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KL - CW JV

Your reference :

Our reference : KLCWJV/1027/2171-2022

31 August 2022

Binnies Hong Kong Limited
43rd Floor, AIA Kowloon Tower
100 How Ming Street
Kwun Tong, Hong Kong

By Hand and Email

Attn: Mr. Thomas Cheung

Dear Sir/Madam,

Contract No. DC/2020/02
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Preservation and Transplantation Plan for Plant Species of Conservation Importance (PTP) (Rev.23)

Refer to the email from EPD dated 9 August 2022, we would like to submit herewith Preservation and Transplantation Plan for Plant Species of Conservation Importance (Rev.23) that is attached herewith for your consideration and approval.

Thank you for your kind attention.

Yours faithfully,
For and on behalf of
KL-CW JV



Charles Tse
Site Agent

Encl. as stated

c.c. Head Office] w/e

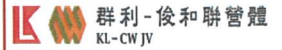
CT/ML/SK

Contract No:

DC/2020/02

Project Title:

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works





Preservation and/or Transplantation Plan for Plant Species of Conservation Importance

Document No: KL-CW JV/PTP

Revision: 23

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Prepared by:	Approved by:
 Shirley Kong Environmental Officer	 Charles Tse Site Agent

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01	8 June 2021	Whole document	Second Submission	Ken Cheung
02	14 June 2021	Whole document	Third Submission	Ken Cheung
03	16 June 2021	Whole document	Fourth Submission	Ken Cheung
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08	9 September 2021	Whole document	Ninth Submission	Ken Cheung
09	21 March 2022	Whole document	Tenth Submission	Shirley Kong
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1 INTRODUCTION

Drainage Services Department (DSD) had issued a tender of PWP No. 4331DS Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works, in which the project scope of the construction of a public sewerage system for 9 unsewered villages/areas (including Shui Hau, Tong Fuk, Cheung Sha Sheung Tsuen, Cheung Sha Ha Tsuen, San Shek Wan, Pui O Lo Uk Tsuen, Pui O San Wai, Pui O Lo Wai and Ham Tin) in South Lantau. The general layout plan is shown in Figure 1.1.

The project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) and an environmental permit (EP) is required for the construction and operation of the project. In April 2017, the Environmental Impact Assessment (EIA) Report for the project was approved with conditions under EIAO. The EIA Report concluded that the environmental impact of the project could be controlled to within the criteria under EIAO and the Technical Memorandum on EIA Process. An EP for the project was issued in July 2017. The project comprises the following works contracts shown in Figure 1.2:

- Contract No. DC/2020/02: Construction of San Shek Wan Sewage Treatment Works, Associated Submarine Outfall and Pui O Sewerage Works.
- Sewerage System to be Constructed under other Contracts in the Future.

Pursuant to the Environmental Permit No.: EP-538/2017, Part C, Clause 2.11, a Preservation and/or Transplantation Plan for Plant Species of Conservation Importance (PTP) is prepared by Kwan Lee – Chun Wo Joint Venture's (KL-CW JV) for the Contract No. DC/2020/02: Construction of San Shek Wan Sewage Treatment Works, Associated Submarine Outfall and Pui O Sewerage Works based on the Environmental Impact Assessment (EIA) Report (AEIAR-210/2017) and the Site Information.

For San Shek Wan Sewage Pumping Station (SPS) mentioned in EP Condition 2.11, SPS is not within the scope of works of Contract No. DC/2020/02. This PTP covers the works areas of Contract No. DC/2020/02 only. The PTP(s) for the other works areas including SPS not covered under Contract No. DC/2020/02 should be provided by the contractors of other contracts of the project in the future.

Scope of Works

The works to be executed under this contract involves construction of

- Construction of a secondary sewage treatment works (STW) at San Shek Wan in South Lantau;
- Construction of a sewage pumping station at Pui O;
- Construction of about 1.4 kilometres (km) of submarine outfall with a diameter of 350 millimetres (mm) for the disposal of treated effluent from the STW at San Shek Wan;
- Construction of about 4.1 km of gravity sewers with diameters from 150 mm to 375 mm along South Lantau Road and Chi Ma Wan Road and at Pui O Lo Uk Tsuen;
- Construction of about 1.2 km of twin rising mains with a diameter of 200 mm along South Lantau Road and Chi Ma Wan Road;
- Ancillary works

2 PURPOSE OF THE PLAN

Under EP-538/2017, Part C, Clause 2.11, a Preservation and/or Transplantation Plan for Plant Species of Conservation Importance (PTP) shall be deposited no later than 3 months before the commencement of construction works at San Shek Wan Sewage Pumping Station (SPS) and San Shek Wan Sewage Treatment Works (SSWSTW) and their associated access roads for the plant species of conservation importance which can be affected by the Project. In accordance with the Environmental Impact Assessment (EIA) Report (AEIAR-210/2017), the proposed mitigation measures for Plant Species of Conservation Importance are proposed to alleviate the impact due to the project.

The Plan shall include at least the following information:

- (i) target species;
- (ii) detailed survey results of each of the target species, including location and quantity; and
- (iii) location and condition of the identified receptor sites; and
- (iv) a detailed implementation programme on the preservation and/or transplantation of each species, including preparation of receptor sites; and
- (v) a detailed post-transplantation monitoring and maintenance programme.

3 ENVIRONMENTAL LEGISLATION, POLICIES, PLANS, STANDARDS & CRITERIA

In preparing this plan, references for tree survey methodology and evaluation of each surveyed tree were made based on the following technical guidelines and publications:

- Note 3 Species of Conservation Importance of Appendix A of Annex 16 of the Technical Memorandum on Environmental Impact Assessment Process (“EIAO-TM”)
- Development Bureau Technical Circular (Works) No. 4/2020 – Tree Preservation;
- Development Bureau Technical Circular (Works) No. 6/2015 – Maintenance of Vegetation and Hard Landscape Features;
- Environment, Transport and Works Bureau (ETWB) Technical Circular (Works) (TCW) No. 29/2004 – Registration of Old and Valuable Trees, and Guidelines for their Preservation;
- Agriculture, Fisheries and Conservation Department – Check List of Hong Kong Plants 2012;
- Agriculture, Fisheries and Conservation Department, Conservation Branch, Nature Conservation Practice Note No. 02/ June 2006 – Measurement of Diameter at Breast Height (DBH);
- Hu, Q., et al. 2003. Rare and Precious Plants of Hong Kong, AFCD, Hong Kong;
- Leisure and Cultural Services Department (LCSD)’s Register of Old and Valuable Trees;

- IUCN Red List of Threatened Species Version 2014.3; and
- Development Bureau, Greening, Landscape and Tree Management Section – Guidelines on Tree Transplanting

4 TARGET SPECIES

According to the Final Tree Preservation and Removal Proposal (Package 1), the tree survey was carried out in April 2019 by the qualified personnel, Mr. Pierre S.K. Ng. 242 trees (222 live trees and 20 dead trees) were identified within the proposed site of San Shek Wan Sewage Treatment Works (SSWSTW) as follow:

- *Aquilaria sinensis* is classified as a significant tree or with special conservation status as per Protection of Endangered Species of Animals and Plants Ordinance (Cap 586). Meanwhile, *Gmelina chinensis* is rare and precious plant according to Agriculture, Fisheries and Conservation Department Publication – ‘Rare and Precious Plants of Hong Kong’(2004).
- According to the findings of the baseline surveys (Register No.: AEIAR-210/2017), all the plants found within the Project Site are common species, with no flora species of conservation importance recorded except at the SSWSTW and SPS (Alternative) where protected plant species *Aquilaria sinensis* in fair condition.
- According to Agriculture, Fisheries and Conservation Department Publication – ‘Rare and Precious Plants of Hong Kong’(2004), *Gmelina chinensis* and *Aquilaria sinensis* are rare and precious species. In proposed boundary of SSWSTW, 3 nos. of *Gmelina chinensis* (T742, T751 & T758) and 1 no. of *Aquilaria sinensis* (T392) are identified. Therefore, 4 trees within the site of SSWSTW with conservation value will be transplanted to Pui O Pumping Station (POPS) as shown on Appendix 5.2.

Justifications of identified target species to be preserved or transplanted:

- 1 Tree is in direct conflict with the proposed works.
- 2 Preparation of intact and sufficient-sized root ball with practical auxiliary support.
- 3 No weedy species ecological significance or species creating maintenance problem.
- 4 Tree with health and/or form for transplantation.
- 5 Enough access for transplantation machinery or vehicle.
- 6 Species of high post-transplantation survival rate.
- 7 Tree has normal in growth in which root ball well in preparation and after transplantation, while auxiliary support will be sufficient / practical.
- 8 Mature Tree.

5 DETAILED SURVEY RESULTS OF TARGET SPECIES

Table 5.1 - Summary of proposed transplanting plant species of conservation importance

Tree Species (Botanical Name)	Tree Species (Chinese Name)	Species Origin	No. of Individuals
<i>Aquilaria sinensis</i> *	土沉香*	Native	1
<i>Gmelina chinensis</i> *	石梓*	Native	3
		Total	4
Remarks: *T392, one number of <i>Aquilaria sinensis</i> and T742, T751 & T758 three numbers of <i>Gmelina chinensis</i>			

The location of survey of target species is presented in Appendix 5.1.

Appendix 5.2 shows the location of identified target species found within the site of SSWSTW.

Vegetation Survey was carried out by qualified personnel, and the method statement and report are presented in Appendix 5.3 and Appendix 5.4, respectively. The survey found one individual of *Aquilaria sinensis* and three individuals of *Gmelina chinensis* within the SSWSTW area. Regular post-transplantation monitoring and maintenance on a monthly basis was recommended.

6 LOCATION AND CONDITION OF NURSERY SITE

To construct the SSWSTW and POSPS, the target species will be inevitably transplanted prior to the commencement of all construction works. Also, the receptor site is the only access road for POSPS and the planter for planting trees will be constructed after completion of the building of POSPS. The target plant species to be transplanted will be temporarily transplanted to the nursery at Kam Tin by experienced qualified personnel as mentioned in Appendix 5.4 and be eventually transplanted to the receptor sites upon clearance of site constrains.

The operations were assessed for the feasibility of survival for the target species after transplantation as well as the operations were approved by client's representative for the need for being temporarily transplanted to the holding nursery at Kam Tin. The health condition of the transplanted trees in the nursery at Kam Tin will be documented in the monitoring report prepared by the qualified personnel. The report will be submitted by qualified personnel and will present the health condition of the transplanted trees in nursery site.

Locations of the nursery site

- 6.1 Since the site constrain, the final receptor site is not available for planting. The target plant species to be transplanted will be temporarily transplanted to the nursery at Kam Tin and be eventually re-located to the receptor sites upon clearance of site constrains.

Condition and preparation of nursery site

- 6.2 4 trees within the site of SSWSTW with conservation value will be transplanted to the nursery site.

- 6.3 The nursery site will be prepared in advance (such as removing herbs and undersized woody seedlings, compacted soil and rock around the hole. The specimens would be pruned prior to the transplantation for transportation as mentioned in Appendix 5.4. Soil conditioner or soil mix shall be prepared for the planting holes to enhance the soil condition favoring the root and plant growth. The actual amount and type of soil conditioner or soil mix will be adjusted on-site.
- 6.4 The nursery sites shall be kept free from weeds throughout the nursery period. Any unwanted weeds found in these areas shall be removed once identified. Weeding shall be carried out by hand as much as possible.
- 6.5 The nursery site will be secured and no unauthorized entry is allowed.
- 6.6 The transplanting operations shall follow the Section 4 of the “Guidelines on Tree Transplanting” issued by the Greening, Landscape and Tree Management Section of Development Bureau, and the post-planting care of the transplanted tree shall reference to the Section 5 of the same guidelines; and the works shall be undertaken by a Landscaping Specialist Contractor approved by the DEVB and supervised by a Qualified Personnel.

7 LOCATION AND CONDITION OF THE IDENTIFIED RECEPTOR SITE

Locations of the receptor site

- 7.1 According to the Tree Preservation and Removal Proposal in Annex 7 of Site Information, the transplanted target specimens to the identified receptor site is at the Site of POSPS. The location of the identified receptor site of the transplanted trees is shown Appendix 6.1. Meanwhile, the existing receptor site is shown in Appendix 6.2.

Condition and preparation of receptor site

- 7.2 Site clearance (such as removing herbs and undersized woody seedlings) at the receptor sites will be carried out before transplanting the uplifted root ball. Compacted soil and rock around the hole shall be removed with a spade. Since specimens would be transplanted to the receptor sites without prior root pruning practice, soil conditioner or soil mix shall be prepared for the planting holes to enhance the soil condition favoring the root and plant growth. However, the actual amount and type of soil conditioner or soil mix will be adjusted on-site.
- 7.3 The receptor sites shall be kept free from weeds throughout the post-transplantation maintenance period. Any unwanted weeds found in these areas shall be removed by the Contractor once identified. Weeding shall be carried out by hand as much as possible. Any removed weeds, litter and debris shall be disposed appropriately by the Contractor.
- 7.4 The proposed receptor sites for the specimens shall be fenced and protected to prevent damage resulting from the adjacent construction works during the establishment period. On-site construction workers shall be notified for the presence of this protected species. No unauthorized damages to the fenced receptor sites shall be allowed.
- 7.5 Before the planting works, a temporary steel scaffold, which shall be established to protect the target species from the adjacent vegetation clearance work, shall be removed.

- 7.6 Dimensions of the area to be transplanted shall be marked. Manual removal of weedy herbs, grass, tree seedlings and wood debris shall be carried out by the qualified personnel.
- 7.7 Special care shall be taken to dig up the plant with intact soil and undisturbed weed.
- 7.8 Target species shall be transplanted to nursery site at Kam Tin and then the final receptor site at Pui O as mentioned in Appendix 5.4.
- 7.9 Before planting the target species, all vegetation and stones at the selected area (about 2.0m x 2.5m) shall be removed, exposing the fertile topsoil of the selected receptor site. The receptor site shall be dominated by black-coloured soil, which is similar to farmland soil rich in organic matter.
- 7.10 Special care to spread and position the upright plant parts. No excess soil shall be backfilled around the transplanted herbs.
- 7.11 Protection fence shall be established around the final receptor site. The on-site construction workers will be notified as to the presence of new plants and unauthorized entry to the fenced receptor site is allowed.
- 7.12 In conclusion, 4 trees within the site of SSWSTW with conservation value will be transplanted to the identified receptor site POSPS.
- 7.13 The transplanting operations shall follow the Section 4 of the “Guidelines on Tree Transplanting” issued by the Greening, Landscape and Tree Management Section of Development Bureau, and the post-planting care of the transplanted tree shall reference to the Section 5 of the same guidelines; and the works shall be undertaken by a Landscaping Specialist Contractor approved by the DEVB and supervised by a Qualified Personnel. Details will be described in Appendix 5.4.

Implementation Programme on the Preservation and Transplantation of Identified Target Species

- 7.14 The schedule of implementation of programme on transplantation depends on the progress of completion of construction of San Shek Wan Sewage Treatment Works and Associated Submarine Outfall and Pui O Sewerage Works. The preservation and transplantation of concerned trees will be carried out before the commencement of major construction works. Detail transplantation proposal is presented in Appendix 5.4.

Table 7.1 - Schedule of implementation of programme

Task	Period / Sequence
Preservation of existing tree	Tentative Q1 of 2022, depend on work progress
Preparation of receptor site	Tentative Q4 of 2022, depend on work progress
Tree transplantation (to nursery site)	Tentative Q1 of 2022, depend on work progress
Tree transplantation (to receptor site)	Tentative Q1 of 2023, depend on work progress
Major construction works	After transplantation to nursery site
Regular Monitoring during establishment period	Tree transplantation and for a period of not less than 12 months

-
- 8.1 Regular watering, weeding and pest control shall be implemented throughout the period at nursery site and during the 12- month post-transplantation maintenance period at final receptor site, the post-transplantation monitoring and maintenance programme is enclosed in Appendix H of Appendix 5.4.
- 8.2 The nursery site, the receptor site and its vicinity shall be kept free from weeds throughout the post-transplantation maintenance period. Any unwanted weeds found shall be removed by the Contractor once identified. Weeding shall be carried out by hand as much as possible. Any removed weeds, litter and debris shall be disposed appropriately by the Contractor.
- 8.3 Supporting shall be erected throughout the period at nursery site and during the 12-month post-transplantation maintenance period at final receptor site.
- 8.4 The Contractor shall regularly check for any insect attack and diseased plant parts of the transplanted trees. Appropriate pest control treatment, including the use of pesticide, and/or removal of diseased plant parts shall be applied if necessary.
- 8.5 Monitoring of the transplanted trees will be undertaken throughout the period at nursery site. The monitoring of tree condition (include but not limited to crown, root, structural condition) and stakes condition will be conducted once per month. To ensure the trees are free from pest, fungal and disease attack, and no damage, deadwood and decay.
- 8.6 Monitoring of the transplanted trees and its supporting will be undertaken throughout the 12-month post-transplantation maintenance period at receptor site. The monitoring will be conducted once per week in the first month and once in each following month in the remaining monitoring period. To ensure the trees are free from pest, fungal and disease attack, and no damage, deadwood and decay. The Contractor shall replace the trees in the event of die-off.
- 8.7 As for reporting of monitoring findings, tree inventory with health condition, photographic record shall be included in monitoring record, submit to ER, IEC and ET.
- 8.8 The following general tree preservation measures shall be implemented to maintain health of the trees to be transplanted on site throughout the construction period.
- 8.9 The transplanted tree shall be fenced off, no unauthorized person can enter the tree protection zone. If there are any emergency event during the maintenance period (e.g. imminent danger as if the transplanted plant species hit people around, damage the properties within the receptor site(s)), the Contractor shall report to ER immediately and provide remediate actions (if necessary).

Provision of Protective Features / Materials

- 8.10 A Tree Protection Zones (TPZ) shall be set up for all existing trees to be transplanted at their original locations as far as possible. The TPZ shall include an area of a perimeter defined by the dripline (the imaginary vertical plumb line that extends downward from the tips of the outermost tree branches and intersects the ground) of the tree. A typical sketch layout of the Tree Protection Zones is shown in Appendix 8.1.
- 8.11 Robust fencing shall be erected around the TPZ of all transplanted trees as far as possible during construction. The typical temporary protective fencing to preserved tree is shown in Appendix 8.2.

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- 8.12 Provide temporary protective plank armoring around the tree trunks to protect the preserved trees if erection of protective fencing is not practicable. The typical temporary protective armoring to preserved tree is shown in Appendix 8.3.
- 8.13 Provide additional protection including laying on top of the temporary protective mulching of double, overlapping, thick metal sheet coverings, wood chips, or other materials to protect from soil compaction due to passage or parking of vehicles or operation of equipment or machinery.
- 8.14 The provision of protective features shall be in place throughout the construction period, in the nursery site and during the establishment period in the receptor site.

Prohibition of Activities within Tree Protection Zones (TPZs)

- 8.15 Prohibition of all construction activities within TPZs. And the TPZs shall be in place throughout the construction period, in the nursery site and during the establishment period in the receptor site.
- 8.16 No passage or parking of vehicles and no operation of equipment or machinery shall take place within the TPZs.
- 8.17 No stripping of surface vegetation or top layer of soil and no paving or earth filling shall be carried out within the TPZs.
- 8.18 No fires shall be lit within the TPZs or in a position where the frames will likely extend to the foliage, branches or trunks of the trees.
- 8.19 No concrete mixing, gas tank filling, paintbrush and toll cleaning, or equipment maintenance shall be carried out within the TPZs.
- 8.20 Align all routes of the overhead services within the site and all access routes to the site or within the site away from the preserved trees as far as possible.
- 8.21 If any works is necessary to be conducted within TPZs, approval from ER shall be obtained.

Site Inspection and Tree Maintenance

- 8.22 Conduct regular site monitoring by qualified personnel to identify any preserved trees suffering from structural defects or having decaying symptoms.
- 8.23 Remove dangerous parts of the trees that may potentially fall down.
- 8.24 Provide routine care including watering and/or pruning.
- 8.25 Remove creepers, parasitic plants and foreign objects (e.g. posters) from the trees.

Impact Monitoring

- 8.26 The recommended good site practices shall be audited at least once every week as part of the site audit programme. The weekly site audit to be carried out by the ET shall include checking whether good site practices are being properly implemented by the Contractor. When non-compliance is found, the relevant Event/ Action Plan shall be implemented (Table 8.1).

- 8.27 The extent of the work site boundaries shall be checked by the ET during the weekly site audit. Any disturbance by the Contractor outside the works area especially any damage to the vegetation and surrounding habitats outside the Project area shall be reported to ER and IEC. ET shall also check and ensure the transplanting trees of any unacceptable construction works.

9 CONCLUSION

In conclusion, four tree found (1 no. of *Aquilaria sinensis* and 3 nos. of *Gmelina chinensis*) within the site of SSWSTW which are considered to be the plant species with conservation importance will be temporarily transplanted to the nursery at Kam Tin by qualified personnel and eventually be transplanted to Pui O Pumping Station. The operations were assessed for the feasibility of survival for the target species after transplantation as well as the operations were approved by client's representative for the need for being temporarily transplanted to the holding nursery at Kam Tin. Monitoring and maintenance of the transplanted trees will be undertaken throughout the period at nursery site and during the 12- month post-transplantation maintenance period at final receptor site.

Table 8.1 – Event and Action Plan for Ecology during Construction Phase

Event	Action				
	ET	IEC	ER	Contractor(s)	
Non-conformity on one occasion	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and ER; 3. Discuss remedial actions with IEC, the ER and the Contractor(s); 4. Monitor/ audit/ review remedial actions until rectification has been completed. 	<ol style="list-style-type: none"> 1. Check monitoring/ auditing results; 2. Check the Contractor(s)'s working method; 3. Discuss with the ET, ER and Contractor(s) on possible remedial measures; 4. Advise the ER on effectiveness of proposed remedial measures; 5. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Notify Contractor(s); 2. Ensure remedial measures are properly implemented; 3. Consider and instruct, if necessary, the Contractor(s) to slow down or to stop all or part of the works in case of serious non-conformity until situation is rectified. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further problem; 2. Amend working methods if needed; 3. Submit proposals for remedial actions to ET, ER and IEC; 4. Rectify damage and implement the agreed remedial actions; 5. As directed by ER, slow down or stop all or part of the works until the situation is rectified. 	
Repeated Non-conformity	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC, ER, EPD, AFCD and other departments as appropriate; 3. Increase monitoring and audit frequency; 4. Discuss remedial actions with the IEC, the ER and the Contractor(s); 5. Monitor/ audit/ review remedial actions until rectification has been completed; 6. If non-conformity stops, cease additional monitoring/ auditing. 	<ol style="list-style-type: none"> 1. Check monitoring/ auditing results; 2. Check the Contractor(s)'s working method; 3. Discuss with the ET, ER and Contractor(s) on possible remedial measures; 4. Supervise the implementation of remedial measures; 5. Advise the ER on effectiveness of proposed remedial measures and keep EPD, AFCD and other departments as appropriate informed. 	<ol style="list-style-type: none"> 1. Notify Contractor(s); 2. Ensure remedial measures are properly implemented; 3. Consider and instruct, if necessary, the Contractor(s) to slow down or to stop all or part of the works in the case of serious non-conformity until situation is rectified. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further problem; 2. Amend working methods if needed; 3. Submit proposals for remedial actions to ET, ER and IEC; 4. Rectify damage and implement the agreed remedial actions; 5. As directed by ER, slow down or stop all or part of the works until the situation is rectified. 	

Notes : ET – Environmental Team, IEC – Independent Environmental Checker; ER – Engineer's Representatives






DC/2020/02

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Preservation and Transplantation Plan for Plant Species of Conservation Importance

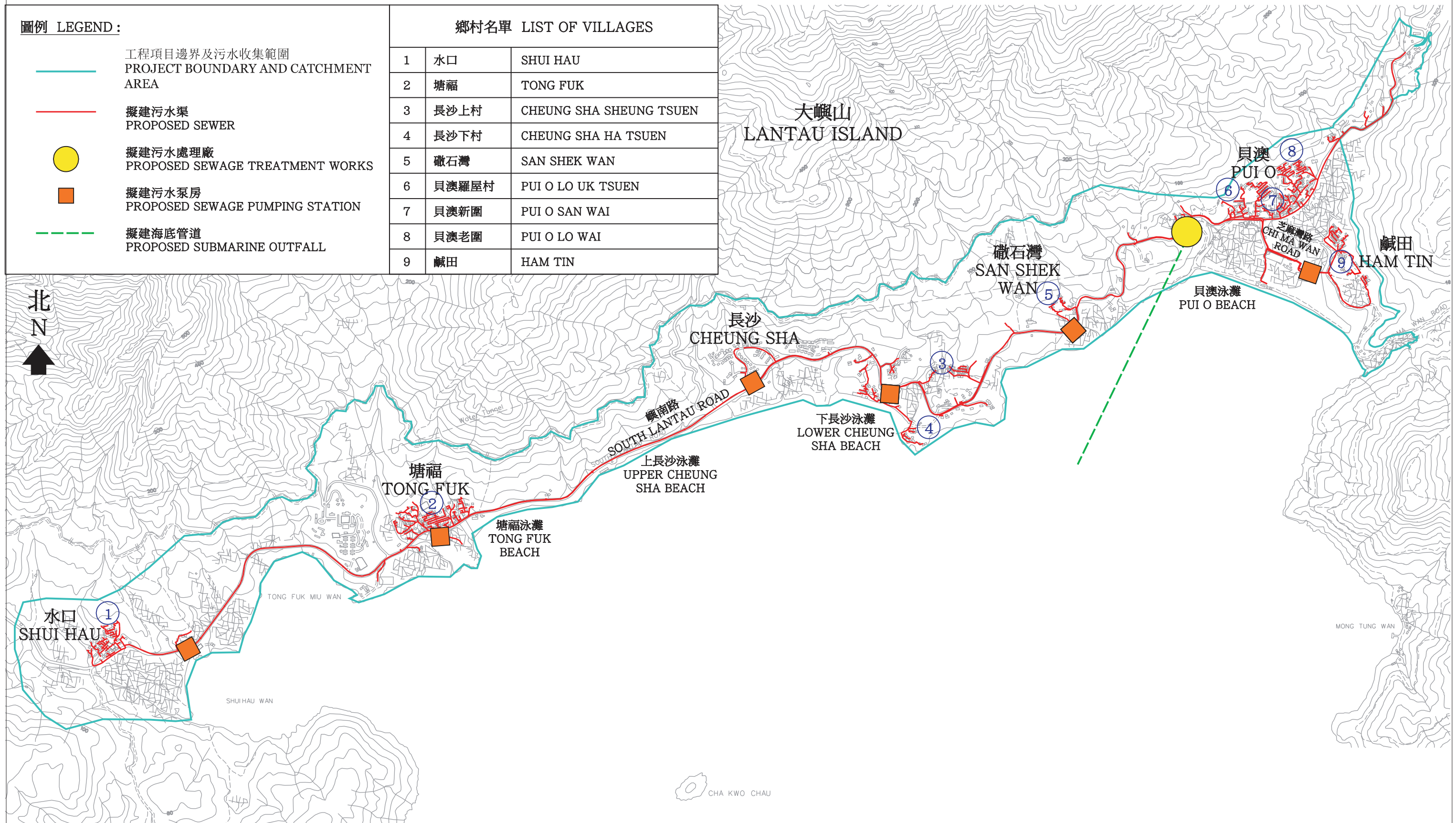
Figure 1.1 - General layout plan

圖例 LEGEND :

-  工程項目邊界及污水收集範圍
PROJECT BOUNDARY AND CATCHMENT AREA
-  擬建污水渠
PROPOSED SEWER
-  擬建污水處理廠
PROPOSED SEWAGE TREATMENT WORKS
-  擬建污水泵房
PROPOSED SEWAGE PUMPING STATION
-  擬建海底管道
PROPOSED SUBMARINE OUTFALL

鄉村名單 LIST OF VILLAGES

1	水口	SHUI HAU
2	塘福	TONG FUK
3	長沙上村	CHEUNG SHA SHEUNG TSUEN
4	長沙下村	CHEUNG SHA HA TSUEN
5	礮石灣	SAN SHEK WAN
6	貝澳羅屋村	PUI O LO UK TSUEN
7	貝澳新圍	PUI O SAN WAI
8	貝澳老圍	PUI O LO WAI
9	鹹田	HAM TIN



Title
Outlying Islands Sewerage Stage 2 –
South Lantau Sewerage – General Layout Plan

OUTLYING ISLANDS SEWERAGE STAGE 2
SOUTH LANTAU SEWERAGE WORKS -
INVESTIGATION

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

Figure no.
Figure 1.1

Prepared KK	Checked JN
Date 29/05/2012	Scale N/A

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

DC/2020/02

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Preservation and Transplantation Plan for Plant Species of Conservation Importance

Figure 1.2 - The layout plans of San Shek Wan Sewage Treatment Works and Pui O Sewerage Works

DC/2020/02

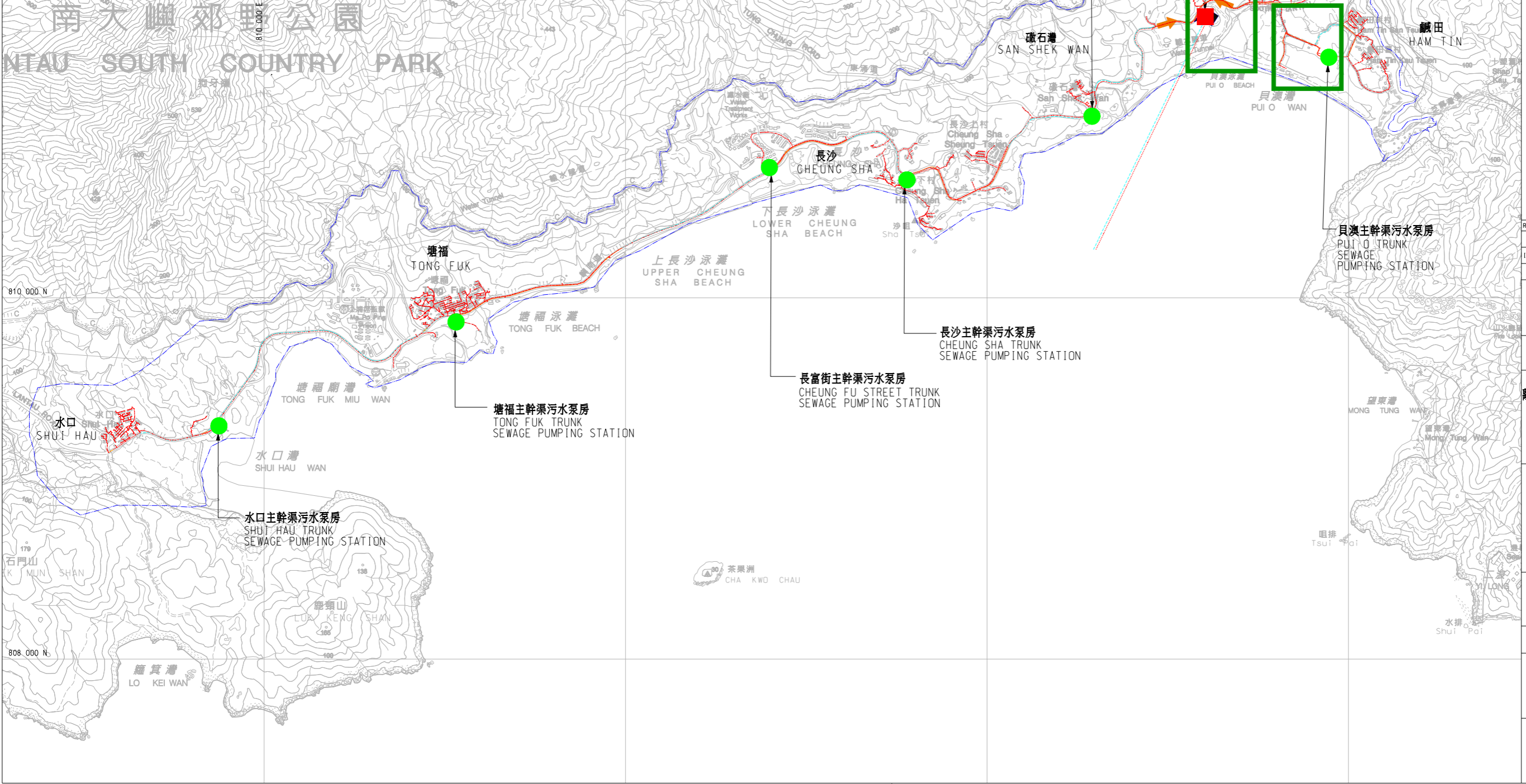
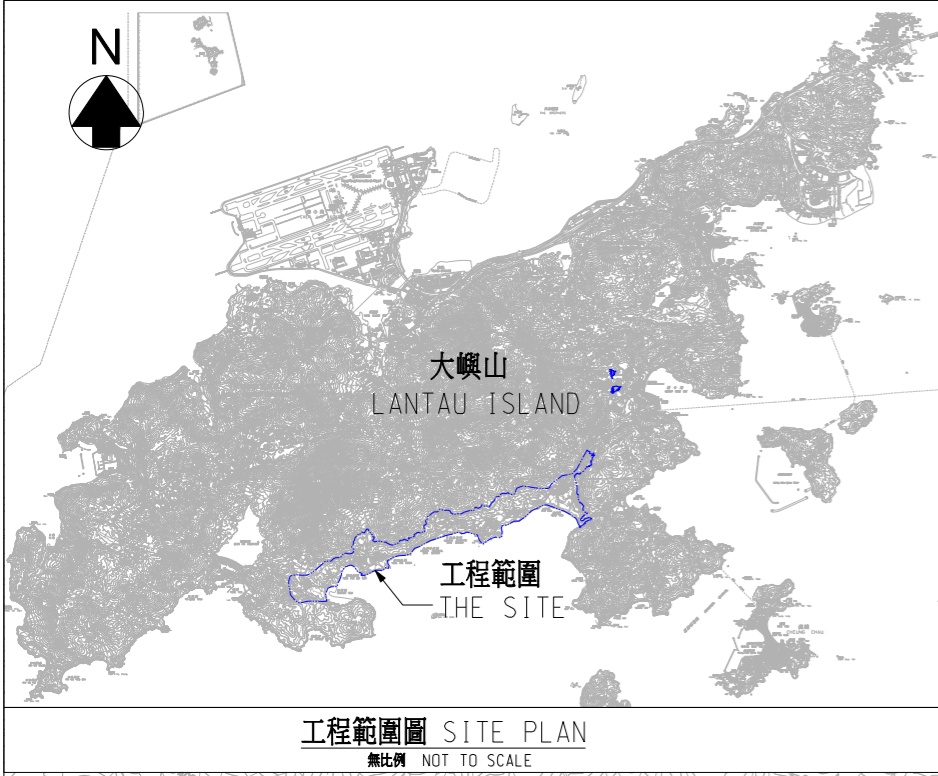
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Preservation and Transplantation Plan for Plant Species of Conservation Importance

Appendix 5.1 - Location of survey of target species

Appendix 5.1 Location of Survey of Target Species

- 圖例:
LEGEND:
- 工程範圍
PROJECT CATCHMENT AREA
 - 污水處理廠
SEWAGE TREATMENT WORKS
 - 主幹渠污水泵房
TRUNK SEWAGE PUMPING STATION
 - 擬建污水渠
PROPOSED SEWER
 - 擬建壓力污水管及海底排水管
PROPOSED RISING MAIN AND SUBMARINE OUTFALL
 - Location of Survey of Target Species



Revision	Date	Description			Initial
Initial	Designed	Checked	Drawn	Checked	
Initial	KN	CSC	SZ	KN	
Date	APR 14	APR 14	APR 14	APR 14	APR 14

批准 Approved

PRELIMINARY

合約編號 Contract no. CE 17/2012 (DS)

工程項目 Contract title
離島污水收集系統第2階段南大嶼山污水收集系統工程及其他工程—設計及建造
OUTLYING ISLANDS SEWERAGE STAGE 2 SOUTH LANTAU SEWERAGE WORKS AND OTHER WORKS - DESIGN AND CONSTRUCTION

圖名 Drawing title
南大嶼山污水工程計劃方案
PROPOSED SEWERAGE SCHEME FOR SOUTH LANTAU

圖則編號 Drawing no.	修訂 Revision
178711/B/SKH/00003	-

比例 Scale 無比例 NOT TO SCALE

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

DC/2020/02

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

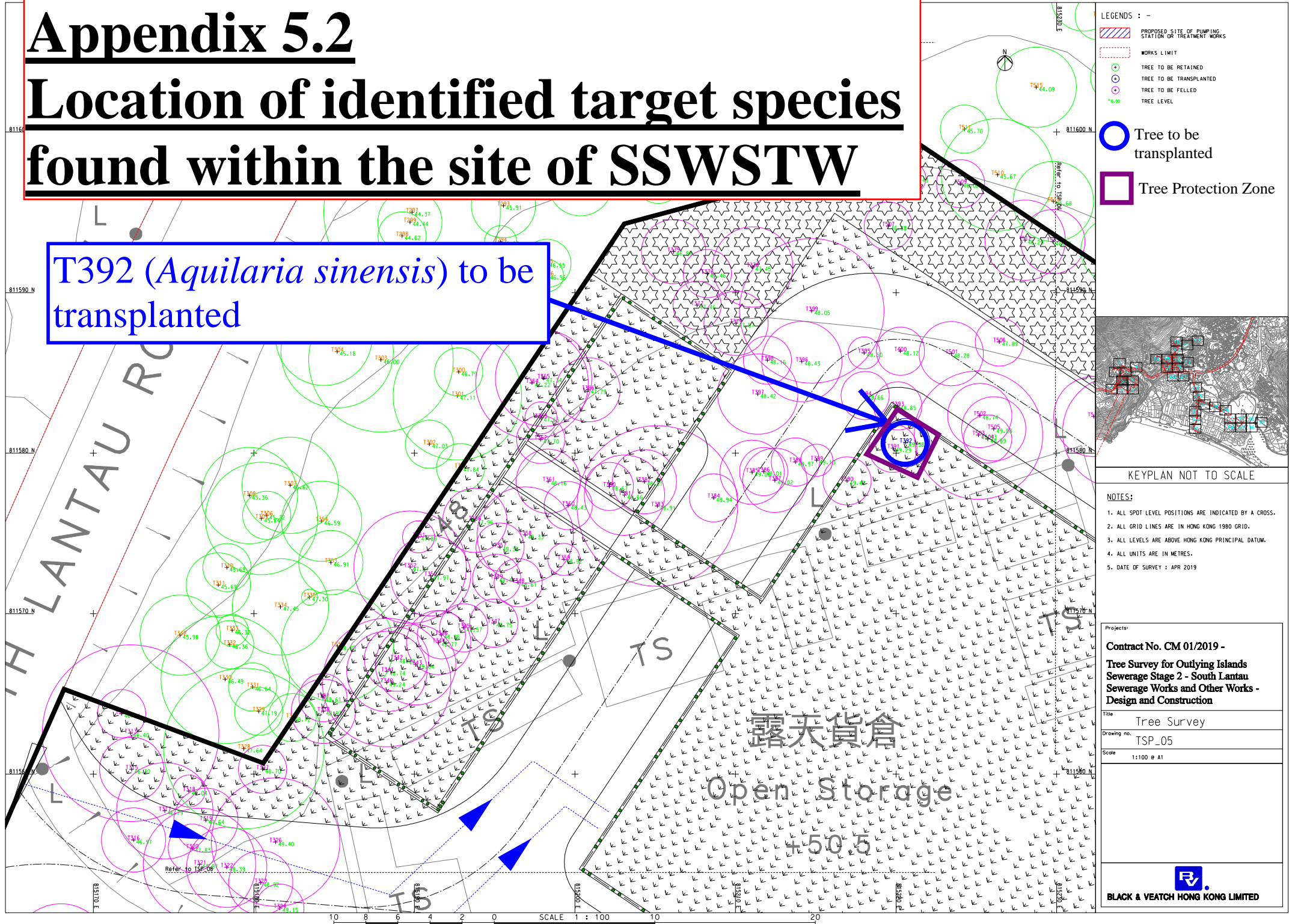
Preservation and Transplantation Plan for Plant Species of Conservation Importance

Appendix 5.2 - Location of identified target species found within the site of SSWSTW

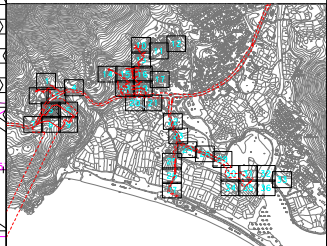
Appendix 5.2

Location of identified target species found within the site of SSWSTW

T392 (*Aquilaria sinensis*) to be transplanted



- LEGENDS : -
- PROPOSED SITE OF PUMPING STATION OR TREATMENT WORKS
 - WORKS LIMIT
 - TREE TO BE RETAINED
 - TREE TO BE TRANSPLANTED
 - TREE TO BE FELLED
 - TREE LEVEL
 - Tree to be transplanted
 - Tree Protection Zone



KEYPLAN NOT TO SCALE

- NOTES:
- ALL SPOT LEVEL POSITIONS ARE INDICATED BY A CROSS.
 - ALL GRID LINES ARE IN HONG KONG 1980 GRID.
 - ALL LEVELS ARE ABOVE HONG KONG PRINCIPAL DATUM.
 - ALL UNITS ARE IN METRES.
 - DATE OF SURVEY : APR 2019

Project: Contract No. CM 01/2019 - Tree Survey for Outlying Islands Sewerage Stage 2 - South Lantau Sewerage Works and Other Works - Design and Construction

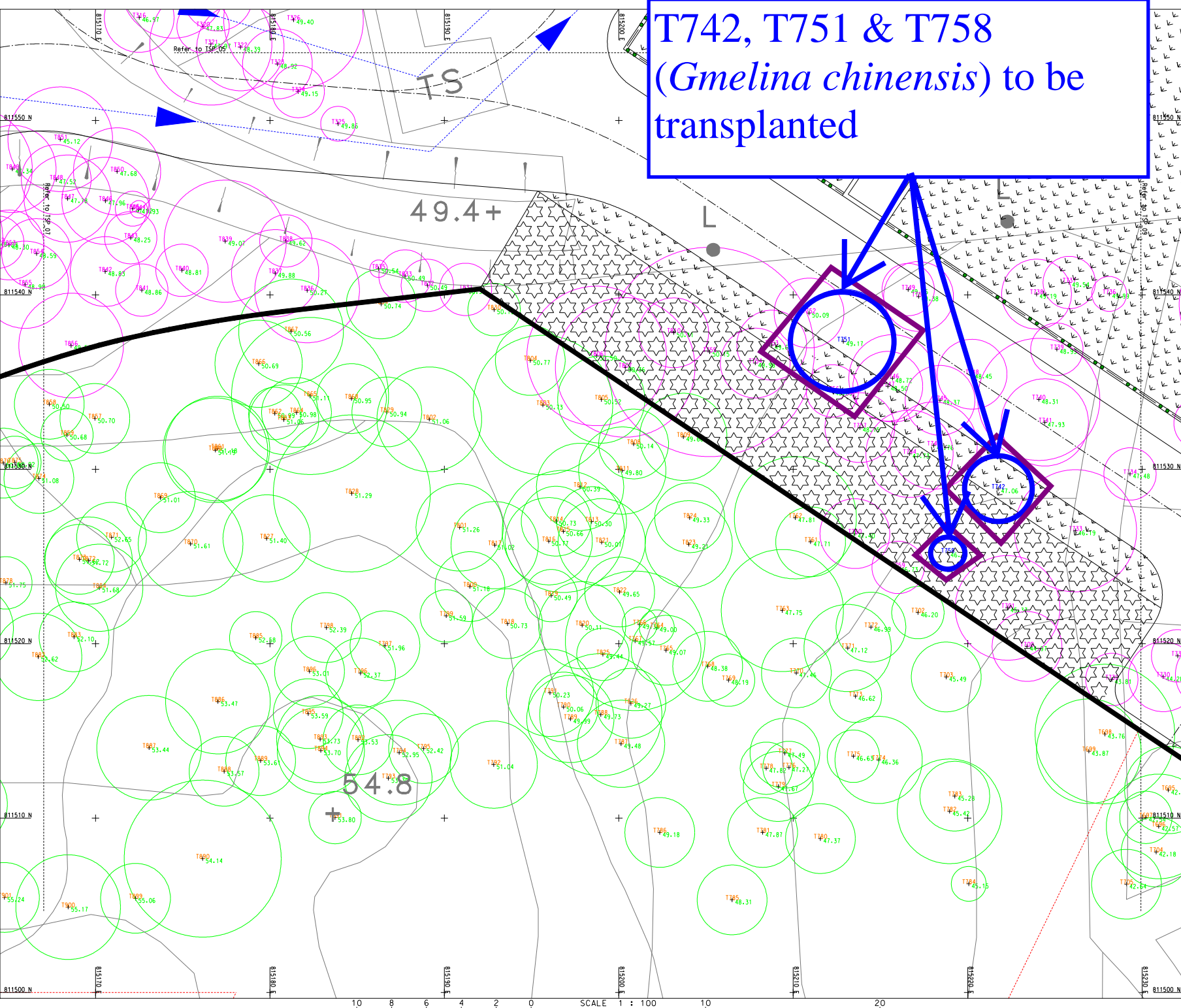
Title: Tree Survey

Drawing no. TSP_05

Scale: 1:100 @ A1

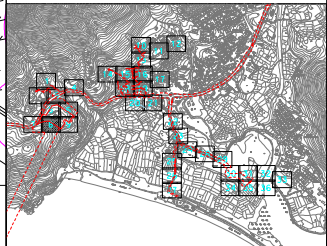
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T742, T751 & T758 (*Gmelina chinensis*) to be transplanted



LEGENDS : -

- PROPOSED SITE OF PUMPING STATION OR TREATMENT WORKS
- WORKS LIMIT
- TREE TO BE RETAINED
- TREE TO BE TRANSPLANTED
- TREE TO BE FELLED
- TREE LEVEL
- Tree to be transplanted
- Tree Protection Zone



- NOTES:**
1. ALL SPOT LEVEL POSITIONS ARE INDICATED BY A CROSS.
 2. ALL GRID LINES ARE IN HONG KONG 1980 GRID.
 3. ALL LEVELS ARE ABOVE HONG KONG PRINCIPAL DATUM.
 4. ALL UNITS ARE IN METRES.
 5. DATE OF SURVEY : APR 2019

Project:
**Contract No. CM 01/2019 -
 Tree Survey for Outlying Islands
 Sewerage Stage 2 - South Lantau
 Sewerage Works and Other Works -
 Design and Construction**

Title: Tree Survey
 Drawing no. TSP_08
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DC/2020/02

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Preservation and Transplantation Plan for Plant Species of Conservation Importance

Appendix 5.3 - Method Statement for Verification Survey in San Shek Wan Sewage Treatment Works (SSWSTW) and their associated access roads

Date: 7 FEB 2022

Method Statement for Verification Survey in San Shek Wan Sewage Treatment Works (SSWSTW) and their associated access roads

1. Introduction

1.1 Background

The Environmental Protection Department (EPD) completed the Outlying Islands Sewerage Master Plan (SMP) Study in 1994 and drew up a SMP for Lantau Island and other outlying islands. The proposed sewerage works for South Lantau were further reviewed in 2008 under the Review of Sewerage Scheme for South Lantau.

According to the Review Study, the proposed sewerage works for South Lantau would serve the unsewered areas of Shui Hau, Tong Fuk, Cheung Sha, San Shek Wan, Pui O and Ham Tin. The above sewerage works, namely Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works, are hereinafter referred to as the Project.

The purpose of the Project is to construct and operate a sewerage system for proper collection, treatment and disposal of the sewage arising from South Lantau, which includes the areas in Shui Hau, Tong Fuk, Cheung Sha, San Shek Wan, Pui O and Ham Tin (Appendix I – Master Layout Plan of South Lantau Sewerage Works)

1.2 Purpose & Nature of the Project

The works under Contract No. DC/2020/02 to be executed under this contract involves:

1. Construction of a secondary sewage treatment works (STW) at San Shek Wan in South Lantau;
2. Construction of a sewage pumping station (SPS) at Pui O;
3. Construction of about 1.4 kilometres (km) of submarine outfall with a diameter of 350 millimetres (mm) for the disposal of treated effluent from the STW at San Shek Wan;
4. Construction of about 4.1 km of gravity sewers with diameters ranging from 150 mm to 375 mm along South Lantau Road and Chi Ma Wan Road and at Pui O Lo Uk;
5. Construction of about 1.2 km of twin rising mains with a diameter of 200 mm along South Lantau Road and Chi Ma Wan Road; and
6. Ancillary works.

Date: 7 FEB 2022

2. Objectives of the Ecological Survey

2.1 According to the approved EIA report (AEIAR-210/2017), an ecological survey was conducted in 2016. Information of the previous survey may be outdated and therefore an updated verification survey on the plant species is required to verify and update the previous findings. The criteria and guidelines for evaluating and assessing ecological impacts as stated in Annexes 8 and 16 of the EIAO TM, guidelines regarding ecological survey / study published by AFCD, EPD and other government departments, and any other relevant guidelines shall be followed (Refer to Section 7).

3. Methodology

3.1 Pursuant to the Clause 2.11 of the EP (EP-538/2017), 'the Permit Holder shall, no later than 3 months before the commencement of construction works at San Shek Wan Sewage Pumping Station (SSWSPS) and San Shek Wan Sewage Treatment Works (SSWSTW) and their associated access roads, deposit 3 hardcopies and 1 electronic copy of a Preservation and/or Transplantation Plan (PTP) for the plant species of conservation importance, including but not limited to *Aquilaria sinensis*, that could be affected by the Project to the Director for approval.' The Plan will cover the following information:

- the target species;
- detailed survey results of each of the target species, including location and quantity;
- location and condition of the identified receptor sites; and
- a detailed implementation programme on the preservation and/or transplantation of each species, including preparation of receptor sites; and
- a detailed post-transplantation monitoring and maintenance programme.

3.2 However, San Shek Wan Sewage Pumping Station (SSWSPS) and its alternative sites are out of DC/2020/02 contract's ambit. The alternative site of the San Shek Wan Sewage Pumping Station is outside the contract area and such assessment would be covered in further review survey in future contracts. The Verification Survey will be confined at San Shek Wan Sewage Treatment Works (SSWSTW) and their associated access roads. For details, please refer to Appendix II – Verification Survey Area, which is demarcated in red in Appendix II.

Date: 7 FEB 2022

- 3.3 The results of verification survey will be adopted in the content of the Preservation and Transplantation Plan (PTP) in accordance to the requirements under EP conditions 2.11.
- 3.4 According to Figure 5.4i in EIA report, the previous survey in Aug 2016 was conducted by Black & Veatch Hong Kong Ltd. The survey results showed that *Aquilaria sinensis* was found at the SSWSTW area. Please refer to Appendix III (extracted from Figure 5.4i in EIA report) summarizing the survey results at SSWSTW.

Table 1 showing the summary table for the previous survey results

Location (s)	Species with conservation interest
SSWSTW	<i>Aquilaria sinensis</i>

Focus will be taken to SSWSTW to confirm the existence of *Aquilaria sinensis* and any other plant species of conservation importance.

- 3.5 The detailed verification survey shall be prepared by a Qualified Personnel and shall be certified by the ET Leader, verified by the IEC and subsequently reviewed by Project Manager's representatives to conform the information and recommendations contained in the approved EIA Report. In view of the above, desktop research, site inspections and detailed verification survey at area demarcated in red in Appendix II will be conducted. The detailed verification survey will start after consent of the of the survey method statement and works programme from Government Representatives (incl. EPD and AFCD) is obtained. For desktop research, desktop review of existing literature will be conducted before conducting the survey to understand if there were any other update records of plant species of conservation importance in the area. The survey will be conducted by onsite inspection to record plant species of conservation importance present in the site boundary SSWSTW, as well as the plant species of conservation importance found during literature review (if any). In addition, any other plant species of conservation importance (e.g. species protected by local legislation, endemic to Hong Kong or South China, listed in international conventions for conservation of habitat/wildlife, listed in IUCN Red Data Book or those of the South China region and considered as rare in the territory or having special conservation importance by scientific studies) encountered during the surveys will also be recorded.

Date: 7 FEB 2022

- 3.6 During the surveys, special attention will be given to the known/ previously recorded plant species of conservation importance and their corresponding habitat types. Active search in the accessible areas will also be carried out to maximize the survey effort. Any identified plant species of conservation importance will be located and mapped on a detailed basemap (1:1000 to 1:5000). Representative photographs of each identified plant species of conservation importance will be taken, and their health condition and suitability for transportation, as well as other useful information (e.g. orientation of each plant and slope gradient, if applicable), will be recorded in detail.
- 3.7 Inspection schedule will be subject to the time at which this Method Statement is finalized and approved. The estimated inspection duration will be a week. Seasonality is not a factor to affect the survey results as the target species is an evergreen plant that could be visually observed during whole year.

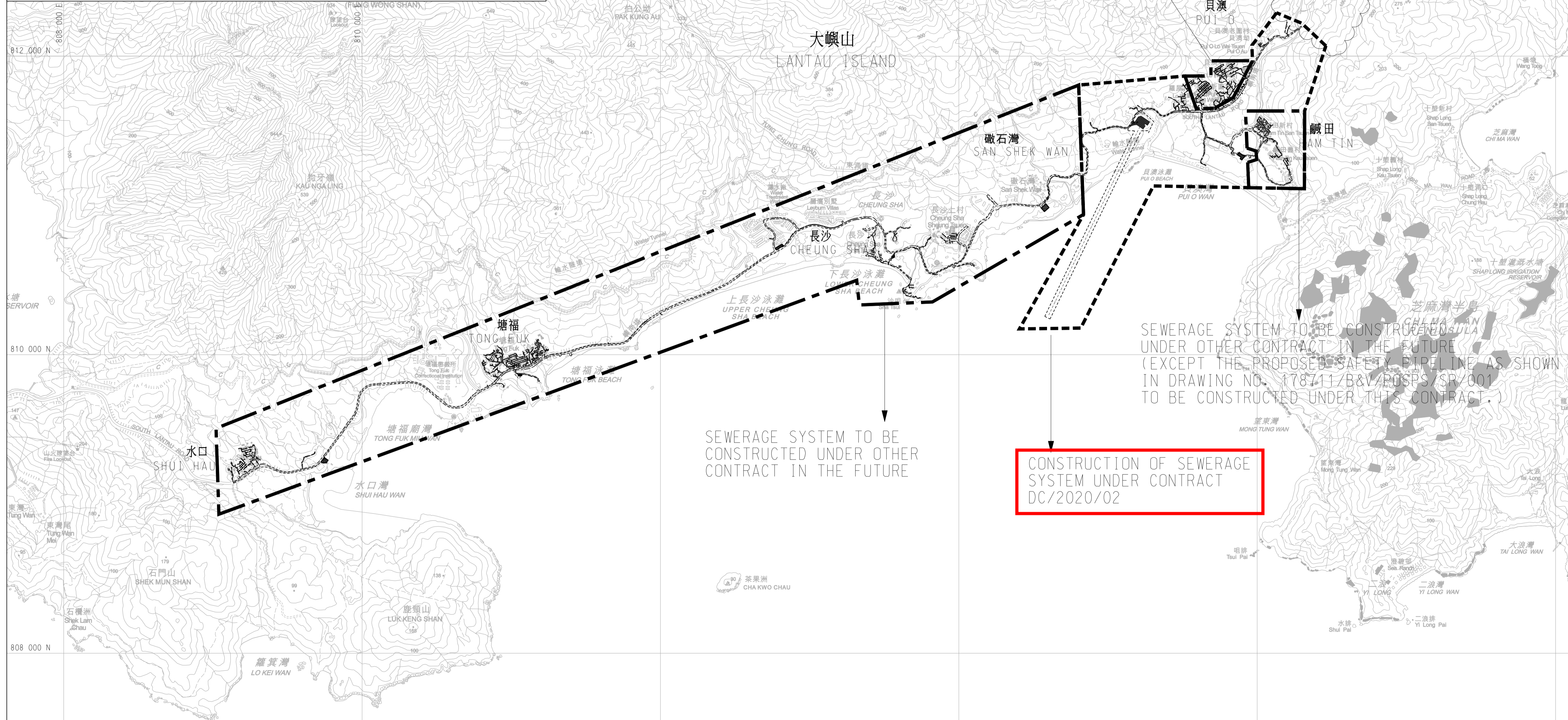
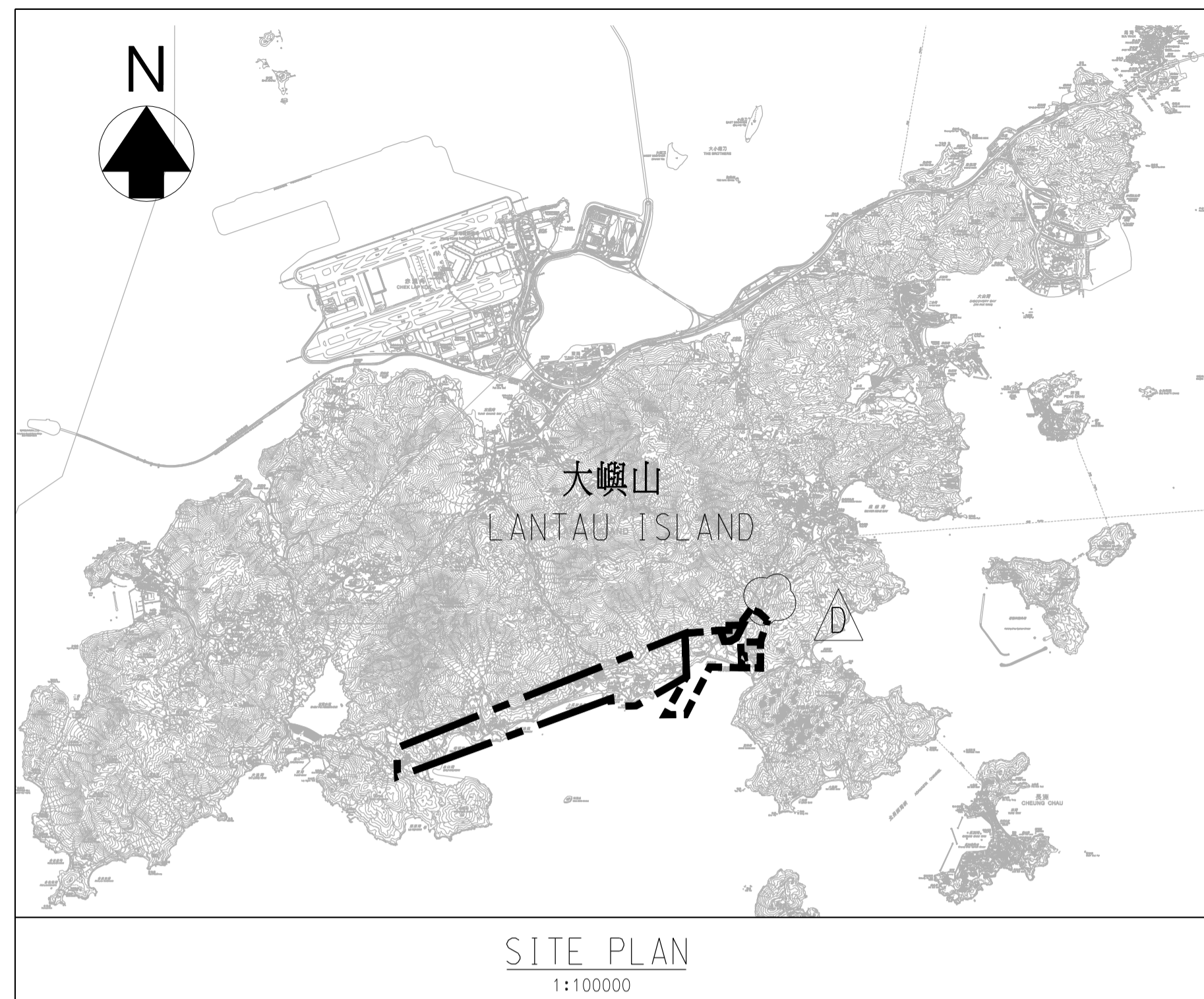
4. Relevant legislative and guidelines

The following relevant legislative and guidelines requirements shall be followed for conducting the plant ecological survey:

- Country Parks Ordinance (Cap 208);
- Forests and Countryside Ordinance (Cap 96);
- Protection of Endangered Species of Animals and Plants Ordinance (Cap 586);
- Hong Kong Planning Standards and Guidelines Chapter 10 (HKPSG); EIAO Guidance Note No. 6/2010, 7/2010, 10/2010 and 11/2010
- United Nations Convention on Biodiversity (1992) and
- IUCN Red List of Threatened Species.

Date: 7 FEB 2022

Appendix I - Master Layout Plan of South Lantau Sewerage Works



Revision	Date	Description	Initial
D	11/20	TENDER ADDENDUM NO.6	BL
C	11/20	TENDER ADDENDUM NO.5	BL
B	11/20	TENDER ADDENDUM NO.4	BL
A	09/20	TENDER ADDENDUM NO.2	TFL
Initial	Designed	Checked	Drawn
	TFL	BL	SZ
Date	04/20	04/20	04/20
Approved	<i>Christina</i>		

Contract no. DC/2020/02

Contract title
CONSTRUCTION OF SAN SHEK WAN SEWAGE TREATMENT WORKS, ASSOCIATED SUBMARINE OUTFALL AND PUI O SEWERAGE WORKS

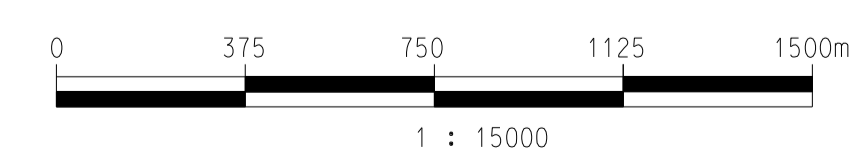
Drawing title
SOUTH LANTAU SEWERAGE WORKS - MASTER LAYOUT PLAN

Drawing no. 178711/B&V/GN/001
Revision D

Scale 1 : 15000

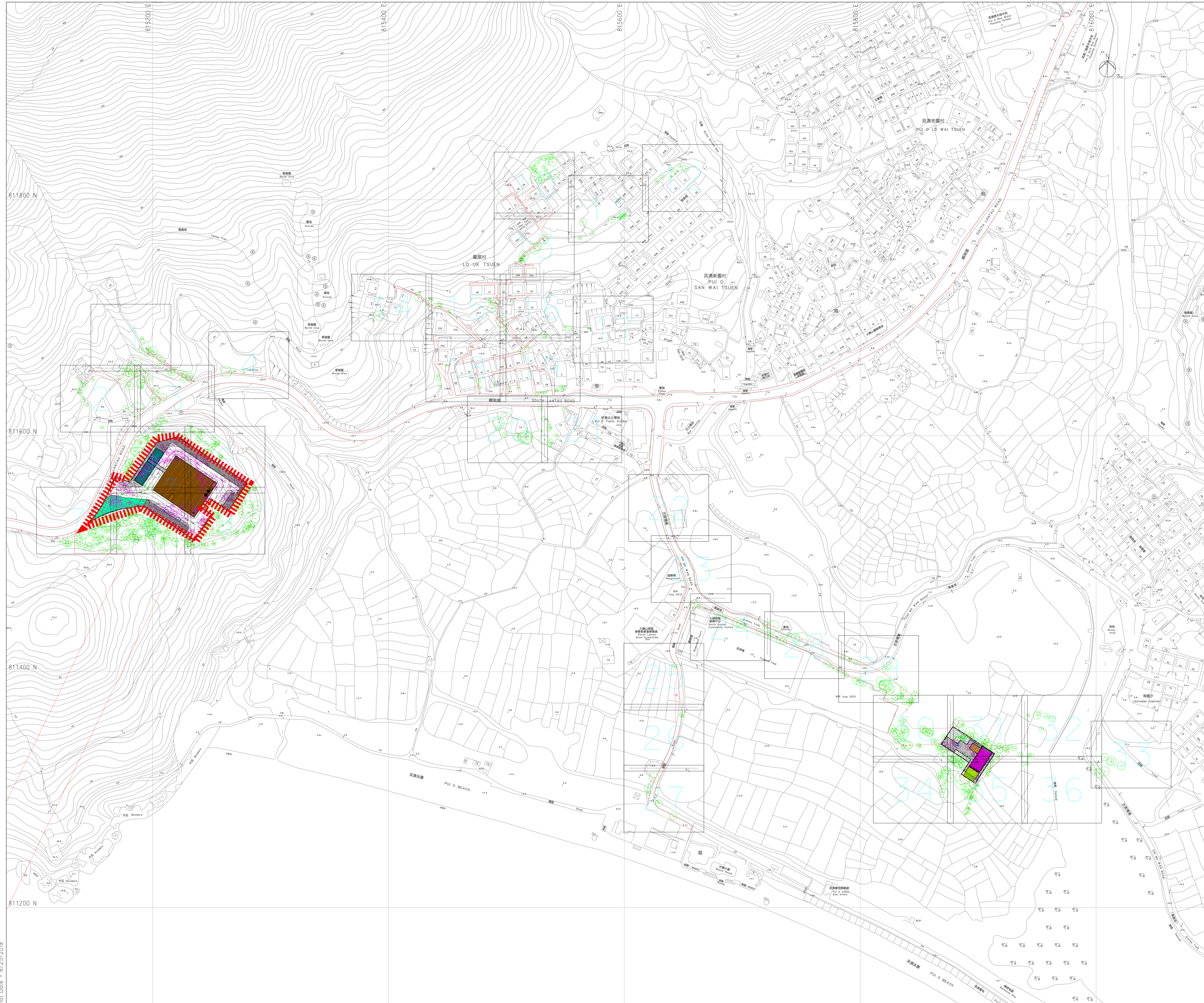
香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

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博威工程顧問有限公司

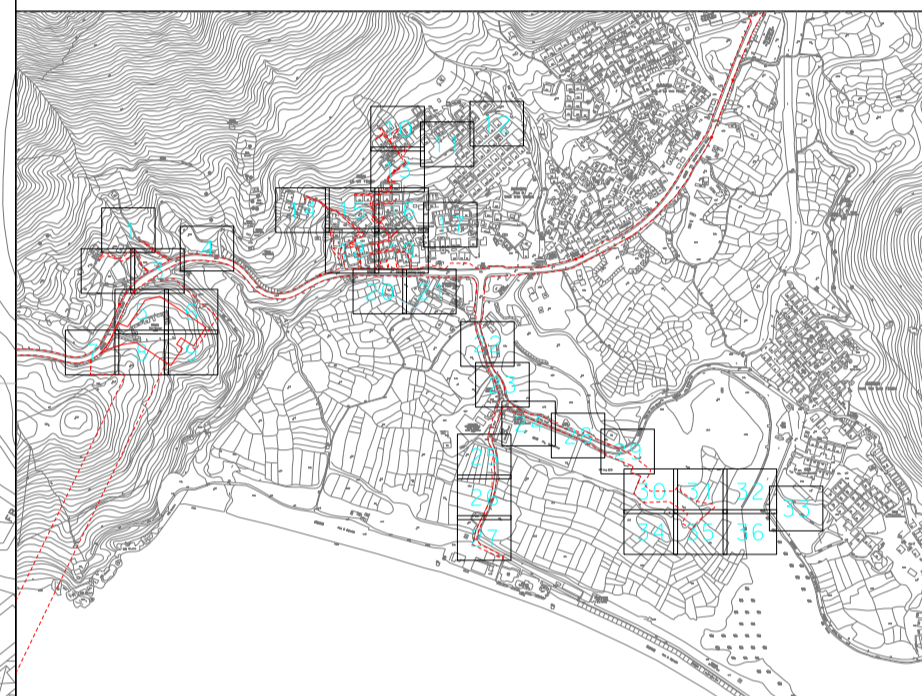


Date: 7 FEB 2022

Appendix II – Verification Survey Area at SSWSTW & their Associated Access Road



- LEGENDS : -
- PROPOSED SITE OF PUMPING STATION OR TREATMENT WORKS
 - WORKS LIMIT
 - TREE TO BE RETAINED
 - TREE TO BE TRANSPLANTED
 - TREE TO BE FELLED
 - TREE LEVEL
 - OPERATION BUILDING OF SAN SHEK WAN SEWAGE TREATMENT WORKS
 - ADMINISTRATION BUILDING OF SAN SHEK WAN SEWAGE TREATMENT WORKS
 - TRANSFORMER ROOM
 - PUI O SEWAGE PUMPING STATION (ABOVE GROUND FACILITIES)
 - PUI O SEWAGE PUMPING STATION (BELOW GROUND FACILITIES)
 - CAR PARKING AREA
 - COMPENSATED MIXED WOODLAND
 - PROPOSED LANDSCAPE AREA
 - BOUNDARY WALL
 - ENTRANCE GATE
 - EMERGENCY VEHICULAR ACCESS



KEYPLAN NOT TO SCALE

- NOTES:
1. ALL SPOT LEVEL POSITIONS ARE INDICATED BY A CROSS.
 2. ALL GRID LINES ARE IN HONG KONG 1980 GRID.
 3. ALL LEVELS ARE ABOVE HONG KONG PRINCIPAL DATUM.
 4. ALL UNITS ARE IN METRES.
 5. DATE OF SURVEY : APR 2019

Verification Survey Area

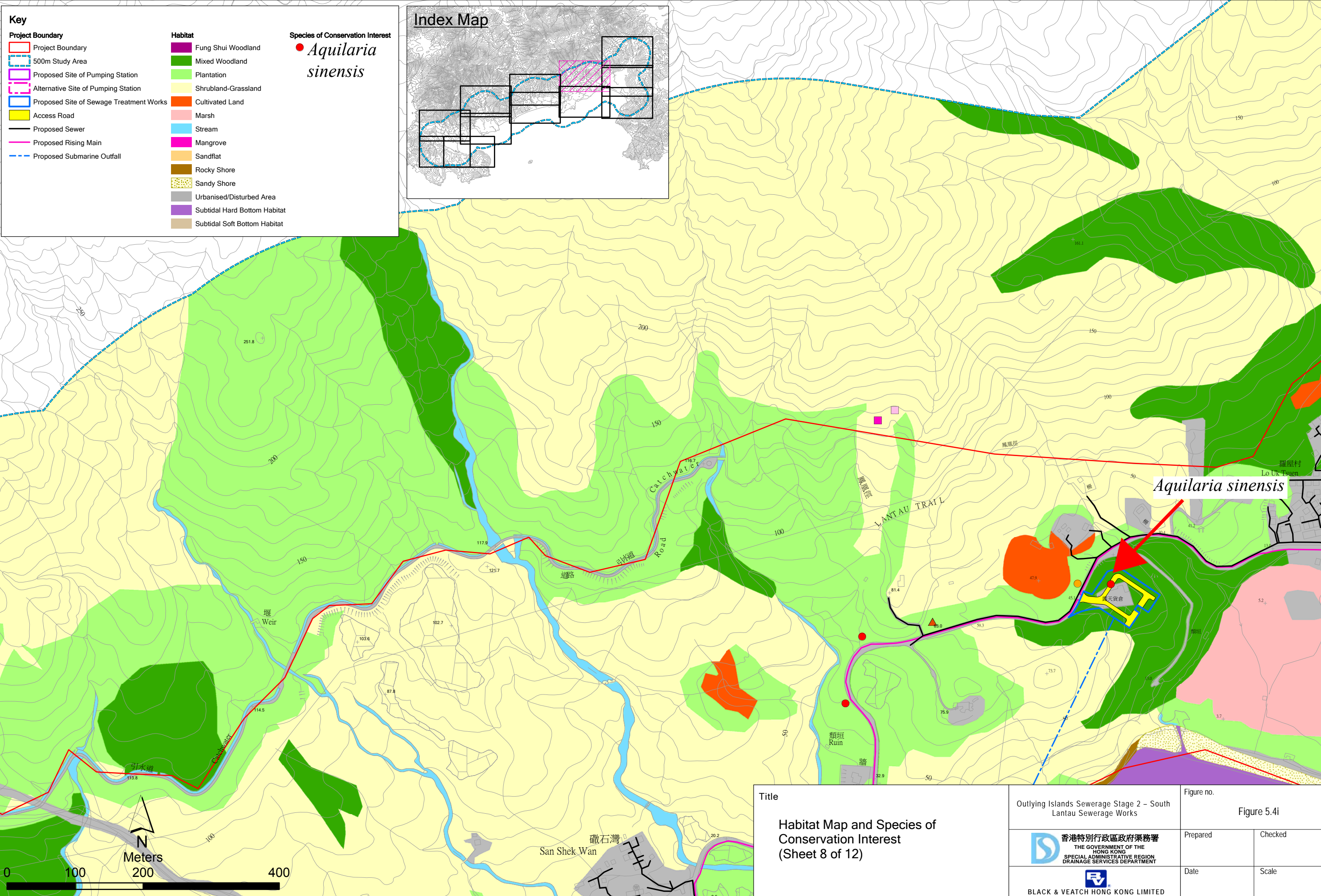
Projects:
Contract No. CM 01/2019 -
Tree Survey for Outlying Islands
Sewerage Stage 2 - South Lantau
Sewerage Works and Other Works -
Design and Construction

Title: Tree Survey
 Drawing no.:
 Scale: 1:1500 @ A1



Date: 7 FEB 2022

Appendix III – Previous Record for Species with Conservation Interest at SSWSTW & their Associated Access Road



Key

Project Boundary		Habitat		Species of Conservation Interest	
[Red Solid Line]	Project Boundary	[Dark Green]	Fung Shui Woodland	[Red Dot]	<i>Aquilaria sinensis</i>
[Blue Dashed Line]	500m Study Area	[Medium Green]	Mixed Woodland		
[Purple Dashed Line]	Proposed Site of Pumping Station	[Light Green]	Plantation		
[Pink Dashed Line]	Alternative Site of Pumping Station	[Yellow-Green]	Shrubland-Grassland		
[Blue Solid Line]	Proposed Site of Sewage Treatment Works	[Orange]	Cultivated Land		
[Yellow Solid Line]	Access Road	[Pink]	Marsh		
[Black Solid Line]	Proposed Sewer	[Blue]	Stream		
[Magenta Solid Line]	Proposed Rising Main	[Magenta]	Mangrove		
[Blue Dashed Line]	Proposed Submarine Outfall	[Tan]	Sandflat		
		[Brown]	Rocky Shore		
		[Dotted Pattern]	Sandy Shore		
		[Grey]	Urbanised/Disturbed Area		
		[Purple]	Subtidal Hard Bottom Habitat		
		[Light Purple]	Subtidal Soft Bottom Habitat		

<p>Title</p> <p>Habitat Map and Species of Conservation Interest</p> <p>(Sheet 8 of 12)</p>	<p>Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works</p>		<p>Figure no.</p> <p>Figure 5.4i</p>	
	<p> 香港特別行政區政府渠務署 THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT</p>		Prepared	Checked
	<p> BLACK & VEATCH HONG KONG LIMITED</p>		Date	Scale

DC/2020/02

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Preservation and Transplantation Plan for Plant Species of Conservation Importance

Appendix 5.4 - Verification Survey Report and Transplantation Proposal submitted by Qualified Personnel

Contract No. DC/2020/02

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Verification Survey Report and Transplantation Proposal


Revision	2	
Date of issue	4 July 2022	
Prepared by	Rachel Siu Qualified Personnel	

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1.	INTRODUCTION	2
1.1	Background.....	2
1.2	Purpose & Nature of the Project	2
2.	OBJECTIVES OF VERIFICATION SURVEY	3
3.	BASELINE INFORMATION	5
3.1	FINDINGS IN EIA REPORT (AEIAR-210/2017)	5
4.	SURVEY METHODOLOGY	6
4.1	SURVEY PERIOD	6
4.2	SURVEY METHODOLOGY	6
5.	SURVEY RESULTS.....	7
5.1	SURVEY FINDINGS.....	7
6.	RECOMMENDATIONS	10
7.	CONCLUSION	11
8.	REFERENCES	12

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Table 1	Details of flora species of conservation importance identified
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LIST OF APPENDICES

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Appendix B	Habitat Map and Species of Conservation Importance at in EIA Report (AEIAR-210/2017)
Appendix C	Location of the <i>Aquilaria sinensis</i> and <i>Gmelina chinensis</i> at San Shek Wan Sewage Treatment Works Area and Associated Roads
Appendix D	Site photos of San Shek Wan Sewage Treatment Works Area and Associated Roads and Photographic Records of the identified <i>Aquilaria sinensis</i> and <i>Gmelina chinensis</i>
Appendix E	Location Plan of Temporary Nursery Site
Appendix F	Location Plan and Site Photos of Final Receptor Site
Appendix G	Detailed Implementation Programme for Tree Transplanting
Appendix H	The Post-transplanting Maintenance Programme

1. INTRODUCTION

1.1 Background

1.1.1. The Environmental Protection Department (EPD) completed the Outlying Islands Sewerage Master Plan (SMP) Study in 1994 and drew up a SMP for Lantau Island and other outlying islands. The proposed sewerage works for South Lantau were further reviewed in 2008 under the Review of Sewerage Scheme for South Lantau.

1.1.2. According to the Review Study, the proposed sewerage works for South Lantau would serve the unsewered areas of Shui Hau, Tong Fuk, Cheung Sha, San Shek Wan, Pui O and Ham Tin. The above sewerage works, namely Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works, are hereinafter referred to as the Project.

1.1.3. The purpose of the Project is to construct and operate a sewerage system for proper collection, treatment and disposal of the sewage arising from South Lantau, which includes the areas in Shui Hau, Tong Fuk, Cheung Sha, San Shek Wan, Pui O and Ham Tin (Appendix A – Project Boundary).

1.2 Purpose & Nature of the Project

1.2.1 The works under Contract No. DC/2020/02 to be executed involves:

1. Construction of a secondary sewage treatment works (STW) at San Shek Wan in South Lantau;
2. Construction of a sewage pumping station (SPS) at Pui O;
3. Construction of about 1.4 kilometres (km) of submarine outfall with a diameter of 350 millimetres (mm) for the disposal of treated effluent from the STW at San Shek Wan;
4. Construction of about 4.1 km of gravity sewers with diameters ranging from 150 mm to 375 mm along South Lantau Road and Chi Ma Wan Road and at Pui O Lo Uk;
5. Construction of about 1.2 km of twin rising mains with a diameter of 200 mm along South Lantau Road and Chi Ma Wan Road; and
6. Ancillary works.

2. OBJECTIVES OF VERIFICATION SURVEY

- 2.1 According to the approved EIA report (AEIAR-210/2017), an ecological survey was conducted in 2016. Information of the previous survey may be outdated and therefore an updated verification survey on the plant species is required to verify and update the previous findings. The criteria and guidelines for evaluating and assessing ecological impacts as stated in Annexes 8 and 16 of the EIAO TM, guidelines regarding ecological survey / study published by AFCD, EPD and other government departments, and any other relevant guidelines shall be followed (Refer to Section 8).
- 2.2 Pursuant to the Clause 2.11 of the EP (EP-538/2017), 'the Permit Holder shall, no later than 3 months before the commencement of construction works at San Shek Wan Sewage Pumping Station (SSWSPS) and San Shek Wan Sewage Treatment Works area (SSWSTW) and their associated access roads, deposit 3 hardcopies and 1 electronic copy of a Preservation and/or Transplantation Plan (PTP) for the plant species of conservation importance, including but not limited to *Aquilaria sinensis*, that could be affected by the Project to the Director for approval.' The Plan will cover the following information:
- the target species;
 - detailed survey results of each of the target species, including location and quantity;
 - location and condition of the identified receptor sites; and
 - a detailed implementation programme on the preservation and/or transplantation of each species, including preparation of receptor sites; and
 - a detailed post-transplantation monitoring and maintenance programme.
- 2.3 However, San Shek Wan Sewage Pumping Station (SSWSPS) and its alternative sites are out of DC/2020/02 contract's ambit. The alternative site of the San Shek Wan Sewage Pumping Station is outside the contract area and such assessment would be covered in further review survey in future contracts. The Verification Survey will be confined at San Shek Wan Sewage Treatment Works area (SSWSTW) and their associated access roads. For details, please refer to Appendix II – Verification Survey Area, which is demarcated in red in Appendix II.

2.4 The results of verification survey will be adopted in the content of the Preservation and Transplantation Plan (PTP) in accordance to the requirements under EP conditions 2.11.

2.5 Structure of this Report

2.5.1 This Report is divided into 6 sections as follow:

Section 1 outlines an introduction to the project outline.

Section 2 outlines objectives and EP requirements regarding this Report.

Section 3 presents the baseline finding of the approved EIA Report

Section 4 presents survey methodology

Section 5 provides results of verification survey

Section 5 presents recommendation and evaluates the suitability and/or practicality of the transplantation

Section 6 provides the details of Transplantation Proposal

Section 7 concludes the Verification Survey and Transplantation Proposal

Section 8 lists the appendices as supporting information

3. BASELINE INFORMATION

3.1 FINDINGS IN EIA REPORT (AEIAR-210/2017)

According to paragraph 5.3.3 in EIA report, Shek Wan Sewage Treatment Works area was defined as an urbanized/ disturbed area and mixed woodland. There was species with conservation significance and protected species recorded at San Shek Wan Sewage Treatment Works area (SSWSTW) and their associated access roads. In figure 5.4i in EIA report, the previous survey in Aug 2016 was conducted by Black & Veatch Hong Kong Ltd. As the EIA was conducted in 2016, the project boundary was slightly adjusted that the results in verification survey may be different from the results mentioned in EIA.

3.1.1 A total of 1 no. of Incense Tree (*Aquilaria sinensis*) in form of tree was recorded at SSWSTW in the EIA report.

3.1.2 Table 1 showing the summary table for the previous survey results

Location (s)	Species with conservation importance	Quantity
San Shek Wan Sewage Treatment Works area (SSWSTW) and their associated access roads	<i>Aquilaria sinensis</i> (Tree)	1

3.1.3 Focus will be taken to SSWSTW and their associated access roads to confirm the existence and the quantity of *Aquilaria sinensis* and any other plant species of conservation importance.

4. SURVEY METHODOLOGY

4.1 SURVEY PERIOD

A vegetation survey was conducted on 2 February 2022 by Qualified Personnel within San Shek Wan Sewage Treatment Works area (SSWSTW) and their associated access roads.

4.2 SURVEY METHODOLOGY

4.2.1 A verification survey was conducted by actively searching for individuals of *Aquilaria sinensis* and any other flora species of conservation importance within the location. The verification survey was carried out by Ms Siu Ting Fung Rachel, who has more than 5 years relevant experience in detailed vegetation/ecological survey. She was the approved Qualified Personnel under EP in October 2021.

4.2.2 The quantity, locations and condition of *Aquilaria sinensis* identified were recorded. Should other flora species of conservation importance be encountered during the survey, their number, locations and condition were also recorded.

4.2.3 The health condition (good/fair/poor) and size (height and crown spread) of all identified plant individuals has been recorded, and their suitability for transplanting has been evaluated on-site with the following criteria:

- Health – with regard to the foliage density, leaf size and color, presence and severity of pest and disease, presence of severity of structural defect, and only those plants in fair or good condition would be expected to recover from the transplanting shock
- Size – the extensiveness of the root system would expect to be proportional to the plant size, and loss of root mass and hence plant vigor during rootball preparation/transplanting would expect to be more severe for mature and plant of larger size. A larger root ball should be prepared for large trees to enhance better recovery after transplanting if site condition allows.
- Local environment - the immediate environment (such as the local gradient, presence of man-made structure, bedrock or other tree) of the plant may limit the size and shape of the rootball that could be formed during rootball

formation, and hence the chance of recovery from transplanting shock.

5. SURVEY RESULTS

5.1 SURVEY FINDINGS

5.1.1 Aquilaria sinensis and Gmelina chinensis

5.1.1.1 **ONE** *Aquilaria sinensis* in form of tree was surveyed. The tree was T392 and was recorded and surveyed in an approved Tree Preservation and Removal Proposal (TPRP) of the contract DC/2020/02. Details such as size, health, structural condition, etc. of the identified *Aquilaria sinensis* are listed in Table 1. The location and photographic records of the *Aquilaria sinensis* and *Gmelina chinensis* are shown in **Appendix C and D**

Incense Tree (*Aquilaria sinensis*) is a common tree in Hong Kong but is listed in Protection of Endangered Species of Animals and Plants Ordinance (Cap 586). It is also listed as a Category II protected plant in China, in the List of Wild Plants under State Protection and is listed as ‘vulnerable’ by both the China Plant Red Data Book and by IUCN (2018).

5.1.2 Other flora species of conservation importance

5.1.1.2 Within the SSWSTW area and their associated roads, apart from *Aquilaria sinensis*, **THREE** *Gmelina chinensis* in form of tree were also surveyed. These trees were T742, T751 and T758 recorded in TPRP of the contract DC/2020/02. Details such as size, health, structural condition, etc. of the identified *Gmelina chinensis* are listed in Table 1. The location and photographic records of the *Gmelina chinensis* are shown in **Appendix C and D**.

Gmelina chinensis is rare and precious plant according to Agriculture, Fisheries and Conservation Department Publication – ‘Rare and Precious Plants of Hong Kong’ (2004), as ‘vulnerable’ recorded in “Illustration of Rare & endangered plant in Guangdong Province” and ‘least concern’ in IUCN (2019).

Table 1 Details of flora species of conservation importance identified

No.	Location^	Co-ordinate	Habitat type	Botanical name	Trunk Diameter (mm)	Height (m)	Crown Spread (m)	Health Condition (Good/Fair/Poor)	Structural Condition (Good/Fair/Poor)	Survival rate after transplanting (High/Medium/Low)	Feasibility of transplantation
T392	San Shek Wan Sewage Treatment Works area and their associated access roads	811580.656N 815220.607E	Urbanized /Mixed Woodland	<i>Aquilaria sinensis</i>	150	8	3	Fair	Fair	Low	1. Located on slope
T742	San Shek Wan Sewage Treatment Works area and their associated access roads	811528.882N 815221.746E	Urbanized /Mixed Woodland	<i>Gmelina chinensis</i>	189	7	4	Fair	Fair	Low	1. Located on slope; 2. Tree with poor form for transplantation.

No.	Location [^]	Co-ordinate	Habitat type	Botanical name	Trunk Diameter (mm)	Height (m)	Crown Spread (m)	Health Condition (Good/Fair/Poor)	Structural Condition (Good/Fair/Poor)	Survival rate after transplanting (High/Medium/Low)	Feasibility of transplantation
T751	San Shek Wan Sewage Treatment Works area and their associated access roads	811537.327N 815212.871E	Urbanized /Mixed Woodland	<i>Gmelina chinensis</i>	178	8	6	Fair	Fair	Low	1. Located on slope
T758	San Shek Wan Sewage Treatment Works area and their associated access roads	811525.214N 815218.853E	Urbanized /Mixed Woodland	<i>Gmelina chinensis</i>	105	3	2	Fair	Poor	Low	1. Located on slope; 2. Tree with poor and structural form for transplantation.

[^] A: Within works area

6. RECOMMENDATIONS

- 6.1 An *Aquilaria sinensis* (T392) and three *Gmelina chinensis* (T742, T751 and T758) were recorded within the SSWSTW area and their associated roads during the verification survey.
- 6.2 The treatment recommendation for T392, T742, T751 and T758 was given and approved in the Tree Preservation and Removal Proposal (TPRP). The trees will be transplanted to a temporary nursery site at Kam Tin (Appendix E) and then be transplanted to final receptor site after completion of construction of Pui O Sewage Pumping Station according to the proposed location in approved TPRP (Appendix F). Regular monitoring of T392, T742, T751 and T758 throughout the construction phase is proposed.
- 6.3 To enhance the survival rate after transplant, the transplanting operations should follow the Section 4 of the “Guidelines on Tree Transplanting” issued by the Greening, Landscape and Tree Management Section of Development Bureau, and the post-planting care of the transplanted trees should make reference to the Section 5 of the same guidelines; and the works should be undertaken by a Landscaping Specialist Contractor approved by the DEVB and supervised by a Qualified Personnel. The transplanting operations of T392, T742, T751 and T758 will be also conducted in accordance to the approved Method Statement. The root ball will be wrapped intact to the temporary nursery followed by establishment works and regular monitoring as stated in post-transplanting maintenance programme. Detailed Implementation Programme for Tree Transplanting is included in Appendix G.
- 6.4 Upon completion of transplanting works, an establishment period of at least 12 months is recommended. The post-transplanting maintenance programme is included in Appendix H.

7. CONCLUSION

- 7.1 In the verification survey in 2 Feb 2022, an *Aquilaria sinensis* (T392) and three *Gmelina chinensis* (T742, T751 and T758) in form of tree were recorded within the SSWSTW area and their associated roads during the verification survey. Since direct impact on due to the Project is anticipated, recommendation of transplantation of the *Aquilaria sinensis* and *Gmelina chinensis* as recorded in the approved TPRP to a temporary nursery until the construction of permanent receptor site (Pui O Sewage Pumping Station) is complete. Regular post-transplantation monitoring and maintenance on monthly basis stipulated in PS 3.80S and Appendix H to monitor overall tree condition and/or proposed remedial operation(s) (if any) for the *Aquilaria sinensis* and *Gmelina chinensis* throughout the construction phase is proposed.

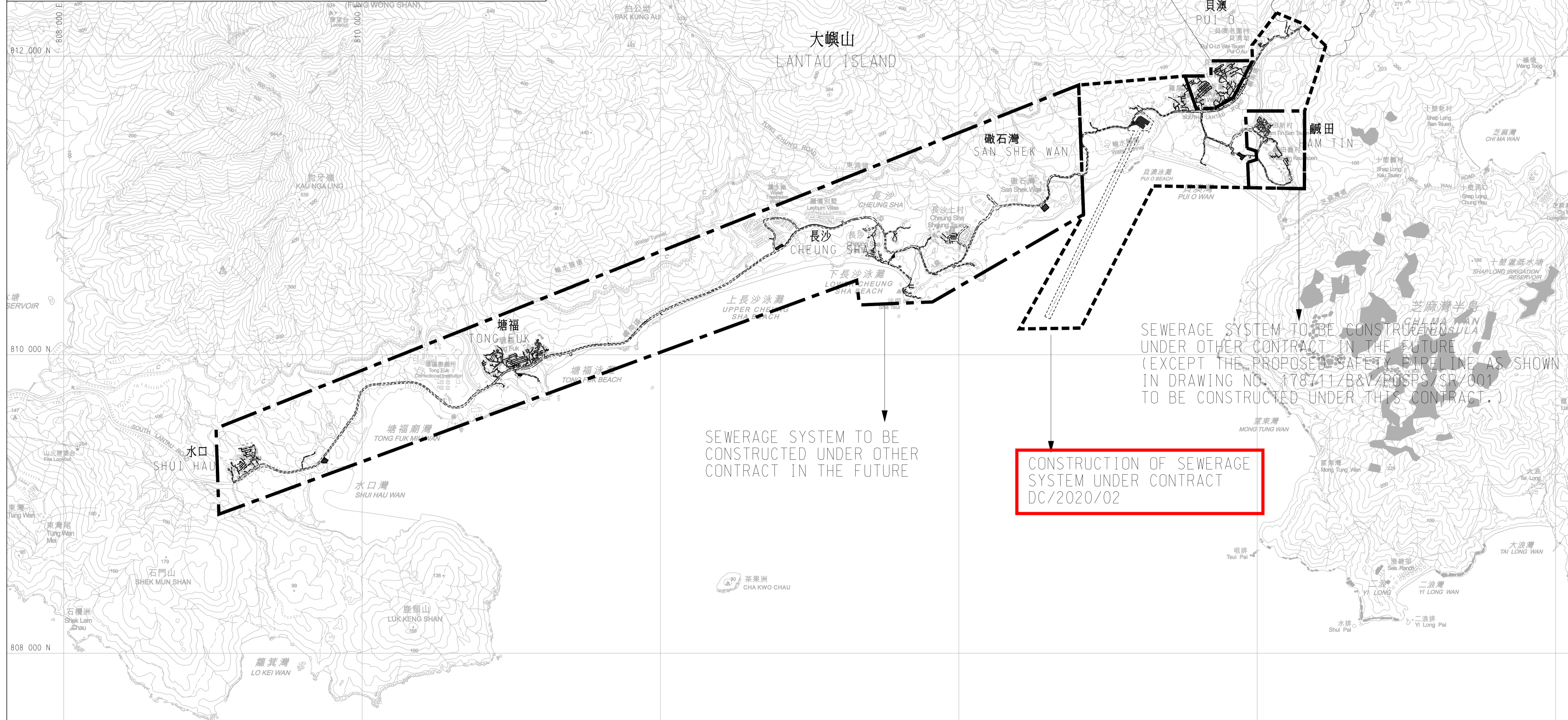
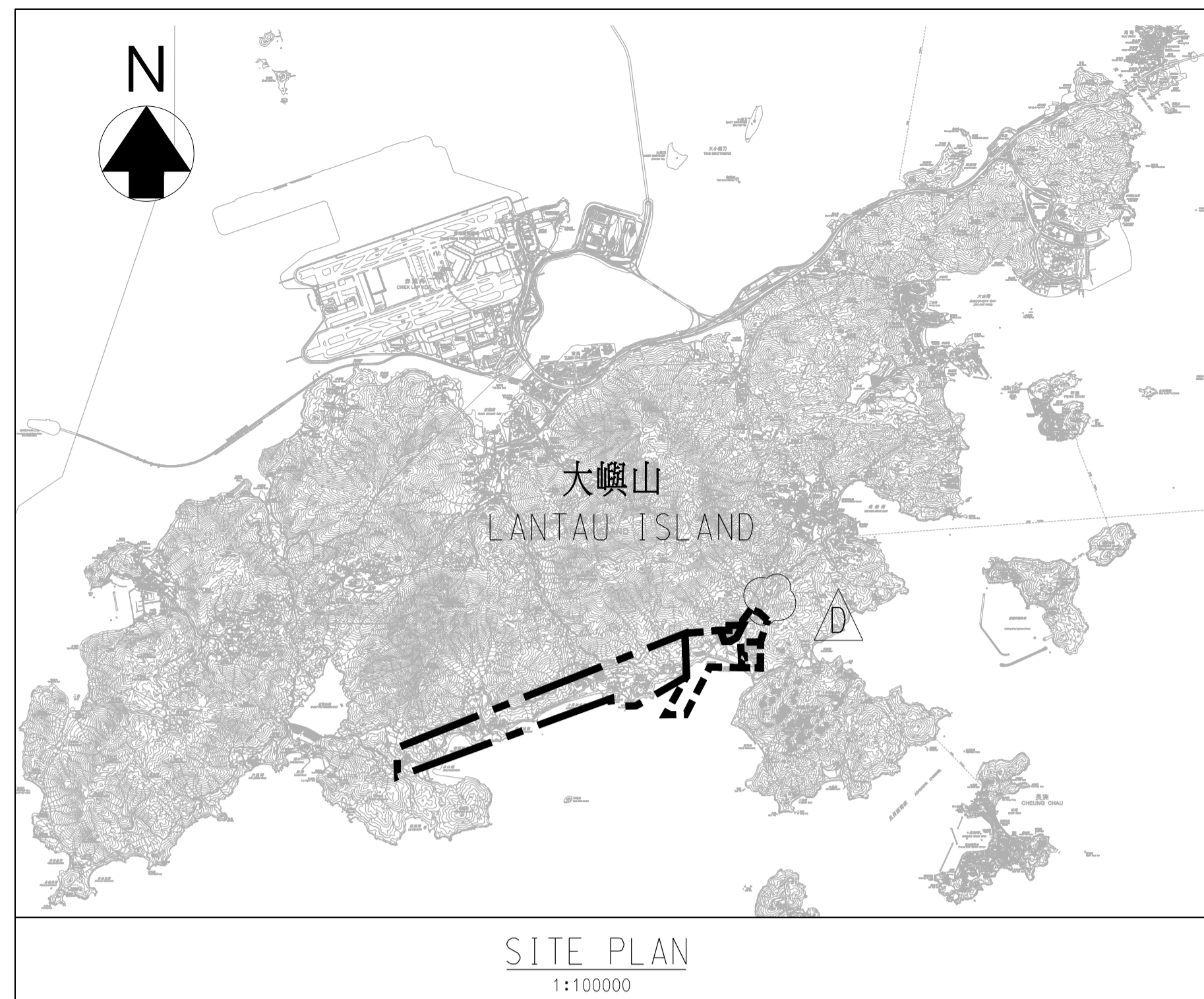
8. REFERENCES

This verification survey has made reference to the following documents/website:

- The approved EIA report and the associated EM&A Manual for development of Outlying Islands Sewerage Stage 2 –South Lantau Sewerage Works (AEIAR-210/2017)
- The Environmental Permit (EP-538/2017)
- Layout plans of the Contract No. CM 01/2019 – Tree Survey for Outlying Islands Sewerage Stage 2- South Lantau Sewerage Works and Other Works – Design and Construction
- CEDD’s General Specification
- ANSI A300 - Trees, Shrub, and Other Woody Plant Maintenance – Standard Practices (Planting and Transplanting)
- Guidelines on Tree Transplanting issued by the Tree Management Office, Development Bureau, HKSAR Rare and Precious Plants of Hong Kong (online version)
<http://herbarium.gov.hk/PublicationsPreface.aspx?BookNameId=1&SectionId=1&ContentId=1>
- Country Parks Ordinance (Cap 208);
- Forests and Countryside Ordinance (Cap 96);
- Protection of Endangered Species of Animals and Plants Ordinance (Cap 586);
- Hong Kong Planning Standards and Guidelines Chapter 10 (HKPSG); EIAO Guidance Note No. 6/2010, 7/2010, 10/2010 and 11/2010
- United Nations Convention on Biodiversity (1992) and
- IUCN Red List of Threatened Species.

APPENDIX A

Project Boundary



Revision	Date	Description	Initial
D	11/20	TENDER ADDENDUM NO.6	BL
C	11/20	TENDER ADDENDUM NO.5	BL
B	11/20	TENDER ADDENDUM NO.4	BL
A	09/20	TENDER ADDENDUM NO.2	TFL
Initial	Designed	Checked	Drawn
	TFL	BL	SZ
Date	04/20	04/20	04/20
Approved	<i>Christina</i>		

Contract no. DC/2020/02

Contract title
CONSTRUCTION OF SAN SHEK WAN SEWAGE TREATMENT WORKS, ASSOCIATED SUBMARINE OUTFALL AND PUI O SEWERAGE WORKS

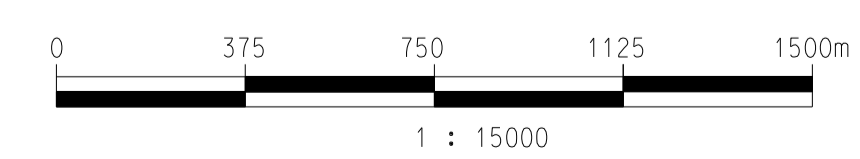
Drawing title
SOUTH LANTAU SEWERAGE WORKS - MASTER LAYOUT PLAN

Drawing no. 178711/B&V/GN/001
Revision D

Scale 1 : 15000

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



APPENDIX B

Habitat Map and Species of Conservation Importance at in EIA

Report (AEIAR-210/2017)

Key

Project Boundary

- Project Boundary
- 500m Study Area
- Access Road
- Proposed Site of Pumping Station
- Alternative Site of Pumping Station
- Proposed Site of Sewage Treatment Works
- Proposed Sewer
- Proposed Rising Main
- Proposed Submarine Outfall

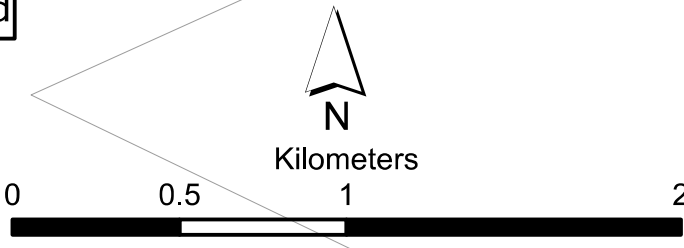
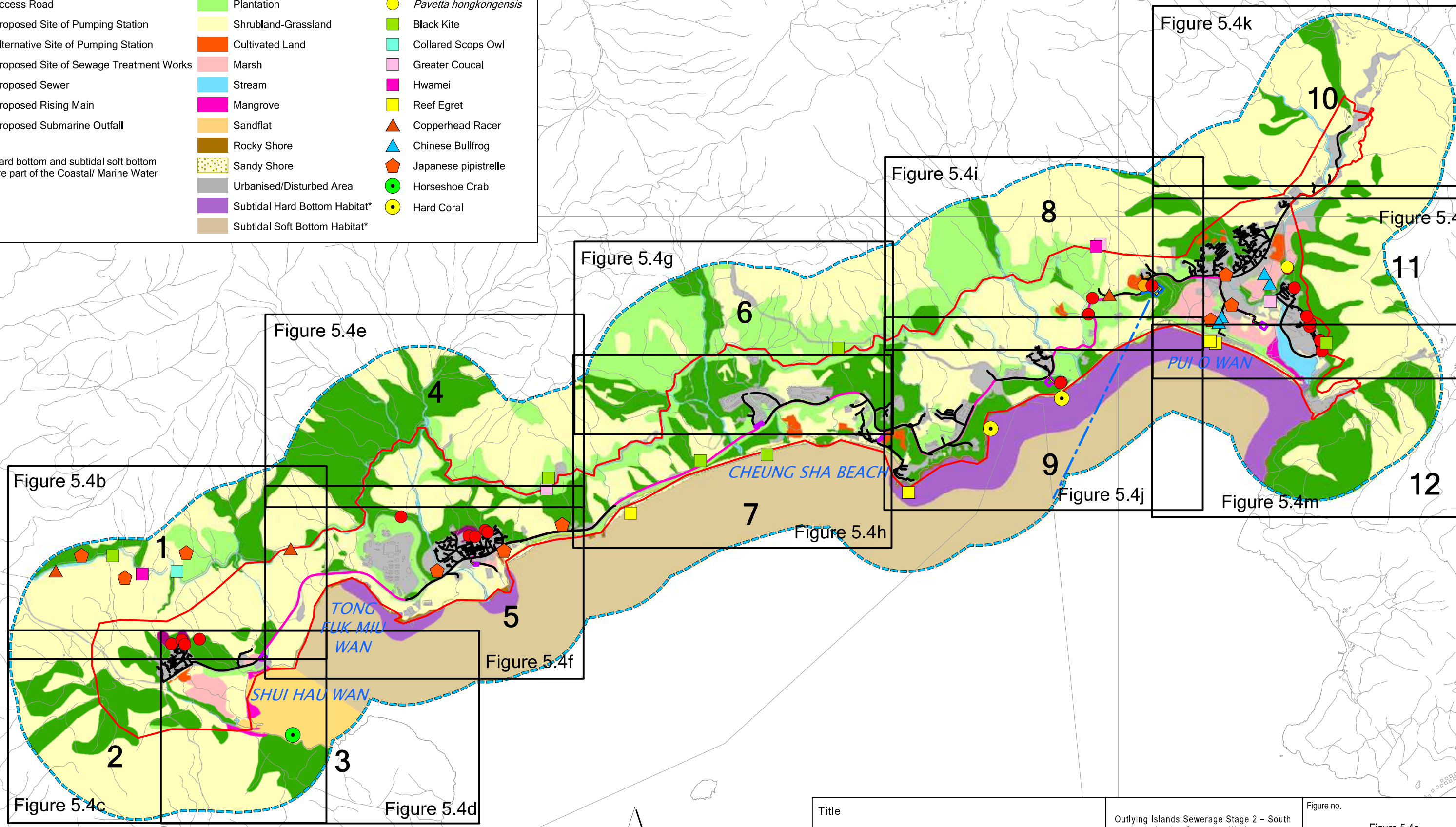
Habitat

- Fung Shui Woodland
- Mixed Woodland
- Plantation
- Shrubland-Grassland
- Cultivated Land
- Marsh
- Stream
- Mangrove
- Sandflat
- Rocky Shore
- Sandy Shore
- Urbanised/Disturbed Area
- Subtidal Hard Bottom Habitat*
- Subtidal Soft Bottom Habitat*

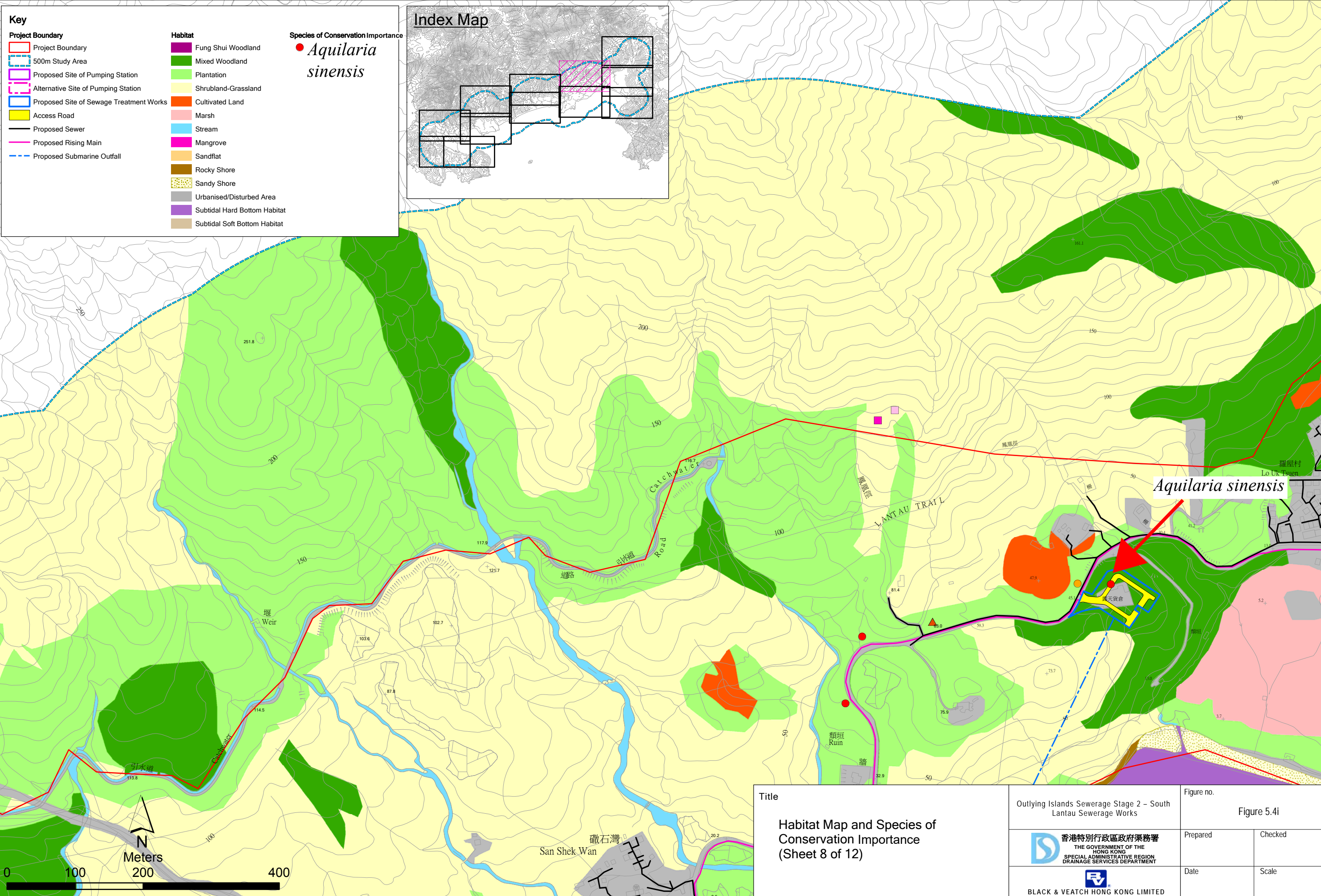
Species of Conservation Importance

- Aquilaria sinensis*
- Artocarpus hypargyreus*
- Pavetta hongkongensis*
- Black Kite
- Collared Scops Owl
- Greater Coucal
- Hwamei
- Reef Egret
- Copperhead Racer
- Chinese Bullfrog
- Japanese pipistrelle
- Horseshoe Crab
- Hard Coral

* Remark:
Subtidal hard bottom and subtidal soft bottom habitats are part of the Coastal/ Marine Water Habitat



Title Habitat Map and Species of Conservation Importance	Figure no. Figure 5.4a		
	Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works 	Prepared Date	Checked Scale



Key

Project Boundary

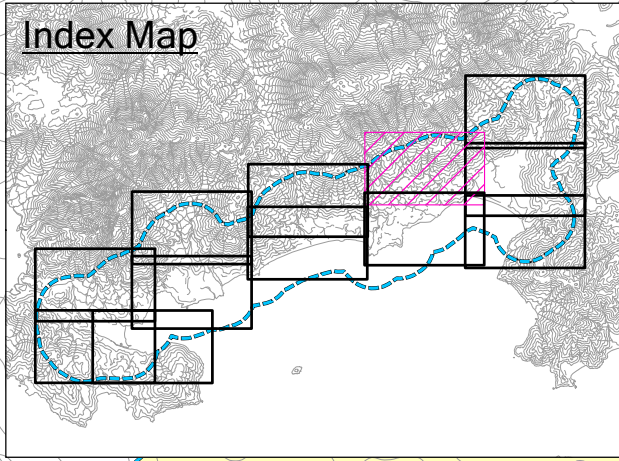
- Project Boundary
- 500m Study Area
- Proposed Site of Pumping Station
- Alternative Site of Pumping Station
- Proposed Site of Sewage Treatment Works
- Access Road
- Proposed Sewer
- Proposed Rising Main
- Proposed Submarine Outfall

Habitat

- Fung Shui Woodland
- Mixed Woodland
- Plantation
- Shrubland-Grassland
- Cultivated Land
- Marsh
- Stream
- Mangrove
- Sandflat
- Rocky Shore
- Sandy Shore
- Urbanised/Disturbed Area
- Subtidal Hard Bottom Habitat
- Subtidal Soft Bottom Habitat

Species of Conservation Importance

- Aquilaria sinensis*



<p>Title</p> <p>Habitat Map and Species of Conservation Importance (Sheet 8 of 12)</p>	<p>Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works</p>		<p>Figure no.</p> <p>Figure 5.4i</p>	
	<p>香港特別行政區政府渠務署 THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT</p>		Prepared	Checked
	<p>BLACK & VEATCH HONG KONG LIMITED</p>		Date	Scale

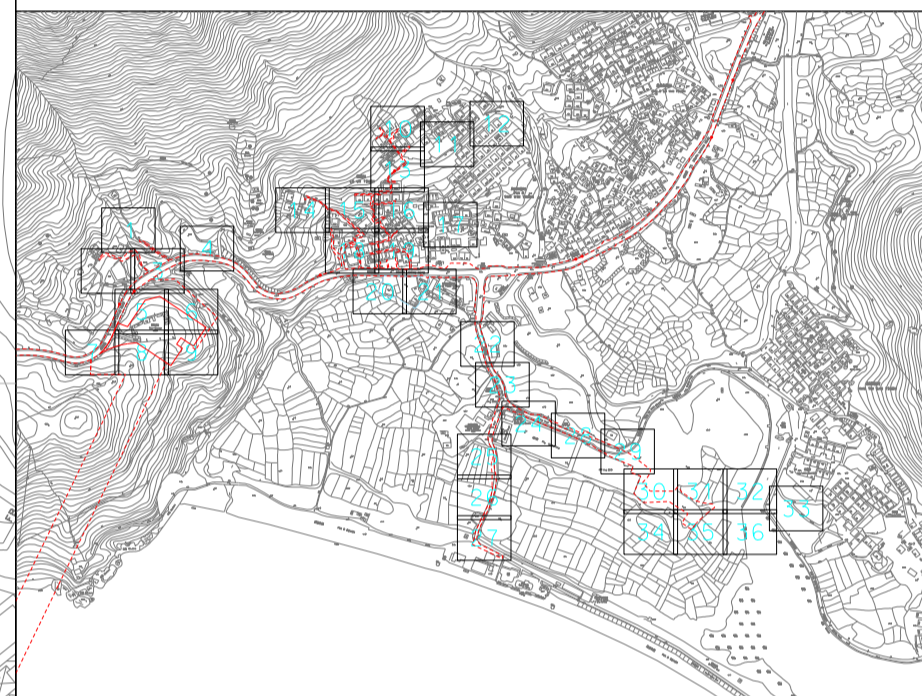
APPENDIX C

Location of the *Aquilaria sinensis* and *Gmelina chinensis* at San Shek Wan Sewage Treatment Works Area and Associated Roads

T392 *Aquilaria sinensis*

**T742, T751 and T758
*Gmelina chinensis***

- LEGENDS : -
-  PROPOSED SITE OF PUMPING STATION OR TREATMENT WORKS
 -  WORKS LIMIT
 -  TREE TO BE RETAINED
 -  TREE TO BE TRANSPLANTED
 -  TREE TO BE FELLED
 -  TREE LEVEL
 -  OPERATION BUILDING OF SAN SHEK WAN SEWAGE TREATMENT WORKS
 -  ADMINISTRATION BUILDING OF SAN SHEK WAN SEWAGE TREATMENT WORKS
 -  TRANSFORMER ROOM
 -  PUI O SEWAGE PUMPING STATION (ABOVE GROUND FACILITIES)
 -  PUI O SEWAGE PUMPING STATION (BELOW GROUND FACILITIES)
 -  CAR PARKING AREA
 -  COMPENSATED MIXED WOODLAND
 -  PROPOSED LANDSCAPE AREA
 -  BOUNDARY WALL
 -  ENTRANCE GATE
 -  EMERGENCY VEHICULAR ACCESS



KEYPLAN NOT TO SCALE

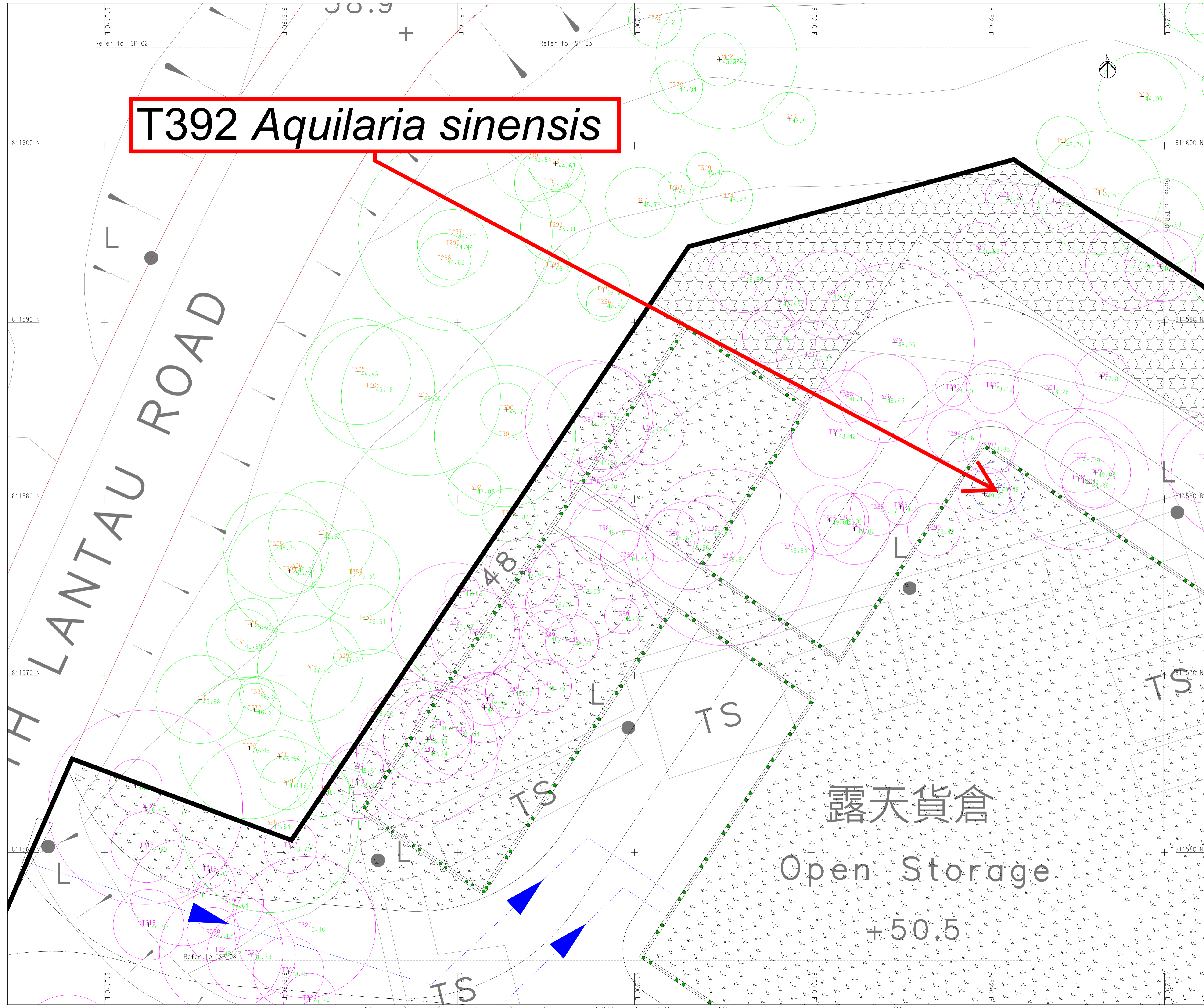
- NOTES:
1. ALL SPOT LEVEL POSITIONS ARE INDICATED BY A CROSS.
 2. ALL GRID LINES ARE IN HONG KONG 1980 GRID.
 3. ALL LEVELS ARE ABOVE HONG KONG PRINCIPAL DATUM.
 4. ALL UNITS ARE IN METRES.
 5. DATE OF SURVEY : APR 2019

Projects:
**Contract No. CM 01/2019 -
 Tree Survey for Outlying Islands
 Sewerage Stage 2 - South Lantau
 Sewerage Works and Other Works -
 Design and Construction**

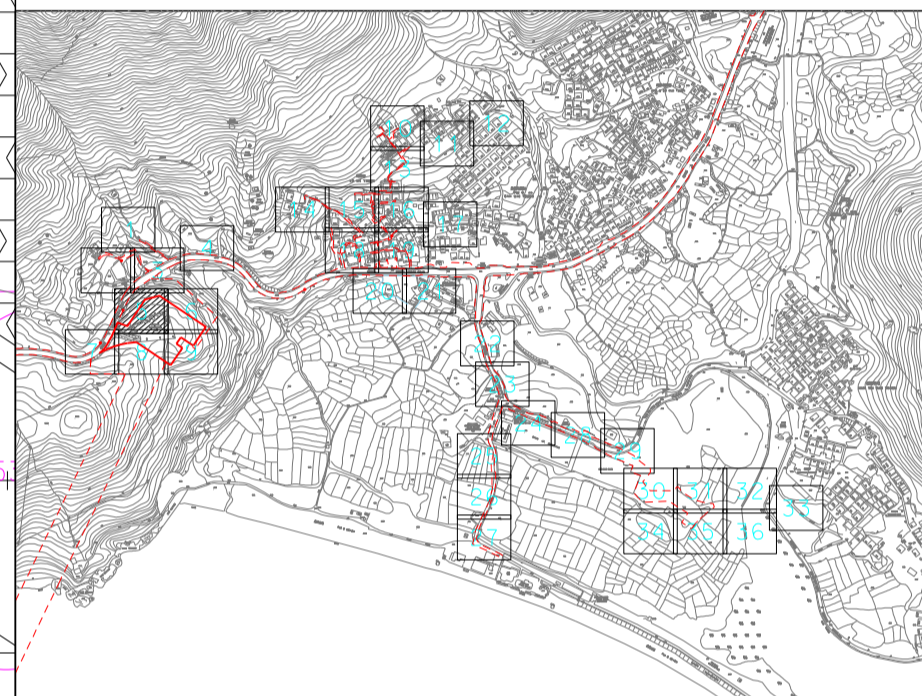
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 Scale: **1:1500 @ A1**



T392 *Aquilaria sinensis*



- LEGENDS :-
- PROPOSED SITE OF PUMPING STATION OR TREATMENT WORKS
 - WORKS LIMIT
 - TREE TO BE RETAINED
 - TREE TO BE TRANSPLANTED
 - TREE TO BE FELLED
 - TREE LEVEL



KEYPLAN NOT TO SCALE

- NOTES:
1. ALL SPOT LEVEL POSITIONS ARE INDICATED BY A CROSS.
 2. ALL GRID LINES ARE IN HONG KONG 1980 GRID.
 3. ALL LEVELS ARE ABOVE HONG KONG PRINCIPAL DATUM.
 4. ALL UNITS ARE IN METRES.
 5. DATE OF SURVEY : APR 2019

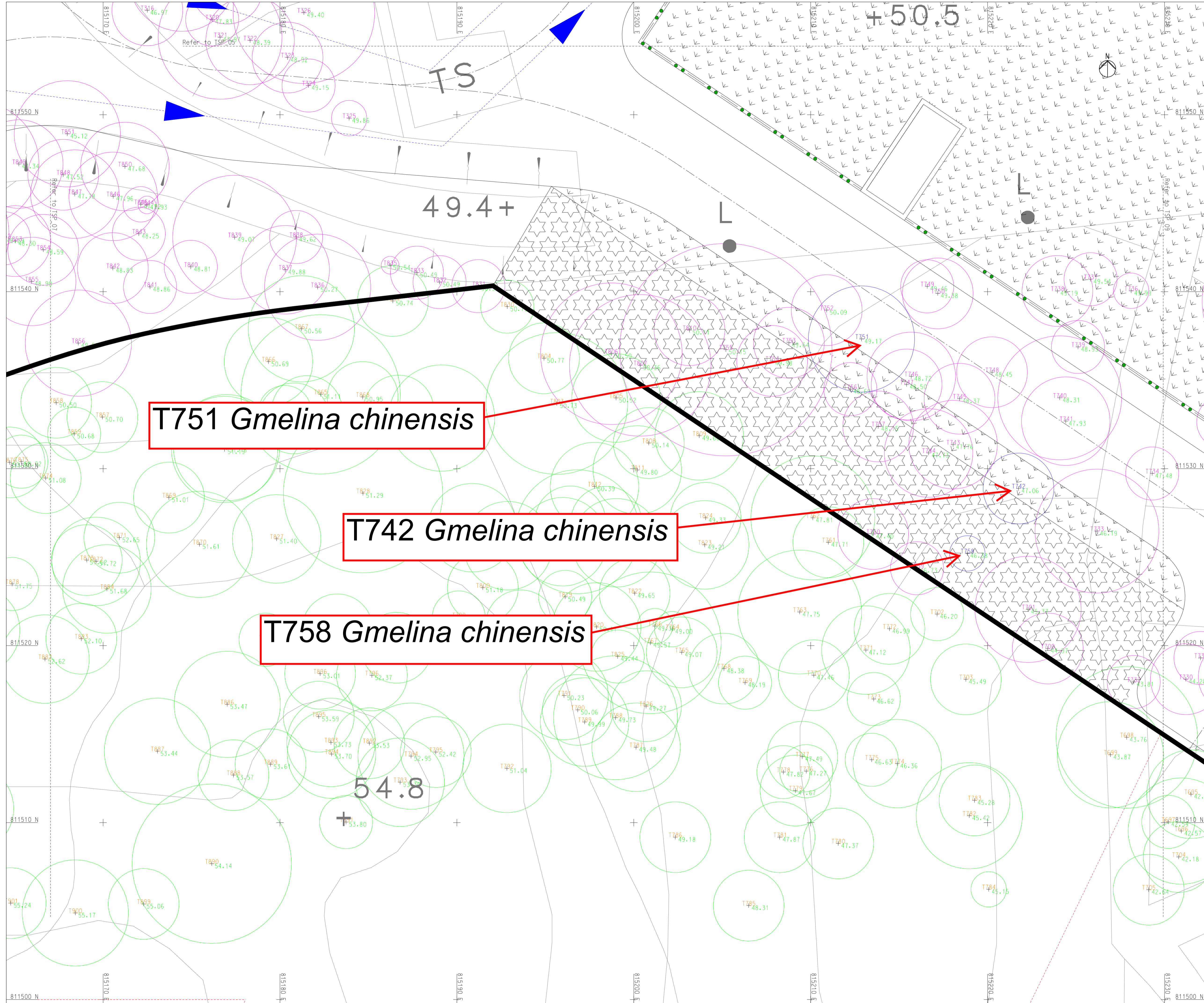
Projects:
Contract No. CM 01/2019 -
Tree Survey for Outlying Islands
Sewerage Stage 2 - South Lantau
Sewerage Works and Other Works -
Design and Construction

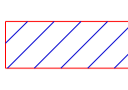





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 Scale: 1:100 @ A1

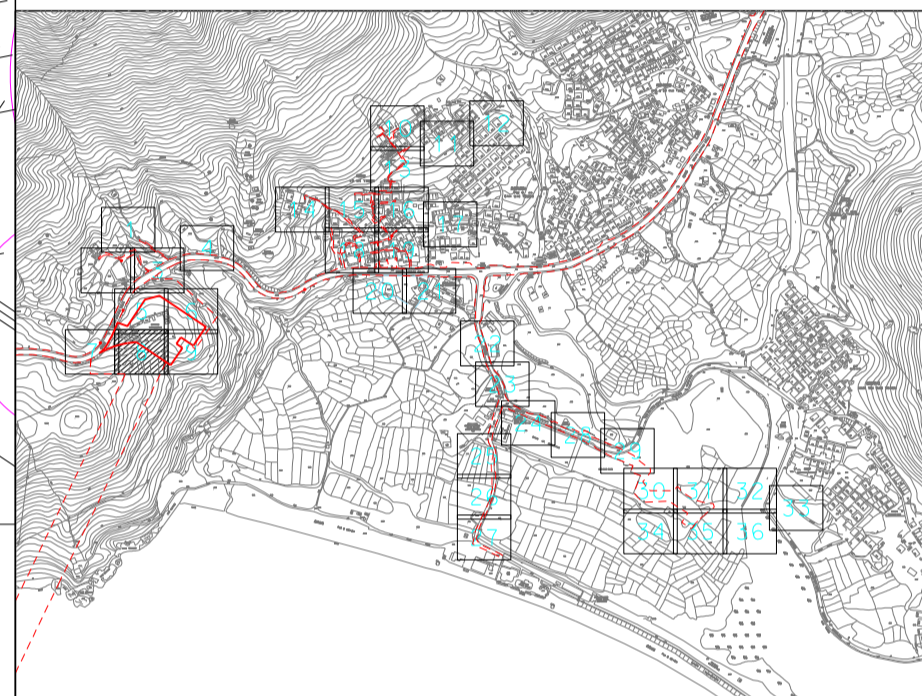


露天貨倉
 Open Storage
 +50.5

SCALE 1 : 100



- LEGENDS :-
-  PROPOSED SITE OF PUMPING STATION OR TREATMENT WORKS
 -  WORKS LIMIT
 -  TREE TO BE RETAINED
 -  TREE TO BE TRANSPLANTED
 -  TREE TO BE FELLED
 -  TREE LEVEL




KEYPLAN NOT TO SCALE

- NOTES:
1. ALL SPOT LEVEL POSITIONS ARE INDICATED BY A CROSS.
 2. ALL GRID LINES ARE IN HONG KONG 1980 GRID.
 3. ALL LEVELS ARE ABOVE HONG KONG PRINCIPAL DATUM.
 4. ALL UNITS ARE IN METRES.
 5. DATE OF SURVEY : APR 2019

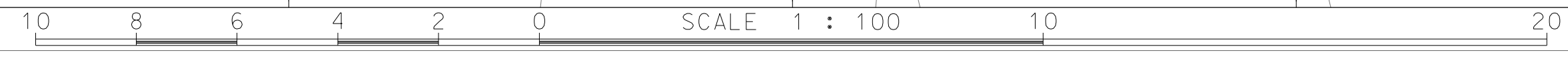
Projects:

Contract No. CM 01/2019 -
Tree Survey for Outlying Islands Sewerage Stage 2 - South Lantau Sewerage Works and Other Works - Design and Construction

Title: Tree Survey
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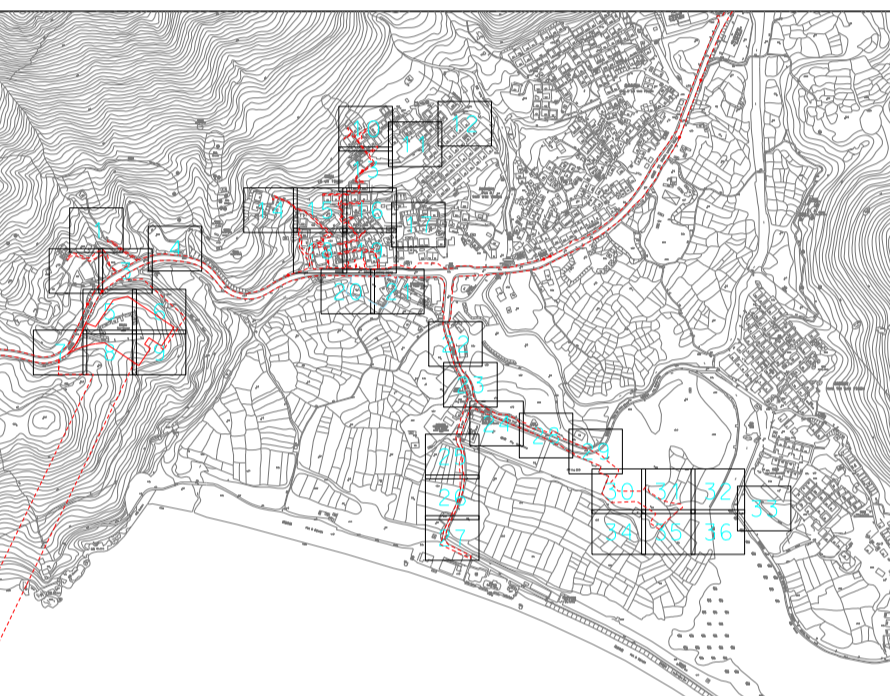
APPENDIX D

**Site photos of San Shek Wan Sewage Treatment Works Area
and Associated Roads and Photographic Records of the
identified *Aquilaria sinensis* and *Gmelina chinensis***

T392 *Aquilaria sinensis*

**T742, T751 and T758
*Gmelina chinensis***

- LEGENDS :-
- PROPOSED SITE OF PUMPING STATION OR TREATMENT WORKS
 - WORKS LIMIT
 - TREE TO BE RETAINED
 - TREE TO BE TRANSPLANTED
 - TREE TO BE FELLED
 - TREE LEVEL
 - OPERATION BUILDING OF SAN SHEK WAN SEWAGE TREATMENT WORKS
 - ADMINISTRATION BUILDING OF SAN SHEK WAN SEWAGE TREATMENT WORKS
 - TRANSFORMER ROOM
 - PUI O SEWAGE PUMPING STATION (ABOVE GROUND FACILITIES)
 - PUI O SEWAGE PUMPING STATION (BELOW GROUND FACILITIES)
 - CAR PARKING AREA
 - COMPENSATED MIXED WOODLAND
 - PROPOSED LANDSCAPE AREA
 - BOUNDARY WALL
 - ENTRANCE GATE
 - EMERGENCY VEHICULAR ACCESS



KEYPLAN NOT TO SCALE

- NOTES:
1. ALL SPOT LEVEL POSITIONS ARE INDICATED BY A CROSS.
 2. ALL GRID LINES ARE IN HONG KONG 1980 GRID.
 3. ALL LEVELS ARE ABOVE HONG KONG PRINCIPAL DATUM.
 4. ALL UNITS ARE IN METRES.
 5. DATE OF SURVEY : APR 2019

Projects:
**Contract No. CM 01/2019 -
 Tree Survey for Outlying Islands
 Sewerage Stage 2 - South Lantau
 Sewerage Works and Other Works -
 Design and Construction**

Title: **Tree Survey**
 Drawing no.:
 Scale: **1:1500 @ A1**



Plot Date : 6/25/2019

CAD Filename : Y:\Daily Work\20190619\TSP\TSP_00.dgn

150 120 90 60 30 0 SCALE 1 : 1500 150 300



GeneralView (1)



GeneralView (2)



GeneralView (3)



GeneralView (4)



GeneralView (5)



GeneralView (6)



GeneralView (7)



GeneralView (8)



GeneralView (9)



GeneralView (10)
5/5



T392__WholeView



T742__WholeView



T751__WholeView(1)



T751__WholeView(2)



T758__WholeView

APPENDIX E

Location Plan of Temporary Nursery Site



For identification purpose or

Temporary nursery site at Kam Tin. 6 trees will be temporary transplanted for this contract, including T392 (*Aquilaria sinensis*), T742, T751 and T758 (*Gmelina chinensis*).
 Planting spacing will be 3m center to center.

The location is in private land with stable water supply.



Temporary Holding Nursery Site Condition

COPY RIGHT®

Project : Contract No.: DC/2020/02
 Construction of San Shek Wan Sewage Treatment Works,
 Associated Submarine Outfall and Pui O Sewerage Works

Drawing Title : Location Plan for 6 nos. Trees on Kam Tin Nursery



Toyo Greenland Co., Ltd.

Check : Ho Tat Pui, Daniel

Scale : N.T.S.

Rev.

Ref: C3109/22/TGD0164

Date : 10 January 2022

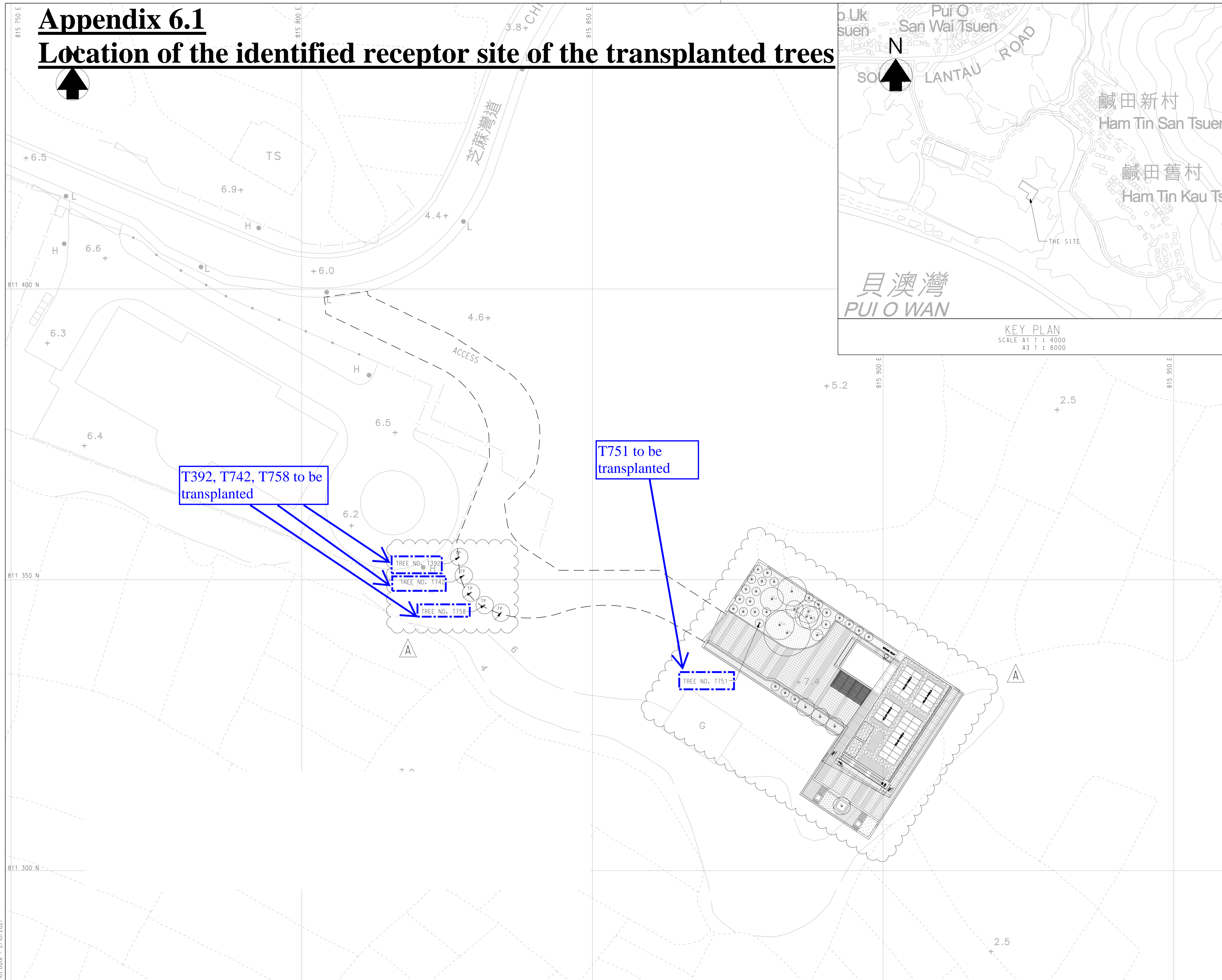
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APPENDIX F

Location Plan and Site Photos of Final Receptor Site

Appendix 6.1

Location of the identified receptor site of the transplanted trees



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NOTES:

- FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO. 178711/B&V/GN/000.
- ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (MPD).
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- REFER TO THE TREE PRESERVATION AND REMOVAL PROPOSAL ARE GIVEN IN ANNEX 7 OF SITE INFORMATION FOR THE DETAILS OF TRANSPLANTED TREES.

LEGEND:

- +20.3 PROPOSED LEVEL
- BOLLARD
- LANDSCAPE AREA
- BOUNDARY FENCE
- ENTRANCE GATE
- MP COMPENSATORY PLANTING
- TP TRANSPLANTED TREES
- JC JUNIPERUS CHINENSIS 'KAIZUKA'

Revision	Date	Description			Initial
A	10/20	TENDER ADDENDUM NO.3	BL		
		Designed	Checked	Drawn	Checked
Initial	TFL	BL	SZ	CSC	
Date	04/20	04/20	04/20	04/20	

Approved: *Christina*

Contract no. DC/2020/02

Contract title
CONSTRUCTION OF SAN SHEK WAN SEWAGE TREATMENT WORKS, ASSOCIATED SUBMARINE OUTFALL AND PUI O SEWERAGE WORKS

Drawing title
PUI O SEWAGE PUMPING STATION COMPENSATORY TREE PLANTING PLAN

Drawing no. 178711/B&V/POSPS/TR/201 Revision A

Scale A1 1 : 300 A3 1 : 600

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

binnies
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賓尼士工程顧問有限公司

Plot Date - 2/18/2021

Photos of Proposed Final Receptor Site (POSPS) in September 2021



The proposed receptor is an existing vacant land

Photos of Proposed Final Receptor Site (POSPS) in May 2022



The proposed final receptor is an existing vacant land



APPENDIX G

Detailed Implementation Programme for Tree Transplanting



Toyo Greenland Co., Ltd.

Contract No.: DC/2020/02

**Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works**

Program of Tree Transplanting Work

DESCRIPTION OF WORKS	Monthly Program							
	Jan 2022				Feb 2022			
1. Tree No. T392, T742, T751 and T758								
1.1 1st Root Pruning Work-two opposing segments								
1.2 2nd Root Pruning Work-two opposing segments								
1.3 Root Ball Preparation (Approx. Dia. 750mm and 400mm D) Undercutting and wrapped by Hessian with wire mesh								
1.4 Tree Crown Pruning as Transplanting Proposal								
1.5 Receptor Site Preparation								
1.6 Transplanting to Final Location								
1.7 Bamboo Staking								

Ref.: C3109/22/TGD0164

Date: 10 January 2022

Pruning Proposal

Tree No.	Botanical Name	Chinese name	Measured Size			Proposed Pruning Proposal			
						Root Pruning		Crown Pruning	
			Diameter at Breast Height (mm)	Tree Height(m)	Tree Crown Spread (m)	Root Ball Diameter (mm)	Depth (mm)	Tree Height (m)	Tree Crown (m)
T113	<i>Celtis sinensis</i>	朴樹	99	7.0	3.0	750	400	N/A	2.5
T114	<i>Celtis sinensis</i>	朴樹	96	6.0	4.0	750	400	N/A	2.5
T392	<i>Aquilaria sinensis</i>	土沉香	150	8.0	3.0	750	400	N/A	2.5
T742	<i>Gmelina chinensis</i>	石梓	189	7.0	4.0	750	400	N/A	3.0
T751	<i>Gmelina chinensis</i>	石梓	178	7.0	6.0	750	400	N/A	4.0
T758	<i>Gmelina chinensis</i>	石梓	105	3.0	2.0	750	400	N/A	N/A

APPENDIX H

The Post-transplanting Maintenance Programme

Contract No.: DC/2020/02

Construction of San Shek Wan Sewage Treatment Works, Associated Submarine Outfall and Pui O Sewerage Works

Post-transplanting Maintenance Programme in Temporary Holding Nursery

Description of Works#	Establishment Programme											
	1st Month	2nd Month	3rd Month	4th Month	5th Month	6th Month	7th Month	8th Month	9th Month	10th Month	11th Month	12th Month
1. Basic Establishment Operation:												
(a) General Inspection	Once a Month											
(b) Control of pests, fungi and disease	When pest, fungi or disease observed											
(c) Litter Collection	When litter observed											
(d) Watering*	Daily (Dry Season) and as required (Wet Season)											
(e) Firming Up	As determined by Qualified Personnel											
2. Weeding or Grass cutting to Planted Area	When Weeding or Grass observed											
3. Pruning	When dead branch observed											
4. Fertilizing												
5. Forking over	As determined by Qualified Personnel											

* Immediate Watering after planting at the temporary nursery is also required according to GS 3.97 (13)

Implemented throughout the period at the temporary nursery

Contract No.: DC/2020/02

Construction of San Shek Wan Sewage Treatment Works, Associated Submarine Outfall and Pui O Sewerage Works

Post-transplanting Maintenance Programme in Receptor Site

Description of Works	Establishment Programme											
	1st Month	2nd Month	3rd Month	4th Month	5th Month	6th Month	7th Month	8th Month	9th Month	10th Month	11th Month	12th Month
1. Basic Establishment Operation:												
(a) General Inspection	Once per week in the first month, once in each following month in the remaining monitoring period and after inclement weather											
(b) Control of pests, fungi and disease	When pest, fungi or disease observed											
(c) Litter Collection	When litter observed											
(d) Watering*	Daily (Dry Season) and as required (Wet Season)											
(e) Firming Up	As determined by Qualified Personnel											
2. Weeding or Grass cutting to Planted Area	When Weeding or Grass observed											
3. Pruning	When dead branch observed											
4. Fertilizing												
5. Forking over	As determined by Qualified Personnel											

* Immediate Watering after planting at the receptor site is also required according to GS 3.97 (13)

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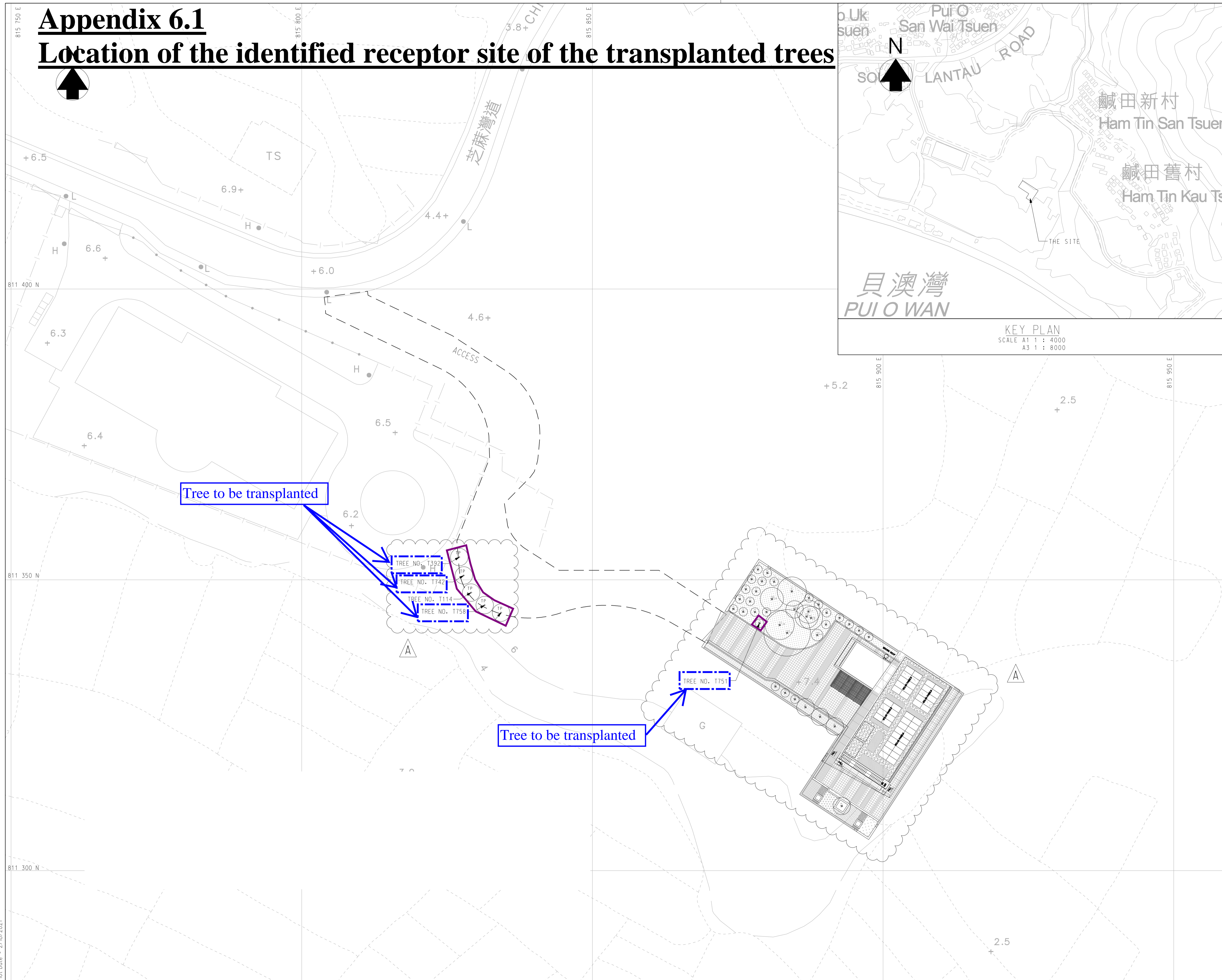
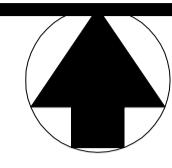
Construction of San Shek Wan Sewage Treatment Works,
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Preservation and Transplantation Plan for Plant Species of Conservation Importance

Appendix 6.1 - Location of the identified receptor site of the transplanted trees

Appendix 6.1

Location of the identified receptor site of the transplanted trees



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NOTES:

- FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO. 178711/B&V/GN/000.
- ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (MPD).
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- REFER TO THE TREE PRESERVATION AND REMOVAL PROPOSAL ARE GIVEN IN ANNEX 7 OF SITE INFORMATION FOR THE DETAILS OF TRANSPLANTED TREES.

LEGEND:

- PROPOSED LEVEL
- BOLLARD
- LANDSCAPE AREA
- BOUNDARY FENCE
- ENTRANCE GATE
- COMPENSATORY PLANTING
- TRANSPLANTED TREES
- JUNIPERUS CHINENSIS 'KAIZUKA'
- Tree Protection Zone

Revision	Date	Description			Initial
A	10/20	TENDER ADDENDUM NO.3	BL		
	Designed	Checked	Drawn	Checked	
Initial	TFL	BL	SZ	CSC	
Date	04/20	04/20	04/20	04/20	

Approved

Christina

Contract no. DC/2020/02

Contract title
CONSTRUCTION OF SAN SHEK WAN SEWAGE TREATMENT WORKS, ASSOCIATED SUBMARINE OUTFALL AND PUI O SEWERAGE WORKS

Drawing title
PUI O SEWAGE PUMPING STATION COMPENSATORY TREE PLANTING PLAN

Drawing no. 178711/B&V/POSPS/TR/201

Revision A

Scale A1 1:300
A3 1:600

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

binnies
BINNIES HONG KONG LIMITED
賓尼士工程顧問有限公司

Plot Date - 2/18/2021

DC/2020/02

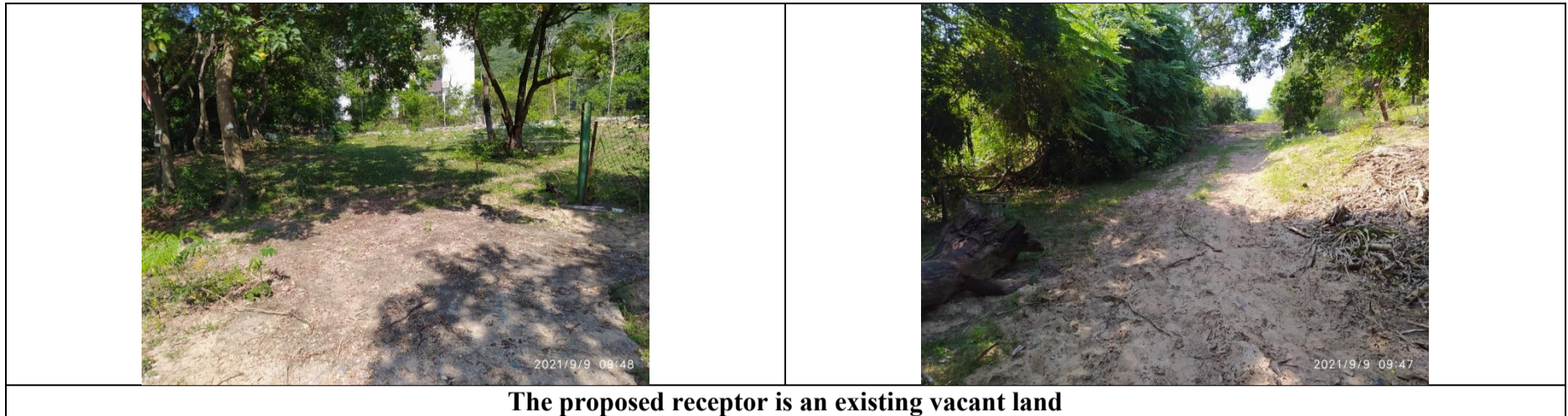
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Appendix 6.2 - The existing receptor site

Appendix 6.2 - Existing Receptor Site (September 2021)

Photos of proposed receptor (POSPS)



The proposed receptor is an existing vacant land

Appendix 6.2 - Existing Receptor Site (May 2022)



The proposed receptor is an existing vacant land



DC/2020/02

Construction of San Shek Wan Sewage Treatment Works,
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Appendix 8.1 - Typical sketch showing layout of the Tree Protection Zones

Proper Planting Practice Design For Tree Protection Zone

For effective tree protection on site:

- the knowledge and understanding of tree protection and active participation of all levels of the project management, design and construction team is required.
- team work is essential.
- planning and demarcation of an adequate tree protection zone at the initial planning and design stage is essential; not as an after thought.
- the objective is to prevent damage rather than undertake remedial work afterwards since most damage is irreversible and cumulative.
- the major threats to trees in works areas are compaction, root damage and change in level. Robust protection fence shall be installed at the beginning of the construction phase and last through out the construction to protect trees.
- no dumping, storage of materials, change in level, excavation, cutting of roots/ branches or parking is allowed within the fenced area of the tree protection zone.
- regular inspection to check the health and structural condition of trees in construction site is required.
- contractors shall be reminded of their responsibilities under the contract to protect trees in construction site. Poor performance in tree works / protection should be reflected in contractor's performance reports.

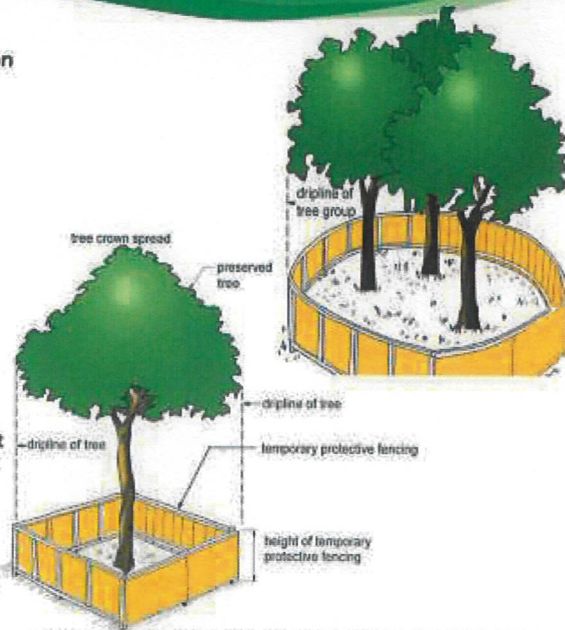


Diagram 1 Installation of robust fencing at tree protection zone throughout the construction period is required. (dripline is a good reference though consideration of larger zone is required for older trees)
 No construction activity, dumping, storage of material and parking is allowed within the fenced area.
 (Multiple trees above, Single tree below)

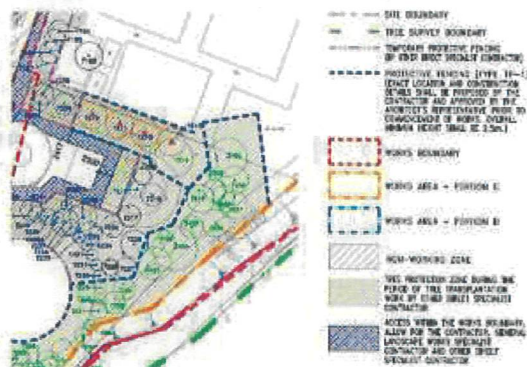


Diagram 2 Tree Protection Plan is a part of the contract drawings: with levels, tree protection zone, circulation routes indicated.

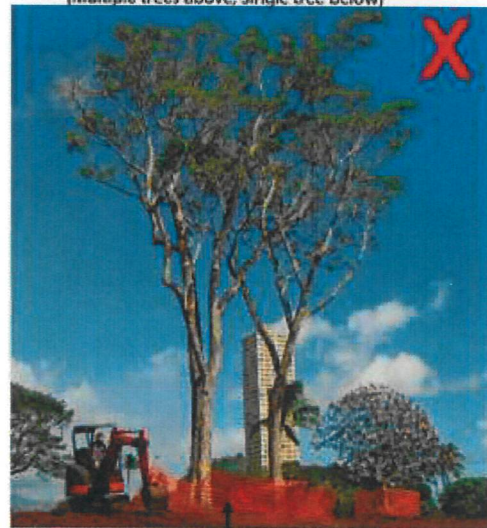


Photo 1 Weak fencing is not enough for protecting trees in construction site.

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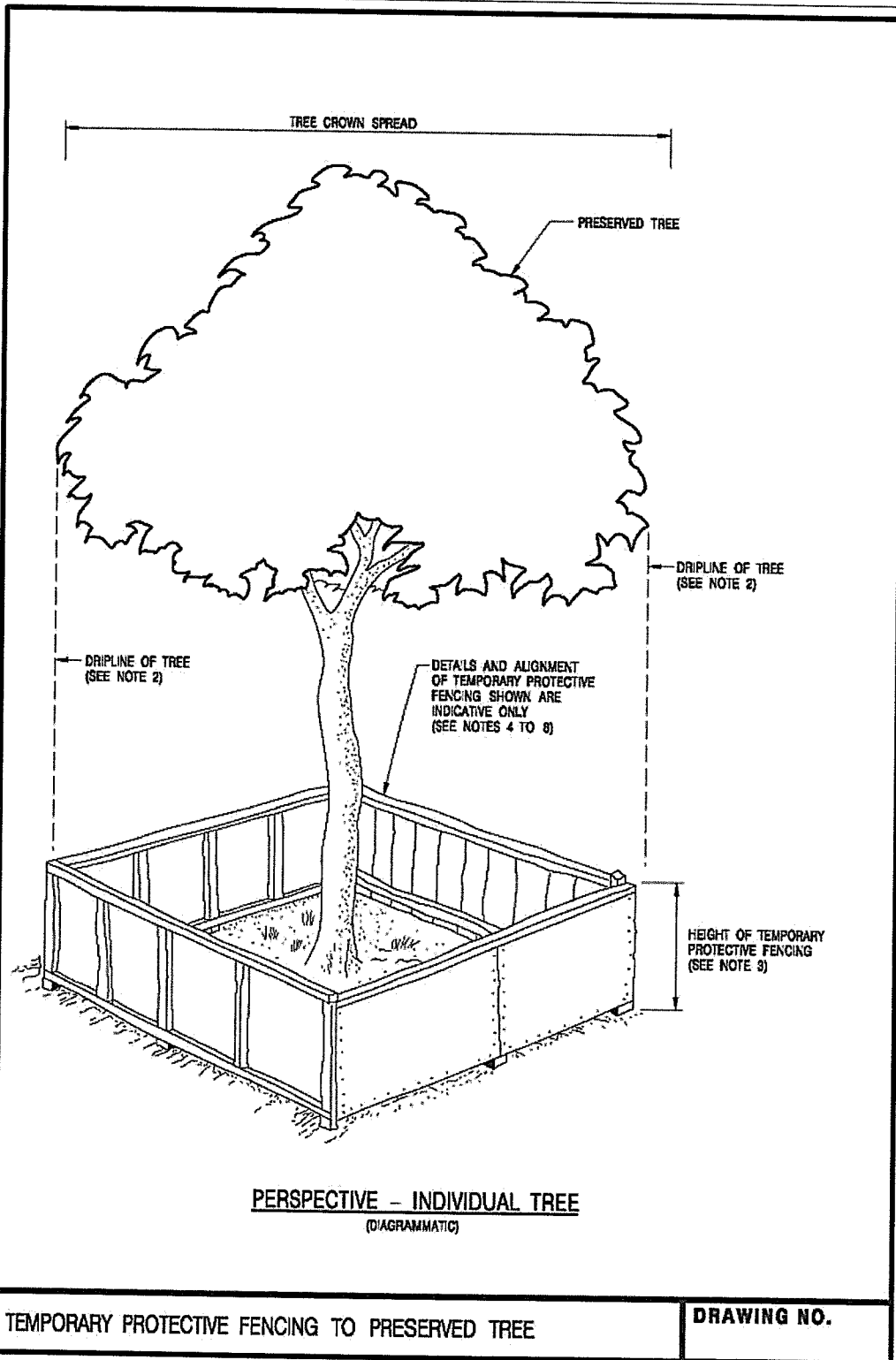
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Appendix 8.2 - Typical details of the fencing

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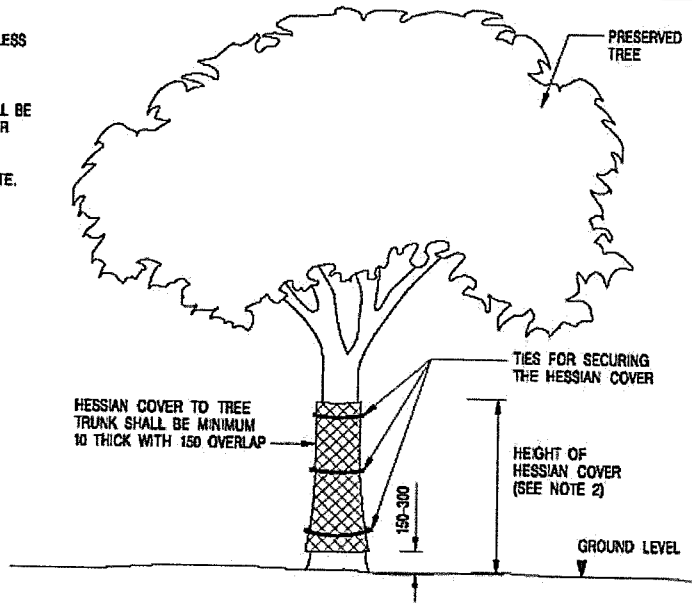
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Preservation and Transplantation Plan for Plant Species of Conservation Importance

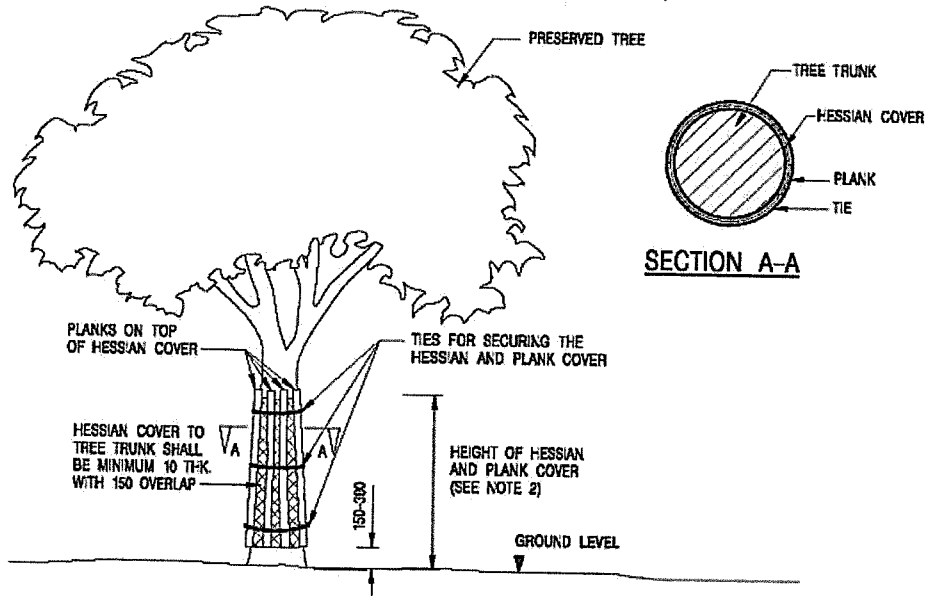
Appendix 8.3 - Typical details of the temporary protective plant armor

NOTES:

- 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
 - 2. HEIGHT OF *HESSIAN COVER /HESSIAN AND PLANK COVER TO THE TRUNK SHALL BE 1500 MM, BUT THE REQUIRED HEIGHT FOR DIFFERENT INDIVIDUAL TREES SHALL BE DETERMINED BY THE *ARCHITECT / ENGINEER / SUPERVISING OFFICER ON SITE.
- * DELETE WHICHEVER IS INAPPROPRIATE



**TEMPORARY PROTECTIVE HESSIAN
ARMOURING TO PRESERVED TREE**
(DIAGRAMMATIC)



**TEMPORARY PROTECTIVE HESSIAN AND PLANK
ARMOURING TO PRESERVED TREE**
(DIAGRAMMATIC)

TEMPORARY PROTECTIVE ARMOURING TO PRESERVED TREE

DRAWING NO.

DC/2020/02

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Preservation and Transplantation Plan for Plant Species of Conservation Importance

Appendix 8.4 – Implementation Schedule

Implementation Schedule of the Major Environmental Mitigation Measures

EIA Ref.	Recommended Major Environmental Protection Measures / Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Party	Implementation Stage	Relevant Legislation & Guidelines
S5.8	Erect fences along the boundary of the works area before the commencement of works to prevent vehicle movements and encroachment of personnel onto adjacent areas.	All area / During Construction	Contractor	Construction Stage	-
S5.8	Regularly check the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas.	All area / During Construction	Contractor / ET	Construction Stage	-
S5.8	Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the surrounding habitats through proper management of waste disposal.	All area / During Construction	Contractor	Construction Stage	-
S5.8; Annex 5B - Table A2	Reinstate temporarily affected areas, particularly the habitats of plantation and shrubland-grassland immediately after completion of construction works, through on-site tree/shrub planting. The tree/shrub species will be chosen with reference to those in the surrounding area.	All area / During Construction	Contractor	Construction Stage	-
S5.8	Permanent building structures, works and storage areas should be avoided in the habitat of moderate or high ecological value, as well as the proximity of species of conservation interest (e.g. Aquilaria sinensis).	All area / During Construction	Contractor	Design & Construction Stage	-
S5.8	For the affected individuals of Aquilaria sinensis at San Shek Wan SPS Alternative Site and STW, transplantation plan will be developed, including an EM&A programme for monitoring the transplantation of the tree individuals.	All area / During Construction	Contractor	Construction Stage	-
S10.6.8 & S10.7.7	Detailed design of development components should reduce landscape footprint and visibility of structures and blend with the existing environment as far as possible. (MM1)	All area/ Detailed design/ During construction/ During Operation	DSD/ Contractor(s)	Design, Construction & Operation Stage	-
S10.6.8	Temporary structures and construction works should be planned with care to minimise disturbance to trees/ vegetation, topography and existing built structures. The footprint of the proposed facilities shall be compressed to a practical minimum taking into account functional, operational and maintenance needs so as to cause minimum land conversion impact. (MM1)	All area/ Detailed design/ During construction/ During Operation	DSD/ Contractor(s)	Design, Construction & Operation Stage	-
S10.6.8	Tree Protection and Preservation - Trees/ woodland within the Project Site will be protected and preserved as far as possible in accordance with DEVB TC(W) No. 7/2015. (MM3)	All area/ Detailed design/ During construction/ During Operation	DSD/ Contractor(s)	Design & Construction Stage	DEVB TC(W) No. 7/2015. GLTMS Guideline on Tree Preservation during Development General Specification of Civil Engineering Works - Section 3 Landscape Softworks and Establishment Works
S10.6.8	Tree Transplantation - Should removal of trees be unavoidable due to construction impacts, trees will be transplanted or felled according to Clause 3.97 of the General Specification of Civil Engineering Works - Section 3 Landscape Softworks and Establishment Works. Transplantation must be carried out prior to site formation works and be treated with establishment works immediately after transplanting, for a period of no less than 12 months. (MM4)	All area/ Detailed design/ During construction/ During Operation	DSD/ Contractor(s)	Design & Construction Stage	GLTMS Guideline on Tree Transplanting General Specification of Civil Engineering Works - Section 3 Landscape Softworks and Establishment Works