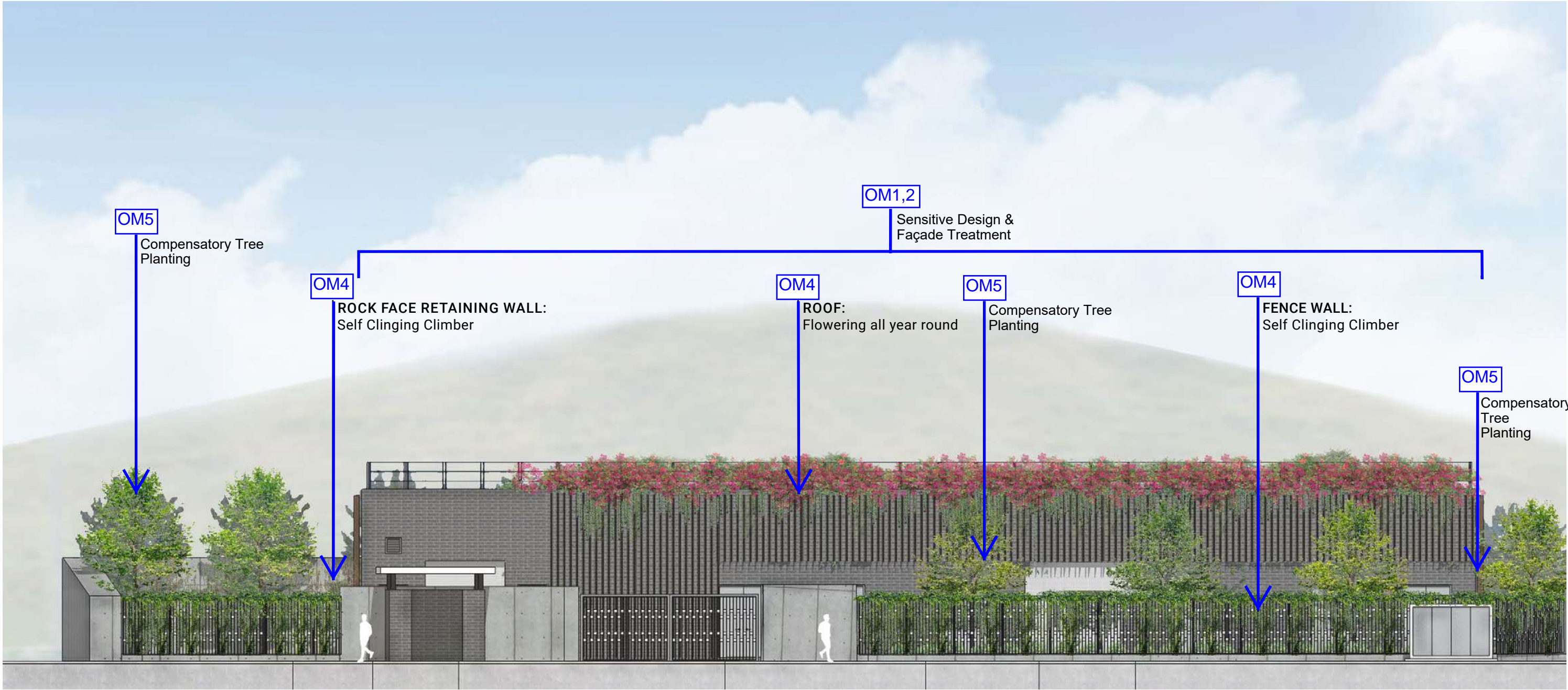
Contract No.	Project	Consultant / Client	Main Contractor	Date
GE/2005/50	10-Year Extended Landslip Preventive Measures Project, Phase 5, Package E - Landslip Preventive Works For Slopes In Tai Po	C M Wong & Associates Ltd	China Geo-Engineering Corporation	Apr-08
6/WSD/06	Construction of Salt Water Supply System for Penny's Bay	Water Supplies Department (WSD)	Kwan On Construction Co. Ltd.	Mar-08
GE/2007/20	10-Year Extended Landslip Preventive Measures Project, Phase 7, Package B - Landslip Preventive Works For Slopes and Retaining Walls in Western New Territories and North	Fugro (Hong Kong) Ltd	New Concepts Engineering Development Ltd	Feb-08
GE/2007/01	10-year Extended LPM Project, Phase 8, Package I - Landslip Preventive Works for Slopes in Hong Kong Island, Kowloon, the New Territories and Outlying Islands	Civil Engineering & Development Department (CEDD)	Fraser Construction Co. Ltd.	Jan-08
GE/2006/17	10-year Extended LPM Project, Phase 4, Package A – Landslip Preventive Works for Slopes in Tsuen Wan and Kwai Tsing (Batch B)	Fugro (Hong Kong) Limited	China Geo-Engineering Corporation	Aug-07
GE/2005/57	10-Year Extended Landslip Preventive Measures Project, Phase 5, Package H - Landslip Preventive Works For Slopes In Outlying Islands	Halcrow China	Kwan On Construction Co. Ltd.	Apr-07
GE/2006/27	10-Year Extended Landslip Preventive Measures Project, Phase 6, Package K - Landslip Preventive Works For Slopes In Hong Kong Island - Batch A	C M Wong & Associates Ltd	Geotech Engineering Ltd.	Apr-07
HY/2006/02	Upgrading / Improvement of Roadside Slopes / Retaining Walls on Hong Kong Island (2005 to 2008 Programme) Investigation, Design and Construction	Ove Arup & Partners	Geotech Engineering Ltd.	Mar-07
GE/2006/23	10-year Extended LPM Project, Phase 7, Package J – Landslip Preventive Works for Slopes in Hong Kong Island, Kowloon, the New Territories and Outlying Islands	Civil Engineering & Development Department (CEDD)	Geotech Engineering Ltd.	Mar-07 Mar-07
GE/2005/52	10-year Extended LPM Project, Phase 6, Package D – Landslip Preventive Works for Slopes in Hong Kong Island, Kowloon, Tuen Mun and Outlying Islands	Ove Arup & Partners	Geotech Engineering Ltd.	Nov-06
GE/2005/02	10-year Extended LPM Project, Phase 6, Package J – Landslip Preventive Works for Slopes in Hong Kong Island, Kowloon and the New Territories	Civil Engineering & Development Department (CEDD)	Geotech Engineering Ltd.	Nov-06

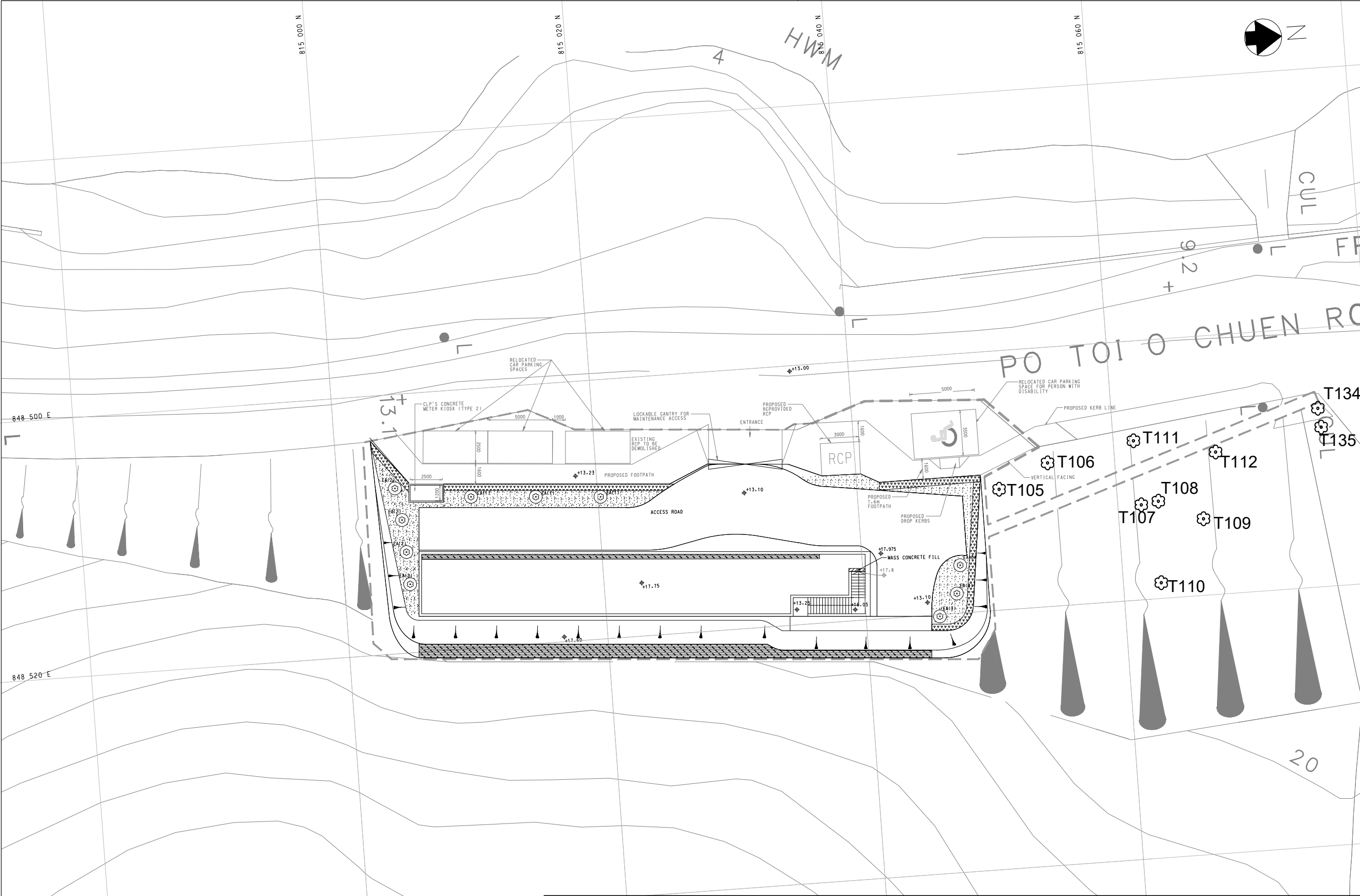
GEOSCAPE & ENVIRONMENTAL LIMITED **Job Reference for GeoFilter “GX35”**

Contract No.	Project	Consultant / Client	Main Contractor	Date
GE/2004/35	10-year Extended LPM Project, Phase 3, Package E – Landslip Preventive Works for Slopes in Central & Western and Wan Chai, Batch 2	C M Wong & Associates Ltd	Geotech Engineering Ltd.	Oct-06
GE/2005/33	10-year Extended LPM Project, Phase 4, Package G – Landslip Preventive Works for Slopes in Shatin	Maunsell Geotechnical Services Ltd.	Geotech Engineering Ltd.	Oct-06
GE/2002/01	10-year Extended LPM Project, Phase 3, Package I – Landslip Preventive Works for Slopes in Hong Kong Island, Kowloon and the New Territories	Civil Engineering & Development Department (CEDD)	Marshall-Karson Construction & Engineers Ltd.	Oct-06

APPENDIX K – ARCHITECTURAL DESIGN OF PTOSTP

Architectural Design of PTOSTP





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NOTES:

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO. 382770/B&V/GN/000.
2. ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (mPD).
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

LEGEND:

- EA ELAEOCARPUS APICULATUS
- APPLICATION SITE
- ZOYSIA JAPONICA
- BOUGAINVILLEA GLABRA
- FICUS PUMILA
- Retain Tree

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	WC	WL	SZ	CC	
Date	03/20	03/20	03/20	03/20	03/20
Approved					

Contract no. DC/2019/09

Contract title
PROVISION OF VILLAGE SEWERAGE IN SAI KUNG

Drawing title
PO TOI O SEWAGE TREATMENT PLANT - LANDSCAPE LAYOUT PLAN AT GROUND FLOOR

Drawing no.	Revision
382770/B&V/PTOSTP/TR/103-1	-

Scale A1 1:150 A3 1:300

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

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

TREE PLANTING SCHEDULE

SPECIES (SCIENTIFIC NAME)	CHINESE COMMON NAME	QUANTITY (NO.)	REVISED DBH (mm)	SPACING (mm)
ELAEOCARPUS APICULATUS (1)	尖葉杜英樹	3	300	5000
ELAEOCARPUS APICULATUS (2)	尖葉杜英樹	4	300	2500
ELAEOCARPUS APICULATUS (3)	尖葉杜英樹	3	300	2200

GROUND COVER SCHEDULE











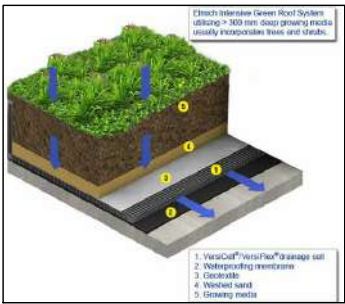


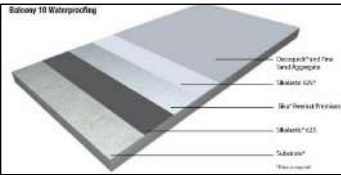



SPECIES (SCIENTIFIC NAME)	CHINESE COMMON NAME	MINIMUM SIZE (mm * mm)	SPACING (mm)	REMARKS
ZOYSIA JAPONICA	結縷草	-	-	-
Bougainvillea glabra	簕杜鵑	700(H) X 600(W)	550	-
FICUS PUMILA	薛荔	-	150	-

Plot Date = \$DATE\$

CAD Filename = \$FILE\$

OM2 - Types of Facade Treatment

MATERIAL & FINISHED SCHEDULE:

CODEDESCRIPTION			CODEDESCRIPTION			CODEDESCRIPTION			© Copyright by Black & Veatch Hong Kong Limited				
W 01FAIRFACE CONCRETE WITH F5 FINISH			F 01CEMENT SCREED WITH FLOOR HARDENER AND NON SLIP EPOXY COATING FINISHES			S 01STAINLESS STEEL WITH HAIRLINE FINISH			NOTES :				
									1. PLEASE REFER TO DRAWING NO. 382770/B&V/TLSSPS/AR/100 FOR NOTES, LEGENDS AND ABBREVIATIONS.				
LOCATIONS: EXTERNAL WALL			LOCATIONS: INTERNAL FLOOR			LOCATIONS: EXTERNAL			2. USE THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS AND OTHER RELEVANT DOCUMENTS. IT IS CONTRACTOR'S DUTY TO VERIFY ALL DIMENSIONS BEFORE PROCEEDING.				
SIZE: -			SIZE: -			SIZE: -			3. DO NOT SCALE DRAWINGS.				
MODEL NO.: -			MODEL NO.: SIKA EPOXY FLOOR OR EQUIVALENT			MODEL NO.: HAIRLINE STAINLESS STEEL			4. THIS IS A DESIGN INTENT DRAWINGS SET ILLUSTRATING THE APPEARANCE OF THE FINISHED WORK, SHOP DRAWINGS AND STRUCTURAL ELEMENTS ARE TO BE DESIGNED BY CONTRACTORS FOR OUR APPROVAL.				
SUPPLIER: BY CONTRACTOR			SUPPLIER: SIKA HONG KONG LIMITED			SUPPLIER: BY CONTRACTOR			5. BUILDING REGULATIONS AND ORDINANCES, AND FIRE SERVICES REQUIREMENTS ARE TO BE COMPLIED WITH.				
W 02DECORATIVE EXTERNAL COATING WITH GRANITE AND GROOVE LINE FINISH			F 02PAVING BLOCK (WATER PERMEABLE TYPE)			P 01PAINT FINISH WITH 1 COAT OF EPOXY PRIMER COATING AND 2 COATS OF POLYURETHANE TOP			6. COLOR AND FINISH TEXTURE, AND ASSOCIATED MATERIAL QUALITY ARE TO BE SUBMITTED AS SAMPLES FOR DESIGNER'S APPROVAL.				
									7. DRAWING IS NOT VALID FOR CONSTRUCTION UNLESS EXPRESSLY CERTIFIED.				
LOCATIONS: EXTERNAL WALL			LOCATIONS: EXTERNAL PAVEMENT			LOCATIONS: EXTERNAL & INTERNAL							
SIZE: -			SIZE: 200X100X80			SIZE: -							
MODEL NO.: SKK-MS-331 OR EQUIVALENT			MODEL NO.: ECO - GLASS BLOCK			MODEL NO.: COLOR TO MATCH RAL 7042 TRAFFIC GREY A							
SUPPLIER: SKK COATING			SUPPLIER: TIOSTONE ENVIRONMENTAL LIMITED			SUPPLIER: BY CONTRACTOR							
W 03ARTIFICIAL GRANITE WALL TILES (GREY COLOR)			F 03300X300MM HOMOGENEOUS FLOOR TILES			AL 01ALUM. CLADDING WITH PVF2 COATING							
													
LOCATIONS: EXTERNAL WALL			LOCATIONS: EXTERNAL WALL			LOCATIONS: EXTERNAL							
SIZE: 95MM x 45MM x 7MM			SIZE: -			SIZE: MINIMUM 3MM THK.							
MODEL NO.: JAPAN ORIGIN KANO TILES WITH CT SELF CLEANING OR EQUIVALENT			MODEL NO.: -			MODEL NO.: -							
SUPPLIER: KANO CERAMIC TILE CO. LTD			SUPPLIER: BY CONTRACTOR			SUPPLIER: BY CONTRACTOR							
W 04ARTIFICIAL GRANITE WALL TILES (GREY COLOR)			R 01GREEN ROOF SYSTEM WITH MIRROR DRAIN AND ROOT BARRIER ON TOP OF LIQUID APPLIED WATER PROOF SYSTEM LAID TO FALL WITH CEMENT SAND SCREED			K 01FIRE RETARDANT TREATED WOOD CLADDING WITH PAINTED GMS SUBFRAME							
									Revision				
LOCATIONS: TOILET WALL			LOCATIONS: ROOF			LOCATIONS: EXTERNAL WALL			Contract no.				
SIZE: 150 X 150MM			SIZE: -			SIZE: 200X30MM OR APPROPRIATE SIZE TO MATCH DESIGN INTENT			DC/2019/09				
MODEL NO.: -			MODEL NO.: NOPHADRAIN 5+1			MODEL NO.: HOOVER FIRE RETARDANT TREATED WOOD OR EQUIVALENT			Contract title				
SUPPLIER: BY CONTRACTOR			SUPPLIER: CSYT EnvironCon Co., Ltd.			SUPPLIER: AMTRAC FURNISHINGS INTL. LTD.			PROVISION OF VILLAGE SEWERAGE IN SAI KUNG				
W 05CEMENT PLASTERED WITH ANTI MOULD EMULSION PAINT			R 01SEAMLESS LIQUID APPLIED WATER PROOF SYSTEM			K 02COMPOSITE TIMBER DECKING WITH PEDESTAL			Drawing title				
									PO TOI O SEWAGE TREATMENT PLANT MATERIAL FINISHES SCHEDULE				
LOCATIONS: INTERNAL WALL			LOCATIONS: ROOF			LOCATIONS: ROOF			Drawing no.				
SIZE: -			SIZE: -			SIZE: 137x23mm SOLID SECTIO BOARD			382770/B&V/PTOSTP/AR/101				
MODEL NO.: DULUX EMULSION PAINT OR EQUIVALENT			MODEL NO.: SIKALASTIC 625 SYSTEM			MODEL NO.: MODWOOD DECKING BRUSHED FINISH WITH BLACK BEAN COLOR, KLEVAKLIP SYSTEM AND VERSI JACK PEDESTAL SYSTEM OR EQUIV.			Scale				
SUPPLIER: AKZO NOBEL PAINTS LIMITED (DULUX)			SUPPLIER: SIKA HONG KONG LIMITED			SUPPLIER: JARDINE ENGINEERING CORPORATION			A1 NTS A3 NTS				
													
													
									BLACK & VEATCH HONG KONG LIMITED 博威工程顧問有限公司				

NOTES :

- PLEASE REFER TO DRAWING NO. 382770/B&V/PTOSTP/AR/100 FOR NOTES, LEGENDS AND ABBREVIATIONS.
- USE THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS AND OTHER RELEVANT DOCUMENTS. IT IS CONTRACTOR'S DUTY TO VERIFY ALL DIMENSIONS BEFORE PROCEEDING.
- DO NOT SCALE DRAWINGS.
- THIS IS A DESIGN INTENT DRAWINGS SET ILLUSTRATING THE APPEARANCE OF THE FINISHED WORK, SHOP DRAWINGS AND STRUCTURAL ELEMENTS ARE TO BE DESIGNED BY CONTRACTORS FOR OUR APPROVAL.
- BUILDING REGULATIONS AND ORDINANCES, AND FIRE SERVICES REQUIREMENTS ARE TO BE COMPLIED WITH.
- COLOR AND FINISH TEXTURE, AND ASSOCIATED MATERIAL QUALITY ARE TO BE SUBMITTED AS SAMPLES FOR DESIGNER'S APPROVAL.
- DRAWING IS NOT VALID FOR CONSTRUCTION UNLESS EXPRESSLY CERTIFIED.

Revision	Date	Description			Initial
		Designed	Checked	Drawn	Checked
Initial		WC	WL	SZ	CC
Date	03/20	03/20	03/20	03/20	03/20

Approved

Signature

Contract no.
DC/2019/09

Contract title

PROVISION OF VILLAGE SEWERAGE
IN SAI KUNG

Drawing title

PO TOI O SEWAGE TREATMENT WORKS
ELEVATION

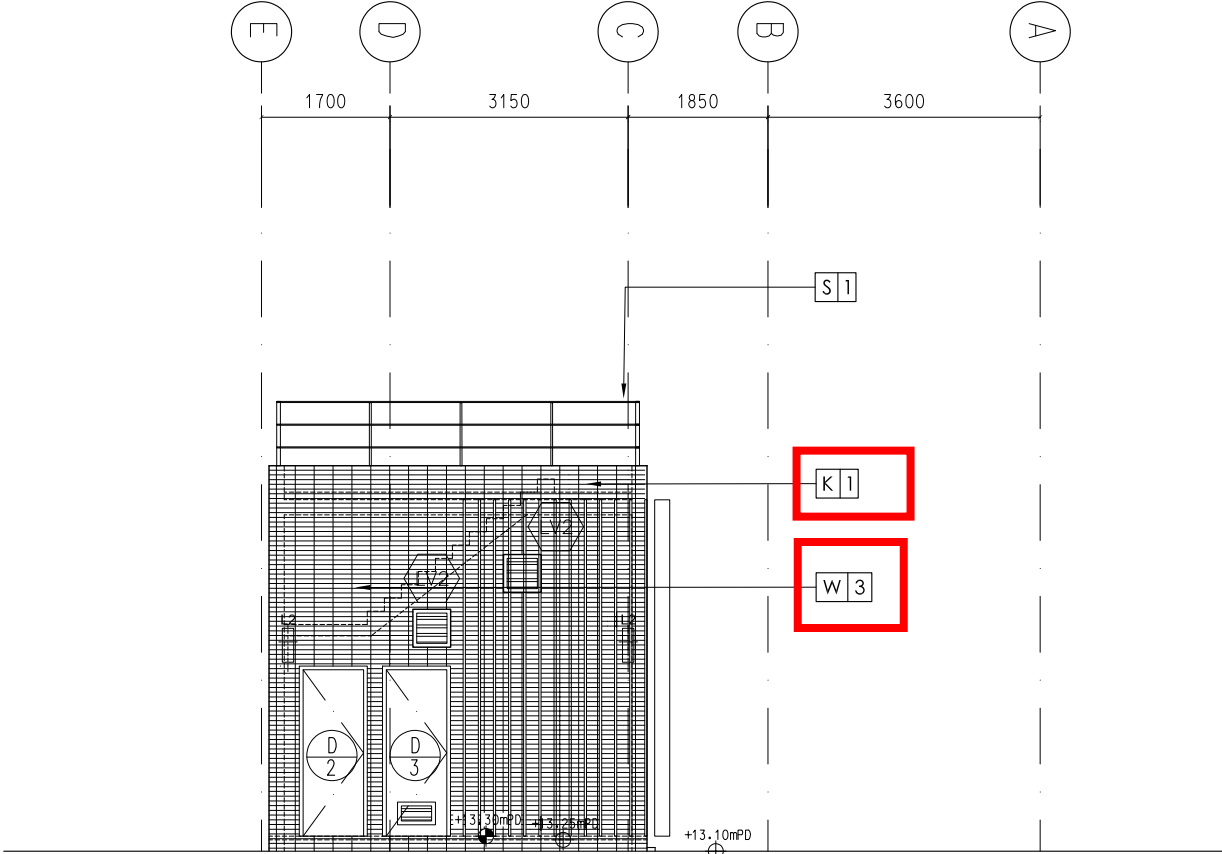
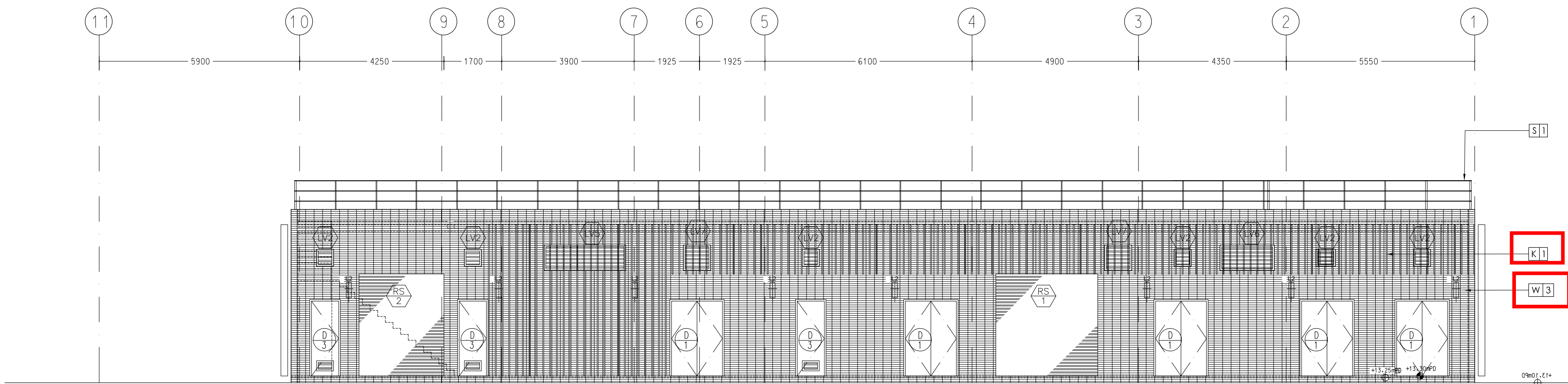
Drawing no.
382770/B&V/PTOSTP/AR/300

Revision

Scale
A1 1 : 100
A3 1 : 200

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

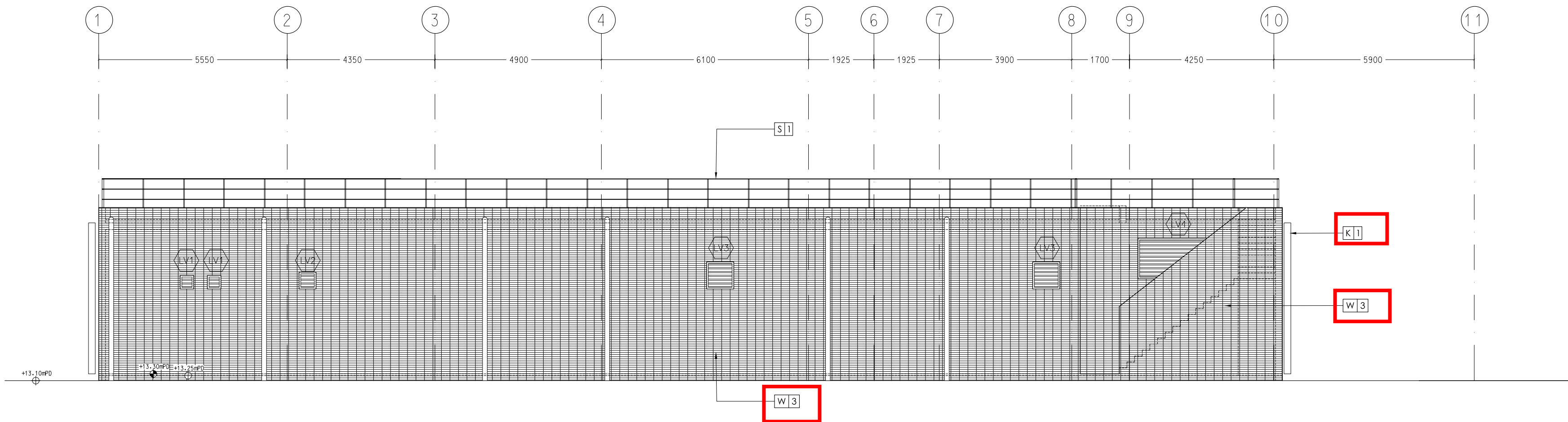


1 WEST ELEVATION

scale 1:100 @ A1 1:200 @ A3

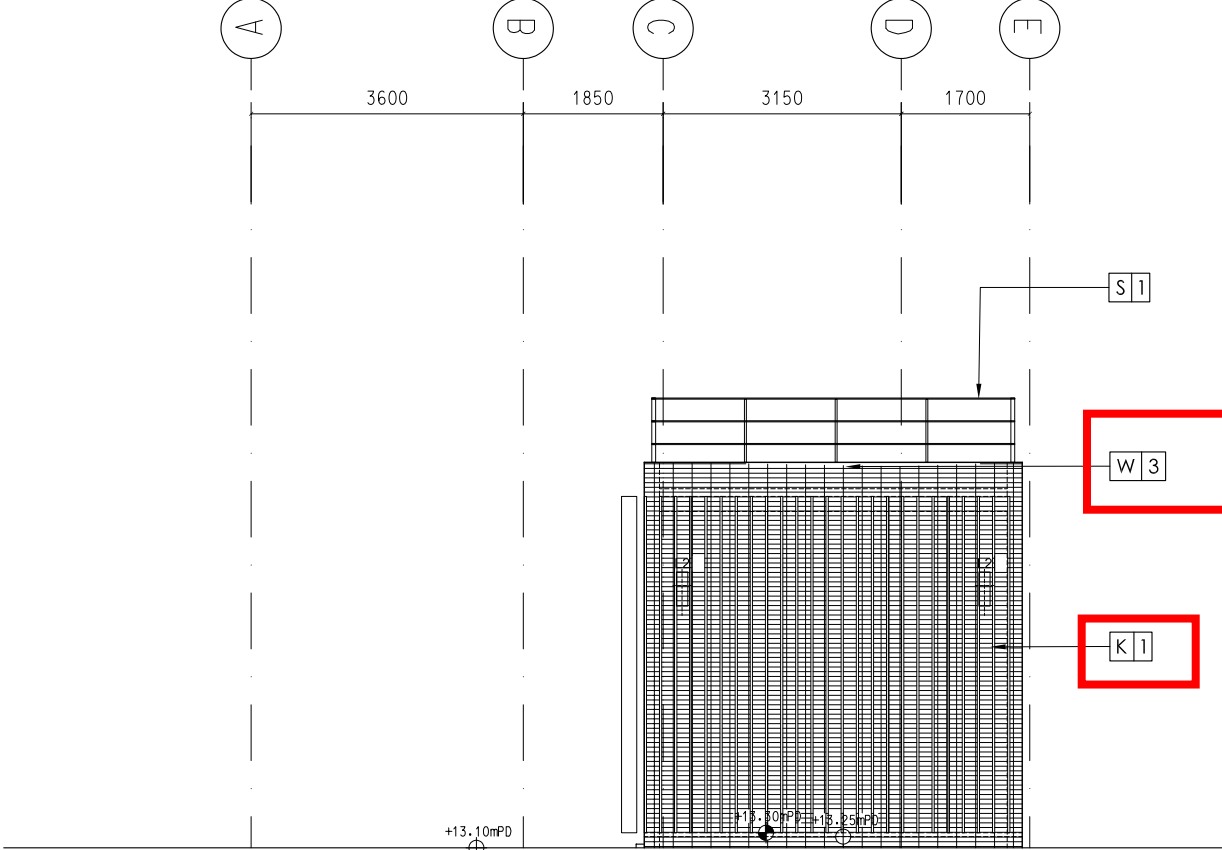
2 NORTH ELEVATION

scale 1:100 @ A1 1:200 @ A3



3 EAST ELEVATION

scale 1:100 @ A1 1:200 @ A3



4 SOUTH ELEVATION

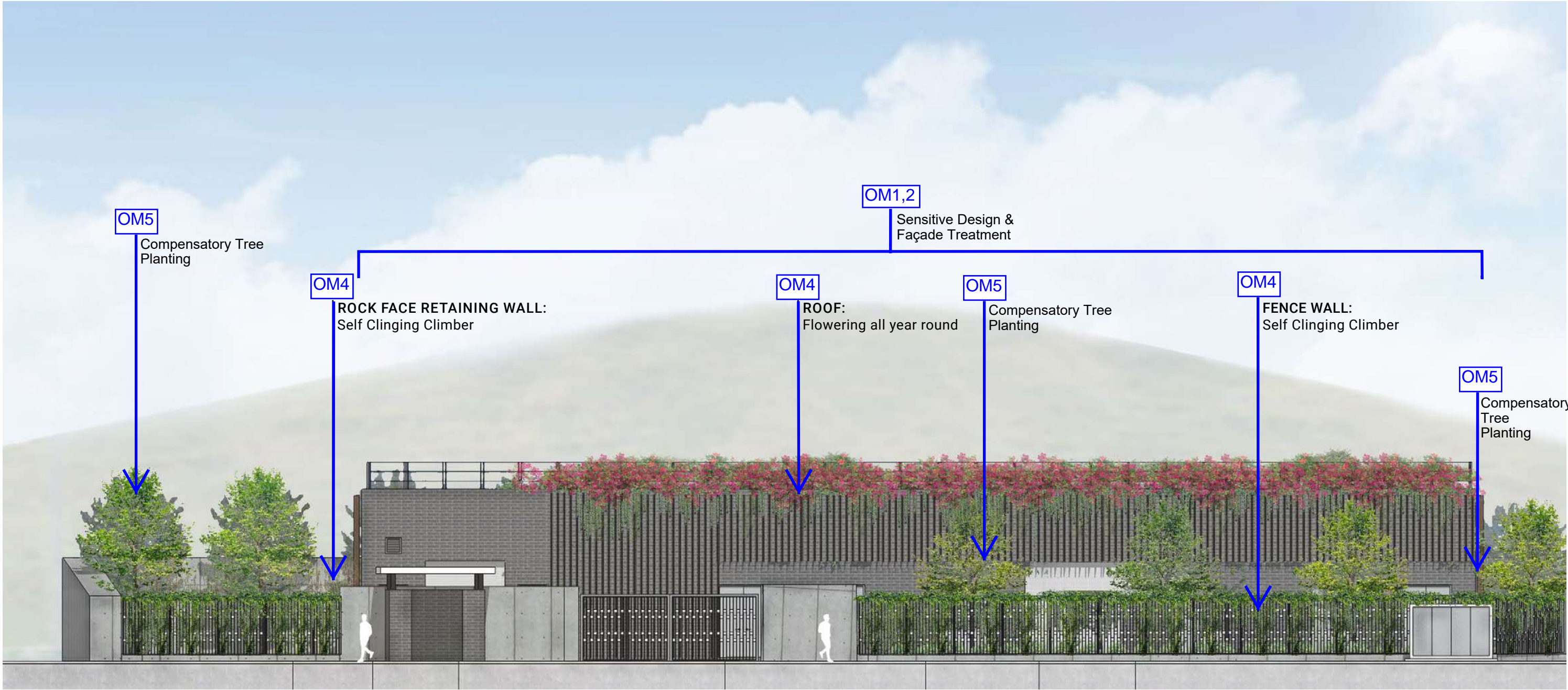
scale 1:100 @ A1 1:200 @ A3

VERTICAL GREENING

Po Toi O Wastewater Treatment Plant (PTOSTP)

Softscape Design (Rev.B)
JUNE 2021

Architectural Design of PTOSTP



fence wall & rock face retaining wall:



Irrigation Demand 灌溉要求:		
<div></div>	<div></div>	<div></div>
Fertilising Demand 肥料要求:		
<div></div>	<div></div>	<div></div>
Pruning Demand 修剪要求:		
<div></div>	<div></div>	<div></div>
In Season 觀賞季節:		
	flower 花	leaf 葉
JAN	<div></div>	<div></div>
FEB	<div></div>	<div></div>
MAR	<div></div>	<div></div>
APR	<div></div>	<div></div>
MAY	<div></div>	<div></div>
JUN	<div></div>	<div></div>
JUL	<div></div>	<div></div>
AUG	<div></div>	<div></div>
SEP	<div></div>	<div></div>
OCT	<div></div>	<div></div>
NOV	<div></div>	<div></div>
DEC	<div></div>	<div></div>

//Ficus pumila 薜荔//



roof:



Irrigation Demand 灌溉要求:		
<div></div>	<div></div>	<div></div>
Fertilising Demand 肥料要求:		
<div></div>	<div></div>	<div></div>
Pruning Demand 修剪要求:		
<div></div>	<div></div>	<div></div>
In Season 觀賞季節:		
	flower 花	leaf 葉
JAN	<div></div>	<div></div>
FEB	<div></div>	<div></div>
MAR	<div></div>	<div></div>
APR	<div></div>	<div></div>
MAY	<div></div>	<div></div>
JUN	<div></div>	<div></div>
JUL	<div></div>	<div></div>
AUG	<div></div>	<div></div>
SEP	<div></div>	<div></div>
OCT	<div></div>	<div></div>
NOV	<div></div>	<div></div>
DEC	<div></div>	<div></div>

//Bougainvillea glabra 簕杜鹃//



key plan:



BIRD'S EYE VIEW (from northwest)



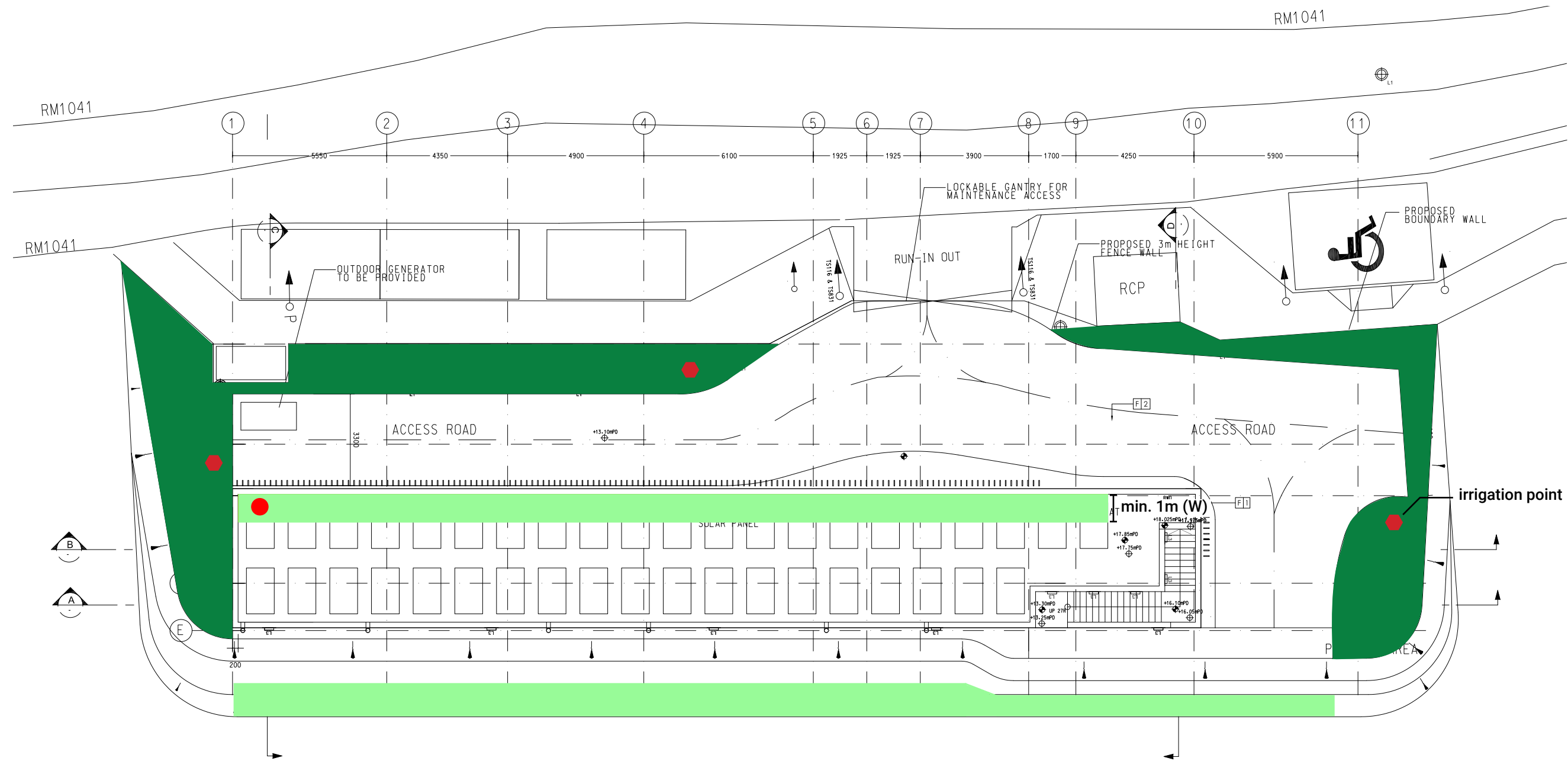
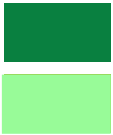
STREET VIEW (from southwest)



SOIL DEPTH PROVISION

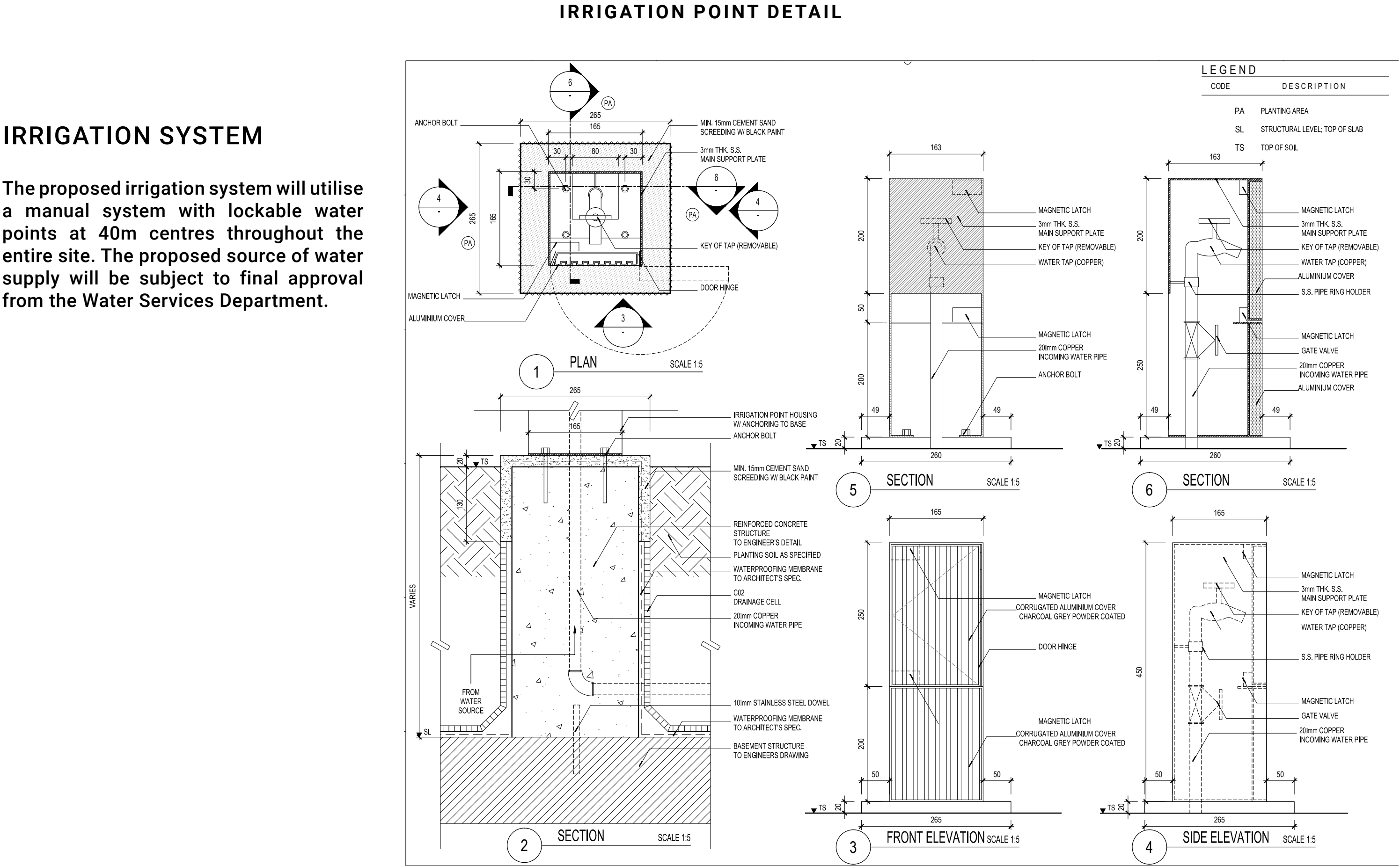
The soil depth provision will be as follows, excluding all drainage layer, water proofing and protective screeding:

Planting Type	Fabricated Soil Depth
Tree	1200mm (min)
Shrub / Climber	600mm (min)

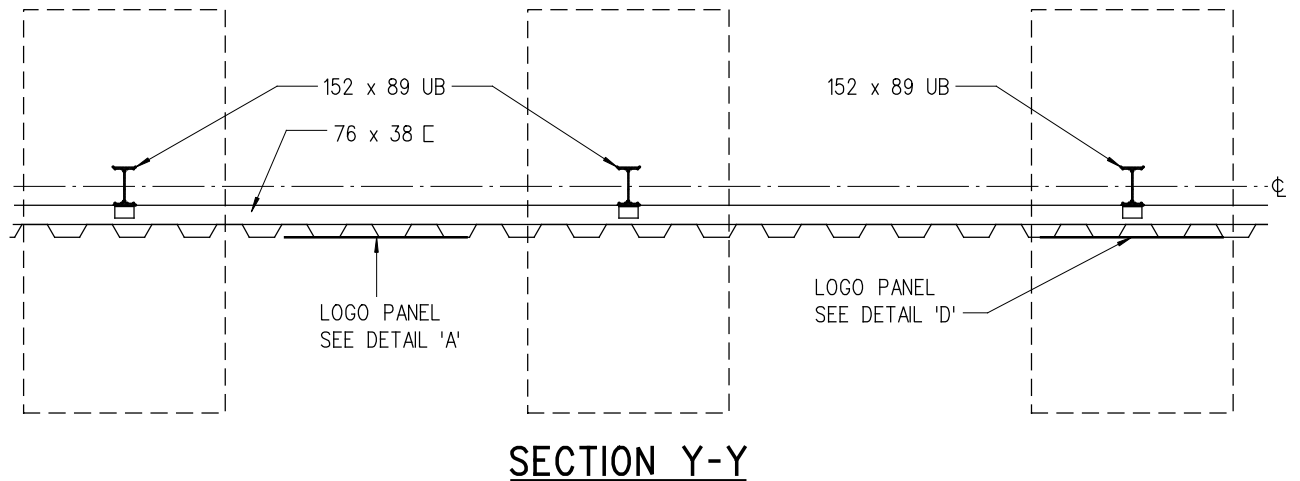
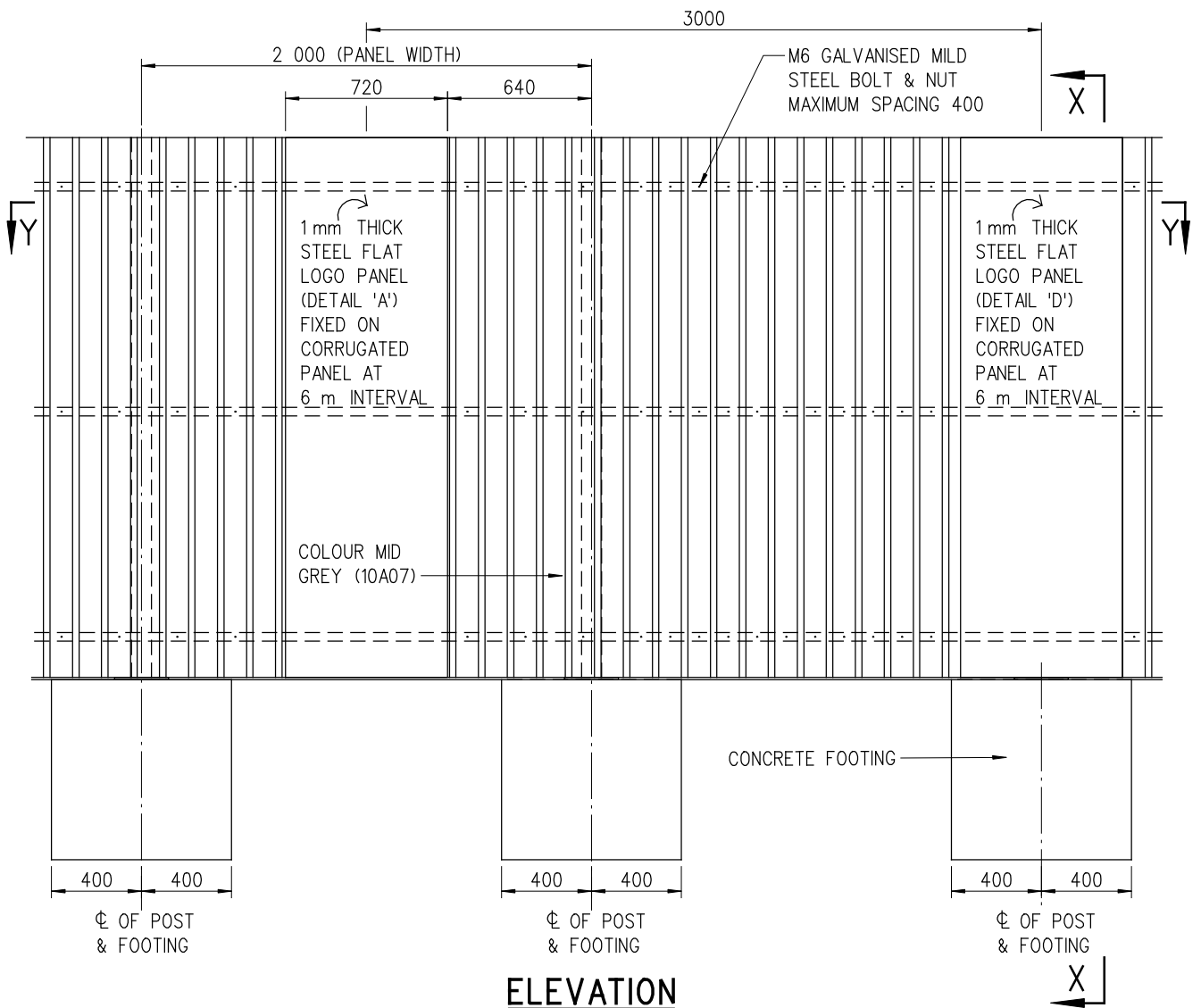


IRRIGATION SYSTEM

The proposed irrigation system will utilise a manual system with lockable water points at 40m centres throughout the entire site. The proposed source of water supply will be subject to final approval from the Water Services Department.



Appendix L – Site Hoarding and Movable Noise Barrier



C	INCORPORATION OF CONSTRUCTION INDUSTRY LOGO	ORIGINAL SIGNED	2.9.2011
B	HEIGHT OF STEEL SHEETING AND SIZES OF POST & FOOTING REVISED	ORIGINAL SIGNED	8.2.2002
A	GENERAL REVIEW	ORIGINAL SIGNED	2.2.2001
REV.	DESCRIPTION	SIGNATURE	DATE

SITE HOARDING

DRAINAGE SERVICES DEPARTMENT

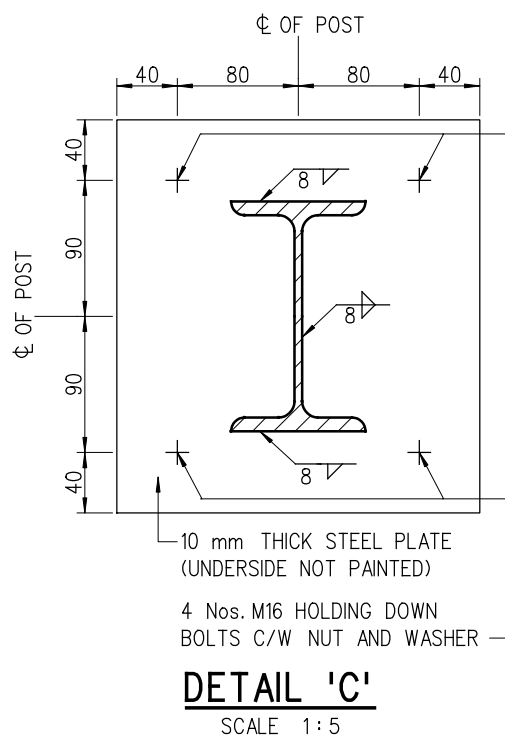
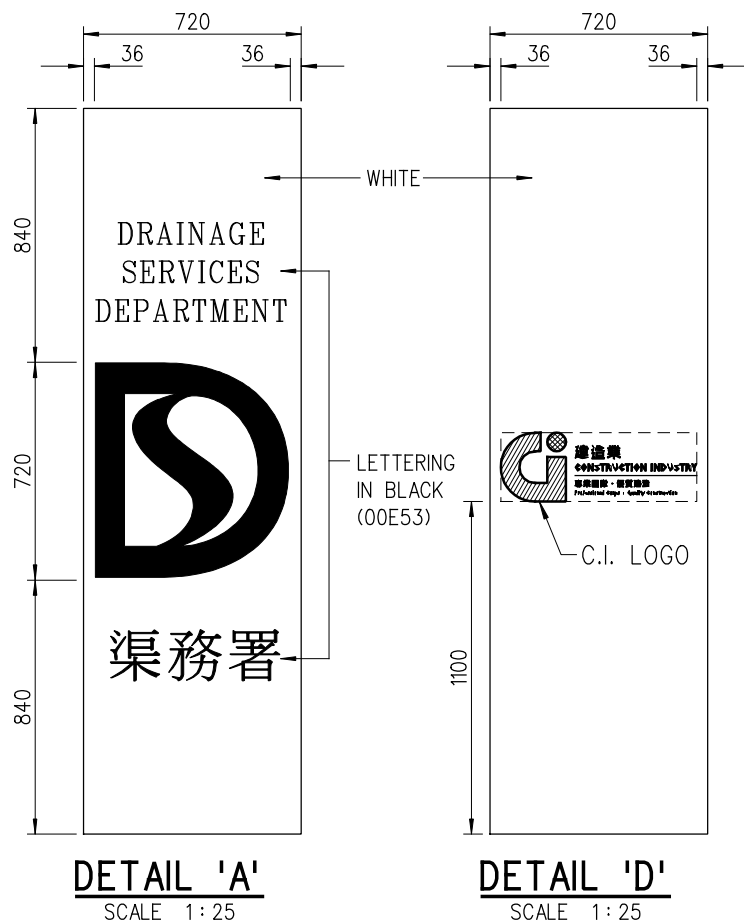
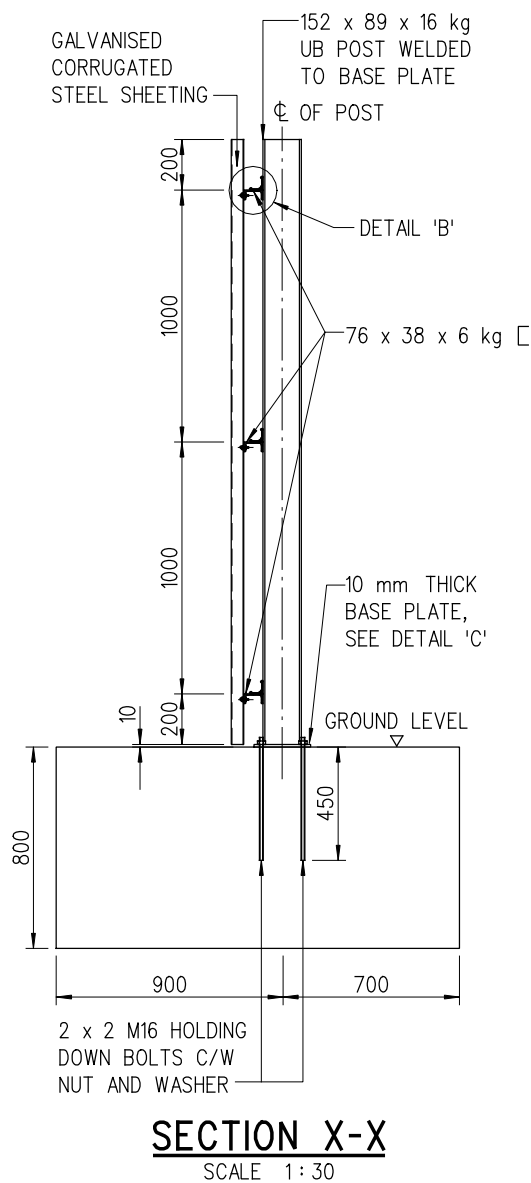
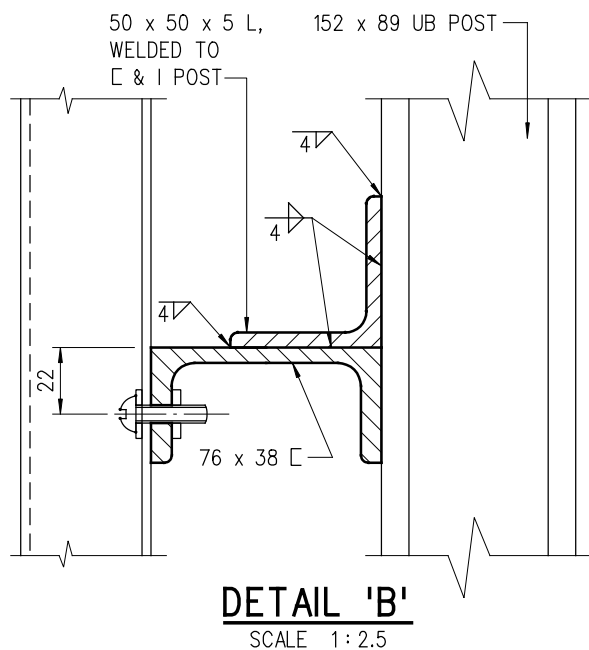
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DRAWING No.

SCALE

1 : 30

DS 1065C
(SHEET 1 OF 3)



C	INCORPORATION OF CONSTRUCTION INDUSTRY LOGO	ORIGINAL SIGNED	2.9.2011
B	HEIGHT OF STEEL SHEETING AND SIZES OF POST & FOOTING REVISED	ORIGINAL SIGNED	8.2.2002
A	GENERAL REVIEW	ORIGINAL SIGNED	2.2.2001
REV.	DESCRIPTION	SIGNATURE	DATE

SITE HOARDING

DRAINAGE SERVICES DEPARTMENT

REFERENCE

DRAWING No.

SCALE

AS SHOWN

DS 1065C
(SHEET 2 OF 3)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. FOR DETAILS OF DRAINAGE SERVICES DEPARTMENT LOGO AND CONSTRUCTION INDUSTRY (C.I.) LOGO, SEE DRG. Nos. DS 1057 AND 1095 RESPECTIVELY.
3. ALL STEELWORK EXCEPT CORRUGATED STEEL SHEETING SHALL BE PAINTED WITH SYSTEM A STATED IN G.S. CLAUSE 18.62.
4. CONCRETE SHALL BE GRADE 20/20.
5. CORRUGATED STEEL SHEETING SHALL HAVE SECTION MODULUS NOT LESS THAN 2000 mm³ /m. THE SHEETING SHALL BE TO BS 3083 8/3 G350.
6. THE CONTRACTOR MAY SUBMIT PROPOSAL WITH DESIGN CALCULATION FOR ALTERNATIVE MATERIAL (OTHER THAN HARDWOOD) AND CONSTRUCTION DETAILS (INCLUDING FOUNDATION DETAILS) FOR THE SITE HOARDING WHICH MUST BE CAPABLE OF WITHSTANDING A WIND PRESSURE OF 1.2 kPa. ANY SUCH CONTRACTOR'S REQUESTED VARIATION, IF AGREED TO BY THE ENGINEER, SHALL BE VALUED IN ACCORDANCE WITH THE CONTRACT.
7. COLOUR OF PAINTING TO BS 5252 : 1976.
8. WHERE THE CONCRETE FOOTING IS LOCATED IN BLOCK PAVED FOOTPATH, THE FOOTING SHOULD BE LOWERED TO ALLOW FOR THE PAVING BLOCKS AND THE SAND COURSE.

C	INCORPORATION OF CONSTRUCTION INDUSTRY LOGO	ORIGINAL SIGNED	2.9.2011
B	HEIGHT OF STEEL SHEETING AND SIZES OF POST & FOOTING REVISED	ORIGINAL SIGNED	8.2.2002
A	GENERAL REVIEW	ORIGINAL SIGNED	2.2.2001
REV.	DESCRIPTION	SIGNATURE	DATE

SITE HOARDING

DRAINAGE SERVICES DEPARTMENT

REFERENCE

DRAWING No.

SCALE







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DS 1065C
(SHEET 3 OF 3)



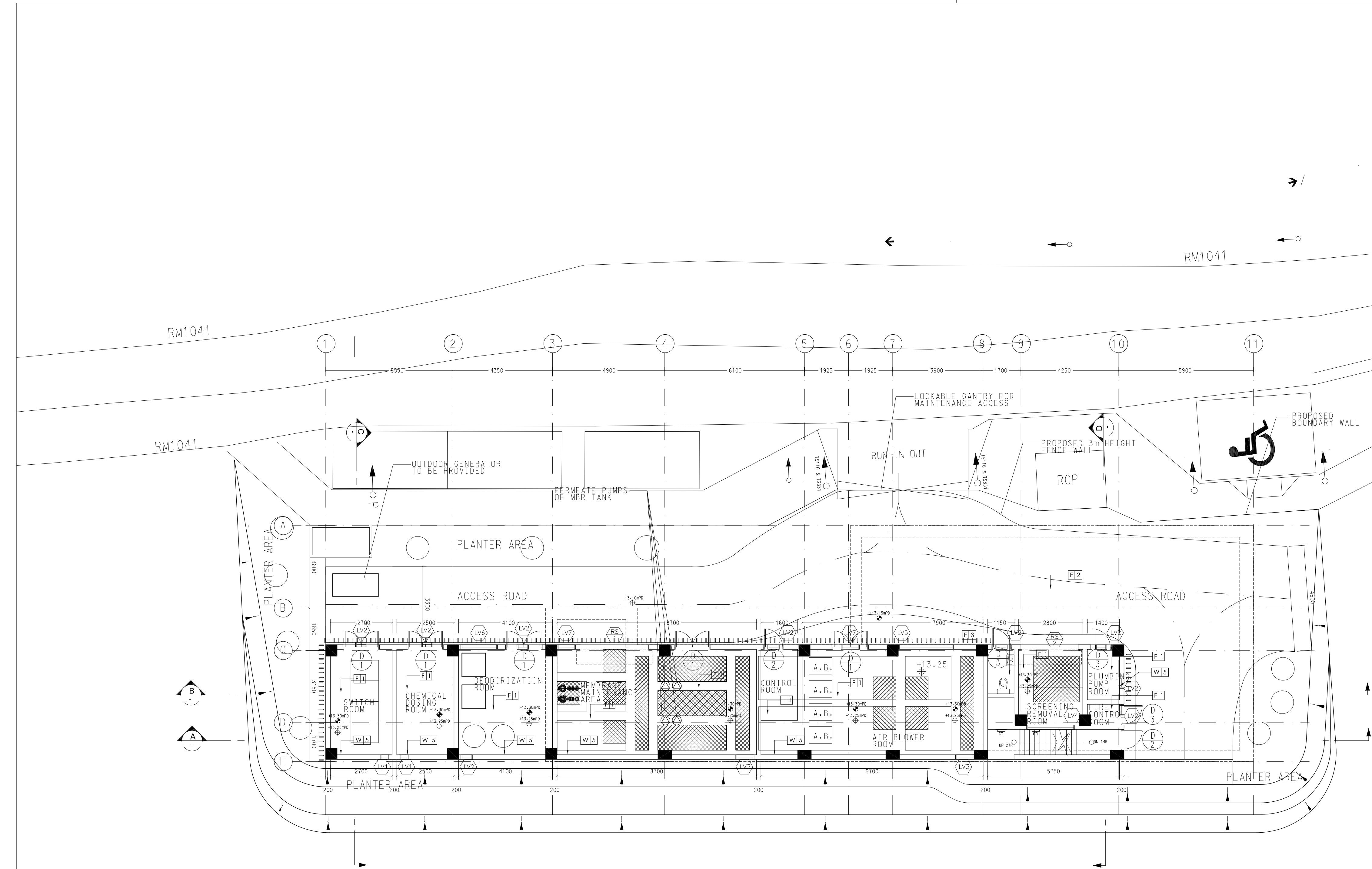
Typical Movable Noise Barrier

Appendix M – Lighting Details of PTOSTP

LIGHTING FITTING SCHEDULE										© Copyright by Black & Veatch Hong Kong Limited									
CODE		DESCRIPTION		CODE		DESCRIPTION										NOTES :			
L 01		PHILIPS CITYSPRIT BDS480 OR EQUIVALENT, LED POST TOP MOUNTED ROADLIGHT ON 4500MM GMS POST WITH PAINTED FINISH. IP65				PHILIPS GREENSPACE WATERPROOF LED BATTERN WT160C OR EQUIVALENT, 20w, 4000K, 230V. IP65										1. PLEASE REFER TO DRAWING NO. 382770/B&V/TLSSPS/AR/100 FOR NOTES, LEGENDS AND ABBREVIATIONS.			
		LOCATIONS:				LOCATIONS:										2. USE THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS AND OTHER RELEVANT DOCUMENTS. IT IS CONTRACTOR'S DUTY TO VERIFY ALL DIMENSIONS BEFORE PROCEEDING.			
		EXTERNAL				INTERNAL,													
		SIZE:				SIZE:													
		4500MM GMS POST				1200MM LONG													
		MODEL NO.:				MODEL NO.:													
		PHILIPS CITYSPRIT BDS480				PHILIPS GREENSPACE WATERPROOF LED BATTERNWT160C										3. DO NOT SCALE DRAWINGS.			
		SUPPLIER:				SUPPLIER:										4. THIS IS A DESIGN INTENT DRAWINGS SET ILLUSTRATING THE APPEARANCE OF THE FINISHED WORK, SHOP DRAWINGS AND STRUCTURAL ELEMENTS ARE TO BE DESIGNED BY CONTRACTORS FOR OUR APPROVAL.			
		SIGNIFY - PHILIPS				SIGNIFY - PHILIPS										5. BUILDING REGULATIONS AND ORDINANCES, AND FIRE SERVICES REQUIREMENTS ARE TO BE COMPLIED WITH.			
CODE		DESCRIPTION														6. COLOR AND FINISH TEXTURE, AND ASSOCIATED MATERIAL QUALITY ARE TO BE SUBMITTED AS SAMPLES FOR DESIGNER'S APPROVAL.			
L 02		PHILIPS EXTERNAL WALL MOUNTED LED DOWN LIGHT, 3.1w, REMOTE GEAR, 4000K, 220-240V. IP 68.														7. DRAWING IS NOT VALID FOR CONSTRUCTION UNLESS EXPRESSLY CERTIFIED.			
 <div>External</div>		LOCATIONS:																	
		EXTERNAL WALL																	
		SIZE:																	
		MODEL NO.:																	
		PHILIPS EXTERNAL WALL MOUNTED LED DOWN LIGHTH DWP220																	
		SUPPLIER:																	
		SIGNIFY - PHILIPS																	
CODE		DESCRIPTION																	
L 03		WALL RECESSED STEPLIGHT WITH DIE-CAST ALUM GREY PAINTED HOUSING, 3X1.2w, 4000K, INTERGRATED LED GEAR, 230V. IP54																	
		LOCATIONS:																	
		EXTERNAL WALL																	
		SIZE:																	
		-																	
		MODEL NO.:																	
		WALL RECESSED STEPLIGHT																	
		SUPPLIER:																	
		SIGNIFY - PHILIPS																	
CODE		DESCRIPTION																	
L 04		PHILIPS GREENPERFORM LOWBAY LED OR EQUIVALENT, LED SUSPENDED LOWBAY LIGHT 85w, 4000K, INTEGRATED LED DRIVER, 230V. IP 65																	
		LOCATIONS:																	
		PUMP HALL																	
		SIZE:																	
		-																	
		MODEL NO.:																	
		-																	
		SUPPLIER:																	
		SIGNIFY - PHILIPS																	
CODE		DESCRIPTION																	
L 05		PHILIPS GREENSPACE SURFACE MOUNTED LED DOWNLIGHT OR EQUIVALENT,P65 8w, 4000K, 160Ø, INTEGRATED LED DRIVER, 230V. IP65																	
		LOCATIONS:																	
		TOILET																	
		SIZE:																	
		-																	
		MODEL NO.:																	
		PHILIPS GREENSPACE SURFACE MOUNTED LED DOWNLIGHT																	
		SUPPLIER:																	
		SIGNIFY - PHILIPS																	

Plot Date = \$DATE\$

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1 GROUND FLOOR PLAN
scale 1:100 @ A1 1:200 @ A3

LIGHTING SCHEDULE:

SYMBOL	DESCRIPTION
L1	PHILIPS CITYSPRT BDS480 OR EQUIVALENT, LED POST TOP MOUNTED ROADLIGHT ON 4500MM GMS POST WITH PAINTED FINISH, IP65
L2	PHILIPS EXTERNAL WALL MOUNTED LED DOWN LIGHT, 3W, REMOTE GEAR, 4000K, 220-240V, IP 68.
L3	ITU LUCE DAF 68 OR EQUIVALENT WALL RECESSED STEPLIGHT WITH DIE-CAST ALUM GREY PAINTED HOUSING, 3X1.2w, 4000K, INTERGRATED LED GEAR, 230V, IP54
L4	PHILIPS GREENPERFORM LOWBAY LED OR EQUIVALENT, LED SUSPENDED LOWBAY LIGHT, 85w, 4000K, INTEGRATED LED DRIVER, 230V, IP 65.
L5	PHILIPS GREENSPACE SURFACE MOUNTED LED DOWNLIGHT OR EQUIVALENT, 50w, 4000K, 1600, INTEGRATED LED DRIVER, 230V, IP65
L6	PHILIPS GREENSPACE WATERPROOF LED BATTERY WT160C OR EQUIVALENT, 20w, 4000K, 230V, IP65

MATERIAL SCHEDULE:

CODE	DESCRIPTION
[E1]	FAIRFACE CONCRETE WITH F5 FINISH
[E2]	DECORATIVE EXTERNAL COATING WITH GRANITE AND GROOVE LINE FINISH SKH-M5-331 OR EQ.
[E3]	ARTIFICIAL GRANITE WALL TILES (GREY COLOR)
[E4]	150X150MM WHITE CERAMIC WALL TILES
[E5]	CEMENT PLASTERED WITH ANTI MOULD EMULSION PAINT FINISH
[E6]	CEMENT SCREED WITH FLOOR HARDENER AND NON SLIP EPOXY COATING FINISHES
[E7]	PAVING BLOCK (WATER PERMEABLE TYPE)
[E8]	300X300MM HOMOGENEOUS FLOOR TILES
[E9]	CEMENT SCREED LAID TO ALL WITH LIQUID APPLIED WATERPROOF LAYOUT, INSULATION PANEL AND EPOXY TOP COATING FINISH
[E10]	STAINLESS STEEL WITH HAIRLINE FINISH
[E11]	PAINT FINISH WITH 1 COAT OF EPOXY PRIMER COATING AND 2 COATS OF POLYURETHANE TOP COAT. (TO BE APPLIED TO ALL GMS)
[E12]	ALUMINIUM CLADDING WITH PVF2 COATING
[E13]	COMPOSITE TIMBER STRIP CLADDING WITH PAINTED GMS SUPPORTING FRAME
[E14]	COMPOSITE TIMBER DECKING WITH PEDESTAL

DOOR SCHEDULE

CODE	DESCRIPTION
[D1]	1600WX2250H STAINLESS STEEL DOUBLE LEAVE DOOR
[D2]	900WX2250H STAINLESS STEEL SINGLE LEAVE DOOR
[D3]	800WX2250H STAINLESS STEEL SINGLE LEAVE DOOR WITH 500X300 VENTILATION LOUVER

SHUTTER DOOR SCHEDULE

CODE	DESCRIPTION
[S1]	3000WX3000HYMM STAINLESS STEEL ROLLER SHUTTER
[S2]	2500WX3000HYMM STAINLESS STEEL ROLLER SHUTTER

LOUVER SCHEDULE

CODE	DESCRIPTION
[LV1]	400WX400H STAINLESS STEEL WEATHERPROOF LOUVER
[LV2]	500WX500H STAINLESS STEEL WEATHERPROOF LOUVER
[LV3]	800WX800H STAINLESS STEEL WEATHERPROOF LOUVER
[LV4]	2100WX1200H STAINLESS STEEL WEATHERPROOF LOUVER
[LV5]	2400WX750H STAINLESS STEEL WEATHERPROOF LOUVER
[LV6]	1600WX750H STAINLESS STEEL WEATHERPROOF LOUVER
[LV7]	800WX750H STAINLESS STEEL WEATHERPROOF LOUVER

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Revision	Date	Description	Initial
Initial	Designed	Checked	Drawn
Initial	WC	WL	SZ
Date	03/20	03/20	03/20

Approved

Contract no.
DC/2019/09

Contract title
**PROVISION OF VILLAGE SEWERAGE
IN SAI KUNG**

Drawing title
**PO TOI O SEWAGE TREATMENT WORKS
GROUND FLOOR PLAN**

Drawing no.
382770/B&V/PTOSTP/AR/201

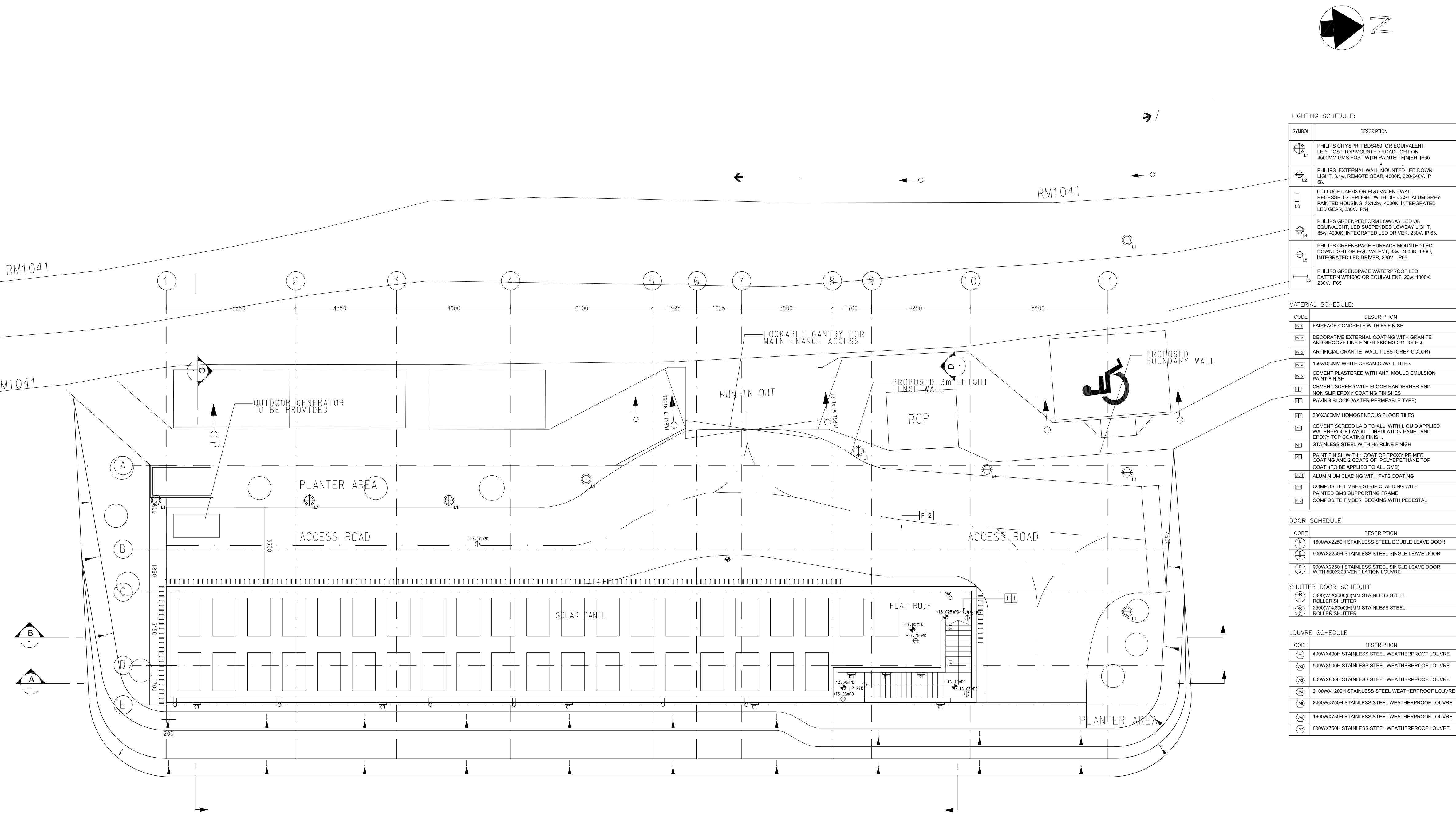
Scale
A1 1 : 100
A3 1 : 200

THE GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

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

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1 ROOF PLAN
scale 1:100 @ A1 1:200 @ A3

LIGHTING SCHEDULE:	
SYMBOL	DESCRIPTION
L1	PHILIPS CITYSPRINT BDB480 OR EQUIVALENT, LED POST TOP MOUNTED ROADLIGHT ON 4500MM GMS POST WITH PAINTED FINISH, IP65
L2	PHILIPS EXTERNAL WALL MOUNTED LED DOWN LIGHT, 3 W, REMOTE GEAR, 4000K, 220-240V, IP 68
L3	ITU LUCE DAF 68 OR EQUIVALENT WALL RECESSED STEPLIGHT WITH DIE-CAST ALUM GREY PAINTED HOUSING, 3X1.2w, 4000K, INTEGRATED LED GEAR, 230V, IP54
L4	PHILIPS GREENPERFORM LOWBAY LED OR EQUIVALENT, LED SUSPENDED LOWBAY LIGHT, 85w, 4000K, INTEGRATED LED DRIVER, 230V, IP 65
L5	PHILIPS GREENSPACE SURFACE MOUNTED LED DOWNLIGHT OR EQUIVALENT, 50w, 4000K, 1600, INTEGRATED LED DRIVER, 230V, IP65
L6	PHILIPS GREENSPACE WATERPROOF LED BATTERY WT160C OR EQUIVALENT, 20w, 4000K, 230V, IP65
MATERIAL SCHEDULE:	
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M2	DECORATIVE EXTERNAL COATING WITH GRANITE AND GROOVE LINE FINISH SKM-MS-331 OR EQ.
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M4	150X150MM WHITE CERAMIC WALL TILES
M5	CEMENT PLASTERED WITH ANTI MOULD EMULSION PAINT FINISH
M6	CEMENT SCREED WITH FLOOR HARDENER AND NON SLIP EPOXY COATING FINISHES
M7	PAVING BLOCK (WATER PERMEABLE TYPE)
M8	300X300MM HOMOGENEOUS FLOOR TILES
M9	CEMENT SCREED LAID TO ALL WITH LIQUID APPLIED WATERPROOF LAYOUT, INSULATION PANEL AND EPOXY TOP COATING FINISH
M10	STAINLESS STEEL WITH HAIRLINE FINISH
M11	PAINT FINISH WITH 1 COAT OF EPOXY PRIMER COATING AND 2 COATS OF POLYURETHANE TOP COAT. (TO BE APPLIED TO ALL GMS)
M12	ALUMINIUM CLADDING WITH PVF2 COATING
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SHUTTER DOOR SCHEDULE	
CODE	DESCRIPTION
S1	3000WX3000HYMM STAINLESS STEEL ROLLER SHUTTER
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LOUVER SCHEDULE	
CODE	DESCRIPTION
L1	400WX400H STAINLESS STEEL WEATHERPROOF LOUVER
L2	500WX500H STAINLESS STEEL WEATHERPROOF LOUVER
L3	800WX800H STAINLESS STEEL WEATHERPROOF LOUVER
L4	2100WX1200H STAINLESS STEEL WEATHERPROOF LOUVER
L5	2400WX750H STAINLESS STEEL WEATHERPROOF LOUVER
L6	1600WX750H STAINLESS STEEL WEATHERPROOF LOUVER
L7	800WX750H STAINLESS STEEL WEATHERPROOF LOUVER

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Approved

Contract no.
DC/2019/09

Contract title
PROVISION OF VILLAGE SEWERAGE IN SAI KUNG

Drawing title
PO TOI O SEWAGE TREATMENT WORKS ROOF PLAN

Drawing no. 382770/B&V/PTOSTP/AR/202	Revision
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Scale
A1 1 : 100
A3 1 : 200

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