



Water Supplies Department  
New Works Branch  
Construction Division  
11 Tai Yip Lane  
Kowloon Bay  
Kowloon  
Hong Kong

Your reference:

Our reference: HKWSD201/50/106378

Date: 25 March 2020

Attention: Mr Hivan Cheng

**BY POST**

Quotation No.: WQ/17/A071

Independent Environmental Checker for Water Supplies Department

-Proposed Desalination Plant in TKO Area 137 for Contract No. 13/WSD/16

Verification of 1st Annually EM&A Review Report for August 2018 to August 2019

We refer to emails of 31 December 2019, 23 and 24 March 2020 attaching 1st Annually EM&A Review Report for August 2018 to August 2019 for the captioned project prepared by the ET.

We have no further comments and hereby verify the 1st Annually EM&A Review Report for August 2018 to August 2019 in accordance with Clause 3.5 of the Environmental Permit no. EP-503/2015/A.

Should you have any queries regarding the above, please do not hesitate to contact the undersigned or our Mr Francis Lau on 2618 2831.

Yours faithfully

ANewR CONSULTING LIMITED

James Choi  
Independent Environmental Checker

CPSJ/LHYF/lhmh



水務署



Water Supplies Department

**Contract No. 13/WSD/16**

**Mainlaying in Tseung Kwan O**

**Annually EM&A Review Report No. 1  
For August 2018 to August 2019**

December 2019  
(Rev. 2)

	<b>Prepared by:</b>	<b>Certified by:</b>
<b>Name</b>	Karen Cheung	Jacky Leung
<b>Position</b>	Environmental Team	Environmental Team Leader
<b>Signature</b>		
<b>Date:</b>	24 March 2020	24 March 2020

### Revision History

2	3 <sup>rd</sup> Submission	24/03/2020
1	2 <sup>nd</sup> Submission	24/02/2020
0	1 <sup>st</sup> Submission	27/12/2019
<b>Rev.</b>	<b>DESCRIPTION OF MODIFICATION</b>	<b>DATE</b>

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## **EXECUTIVE SUMMARY**

- A1. Penta-Ocean - Concentric Joint Venture (POCJV) is contracted to carry out the Mainlaying in Tseung Kwan O under Contract No. 13/WSD/16 (hereinafter known as “the Project”).
- A2. In accordance with the Environmental Monitoring and Audit (EM&A) Manual for the Project, EM&A works should be carried out by Environmental Team (ET), Acuity Sustainability Consulting Limited (ASCL), during the construction phase of the Project.
- A3. The construction works of Mainlaying in Tseung Kwan O commenced on 30 August 2018. This is the 1st Annually Environmental Monitoring and Audit (EM&A) Review Report prepared by ASCL. This report presenting the EM&A works carried out during the period of 1 August 2018 to 31 August 2019.
- A4. A summary of the monitoring activities undertaken in this reporting period is listed below:

<b>Monitoring Activities</b>	<b>Frequency</b>
Daytime Noise monitoring	0 times
Landfill Gas Monitoring	2256 times
Environmental Site Inspection	54 times

- A5. No project-related exceedance of the Action/Limit Level was recorded during the reporting period.
- A6. No noise impact monitoring from August 2018 to August 2019 since there are no projected-related construction activities undertaken within a radius of 300m from the monitoring locations.
- A7. No exceedance of landfill gas monitoring was recorded during the reporting period.
- A8. No summons/ prosecutions were received in the reporting period.
- A9. There were no changes to be reported that may affect the on-going EM&A programme.

## 1 Basic Project Information

### 1.1 Background

1.1.1 The proposed Desalination Plant at Tseung Kwan O (DPTKO) will produce potable water with an initial capacity of 135 million liters per day (MLD), expandable to an ultimate capacity of 270 MLD in the future to provide a secure and alternative fresh water resource complying with the World Health Organization (WHO) standards. The plant will adopt the Seawater Reverse Osmosis (SWRO) technology, which dominates the market due to its reliability and progressive reduction in cost as the technology advances.

1.1.2 Pursuant to the Environmental Impact Assessment Ordinance (EIAO), the Director of Environmental Protection granted the Variation of Environmental Permit (No. EP-503/2015/A) to Water Supplies Department (WSD) for the Project on 26 January 2018.

1.1.3 The scope of the Contract may be considered in brief, to consist of the laying of about 10km long 1200mm diameter fresh water mains and the associated works along the alignment of the Project as shown with the overall view in **Appendix A**.

### 1.2 The Reporting Scope

1.2.1 This is the 1st Annually EM&A Review Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 August 2018 to 31 August 2019.

### 1.3 Project Organization

1.3.1 The Project Organization structure for Construction Phase is presented in **Appendix B**.

1.3.2 Contact details of the key personnel are presented in **Table 1.1** below:

**Table 1.1 Contact Details of Key Personnel**

Party	Position	Name	Telephone no.
Penta-Ocean - Concentric Joint Venture	Environmental Officer	Calvin Chik	9863-5630
Acuity Sustainability Consulting Limited	Environmental Team Leader	Jacky Leung	2698-6833
ANewR Consulting Limited	Independent Environmental Checker	James Choi	2618-2831

### 1.4 Summary of Construction Works

1.4.1 Details of the major construction works undertaken in this reporting period are shown in **Table 1.2** and **Appendix A**. The construction programme is presented in **Appendix C**.

**Table 1.2 Summary of the Construction Works Undertaken during the reporting period**

<b>Location</b>	<b>Works Conducted in the reporting period</b>
Portion A, B, C & D	<ul style="list-style-type: none"> <li>Initial joint survey with WSD</li> </ul>
Portion F & G	<ul style="list-style-type: none"> <li>Erection of fencing and gates</li> <li>Site accommodation erection and internal fitting out</li> </ul>
Portion H	<ul style="list-style-type: none"> <li>Excavation of trench for mainlaying in TKO Area 137 is implemented as schedule</li> </ul>
Portion J	<ul style="list-style-type: none"> <li>Continue utilities checking and detection before road works.</li> <li>5 additional trial pits were completed at the cycle track and EPD area. Trial pit at Shek Kok Road's parking area is completed.</li> <li>Underground utility detection and shallow excavation in working pit C to determine underground utility are in-going.</li> <li>Trial pits for TKO stage 1 landfill are also in progress</li> <li>29 nos. of trial pits done at Wan Po Road (CH. A3+50, 5+30, 13+70, 15+40, 16+30, 18+50, 19+00, 22+70, 27+50 and 41+10), Po Hong Road (CH. A44+80, 51+80, 59+70, 60+00, 63+60 and 66+90), Ling Hong Road (CH. A55+50 and 56+00), Po Shun Road (CH.A 54+30), Wan Po Road (CH. A37+25, 19+20), HK Velodrome (VD1-3), Wan Lung Road (WLR1), Shek Kok Road's parking space (Pit E) and TKO South Waterfront Promenade (WF1-5).</li> <li>Trench excavation at CHA1+50, CH7+20, CH13+50. 3 nos. of work fronts implemented as scheduled for the open-trench between CH. A0+00 to 13+70.</li> </ul>

## 1.5 Summary of Environmental Status

1.5.1 A summary of the valid permits, licences, and /or notifications on environmental protection for this Project is presented in **Table 1.3**.

**Table 1.3 Summary of the Status of Valid Environmental Licence, Notification, Permit and Documentations**

<b>Permit/ Licences/ Notification</b>	<b>Reference</b>	<b>Validity Period</b>	<b>Remarks</b>
Variation of Environmental Permit	EP no.: EP-503/2015/A	Throughout the Contract	-
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	Ref no.: 423775	Throughout the Contract	-
Chemical Waste Producer Registration	WPN: 5213-839-P3287-01	Throughout the Contract	-
Billing Account for Disposal of Construction Waste	A/C no.: 7029491	Throughout the Contract	-

1.5.2 The status for all environmental aspects is presented **Table 1.4**.

**Table 1.4 Summary of Status for Key Environmental Aspects under the EM&A Manual**

<b>Parameters</b>	<b>Status</b>
<b>Noise</b>	
Baseline Monitoring	The baseline noise monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under VEP Condition 3.4
Impact Monitoring	No impact monitoring from August 2018 to August 2019 due to the over distant monitoring stations from the works locations, where they were farther than 1 km from the closest monitoring station NSR4 to the works location.
<b>Waste Management</b>	
Mitigation Measures in Waste Monitoring Plan	On-going
<b>Landfill Gas Monitoring</b>	
Mitigation Measures	On-going
Monitoring	On-going
<b>Environmental Audit</b>	
Site Inspection	On-going

1.5.3 Other than the EM&A works by ET, regular environmental management meetings were conducted in order to enhance environmental awareness and closely monitor the environmental performance of the contractors.

1.5.4 The EM&A programme has been implemented in accordance with the recommendations presented in the approved EIA Report and the EM&A Manual. A summary of implementation status of the environmental mitigation measures for the construction phase of the Project during the reporting period is provided in **Appendix E**.

## 2 Noise Monitoring

### 2.1 Monitoring Requirements

- 2.1.1 To ensure no adverse noise impact, noise monitoring is recommended to be carried out within 300m radius from the nearby noise sensitive receivers (NSRs), during construction phase. The NSRs selected as monitoring station are (i) NSR4 – Creative Secondary School, (ii) NSR24 – PLK Laws Foundation College, and (iii) NSR31 – School of Continuing and Professional Studies – CUHK respectively.
- 2.1.2 In accordance with the EM&A Manual, baseline noise level at the noise monitoring stations were established as presented in the Baseline Monitoring Report. Impact noise monitoring will be conducted once per week in the form of 30-minutes measurements Leq, L10 and L90 levels recorded at each monitoring station between 0700 and 1900 hours on normal weekdays.
- 2.1.3 Referring to EM&A manual Section 4.1.2, the impact noise monitoring should be carried out at all the designated monitoring stations when there are project-related construction activities undertaken within a radius of 300m from the monitoring stations. No impact monitoring for noise impact was conducted in the reporting period due to the over distant monitoring station from the works location, where they were farther than 1 km from the closest monitoring station NSR4 to the works location.

### 2.2 Noise Monitoring Parameters, Time, Frequency

- 2.2.1 Impact noise monitoring will be conducted weekly in the reporting period between 0700-1900 hours on normal weekdays. No construction works were carried out during 1900-0700 hours all days or any time on Sundays or general holidays during the reporting period.
- 2.2.2 Construction noise level measured in terms of the A-weighted equivalent continuous sound pressure level (LAeq). Leq 30min was used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. **Table 2.1** summarizes the monitoring parameters, frequency and duration of the impact noise monitoring.

**Table 2.1 Noise Monitoring Parameters, Time, Frequency and Duration**

Time	Frequency	Duration	Parameters
Daytime: 0700-1900 hours	Once per week	Continuously in Leq 5min/Leq 30min (average of 6 consecutive Leq 5min)	Leq, L10 & L90

### 2.3 Noise Monitoring Locations

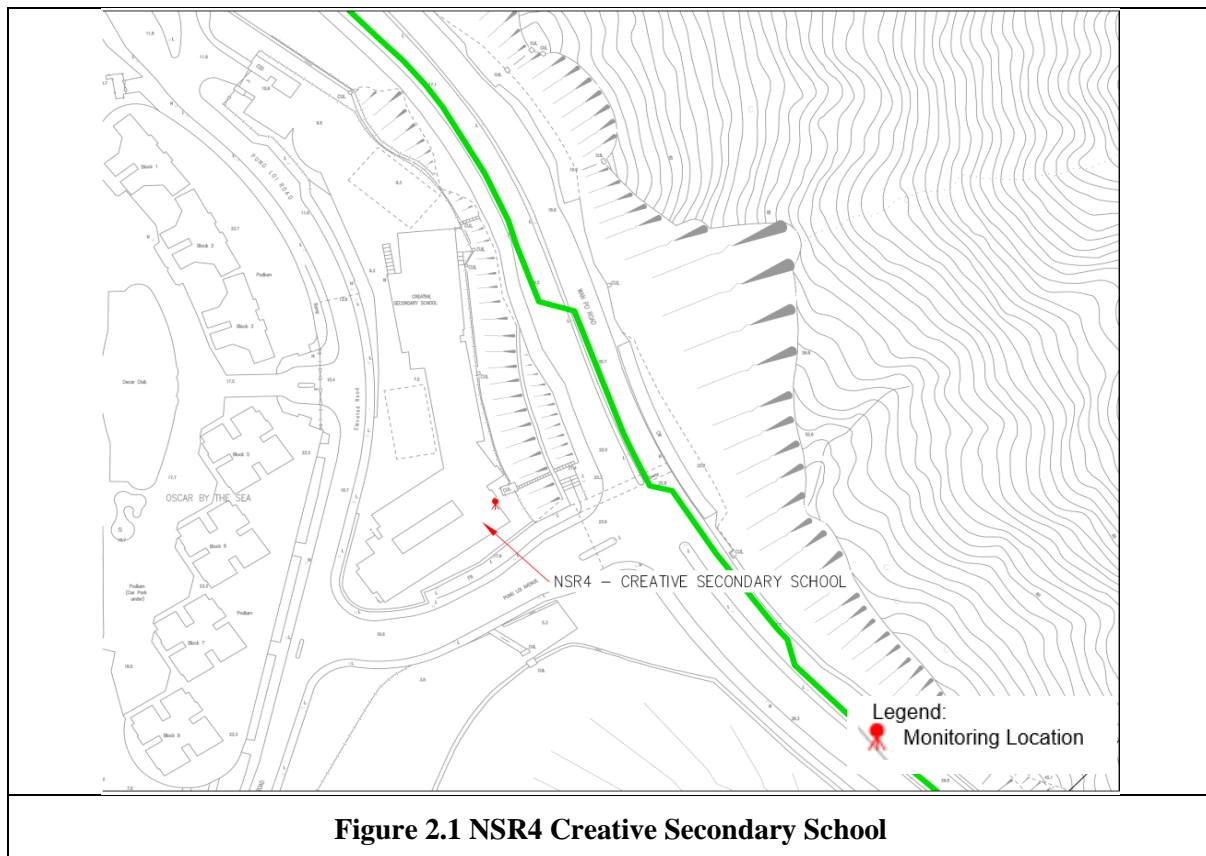
- 2.3.1 The monitoring locations should normally be made at a point 1m from the exterior of the NSRs building façade and be at a position 1.2m above the ground. A correction of +3dB(A) should be made to the free-field measurements
- 2.3.2 Referring to EM&A manual Section 4.1.2, the impact noise monitoring should be carried out at all the designated monitoring stations when there are project-related construction activities undertaken within a radius of 300m from the monitoring stations.

2.3.3 According to the environmental findings detailed in the EIA report and Baseline Monitoring Report, the designated locations for the construction noise monitoring are listed in Table 2.2 below.

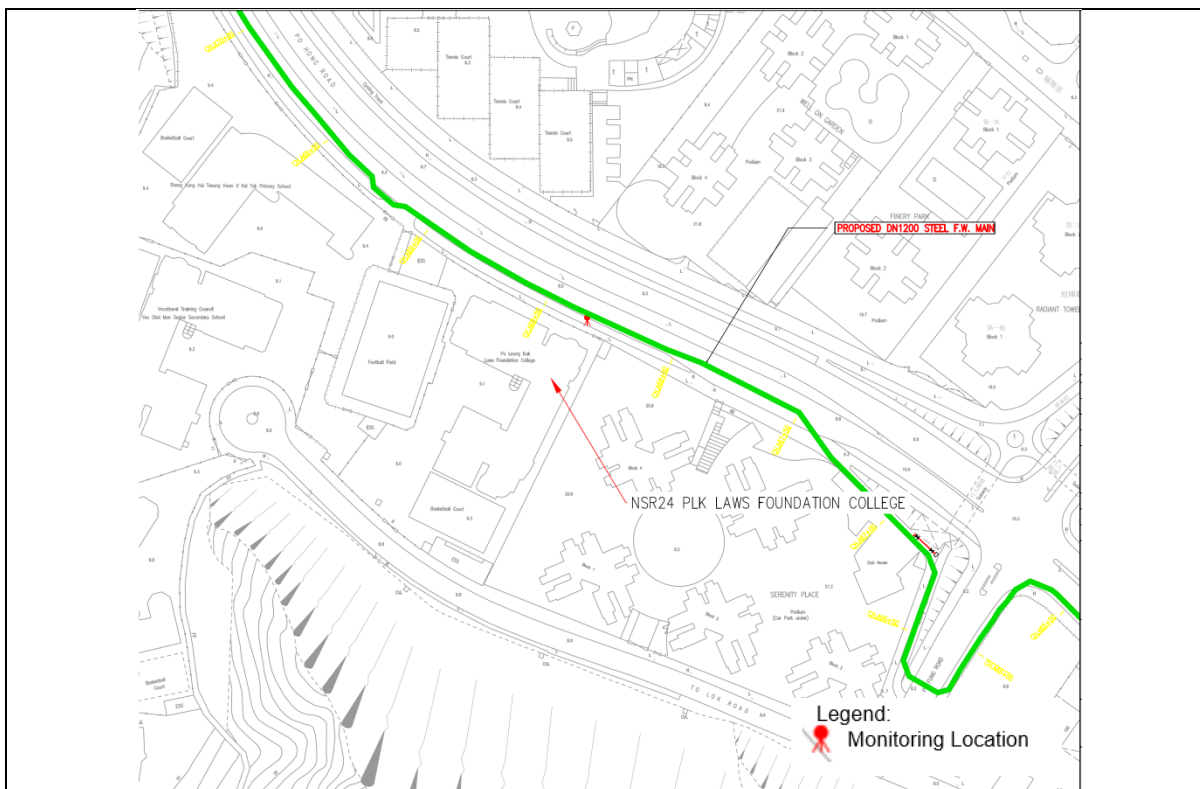
**Table 2.2 Noise Monitoring Location**

NSR ID	Noise Sensitive Receivers	Monitoring Location	Position
NSR 4	Creative Secondary School	Roof Floor	1 m from facade
NSR 24	PLK Laws Foundation College	Pedestrian Road on Ground Floor	Free-field
NSR 31	School of Continuing and Professional Studies - CUHK	Roof Floor	1 m from facade

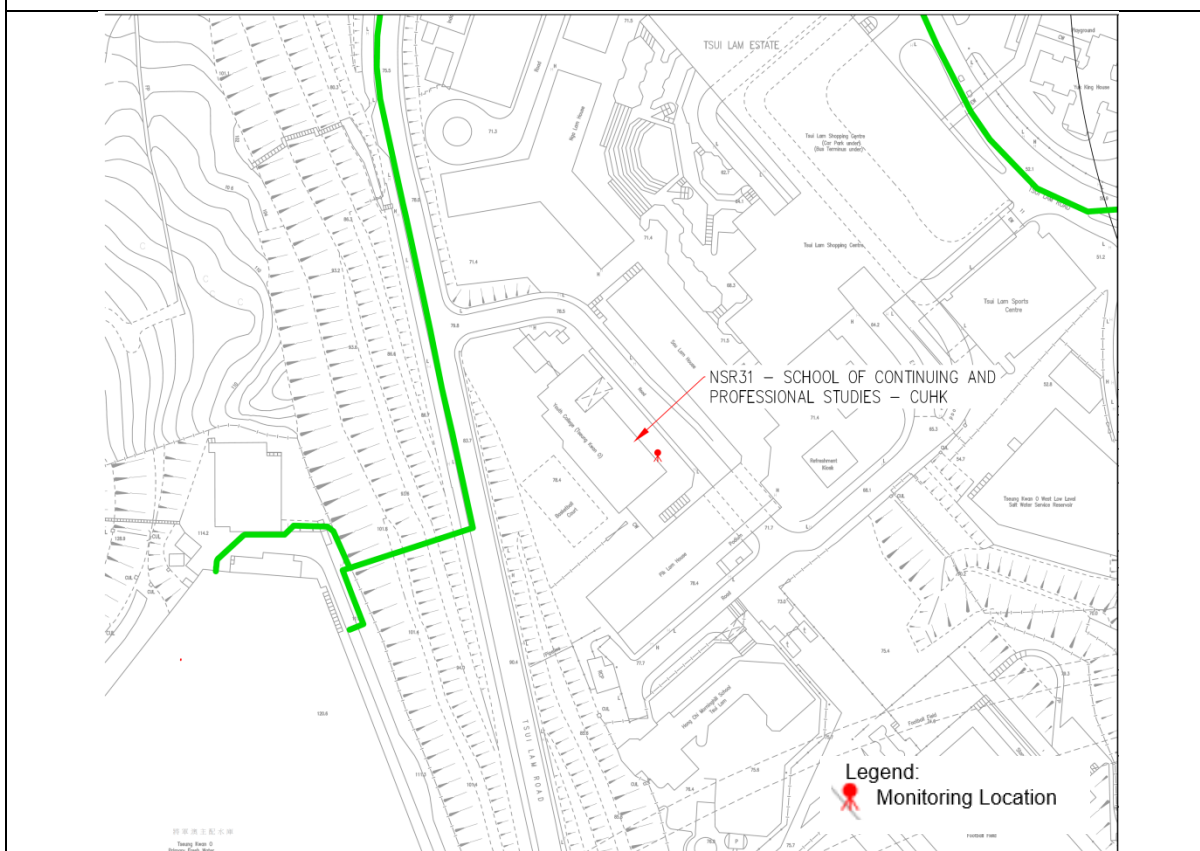
2.3.4 Three noise monitoring locations for impact monitoring at the nearby sensitive receivers are shown in **Figure 2.1 - 2.3**.







**Figure 2.2 NSR24 PLK Laws Foundation College**



**Figure 2.3 NSR31 School of Continuing and Professional Studies - CUHK**

2.4 Impact Monitoring Methodology

- 2.4.1 Integrated sound level meter shall be used for the noise monitoring. The meter shall be in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration level before and after the noise measurements agree to within 1.0 dB(A).
- 2.4.2 Noise measurements shall not be made in the presence of fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

**Table 2.3 Impact Noise Monitoring Equipment**

Equipment	Brand and Model	Detection Limit
Sound Level Meter	Nti XL2	30-130 dB(A)
Sound Level Meter Calibrator	Rion NC-74	Nil
Pocket Wind Meter Anemometer	Kestrel 1000 Wind Meter	Nil

2.5 Action and Limit Levels

- 2.5.1 The Action/Limit Levels in line with the criteria of Practice Note for Professional Persons (ProPECC PN 2/93) “Noise from Construction Activities – Non-statutory Controls” and Technical Memorandum on Environmental Impact Assessment Process issued by HKSAR Environmental Protection Department [“EPD”] under the Environmental Impact Assessment Ordinance, Cap 499, S.16 are presented in **Table 2.4**.

**Table 2.4 Action and Limit Levels for Noise**

Time Period	Action	Limit (dB(A))
0700-1900 hours on normal weekdays	When one documented complaint is received from any one of the noise sensitive receivers	<ul style="list-style-type: none"> <li>• 70 dB(A) for school and</li> <li>• 65 dB(A) during examination period</li> </ul>
Notes: (a) Limits specified in the GW-TM and IND-TM for construction and operation noise, respectively.		

- 2.5.2 If exceedances were found during noise monitoring. The actions in accordance with the Event and Action Plan shall be carried out according to **Appendix F**.

2.6 Monitoring Results and Observations

- 2.6.1 Noise monitoring data shall be recovered in real-time as it is a manned-event with data display from the sound level meters.
- 2.6.2 No impact monitoring for noise impact was conducted in the reporting quarter due to the over distant monitoring station from the works location, where they were farther than 1 km from the closest monitoring station NSR4 to the works location.
- 2.6.3 Detailed monitoring results are presented in **Appendix H**. **Appendix H** is intentionally left blank since there is no impact monitoring for noise impact in this reporting period.



2.6.4 No notification of summons and prosecution related to noise was received in the reporting period.

### 3 Waste Management

3.1.1 Total of 3.652m<sup>3</sup> of inert C&D materials was collected to the Fill Bank, 0.220m<sup>3</sup> C&D waste and general refuse were disposed of at Landfill, 0.417 tonnes of paper/ cardboard packaging was recycled and 0 tonnes chemical waste collected by licensed contractor for disposal in the reporting period.

3.1.2 Waste Flow Table is shown in **Appendix D**.

### 4 Summary of Monitoring Exceedance, Complaints, Notification of Summons and Prosecutions

4.1.1 No monitoring exceedance, notification of summons and prosecution was received in the reporting period.

### 5 EM&A Site Inspection

5.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting period, site inspections were carried out from August 2018 to August 2019 at the site portions list in **Table 5.1** below.

5.1.2 Elven joint site inspections with IEC were carried out in the reporting period as shown in **Table 5.1**.

**Table 5.1 Site Inspection Record**

<b>Date</b>	<b>Inspected Site Portion</b>	<b>Time</b>
30* August 2018	Portion F & G	10:00 am - 11:00 am
4, 13, 20, 27* September 2018	Portion J, F & G	10:00 am - 11:00 am
5, 11, 18, 25, 30* October 2018	Portion J, F & G	10:00 am - 11:00 am
5, 16, 22, 30* November 2018	Portion J	10:00 am - 11:00 am
6, 14, 20, 28, 31* December 2018	Portion F and J	10:00 am - 11:00 am
7, 17, 24, 28, 31* January 2019	Portion J	10:00 am - 11:00 am
4, 14, 21, 27* February 2019	Portion J	10:00 am - 11:00 am
8, 15, 22, 27* March 2019	Portion J	10:00 am - 11:00 am
4, 10, 18, 25, 29* April 2019	Portion J, Portion F	10:00 am - 11:00 am
8, 16, 24, 29* May 2019	Portion J, Portion F	10:00 am - 11:00 am
4, 14, 20, 26* June 2019	Portion J, Portion F	9:30 am – 10:45am 2:00pm – 3:00 pm
3, 10, 19, 24 July 2019	Portion J, Portion F	9:30 am – 11:20 am
2*, 8, 15, 23, 30 August 2019	Portion F, H and J	9:30 am – 12:00 pm

Remark (\*): Joint Site Inspection

5.1.3 Minor deficiencies were observed during weekly site inspection. Key observations during the site inspections are summarized in Table 5.2.

**Table 5.2 Site Observations**

<b>Date</b>	<b>Environmental Observations</b>	<b>Follow-up Status</b>
30 Aug 2018	<ol style="list-style-type: none"> <li>1. At the under-construction site office, construction debris was observed scatteredly next to the gullies.</li> <li>2. The gullies next to the construction area for site office were not properly covered and there is no clear diversion of site runoff on-site.</li> <li>3. The contractor was request to post Environmental Permit at all vehicle site entrance.</li> <li>4. Used paint drums were observed inside the site area and it should be placed inside lockable chemical store on site.</li> <li>5. Stagnant water were found inside the site office and it should be diverted to the waste water treatment tank.</li> </ol>	<ol style="list-style-type: none"> <li>1. Construction debris were cleaned up by the contractor.</li> <li>2. Sandbags were placed to protect the gullies.</li> <li>3. The Environmental Permit was posted by the contractor at the required work area.</li> <li>4. The paint drum had been removed.</li> <li>5. Pond of water was spread by the contractor to facilitate evaporation.</li> </ol>
4 Sep 2018	No observations	-
13 Sep 2018	No observations	-
20 Sep 2018	No observations	-
27 Sep 2018	<ol style="list-style-type: none"> <li>1. Site area near TVB City- The road section appeared dry and dusty. The contractor was requested to clean up the dust/provide with water spray. The contractor was also requested to provide sandbags under water horses before any water spray.</li> <li>2. Site areas near TVB city and Next Media Co. Ltd.- There are scatter waste on-site. The contractor was requested to remove them.</li> </ol>	<ol style="list-style-type: none"> <li>1. The road was cleaned up and sandbags was placed under water horses.</li> <li>2. Waste was cleaned up on site.</li> </ol>
5 Oct 2018	No observations	-
11 Oct 2018	No observations	-
18 Oct 2018	No observations	-
25 Oct 2018	No observations	-
30 Oct 2018	No observations	-
5 Nov 2018	No observations	-
16 Nov 2018	No observations	-
22 Nov 2018	No observations	-
30 Nov 2018	<ol style="list-style-type: none"> <li>1. Waste and general refuse were found on pathway at CHA720</li> <li>2. Gullies was found no blocked or cleaned at CHA 1250</li> </ol>	<ol style="list-style-type: none"> <li>1. Removed the C&amp;D materials</li> <li>2. Covered the gullies with geotextile</li> </ol>

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<b>Date</b>	<b>Environmental Observations</b>	<b>Follow-up Status</b>
6 Dec 2018	<ol style="list-style-type: none"> <li>Sandbags were not fully placed along the barriers at CHA 7+20</li> <li>Chemical was not placed on drip tray at CHA 1+50</li> <li>Some of the gullies were not blocked or covered with geotextile at CHA 1+50</li> </ol>	<ol style="list-style-type: none"> <li>Sandbags were placed</li> <li>Chemical was cleared</li> <li>Gullies were covered with geotextile</li> </ol>
14 Dec 2018	No observations	-
20 Dec 2018	No observations	-
28 Dec 2018	<ol style="list-style-type: none"> <li>Waste was found at Portion F</li> </ol>	<ol style="list-style-type: none"> <li>Removed the C&amp;D materials at Portion F</li> </ol>
31 Dec 2018	No observations	-
7 Jan 2019	No observations	-
17 Jan 2019	No observations	-
24 Jan 2019	No observations	-
31 Jan 2019	No observations	-
2 Feb 2019	No Observations	-
14 Feb 2019	<ol style="list-style-type: none"> <li>Waste was found in the channels at Portion F</li> <li>Chemical was not placed on drip tray at Portion F</li> <li>Sandbags was not fully placed at the barriers at CHA1+50</li> <li>Some of the gullies were not blocked or covered with geotextile at CHA13+50</li> <li>Some of the fences moved across to the passengers road at ACHA13+50</li> <li>Waste and general refuse were found in excavated area at A12+50</li> </ol>	<ol style="list-style-type: none"> <li>Removed the waste in the channels</li> <li>Placed the oil drum on the drip tray</li> <li>Place sufficient sandbags along the water barriers</li> <li>Covered the gullies with geotextile</li> <li>Moved the plastic barriers to the road</li> <li>Removed the general refuse</li> </ol>
21 Feb 2019	<ol style="list-style-type: none"> <li>Sands and excavated materials were not cleaned near the sandbags at CHA 7+20</li> </ol>	<ol style="list-style-type: none"> <li>Removed the C&amp;D material</li> </ol>
27-Feb 2019	<ol style="list-style-type: none"> <li>Sandbags should be placed along the working area at the site near 137 (CHA 1+50) and CHA12+50</li> </ol>	<ol style="list-style-type: none"> <li>Placed sufficient sandbags along the water barriers</li> </ol>
8 Mar 2019	<ol style="list-style-type: none"> <li>Sand bags should be placed along the working area at CHA 1+50</li> </ol>	<ol style="list-style-type: none"> <li>Place sufficient sandbags along the water barriers</li> </ol>
15 Mar 2019	<ol style="list-style-type: none"> <li>Sandbags should be placed along the working area at CHA1+50</li> <li>Housekeeping are needed near the site exit at A1+50</li> </ol>	<ol style="list-style-type: none"> <li>Place sufficient sandbags along water barriers</li> <li>Clean the surface of concrete carriageway</li> </ol>
22 Mar 2019	No Observations	-
27 Mar 2019	No Observations	-

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<b>Date</b>	<b>Environmental Observations</b>	<b>Follow-up Status</b>
4 Apr 2019	<ol style="list-style-type: none"> <li>1. Chemical was not placed in the drip tray at Portion F.</li> <li>2. Wastes in the U-channel were not cleaned at Portion F.</li> <li>3. Construction wastes/ materials were not treated properly at Portion CHA1+50.</li> </ol>	<ol style="list-style-type: none"> <li>1. Drip tray is provided for storing of chemicals</li> <li>2. Remove the wastes in the U-channel</li> <li>3. Remove the construction wastes / materials</li> </ol>
10 Apr 2019	<ol style="list-style-type: none"> <li>1. Sandbags were not placed along the site boundaries fully at A1+50.</li> <li>2. Road section near the site exits were not free from dusty materials at A1+20.</li> </ol>	<ol style="list-style-type: none"> <li>1. Provide sufficient sandbags along the water barriers</li> <li>2. Remove the C&amp;D materials on the access road</li> </ol>
18 Apr 2019	<ol style="list-style-type: none"> <li>1. Road section near the site exit was not free from dusty materials at A1+50.</li> <li>2. Construction materials along the site boundary were not treated properly at A1+50.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove the dusty material at the site exit</li> <li>2. Remove the construction materials along the water barriers</li> </ol>
25 Apr 2019	No Observations	-
29 Apr 2019	No Observations	-
8 May 2019	<ol style="list-style-type: none"> <li>1. Sandbags were not placed along the working boundary fully.</li> <li>2. Dusty materials along the site boundary were not cleaned.</li> <li>3. Road section near the site exit was not free from dusty materials at A1+50.</li> </ol>	<ol style="list-style-type: none"> <li>1. Place sandbags fully cover the working boundary</li> <li>2. Remove the dusty materials along the site boundary</li> <li>3. Remove the dusty materials</li> </ol>
16 May 2019	No Observations	-
24 May 2019	<ol style="list-style-type: none"> <li>1. Gullies were not blocked at A0+78 and Pit B.</li> <li>2. Sandbags were not placed along the site boundaries fully at A12+50 and Pit B.</li> <li>3. Road section near the site exit was not free from dusty materials at A12+50</li> </ol>	<ol style="list-style-type: none"> <li>1. Gullies were blocked at A0-78 and Pit B.</li> <li>2. Sandbags were placed along the site boundaries fully at A12+50 and Pit B.</li> <li>3. Road section near the site exit was free from dusty materials at A12+50.</li> </ol>
29 May 2019	<ol style="list-style-type: none"> <li>1. Gullies were not blocked fully at A0-78.</li> </ol>	<ol style="list-style-type: none"> <li>1. Gullies were blocked fully at A0-78.</li> </ol>
4 Jun 2019	<ol style="list-style-type: none"> <li>1. Accumulation of stagnant water and sediment were not clean at A0+78.</li> <li>2. Road section near the site exit were not free from dusty materials at A13+50</li> <li>3. Wastes in the site area were not clean at A13+50.</li> <li>4. Gullies were not blocked fully at A0+78, A13+50 and Pit B.</li> <li>5. Stagnant water should be cleared at Pit B.</li> </ol>	<ol style="list-style-type: none"> <li>1. Accumulation of stagnant water and sediment were cleaned at A0+78.</li> <li>2. Road section near the site exit were free from dusty materials at A13+50.</li> <li>3. Wastes in the site area were cleaned at A13+50.</li> <li>4. Gullies were blocked fully at A0+78, A13+50 and Pit B.</li> <li>5. Stagnant water had been cleaned at Pit B.</li> </ol>

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<b>Date</b>	<b>Environmental Observations</b>	<b>Follow-up Status</b>
14 Jun 2019	<ol style="list-style-type: none"> <li>1. Stagnant water in drip tray was full nearly at Portion F.</li> <li>2. Cleaning of stagnant water after raining are needed at A0+78, Portion F and Pit B.</li> <li>3. Environmental Permits were missing at A12+50 and Pit B.</li> </ol>	<ol style="list-style-type: none"> <li>1. Stagnant water in drip tray was cleaned at Portion F.</li> <li>2. Cleaning of stagnant water at Portion F and Pit B were directed to sedimentation tank. However, cleaning of stagnant water at A0+78 is still continuing due to the heavy rain. The report will be updated once the cleaning has been done.</li> <li>3. Environmental Permits were replenished at A12+50 and Pit B.</li> </ol>
20 Jun 2019	<ol style="list-style-type: none"> <li>1. Suspicious chemical waste was not placed on drip tray at Portion F.</li> <li>2. Waste was not cleaned regularly at Portion F.</li> <li>3. Sands leaked from sandbags were not cleaned at Portion F.</li> <li>4. Accumulated of stagnant water should be cleaned regularly at A0+78 and A12+50.</li> </ol>	<ol style="list-style-type: none"> <li>1. Chemical waste was placed in chemical waste storage area.</li> <li>2. Waste was cleaned regularly at Portion F.</li> <li>3. Sands leaked from sandbags were cleaned at Portion F.</li> <li>4. Accumulated of stagnant water were cleaned at A0+78 and A12+50.</li> </ol>
26 Jun 2019	<ol style="list-style-type: none"> <li>1. Accumulation of stagnant water was found at A06+64, A12+50 and Pit B</li> <li>2. Accumulation of dusty material was found in the road section near the site exit at A12+50.</li> </ol>	<ol style="list-style-type: none"> <li>1. Accumulation of stagnant water was cleaning at A06+64, A12+50 and Pit B, However, we couldn't clean the water completely, because it keeps raining.</li> <li>2. Accumulation of dusty material was cleaned in the road section near the site exit at A12+50.</li> </ol>
3 Jul 2019	<ol style="list-style-type: none"> <li>1. Water treatment tank was nearly full at A0+78 and A12+50.</li> <li>2. Turbidity in the sedimentation tank as observed consider high at A0+78 and A12+50.</li> </ol>	<ol style="list-style-type: none"> <li>1. Water treatment tanks were not full at A0+78 and A12+50.</li> <li>2. Testing of water samples was conducted and the results were satisfactory.</li> </ol>
10 Jul 2019	<ol style="list-style-type: none"> <li>1. Water should be clear regularly at CHA0+78</li> <li>2. Sandbags were damaged and not fully placed along work area.</li> <li>3. Geotextile covered on the gullies was damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Stagnant water was cleaned.</li> <li>2. Sandbags were changed and fully placed along the work area.</li> <li>3. Geotextile covered on gullies were changed to a new one.</li> </ol>
19 Jul 2019	No observations.	-
24 Jul 2019	<ol style="list-style-type: none"> <li>1. Stagnant water was observed at A7+20.</li> <li>2. Construction materials was not treated properly at Pit B.</li> <li>3. Sandbags should be fully placed along work area.</li> <li>4. Wastewater should be directed to water treatment facilities and treated prior to discharge at A0+78.</li> </ol>	<ol style="list-style-type: none"> <li>1. Stagnant water was pumping at A07+20.</li> <li>2. Construction materials were cleared at Pit B.</li> <li>3. Sandbags were fully placed along the work area.</li> <li>4. Wastewater were directed to water treatment facilities prior to discharge at A0+78.</li> </ol>

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<b>Date</b>	<b>Environmental Observations</b>	<b>Follow-up Status</b>
2 Aug 2019	<ol style="list-style-type: none"> <li>4. Wastewater should be connected to water treatment facilities and treated prior to discharge at A0+78.</li> <li>5. Sandbags should be fully placed along the work area at A0+64</li> <li>6. Chemicals should be placed on drip tray after used at 12+50</li> </ol>	<ol style="list-style-type: none"> <li>1. Wastewater had already been connected to water treatment facilities and treated prior to discharge at A0+78.</li> <li>2. Sandbags had been fully placed along the work area.</li> <li>3. Chemicals had been placed on drip tray after used.</li> </ol>
8 Aug 2019	<ol style="list-style-type: none"> <li>4. Sandbags should be fully placed along the work area at A0+78, A06+64 and A12+50.</li> <li>5. Sandbags were damaged at Pit B.</li> <li>6. Dust suppression measures should be provided in the construction works.</li> <li>7. Contractor is reminded all water should be treated before discharging to discharge point as per requirements in water discharge license.</li> </ol>	<ol style="list-style-type: none"> <li>1. Sandbags had been fully placed along the work area.</li> <li>2. Sandbags were changed at Pit B.</li> <li>3. Water spraying facility was provided and water was sprayed in the work area to minimize the dust emission.</li> <li>4. All water was treated before discharging to discharge point as per requirements in water discharge license.</li> </ol>
15 Aug 2019	<ol style="list-style-type: none"> <li>1. Sandbags should be fully placed along the work area at A0+78, A6+64 and A12+50</li> <li>2. Sandbags were damaged at Pit B.</li> <li>3. All water should be treated before discharging as per requirements in water discharge license at A0+78 and A06+64</li> </ol>	<ol style="list-style-type: none"> <li>1. Sandbags were fully placed along the work area.</li> <li>2. Sandbags were changed at Pit B.</li> <li>3. All water was treated before discharging as per requirements in water discharge license.</li> </ol>
23 Aug 2019	<ol style="list-style-type: none"> <li>2. Stagnant water in the drip tray should be cleaned regularly at Portion F.</li> <li>3. Sandbags should be fully placed along the work area at Pit E and Pit B.</li> <li>4. All water should be treated before discharging as per requirements in water discharge license.</li> <li>5. Chemicals were not placed in drip tray at 137 and CHA 12+50.</li> <li>6. Regular cleaning should be conducted at Pit B.</li> <li>7. Gullies should be covered with geotextile and enclosed by sandbags.</li> </ol>	<ol style="list-style-type: none"> <li>1. Stagnant water in the drip tray was cleaned regularly at Portion F.</li> <li>2. Sandbags were fully placed along the work area.</li> <li>3. All water was treated before discharging as per requirements in water discharge license.</li> <li>4. Chemicals were taken back to Portion F from 137 and CHA 12+50 and placed in drip tray.</li> <li>5. Regular cleaning was conducted at Pit B.</li> <li>6. Gullies were covered with geotextile and enclosed by sandbags.</li> </ol>

Date	Environmental Observations	Follow-up Status
30 Aug 2019	<ol style="list-style-type: none"> <li>1. All water should be treated before discharging as per requirements in water discharge license at A0+78 and A6+64.</li> <li>2. General refuse should be disposed properly and regularly at A0+78 and Pit B.</li> <li>3. Gully should be blocked. Contractor is recommended to cover the gully with geotextile and place the sandbags at four sides of the gully at Pit B.</li> <li>4. Chemical should be place properly to prevent leakage and spillage at Pit B and 137.</li> </ol>	<ol style="list-style-type: none"> <li>1. All water was treated before discharging as per requirements in water discharge license.</li> <li>2. General refuse was disposed properly and regularly.</li> <li>3. Gully was blocked.</li> <li>4. Chemicals were taken back to Portion F from 137 and CHA 12+50 and placed in drip trays.</li> </ol>

5.1.4 According to the EIA Study Report, Environmental Permit, contract documents and EM&A Manual, the mitigation measures detailed in the documents are implemented as much as practical during the reporting period. An updated Implementation Status of Environmental Mitigation Measures (EMIS) is provided in **Appendix E**.



## **6 Landfill gas monitoring**

- 6.1.1 In accordance with Section 11 of the EM&A Manual, monitoring of landfill gas is required for construction works within the 250m Consultation Zone. Part of the desalination plant and the indicative area of natural slope mitigation works fall within the SENT Landfill Extension Consultation Zone; and part of the 1,200 mm diameter fresh water mains along Wan Po Road falls within the SENT Landfill and SENT Landfill Extension Consultation Zones, TKO Stage II/III Restored Landfill and TKO Stage I Restored Landfill Consultation Zones. Monitoring were conducted from September 2018 to August 2019.
- 6.1.2 Monitoring of oxygen, methane and carbon dioxide was performed for excavations at 1m depth or more within the consultation Zone. In this reporting period, 2256 times of monitoring was carried out by the Registered Safety Officer by the Contractor at the excavation locations. Action and Limit Level is provided in **Appendix F**.
- 6.1.3 Monitoring Equipment used in the reporting period are summarised in **Table 6.1**.

**Table 6.1 Landfill Gas Monitoring Equipment**

<b>Equipment</b>	<b>Model and Make</b>	<b>Calibration Expiry Date</b>
Gas Detector	Industrial Scientific Corporation M40	28 August 2019
Gas Detector	RAE System QRAE3	17 October 2019



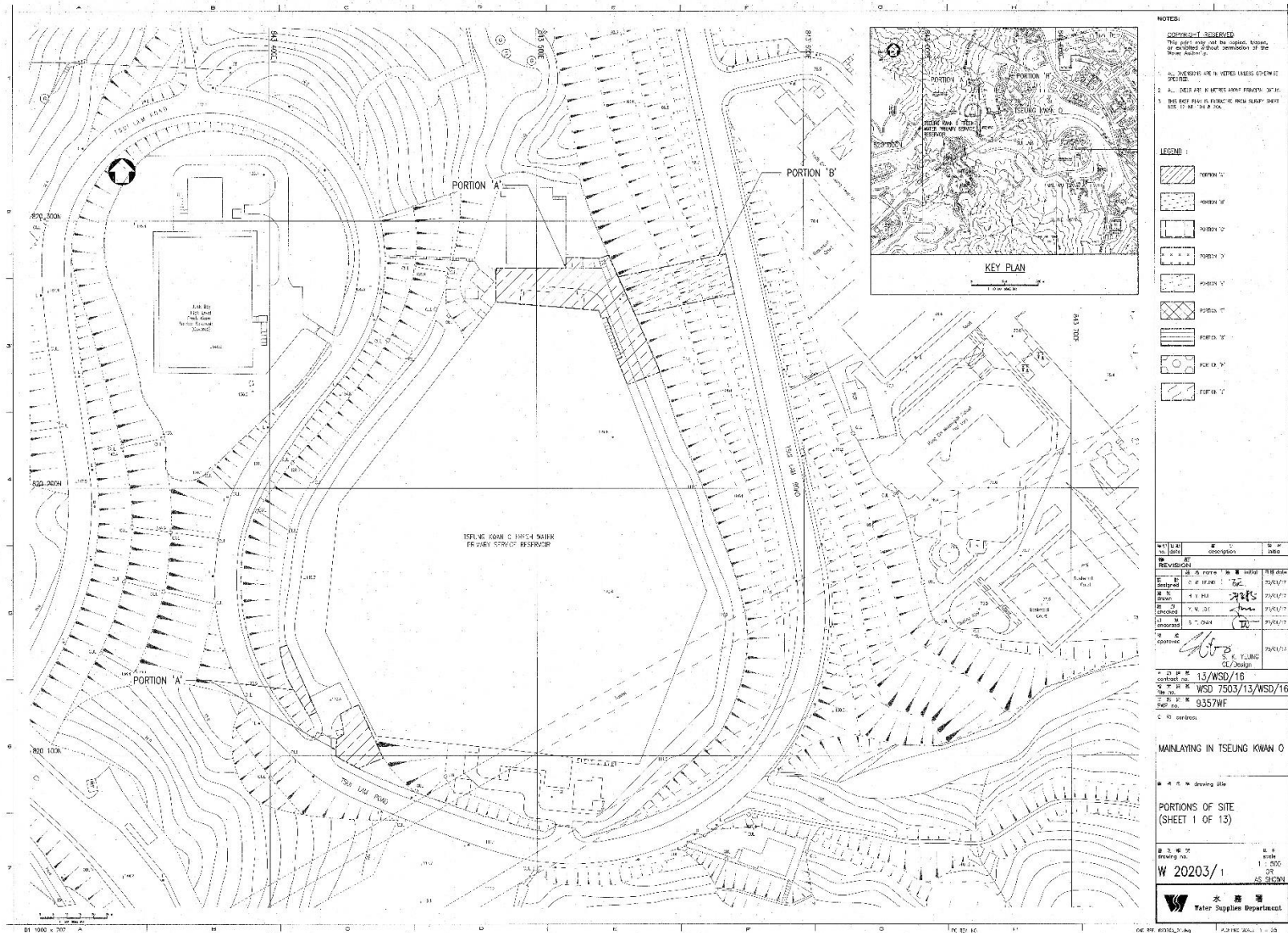
## **7 Conclusion and Recommendations**

- 7.1.1 This is the 1st Annually Environmental Monitoring and Audit (EM&A) Review Report prepared by ASCL. This report presenting the EM&A works carried out during the period of 1 August 2018 to 31 August 2019 in accordance with the EM&A Manual and the requirement under EP-503/2015/A.
- 7.1.2 No noise monitoring was conducted from August 2018 to August 2019 due to over distant monitoring stations from the works location.
- 7.1.3 No landfill gas exceedance was recorded in the reporting period.
- 7.1.4 No project-related exceedance of the Action Level was recorded during the reporting period.
- 7.1.5 Weekly environmental site inspection was conducted during the reporting period. Minor deficiencies were observed during site inspection and were rectified. The environmental performance of the Project was therefore considered satisfactory.
- 7.1.6 According to the environmental site inspections performed in the reporting period, the Contractor is reminded to pay attention on maintaining site tidiness and proper materials storage.
- 7.1.7 No environmental complaint was received in the reporting period.
- 7.1.8 No notification of summons or prosecution was received since commencement of the Contract.
- 7.1.9 The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.
- 7.1.10 Statistics on complaints and regulatory compliance are summarized in **Appendix G**.

# Appendix A

## Overview of Mainlaying in TKO

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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- [Symbol] PORTION 'B'
- [Symbol] PORTION 'C'
- [Symbol] PORTION 'D'
- [Symbol] PORTION 'E'
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NO.	DATE	BY	DESCRIPTION	SCALE
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2	13/08/16	WSD	CHECKED	1:500
3	13/08/16	WSD	APPROVED	1:500

WSD  
 WATER SUPPLY DEPARTMENT

CONTRACT NO. 13/WSD/16  
 PROJECT NO. WSD 7503/13/WSD/16  
 SHEET NO. 9357WF  
 C. H. CHAN

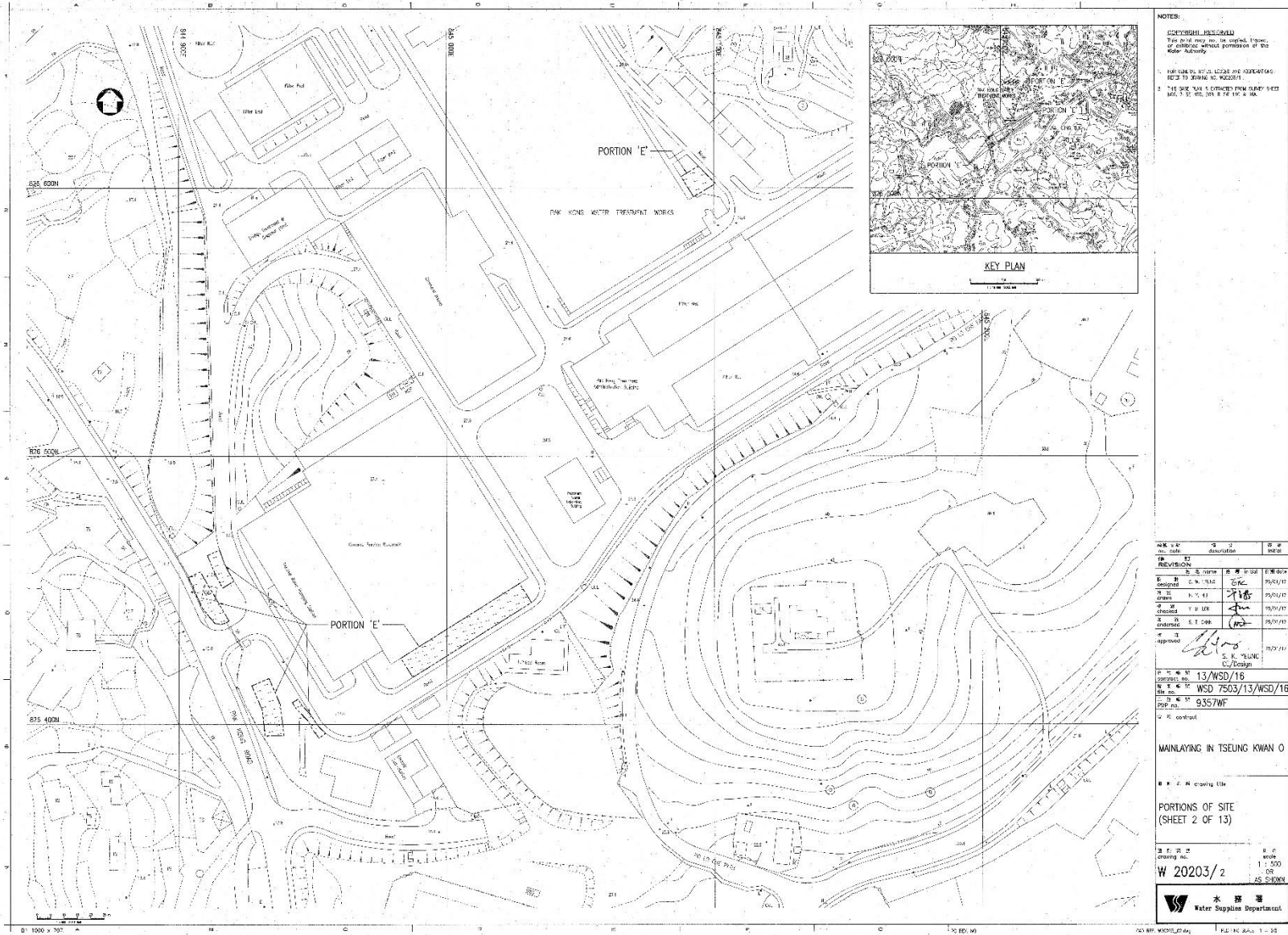
**MAINLAYING IN TSEUNG KWAN O**

PORTIONS OF SITE  
 (SHEET 1 OF 13)

W 20203/1  
 WATER SUPPLY DEPARTMENT



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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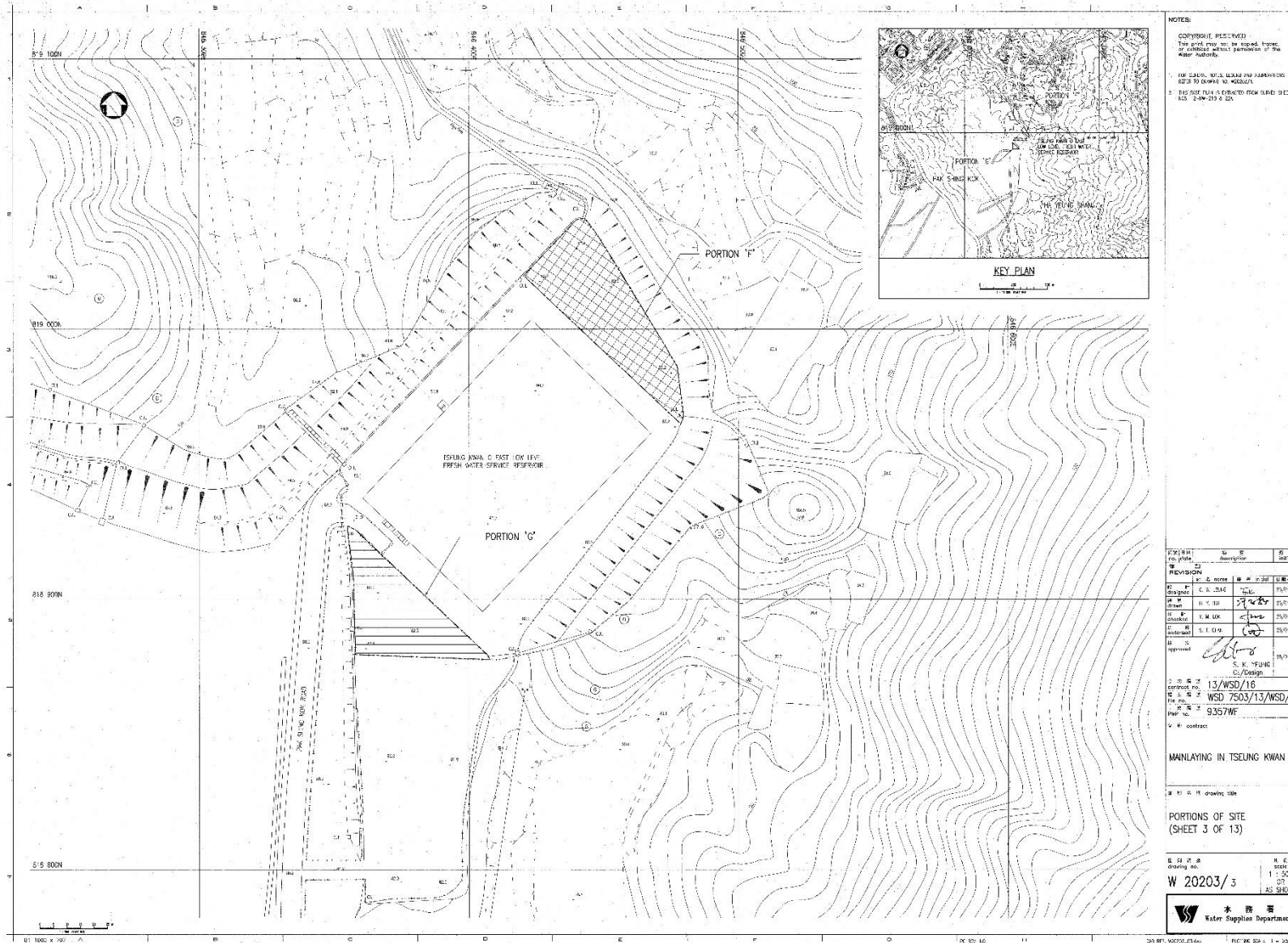
NO.	DATE	DESCRIPTION	BY	CHKD.	DATE
1	13/08/16	DESIGNED	S. K. LUNG	C. Y. CHAN	13/08/16
2	13/08/16	CHECKED	S. T. CHAN	(M)	13/08/16
3	13/08/16	APPROVED	S. K. LUNG	C. Y. CHAN	13/08/16

Contract No. 13/WSD/16  
 Mainlaying in Tseung Kwan O  
 SHEET 2 OF 13

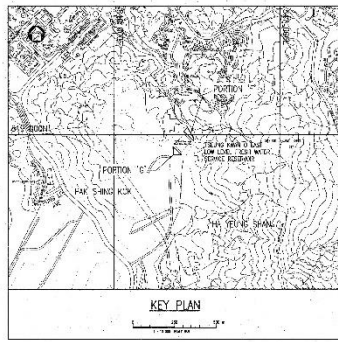
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**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**

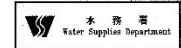


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2	REVISION	
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MAINLAYING IN TSEUNG KWAN O  
 PORTIONS OF SITE  
 (SHEET 3 OF 13)  
 W 20203/3  
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**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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4	22/01/17	Issue for construction	S. C. YELING	CL/Design
5	22/01/17	Issue for construction	S. C. YELING	CL/Design

Contract No. 13/WSD/16  
 Project No. WSD 7503/13/WSD/16  
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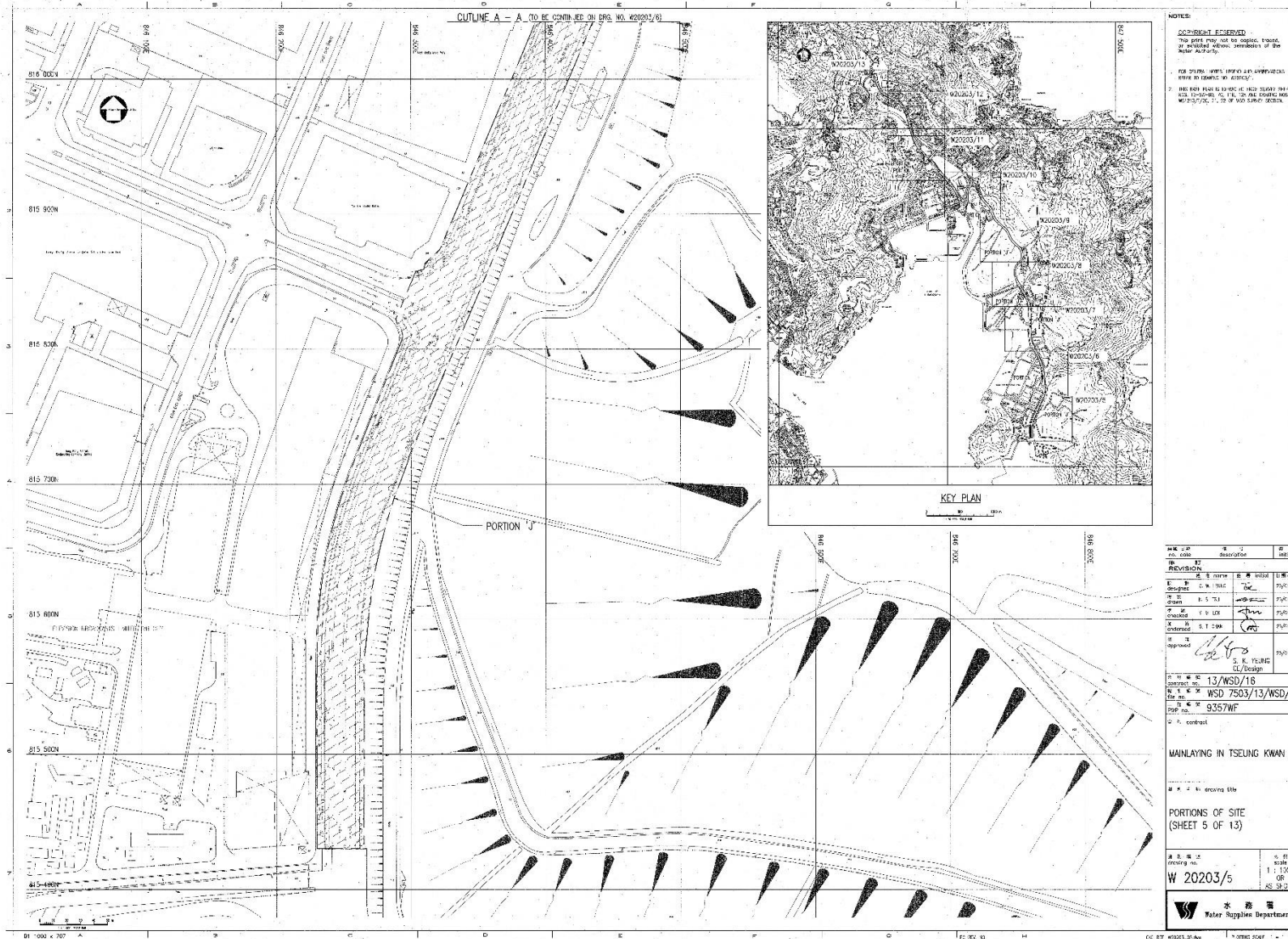
**MAINLAYING IN TSEUNG KWAN O**

PORTIONS OF SITE  
 (SHEET 4 OF 13)

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 Date: 20203/4

Water Supplies Department

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



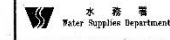
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100	15/01/12	REVISED	CL	CL

Contract No. 13/WSD/16  
 Mainlaying in Tseung Kwan O  
 WSD 7503/13/WSD/16  
 9357WF  
 S. K. YEUNG  
 CL/Design

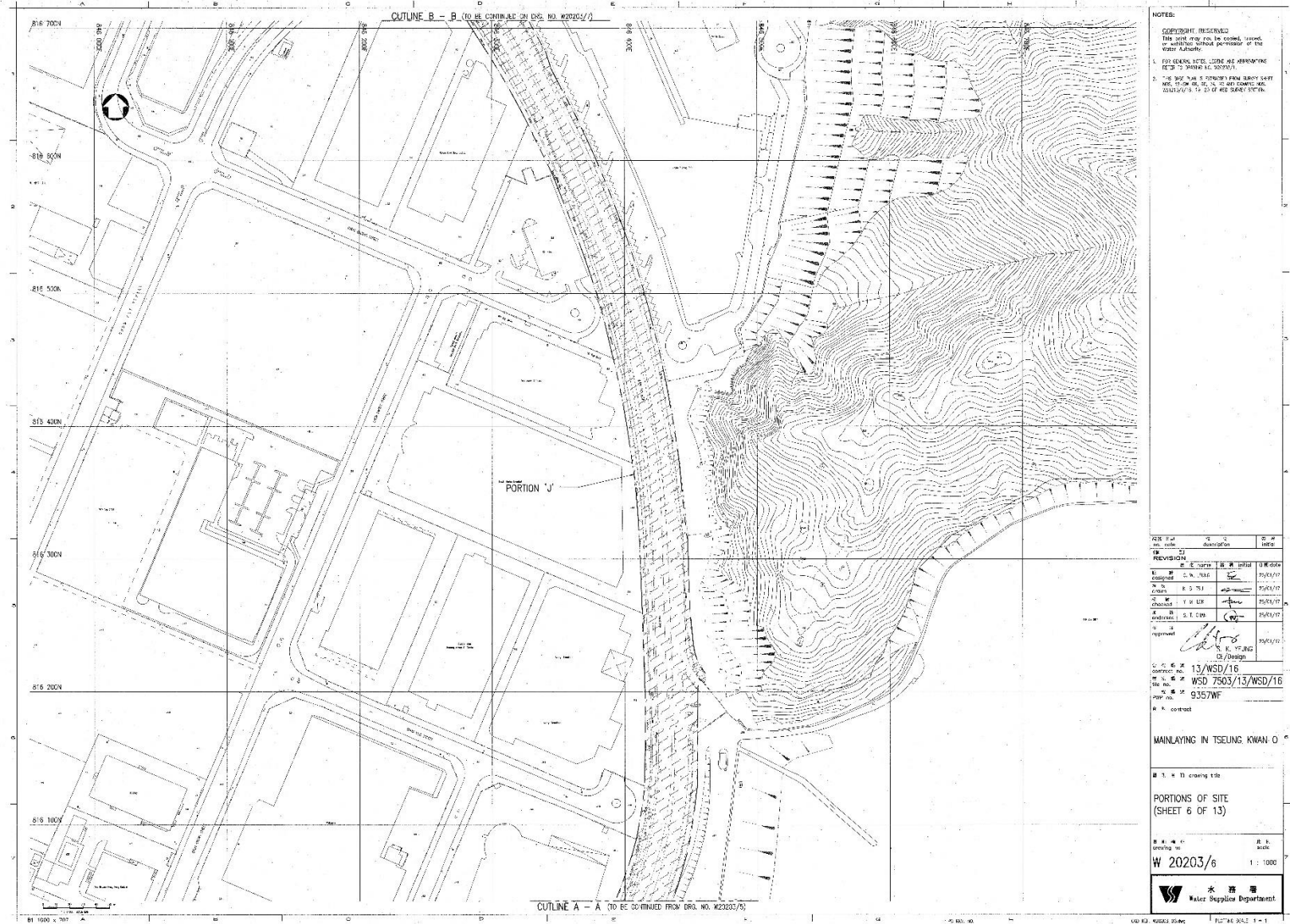
MANLAYING IN TSEUNG KWAN O  
 PORTIONS OF SITE  
 (SHEET 5 OF 13)

W 20203/5  
 1:1000  
 AS SHOWN





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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REV. NO.	DATE	DESCRIPTION	BY	CHKD.
<b>REVISION</b>				
1	13/08/16	Issue for tender	WSD	WSD
2	13/08/16	Issue for tender	WSD	WSD
3	13/08/16	Issue for tender	WSD	WSD
4	13/08/16	Issue for tender	WSD	WSD
5	13/08/16	Issue for tender	WSD	WSD
6	13/08/16	Issue for tender	WSD	WSD
7	13/08/16	Issue for tender	WSD	WSD
8	13/08/16	Issue for tender	WSD	WSD
9	13/08/16	Issue for tender	WSD	WSD
10	13/08/16	Issue for tender	WSD	WSD
11	13/08/16	Issue for tender	WSD	WSD
12	13/08/16	Issue for tender	WSD	WSD
13	13/08/16	Issue for tender	WSD	WSD
14	13/08/16	Issue for tender	WSD	WSD
15	13/08/16	Issue for tender	WSD	WSD
16	13/08/16	Issue for tender	WSD	WSD
17	13/08/16	Issue for tender	WSD	WSD
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22	13/08/16	Issue for tender	WSD	WSD
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24	13/08/16	Issue for tender	WSD	WSD
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47	13/08/16	Issue for tender	WSD	WSD
48	13/08/16	Issue for tender	WSD	WSD
49	13/08/16	Issue for tender	WSD	WSD
50	13/08/16	Issue for tender	WSD	WSD

Contract no. 13/WSD/16  
 Site no. WSD 7503/13/WSD/16  
 Drawn by: 9357WF  
 R. K. contract

**MAINLAYING IN TSEUNG KWAN O**

Sheet 6 of 13

**PORTIONS OF SITE**  
 (SHEET 6 OF 13)

W 20203/6 1:1000

Water Supply Department



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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REV.	NO.	DATE	DESCRIPTION	BY	CHK.
<b>REVISION</b>					
1	1	25/01/17	Issue for construction	S.K.	S.K.
2	2	25/01/17	Issue for construction	S.K.	S.K.
3	3	25/01/17	Issue for construction	S.K.	S.K.
4	4	25/01/17	Issue for construction	S.K.	S.K.
5	5	25/01/17	Issue for construction	S.K.	S.K.
6	6	25/01/17	Issue for construction	S.K.	S.K.
7	7	25/01/17	Issue for construction	S.K.	S.K.
8	8	25/01/17	Issue for construction	S.K.	S.K.
9	9	25/01/17	Issue for construction	S.K.	S.K.
10	10	25/01/17	Issue for construction	S.K.	S.K.
11	11	25/01/17	Issue for construction	S.K.	S.K.
12	12	25/01/17	Issue for construction	S.K.	S.K.
13	13	25/01/17	Issue for construction	S.K.	S.K.
14	14	25/01/17	Issue for construction	S.K.	S.K.
15	15	25/01/17	Issue for construction	S.K.	S.K.
16	16	25/01/17	Issue for construction	S.K.	S.K.
17	17	25/01/17	Issue for construction	S.K.	S.K.
18	18	25/01/17	Issue for construction	S.K.	S.K.
19	19	25/01/17	Issue for construction	S.K.	S.K.
20	20	25/01/17	Issue for construction	S.K.	S.K.

Contract No. 13/WSD/16  
 Drawing No. WSD 7503/13/WSD/16  
 Sheet No. 9357WF  
 Contract

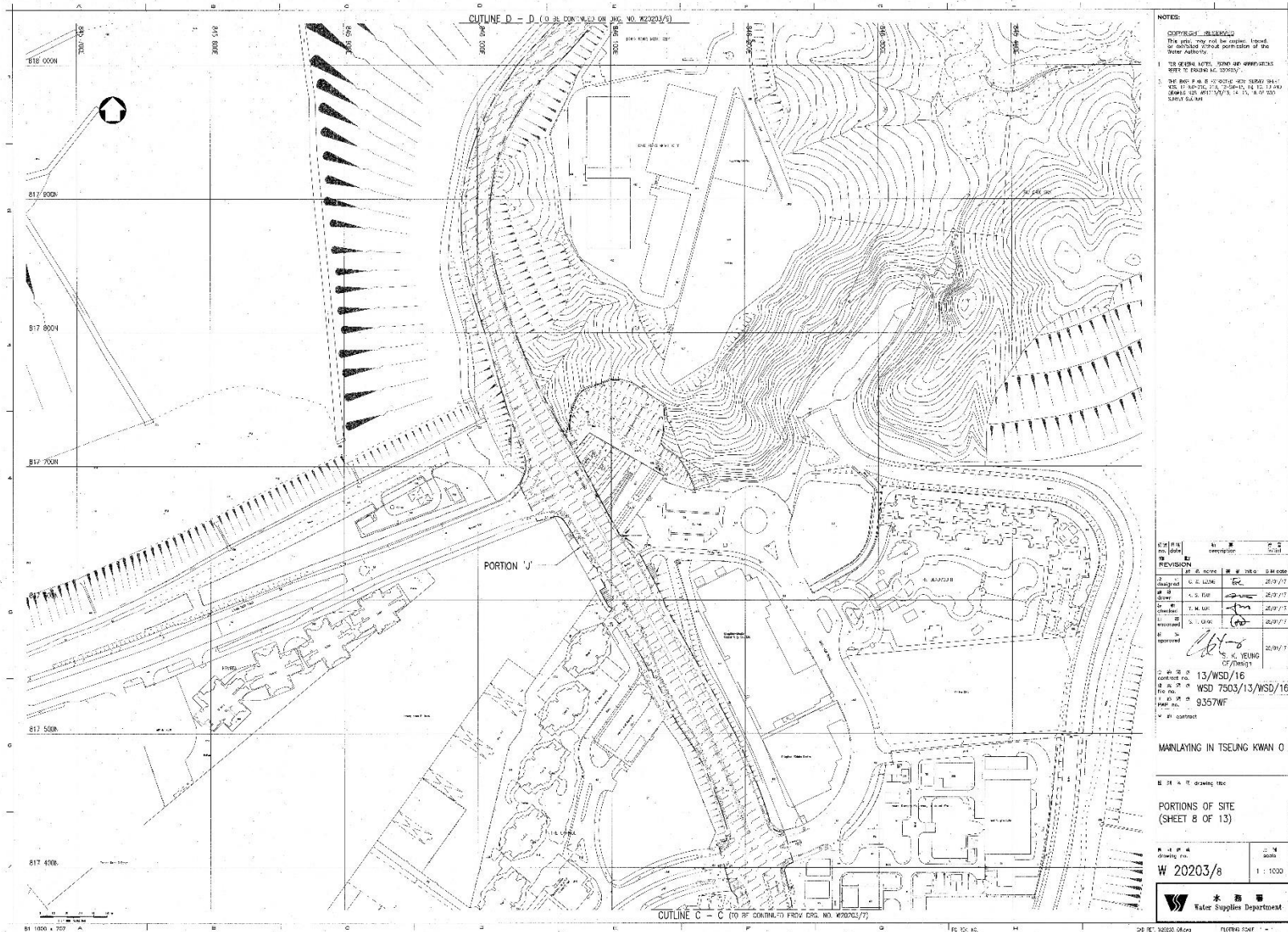
MAINLAYING IN TSEUNG KWAN O

PORTIONS OF SITE  
 (SHEET 7 OF 13)

Drawing No. W 20203/7  
 Scale 1:1000



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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REV. NO.	DESCRIPTION	DATE
1	DESIGNED	25/9/17
2	CHECKED	26/9/17
3	APPROVED	26/9/17

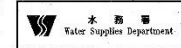
CONTRACT NO. 13/WSD/16  
 DRAWING NO. WSD 7503/13/WSD/16  
 DRAWING TITLE: MAINLAYING IN TSEUNG KWAN O  
 SHEET NO. 8 OF 13

MAINLAYING IN TSEUNG KWAN O

PORTIONS OF SITE  
 (SHEET 8 OF 13)

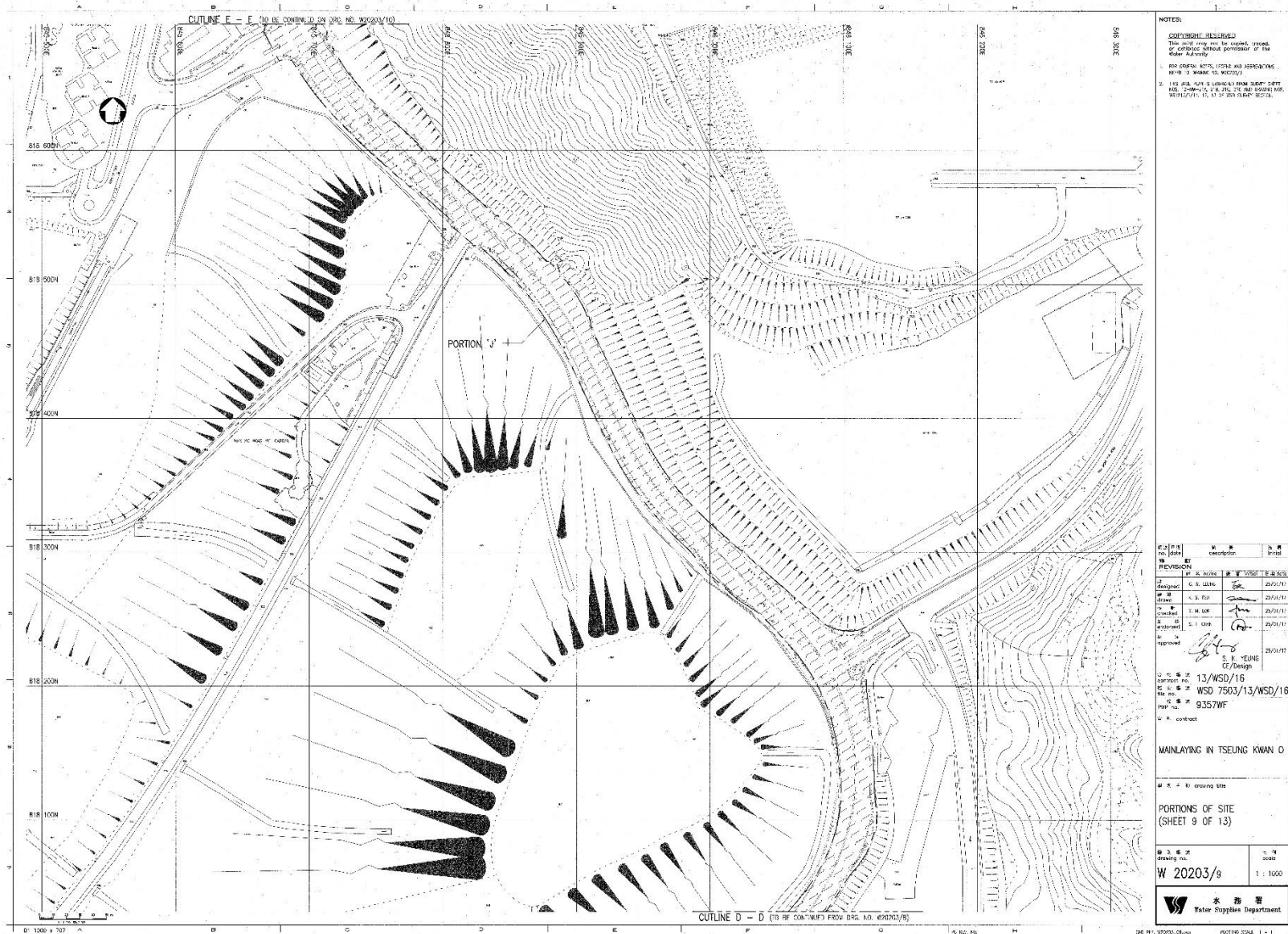
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W 20203/8





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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REV. NO.	DATE	DESCRIPTION	BY	CHKD.
1	25/01/17	ISSUE FOR TENDER	S. S. YIP	S. K. YUNG
2	25/01/17	FOR CONSTRUCTION	S. S. YIP	S. K. YUNG
3	25/01/17	FOR CONSTRUCTION	S. S. YIP	S. K. YUNG
4	25/01/17	FOR CONSTRUCTION	S. S. YIP	S. K. YUNG
5	25/01/17	FOR CONSTRUCTION	S. S. YIP	S. K. YUNG

Designer: S. S. YIP  
 Checker: S. K. YUNG  
 Approved: S. K. YUNG  
 Date: 25/01/17  
 Position: CE/Design

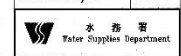
Contract no.: 13/WSD/16  
 Site no.: WSD 7503/13/WSD/16  
 Dwg. no.: 9357WF  
 Contract:

**MAINLAYING IN TSEUNG KWAN O**

# 1: 1: growing site

**PORTIONS OF SITE**  
 (SHEET 9 OF 13)

Drawing no.: W 20203/9  
 Scale: 1:1000





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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1. FOR GENERAL INFO, SEE THE GENERAL NOTES TO DRAWING NO. WSD/16/13.

2. THE MAP HAS A SPAN OF 100 METERS. THE SPAN IS 100 METERS. THE SPAN IS 100 METERS. THE SPAN IS 100 METERS.

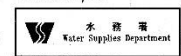
NO.	DATE	DESCRIPTION	BY	CHKD.
<b>REVISION</b>				
1	25/01/19	DESIGNED	C.S. HUI	C.S. HUI
2	25/01/19	DRAWN	C.S. HUI	C.S. HUI
3	25/01/19	CHECKED	T.M. TO	T.M. TO
4	25/01/19	APPROVED	S.T. CHAN	S.T. CHAN
APPROVED: <i>[Signature]</i> S. K. YEUNG CE/Design				

PROJECT NO. 13/WSD/16  
 DRAWING NO. WSD 7503/13/WSD/16  
 PLAN NO. 9357WF  
 CONTRACT NO.

MAINLAYING IN TSEUNG KWAN O

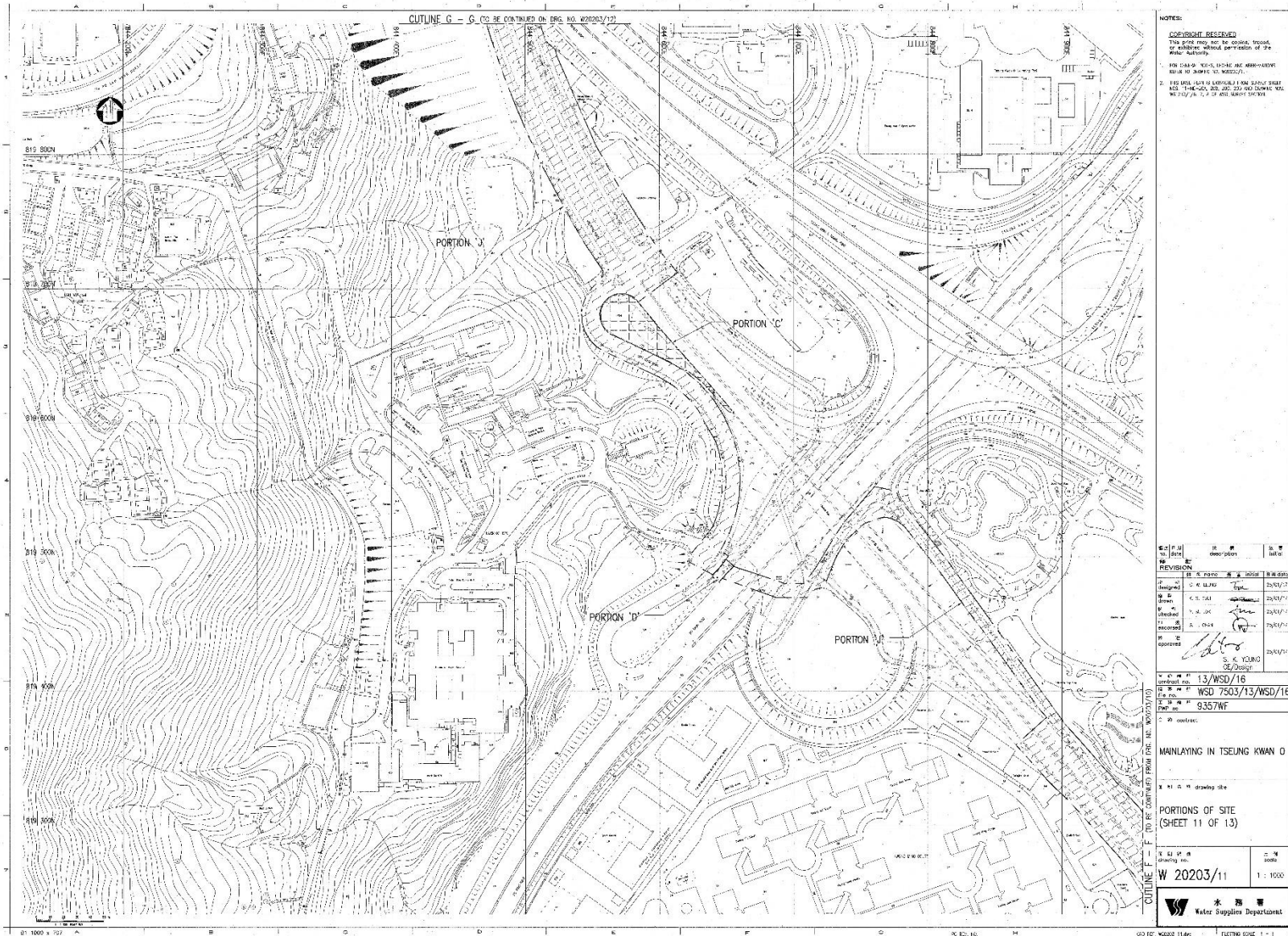
PORTIONS OF SITE  
 (SHEET 10 OF 13)

DRAWING NO. W 20203/10  
 SCALE 1:1000





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**NOTES:**

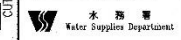
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NO.	REVISION	DATE	BY	CHECKED
1	Issue for tender	20/05/17	S. K. YOUNG	S. K. YOUNG
2	Issue for construction	20/05/17	S. K. YOUNG	S. K. YOUNG
3	Issue for construction	20/05/17	S. K. YOUNG	S. K. YOUNG
4	Issue for construction	20/05/17	S. K. YOUNG	S. K. YOUNG

Project No. 13/WSD/16  
 WSD 7503/13/WSD/16  
 9357WF

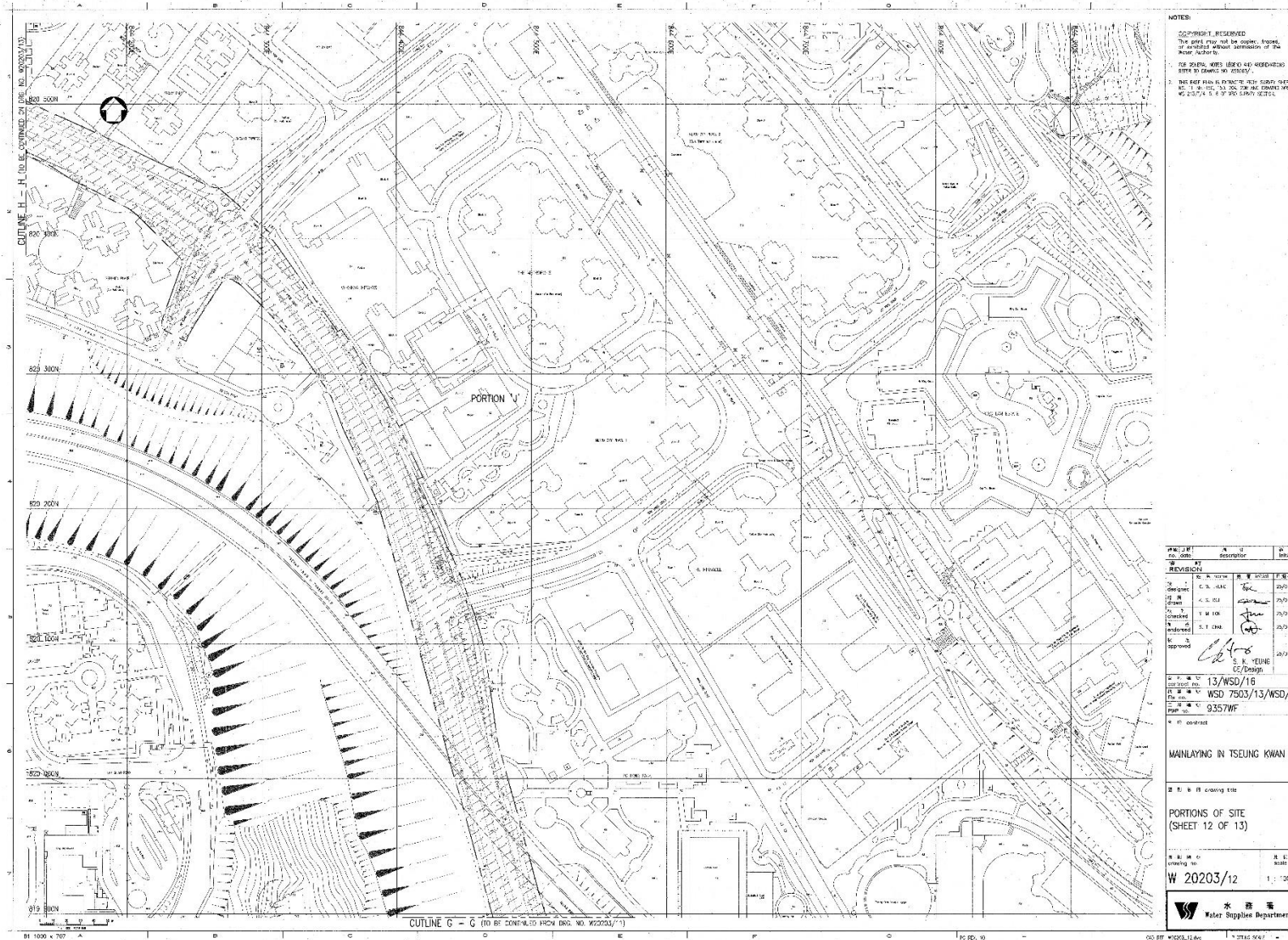
MANLAYING IN TSEUNG KWAN O  
 PORTIONS OF SITE  
 (SHEET 11 OF 13)

W 20203/11  
 1 : 1000





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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 DATE BY CHECKED BY: 2018/11/15

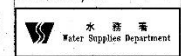
REV. NO.	DATE	DESCRIPTION	BY	CHKD.	DATE
1	20/01/16	Issue for tender	C.S. HUI	S.K. YUNG	20/01/16
2	20/01/16	Check for design	T.M. TONG	S.K. YUNG	20/01/16
3	20/01/16	Check for design	S.T. CHAN	S.K. YUNG	20/01/16
4	20/01/16	Approved	S.K. YUNG	S.K. YUNG	20/01/16

Project No. 13/WSD/16  
 WSD 7503/13/WSD/16  
 9357WF

MAINLAYING IN TSEUNG KWAN O

PORTIONS OF SITE  
 (SHEET 12 OF 13)

W 20203/12 1:1000





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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 2. THE WORKS SHALL BE CONSIDERED TO BE THE WORKS SHOWN ON THIS PLAN UNLESS OTHERWISE SPECIFIED.

NO.	DATE	REVISION	BY	CHKD.	DATE
1	25/01/19	Design	C. S. CHAN	Sup.	25/01/19
2	25/01/19	Check	C. S. CHAN	Sup.	25/01/19
3	25/01/19	Check	C. T. CHAN	Sup.	25/01/19

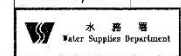
APPROVED: *[Signature]*  
 S. K. YEUNG  
 C./Design

Contract no. 13/WSD/16  
 File no. WSD 7503/13/WSD/16  
 Plan no. 9357WF  
 2<sup>nd</sup> contract

**MAINLAYING IN TSEUNG KWAN O**

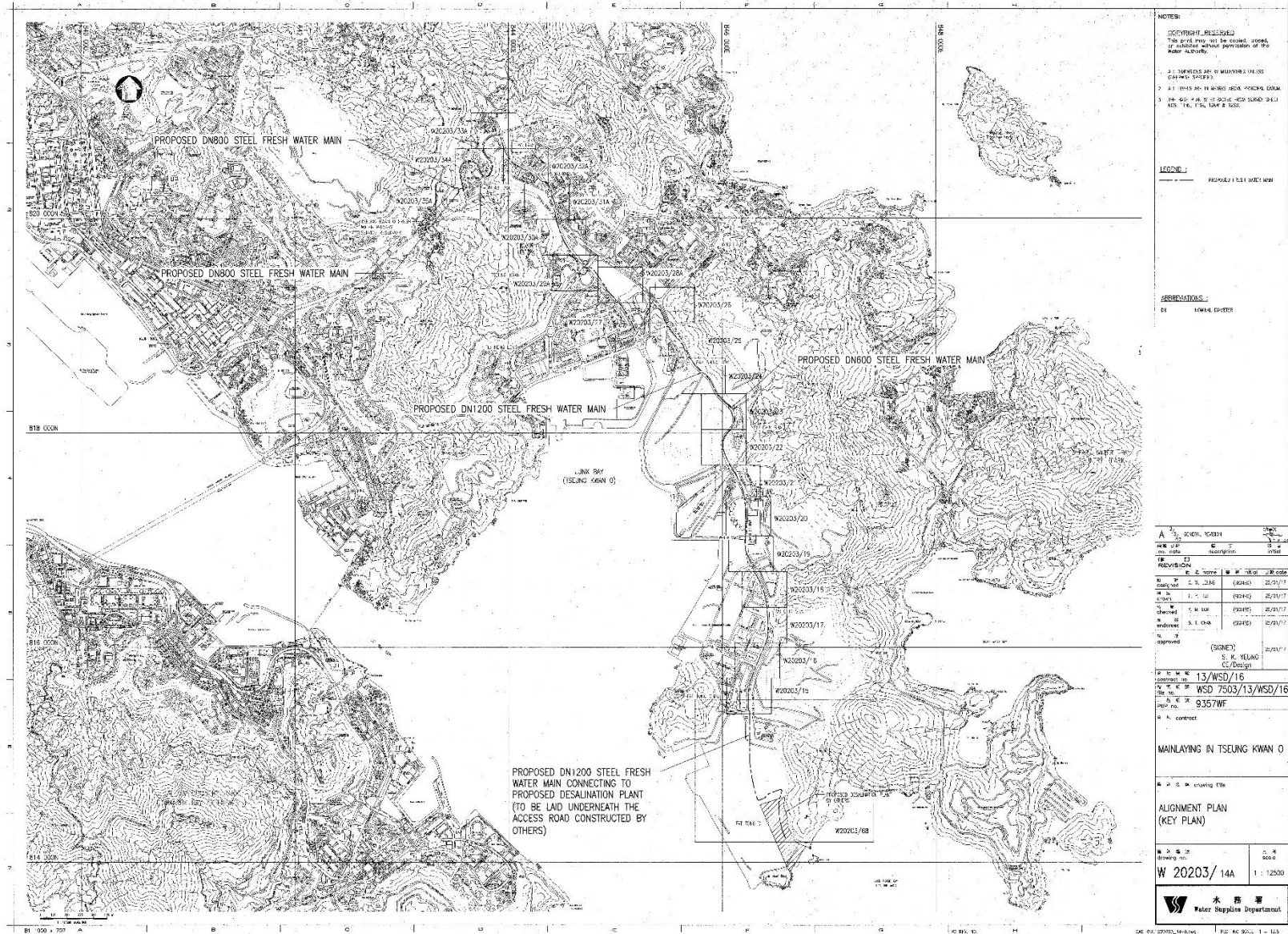
PORTIONS OF SITE  
 (SHEET 13 OF 13)

Scale: 1:1000





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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4. THE DIMENSIONS OF ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

**LEGEND:**

PROPOSED FRESH WATER MAIN

**ABBREVIATIONS:**

DA: EXISTING DRAINAGE

---

**REVISION:**

NO.	DATE	BY	CHKD.	DESCRIPTION
1	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
2	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
3	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
4	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
5	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
6	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
7	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
8	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
9	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
10	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
11	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
12	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
13	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
14	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
15	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
16	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
17	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
18	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
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43	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
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48	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
49	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER
50	13/08/16	S. K. YUANG	S. K. YUANG	ISSUED FOR TENDER

(SIGNED) S. K. YUANG  
 CE/Design

Contract No. 13/WSD/16  
 Project No. WSD 7503/13/WSD/16  
 Drawing No. 9357WF  
 Scale: 1:12500

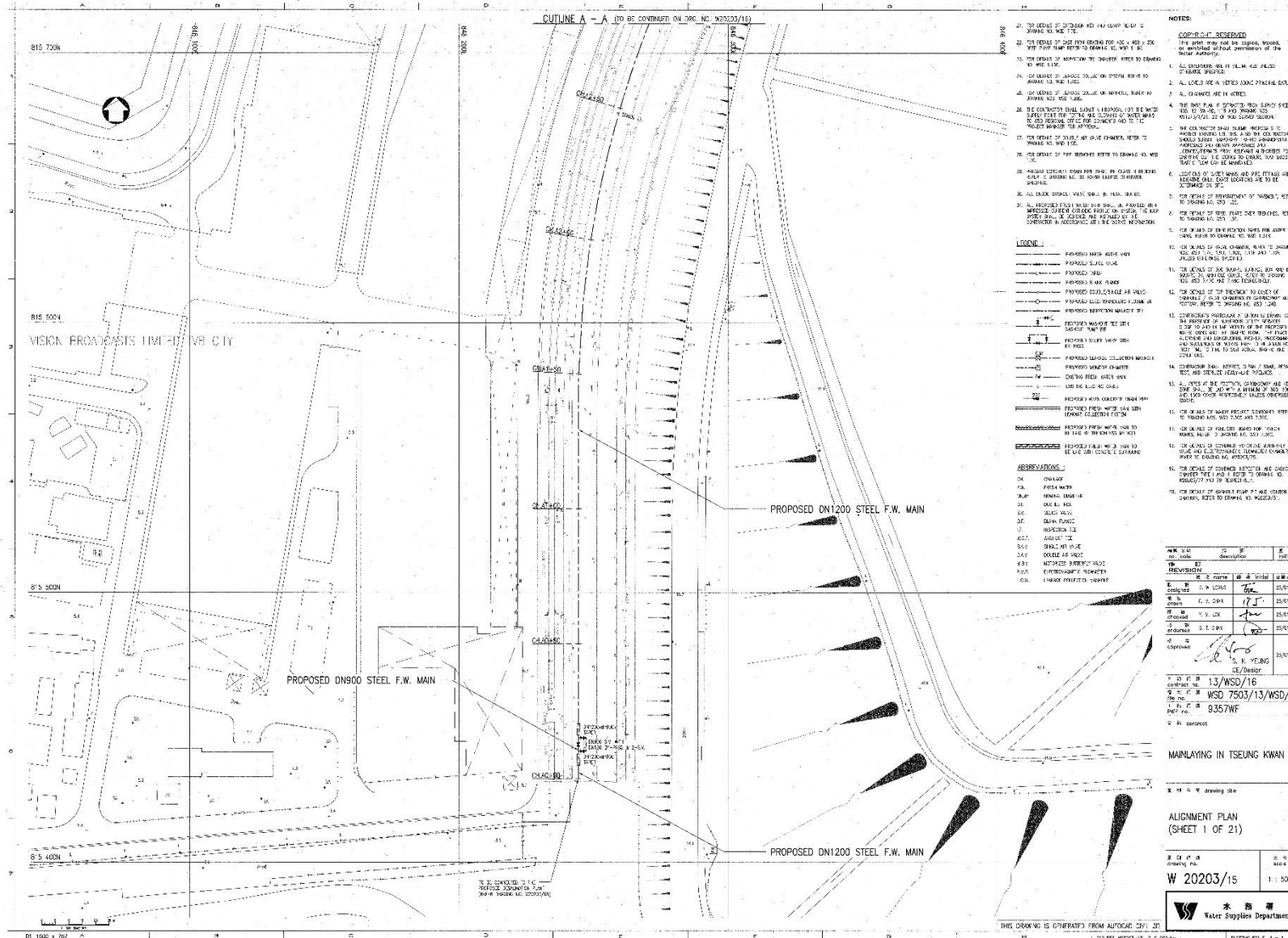
**MAINLAYING IN TSEUNG KWAN O**

**ALIGNMENT PLAN (KEY PLAN)**

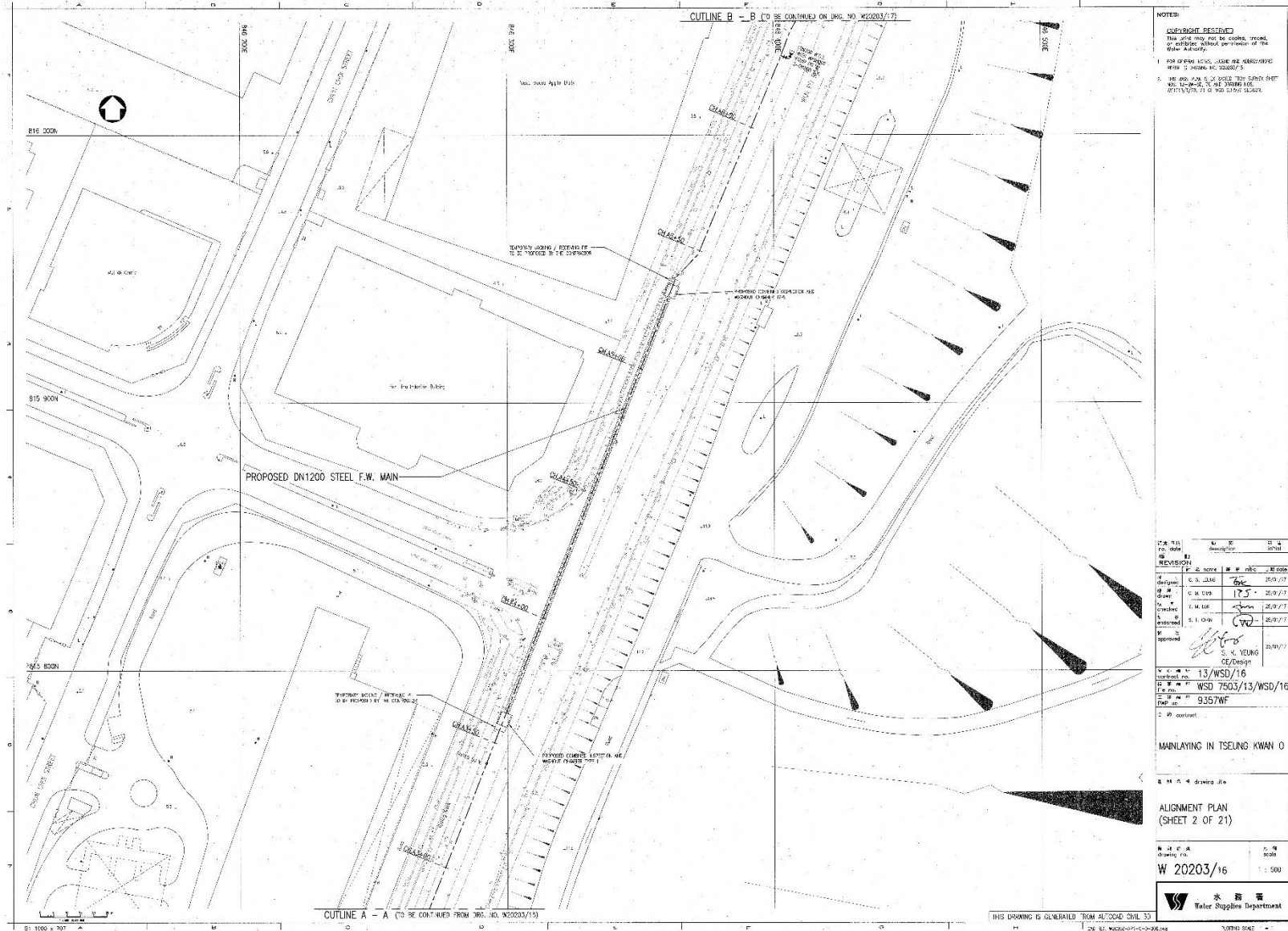
W 20203/14A  
 Water Supplies Department



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**NOTES**

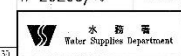
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2. FOR OTHER DETAILS, PLEASE SEE RELEVANT DRAWINGS IN WORKING DRAWINGS.
3. THE APP. PLAN IS A 1/2500 SCALE SHEET. THE SCALE OF THE DRAWING IS 1/2500. THE SCALE OF THE PLAN IS 1/2500.

NO.	DATE	DESCRIPTION	BY	CHKD.
1	20/09/17	DESIGN	S. K. YEUNG	S. K. YEUNG
2	20/09/17	DRAWN	S. K. YEUNG	S. K. YEUNG
3	20/09/17	CHECKED	S. K. YEUNG	S. K. YEUNG
4	20/09/17	APPROVED	S. K. YEUNG	S. K. YEUNG

PROJECT NO. 13/WSD/16  
 DRAWING NO. WSD 7503/13/WSD/16  
 SHEET NO. 9357WF  
 CONTRACT NO. 13/WSD/16

ALIGNMENT PLAN  
 (SHEET 2 OF 21)

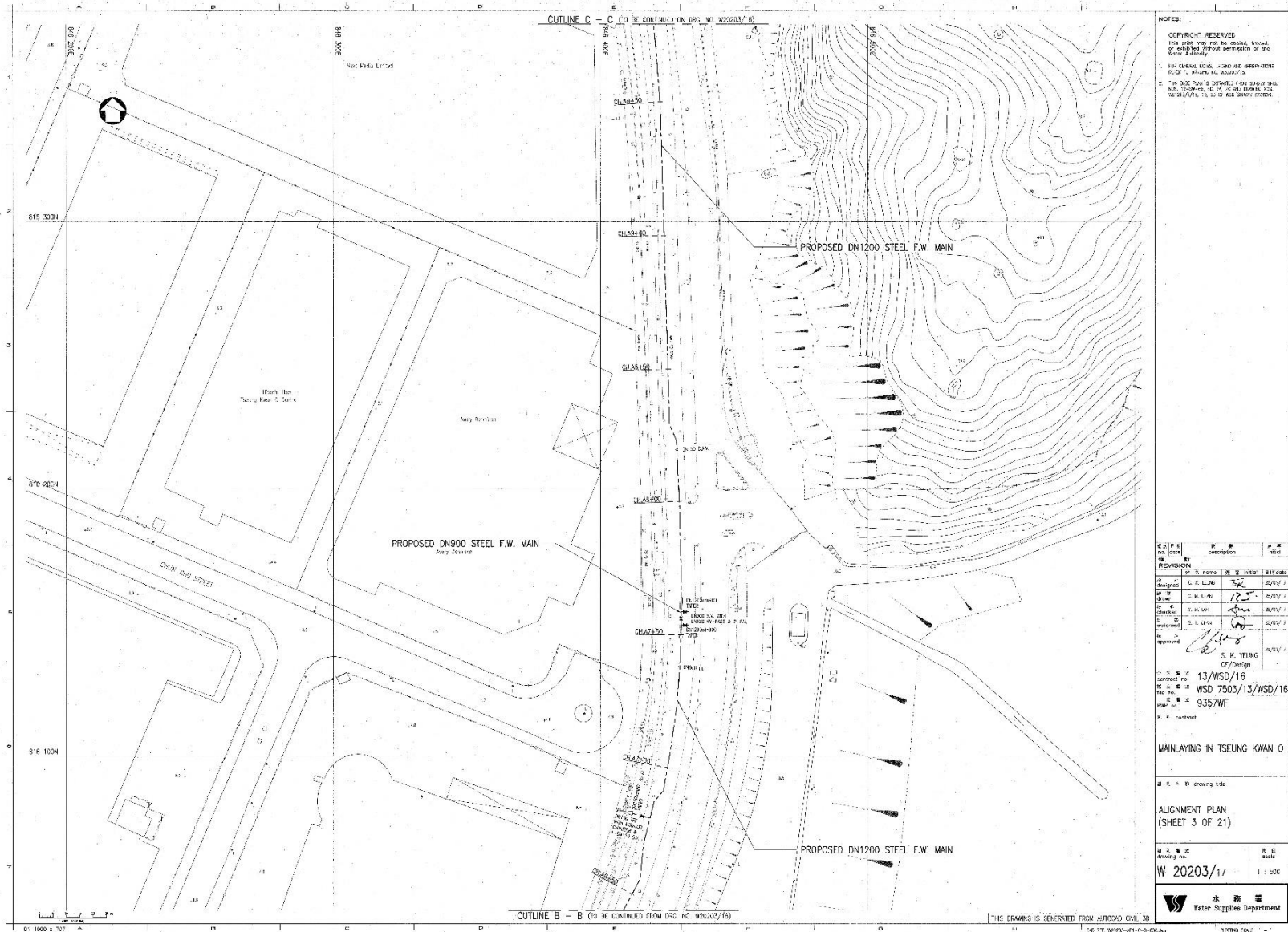
DATE: 20/09/17  
 SCALE: 1:500



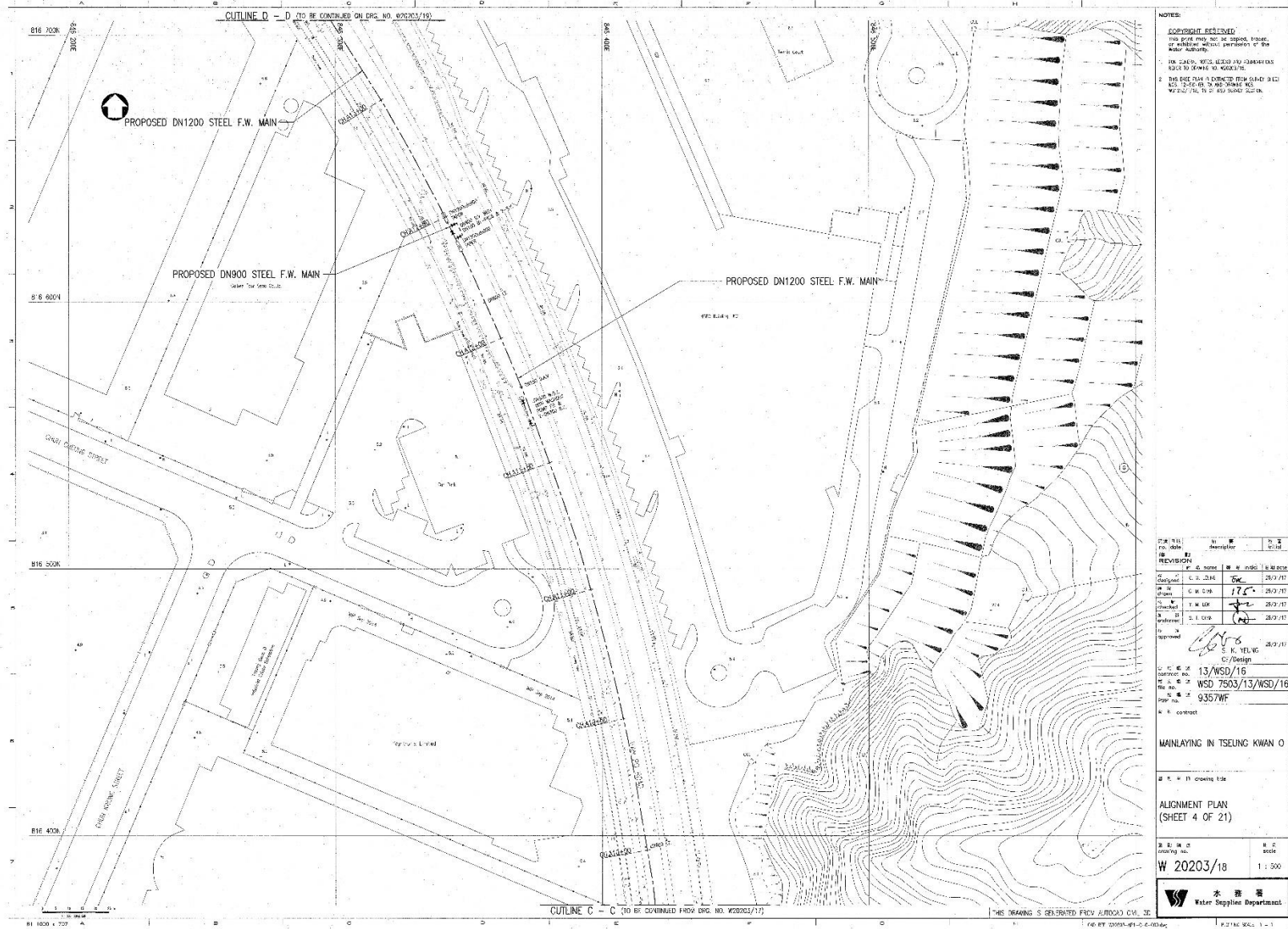
THIS DRAWING IS GENERATED FROM AUTOCAD CIVIL 3D  
 DATE: 20/09/17 10:00:00 AM



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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- THIS SHEET IS EXTRACTED FROM SHEET 3 (SHEET NO. 7503/13/WSD/16) OF THE MAIN LAYING PLAN.

REV. NO.	DATE	DESCRIPTION	BY	CHKD.
1	28/09/17	Issue for tender	S. K. YEL	S. K. YEL
2	28/09/17	Issue for construction	S. K. YEL	S. K. YEL

REVISION	NO.	DESCRIPTION	DATE
1	1	Issue for tender	28/09/17
2	2	Issue for construction	28/09/17

Design: S. K. YEL  
 Checked: S. K. YEL  
 Approved: S. K. YEL  
 Date: 28/09/17

Project No.: 13/WSD/16  
 Drawing No.: WSD 7503/13/WSD/16  
 Page No.: 9357WF

**MAINLAYING IN TSEUNG KWAN O**

Sheet No. 4 of 21

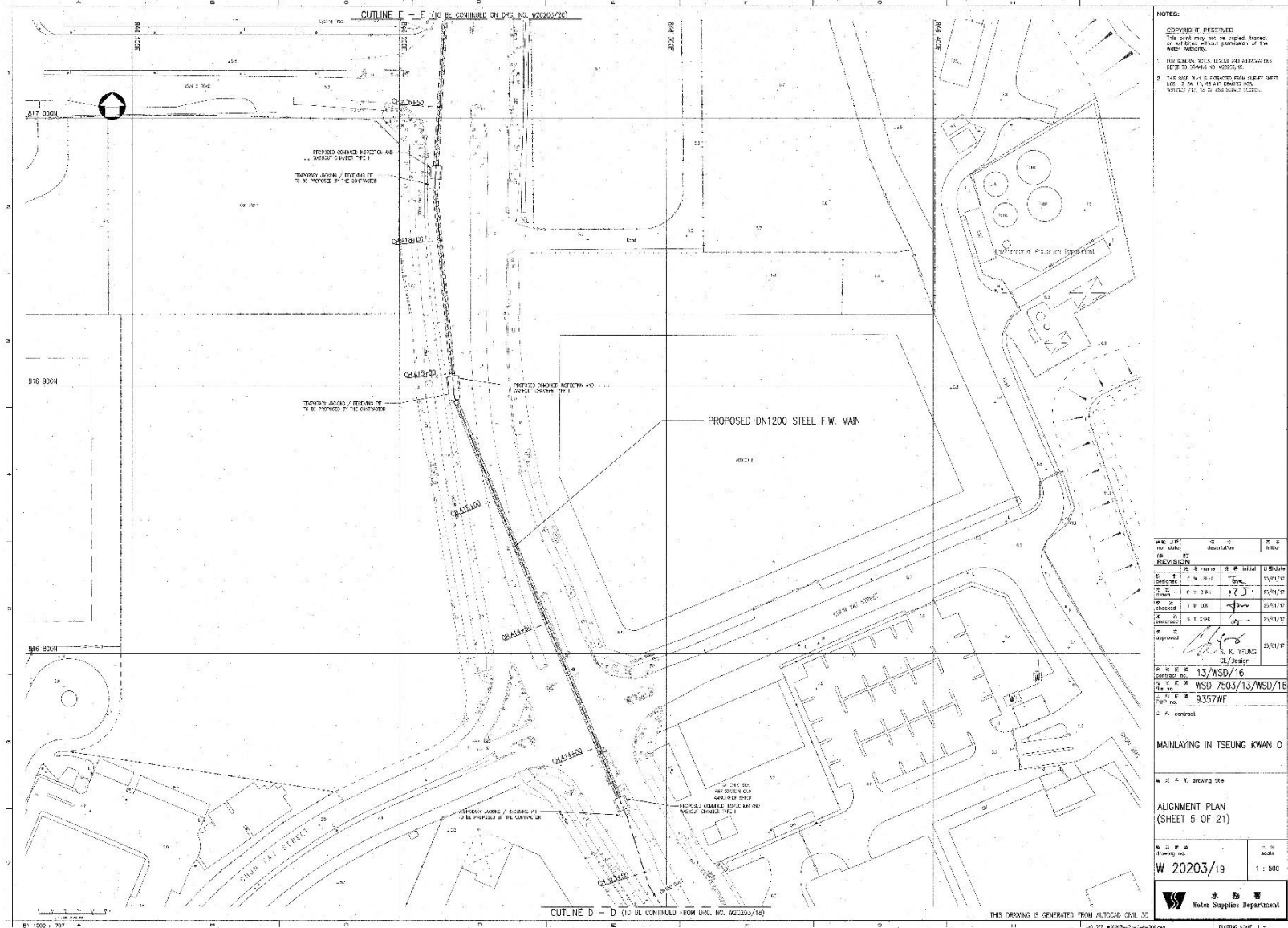
**ALIGNMENT PLAN**  
(SHEET 4 OF 21)

Drawing No.: W 20203/18  
 Scale: 1:500

水務署  
 Water Supplies Department



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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 2. FOR SCALE, REFER TO THE DRAWING AND ASSOCIATED SHEETS TO BE REFERRED TO.  
 3. THIS MAP WAS EXTRACTED FROM SHEET 'REPT' SHEET NO. 'S' OF 'A' TO 'Z' CONTRACTS, WHICH IS/ARE OF THE SAME SCALE.

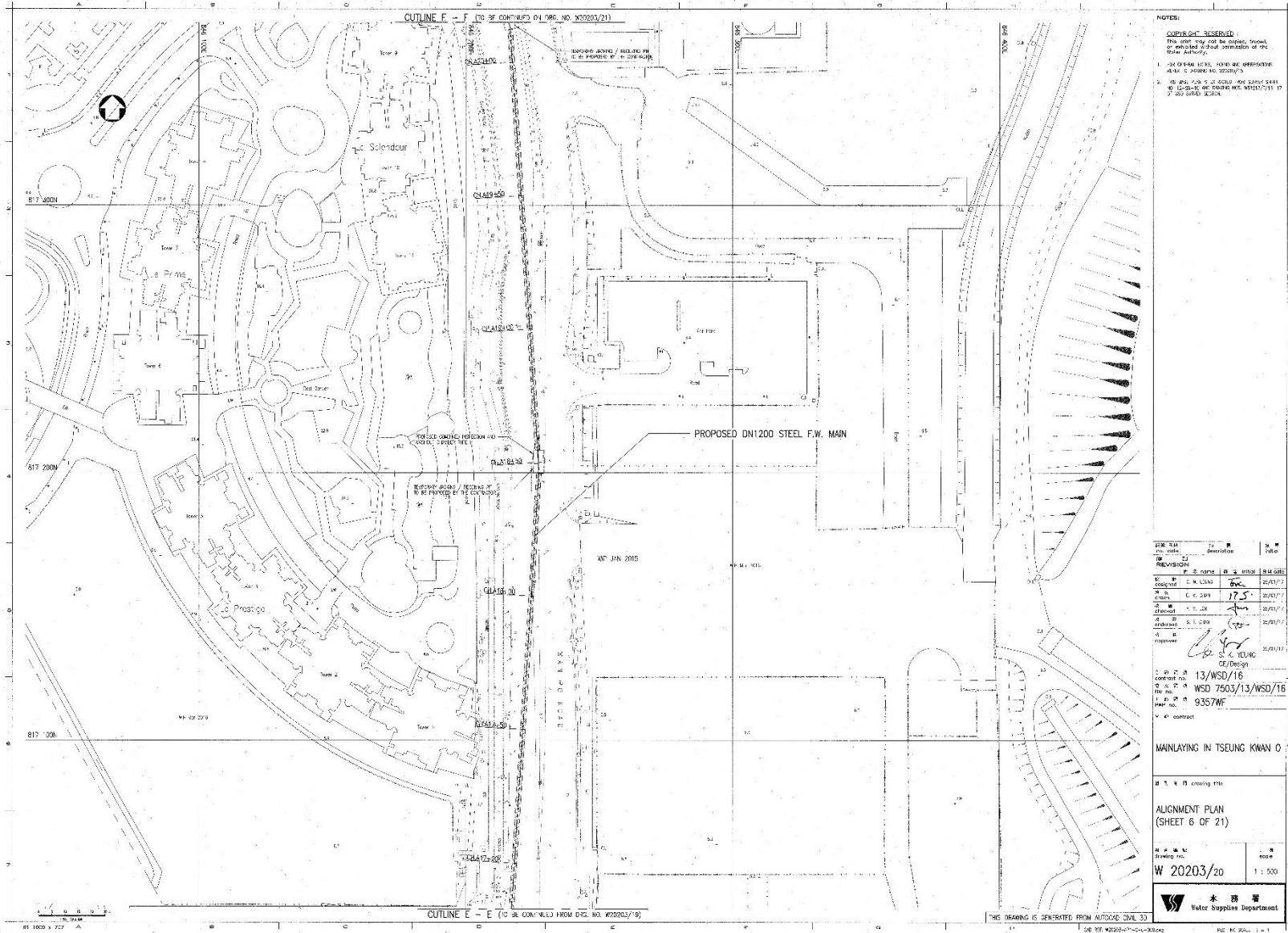
REV. NO.	DATE	DESCRIPTION	BY	CHK
<b>REVISION</b>				
1		Issue for tender	CL	CL
2		Issue for tender	CL	CL
3		Issue for tender	CL	CL
4		Issue for tender	CL	CL
5		Issue for tender	CL	CL
6		Issue for tender	CL	CL
7		Issue for tender	CL	CL
8		Issue for tender	CL	CL
9		Issue for tender	CL	CL
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24		Issue for tender	CL	CL
25		Issue for tender	CL	CL
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44		Issue for tender	CL	CL
45		Issue for tender	CL	CL
46		Issue for tender	CL	CL
47		Issue for tender	CL	CL
48		Issue for tender	CL	CL
49		Issue for tender	CL	CL
50		Issue for tender	CL	CL

**MAINLAYING IN TSEUNG KWAN O**  
 W 20203/19  
 ALIGNMENT PLAN  
 (SHEET 5 OF 21)

W 20203/19  
 1:500  
 水務署  
 Water Supplies Department



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



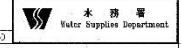
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 2. THE DRAWING IS TO BE USED FOR THE DESIGN OF THE MAINS ONLY AND NOT FOR ANY OTHER PURPOSE.

REV. NO.	REV. DATE	DESCRIPTION	BY	CHKD.
1	17/07/17	ISSUED FOR TENDER	S. C. YOUNG	S. C. YOUNG
2	22/07/17	REVISED TO REFLECT COMMENTS FROM THE WATER AUTHORITY	S. C. YOUNG	S. C. YOUNG
3	22/07/17	REVISED TO REFLECT COMMENTS FROM THE WATER AUTHORITY	S. C. YOUNG	S. C. YOUNG
4	22/07/17	REVISED TO REFLECT COMMENTS FROM THE WATER AUTHORITY	S. C. YOUNG	S. C. YOUNG
5	22/07/17	REVISED TO REFLECT COMMENTS FROM THE WATER AUTHORITY	S. C. YOUNG	S. C. YOUNG

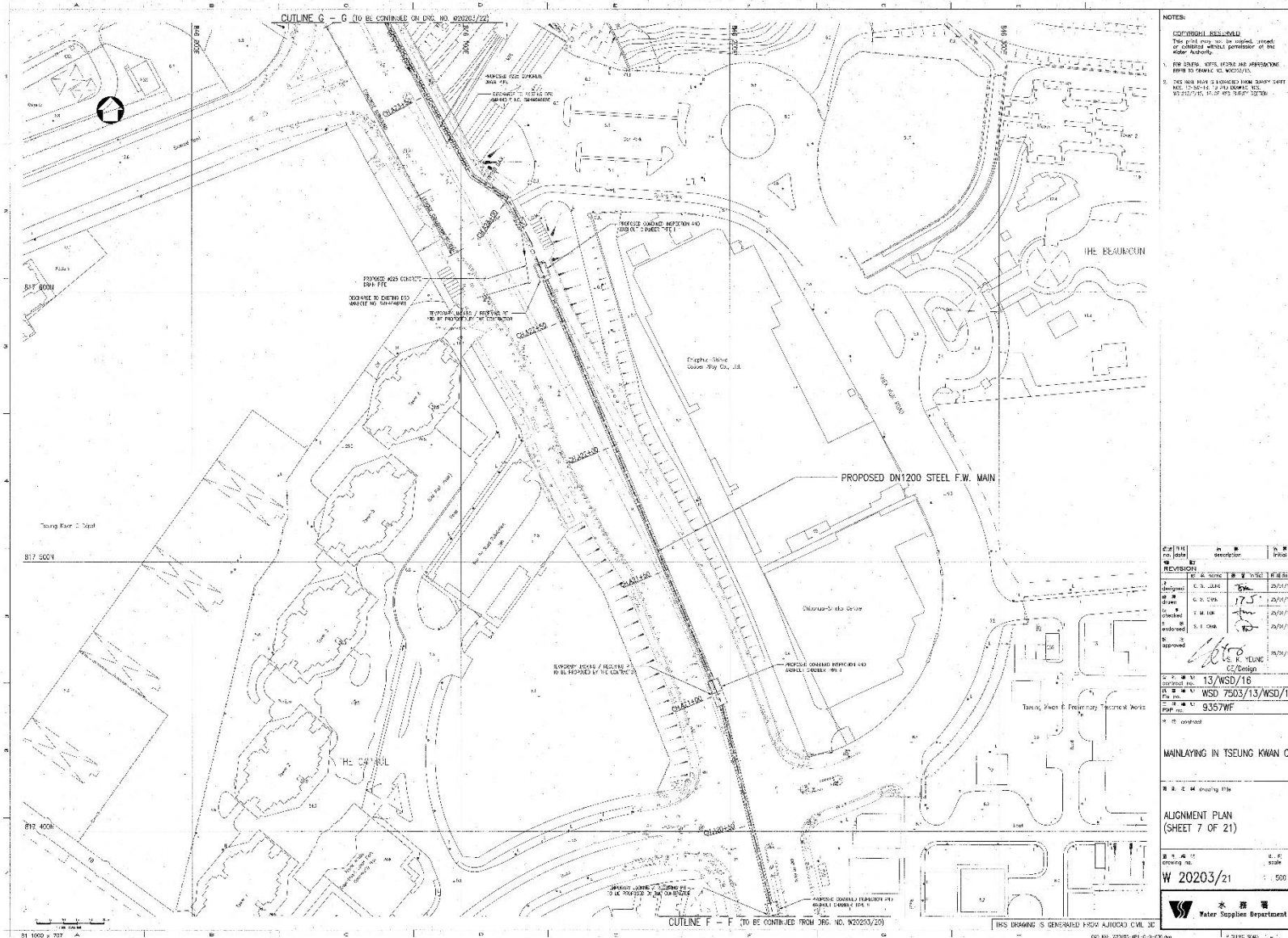
13/WSD/16  
 WSD 7503/13/WSD/16  
 9357WF

ALIGNMENT PLAN  
 (SHEET 6 OF 21)

W 20203/20  
 1:500



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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 3. THIS PLAN HAS BEEN CHECKED FROM DRAWING SHEET NO. WSD2023/21. IT IS THE RESPONSIBILITY OF THE DESIGNER TO CHECK THE ACCURACY OF THE DATA.

REV. NO.	DATE	DESCRIPTION	BY	CHECKED
1	25/01/16	ISSUED FOR TENDER	C.S. CHAN	C.S. CHAN
2	25/01/16	REVISION CONDUCT INSPECTION AND ASSESSMENT	C.S. CHAN	C.S. CHAN
3	25/01/16	REVISION CONDUCT INSPECTION AND ASSESSMENT	C.S. CHAN	C.S. CHAN
4	25/01/16	REVISION CONDUCT INSPECTION AND ASSESSMENT	C.S. CHAN	C.S. CHAN
5	25/01/16	REVISION CONDUCT INSPECTION AND ASSESSMENT	C.S. CHAN	C.S. CHAN

Project No. 13/WSD/16  
 Drawing No. WSD 7503/13/WSD/16  
 Scale 1:500  
 Date 25/01/16

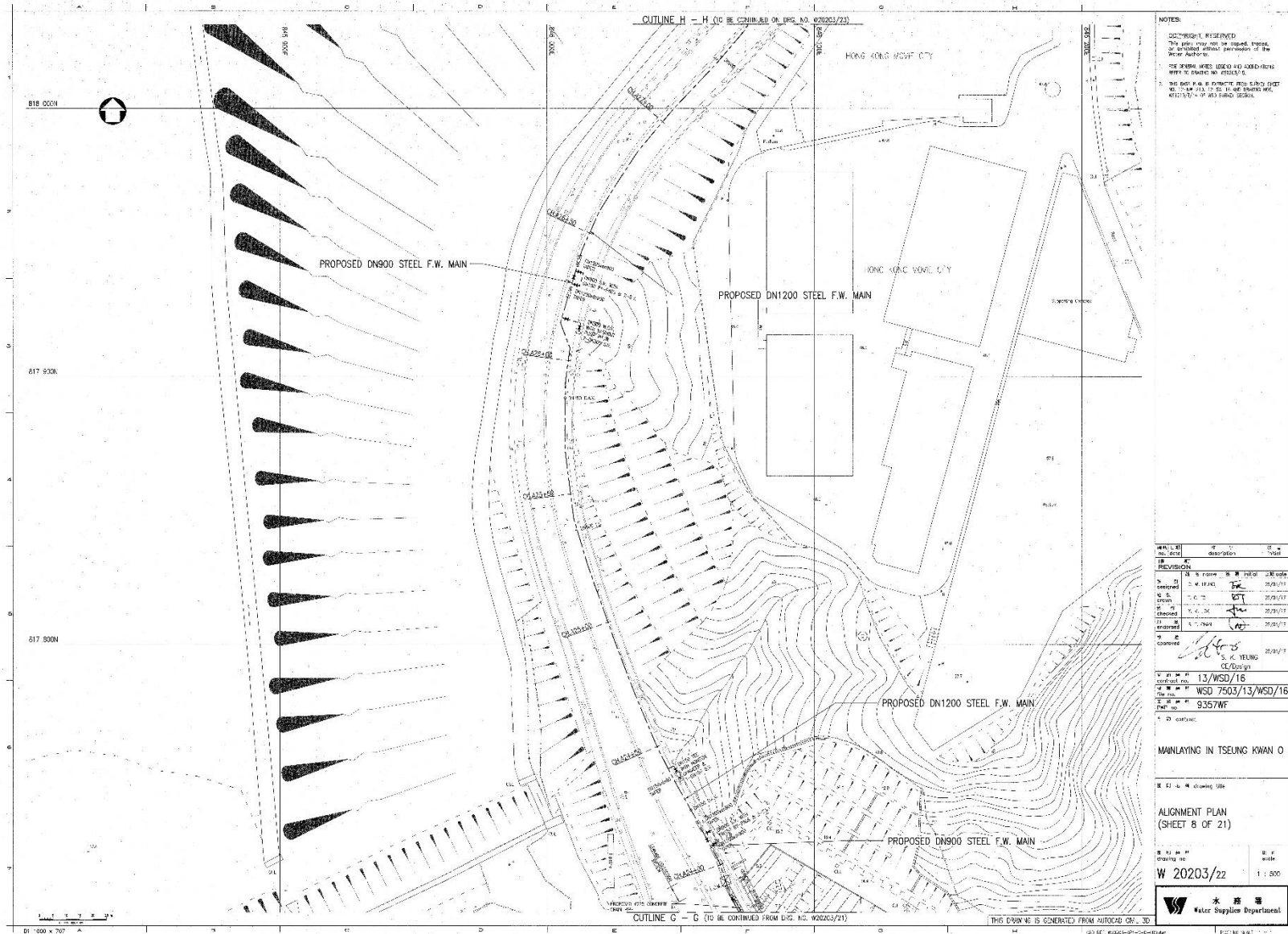
**MAINLAYING IN TSEUNG KWAN O**

**ALIGNMENT PLAN**  
**(SHEET 7 OF 21)**

W 20203/21  
 Water Supplies Department



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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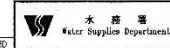
NO.	DATE	DESCRIPTION	BY	CHKD.
<b>REVISION</b>				
1	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
2	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
3	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
4	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
5	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
6	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
7	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
8	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
9	22/01/17	Issue for tender	S. K. YEUNG	CL/Design
10	22/01/17	Issue for tender	S. K. YEUNG	CL/Design

MAINLAYING IN TSEUNG KWAN O

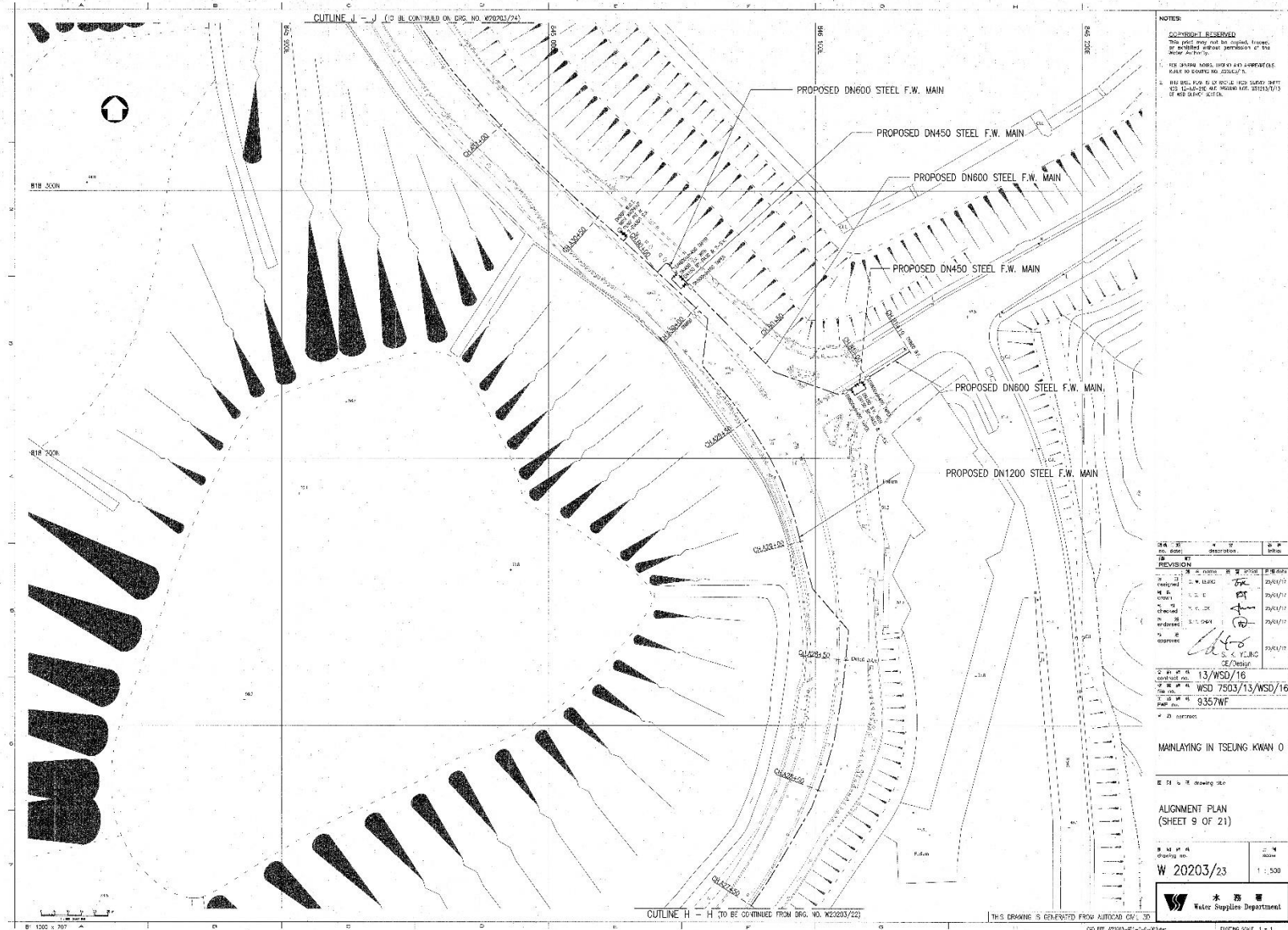
ALIGNMENT PLAN  
(SHEET 8 OF 21)

Drawing No. W 20203/22

Scale 1:500



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**NOTES**

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1. THE DRAWING, NOTES, SPECIFICATIONS AND APPROPRIATE STANDARDS SHALL BE CONSULTED.

2. THE MAIN PIPE IS TO BE LAYED WITH SLOPE OF 1:100 UNLESS OTHERWISE SPECIFIED.

NO.	DATE	DESCRIPTION	BY	CHKD.
<b>REVISION</b>				
1	23/01/19	ISSUED FOR TENDER	YKC	YKC
2	23/01/19	REVISED	YKC	YKC
3	23/01/19	REVISED	YKC	YKC
4	23/01/19	REVISED	YKC	YKC
5	23/01/19	REVISED	YKC	YKC

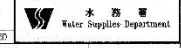
S. C. YOUNG  
 CE/Design

Contract no. 13/WSD/16  
 Drawing no. WSD 7503/13/WSD/16  
 Part no. 9357WF  
 21 sheets

**MAINLAYING IN TSEUNG KWAN O**

ALIGNMENT PLAN  
 (SHEET 9 OF 21)

Drawing no. W 20203/23  
 Scale 1:500





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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2. THE DESIGNER, ENGINEER AND SURVEYOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE WORKS SHOWN ON THIS PLAN. THE WATER AUTHORITY SHALL BE RESPONSIBLE FOR THE CONSTRUCTION AND MAINTENANCE OF THE WORKS SHOWN ON THIS PLAN.

DATE	DESCRIPTION	BY	CHKD
13/07/17	DESIGNED	C. S. LAM	W. Y. YIP
13/07/17	DRAWN	T. C. HO	W. Y. YIP
13/07/17	CHECKED	T. M. LUK	W. Y. YIP
13/07/17	APPROVED	S. L. CHAN	W. Y. YIP
13/07/17	APPROVED	C. S. YOUNG	CE/Design

13/WSD/16  
 WSD 7503/13/WSD/16  
 9357WF  
 MAINLAYING IN TSEUNG KWAN O

ALIGNMENT PLAN  
 (SHEET 10 OF 21)

W 20203/24  
 1:500  
 水務署  
 Water Supplies Department



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**NOTES:**  
 1. CONTRACT RESERVE  
 The main line shall be located, proposed or extended within the jurisdiction of the Water Authority.  
 2. FOR GENERAL NOTES, SEE THE RELEVANT SHEETS OF THE DRAWING.  
 3. THE MAIN LINE IS TO BE CONSTRUCTED WITHIN THE EXISTING RIGHTS OF WAY OF THE MAIN LINE.

REV.	NO.	DESCRIPTION	DATE
<b>REVISION</b>			
1	1	ISSUED FOR TENDER	20/03/16
2	2	REVISED TO REFLECT THE DESIGN	20/03/16
3	3	REVISED TO REFLECT THE DESIGN	20/03/16
4	4	REVISED TO REFLECT THE DESIGN	20/03/16
5	5	REVISED TO REFLECT THE DESIGN	20/03/16

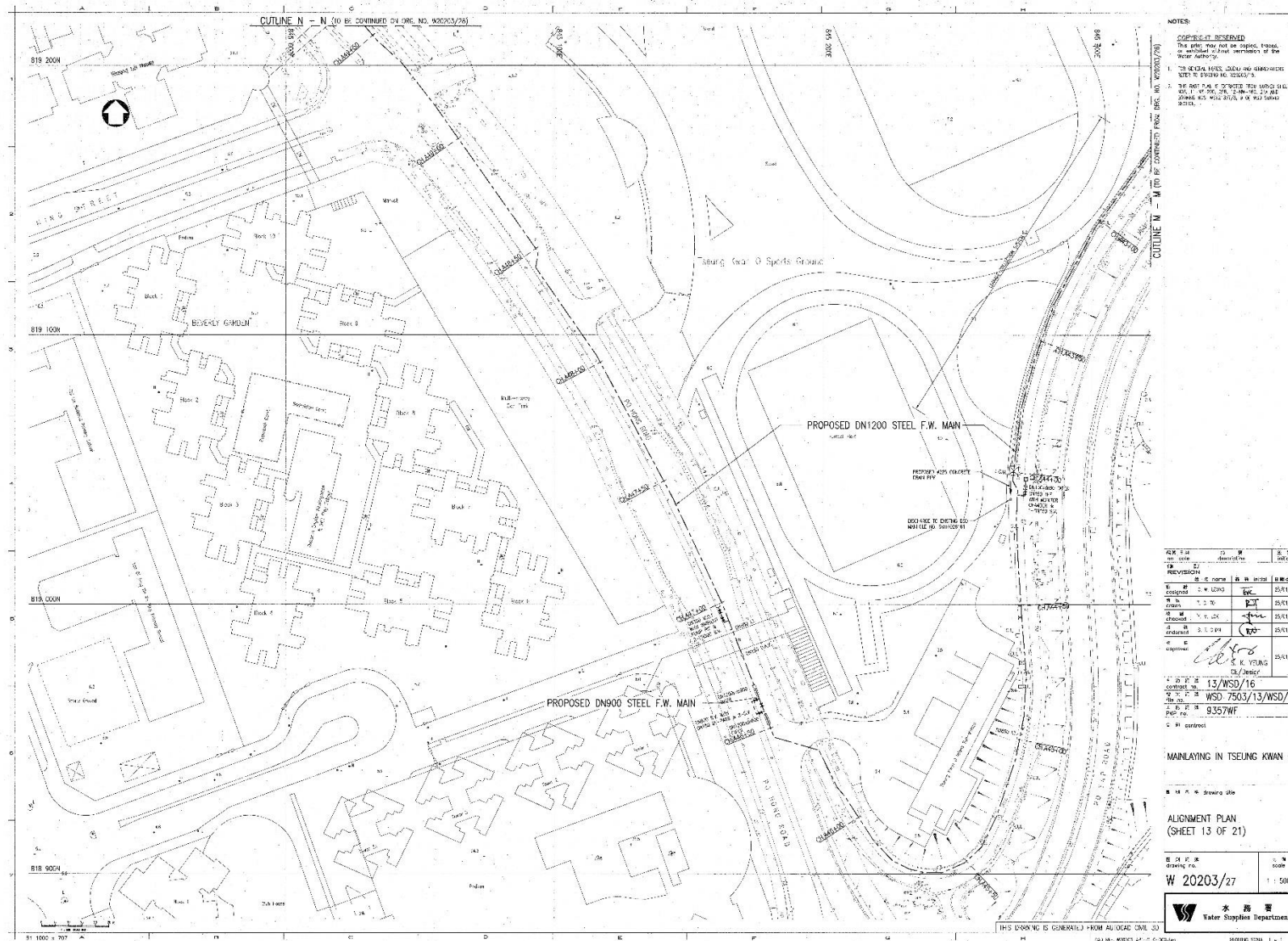
CONTRACT NO. 13/WSD/16  
 DRAWING NO. WSD 7503/13/WSD/16  
 PLAN NO. 9357WF  
 DATE: 20/03/16  
 DRAWN BY: S. YOUNG  
 CHECKED BY: S. YOUNG  
 APPROVED BY: S. YOUNG  
 TITLE: MAINLAYING IN TSEUNG KWAN O

ALIGNMENT PLAN  
 (SHEET 12 OF 21)  
 W 20203/26  
 1:500  
 Water Supplies Department

Contract No. 13/WSD/16

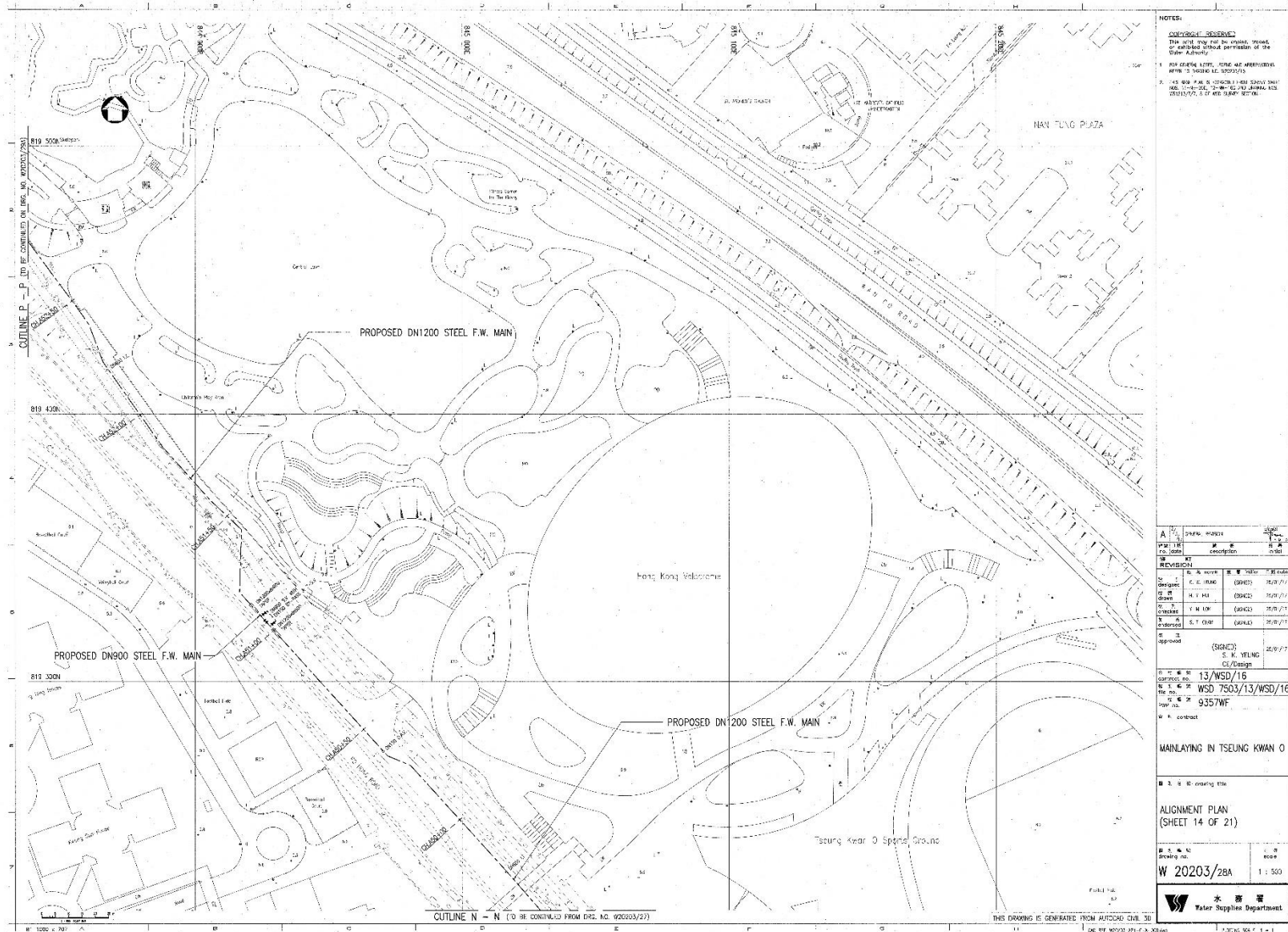
Mainlaying in Tseung Kwan O

1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019





**Contract No. 13/WSD/16  
Mainlaying in Tseung Kwan O  
1st Annually EM&A Review Report for August 2018 to August 2019**



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 2. FOR ANY OTHER ENQUIRY, PLEASE CONTACT APPROVED APPROVED NUMBER: 9357WF

NO.	BY	DATE	DESCRIPTION
1	S.T. CHAN	20/10/17	DESIGN
2	S.T. CHAN	20/10/17	CHECK
3	S.T. CHAN	20/10/17	APPROVED

(SIGNED)  
 S. K. YELING  
 C.S./Design  
 20/10/17

PROJECT NO.: 13/WSD/16  
 DRAWING NO.: WSD 7503/13/WSD/16  
 SHEET NO.: 9357WF

MAINLAYING IN TSEUNG KWAN O

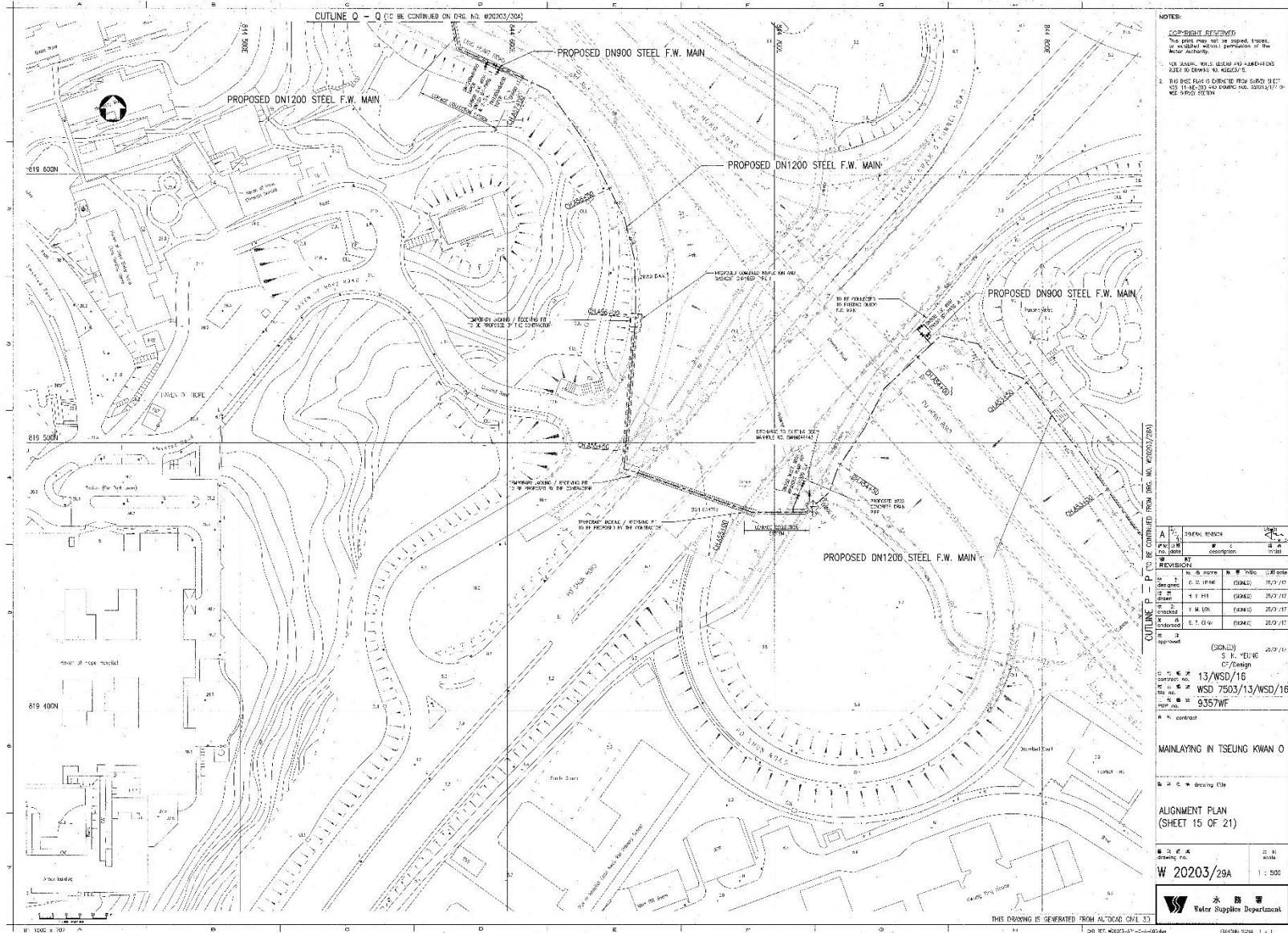
ALIGNMENT PLAN  
 (SHEET 14 OF 21)

SCALE: 1:500

W 20203/28A

Water Supplies Department

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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 3. THIS BEST FILE IS EXTRACTED FROM SAVED FILE: C:\D:\13-WSD-16\DWG\13-WSD-16-20203\29A.dwg  
 4. DATE: 20/08/2019

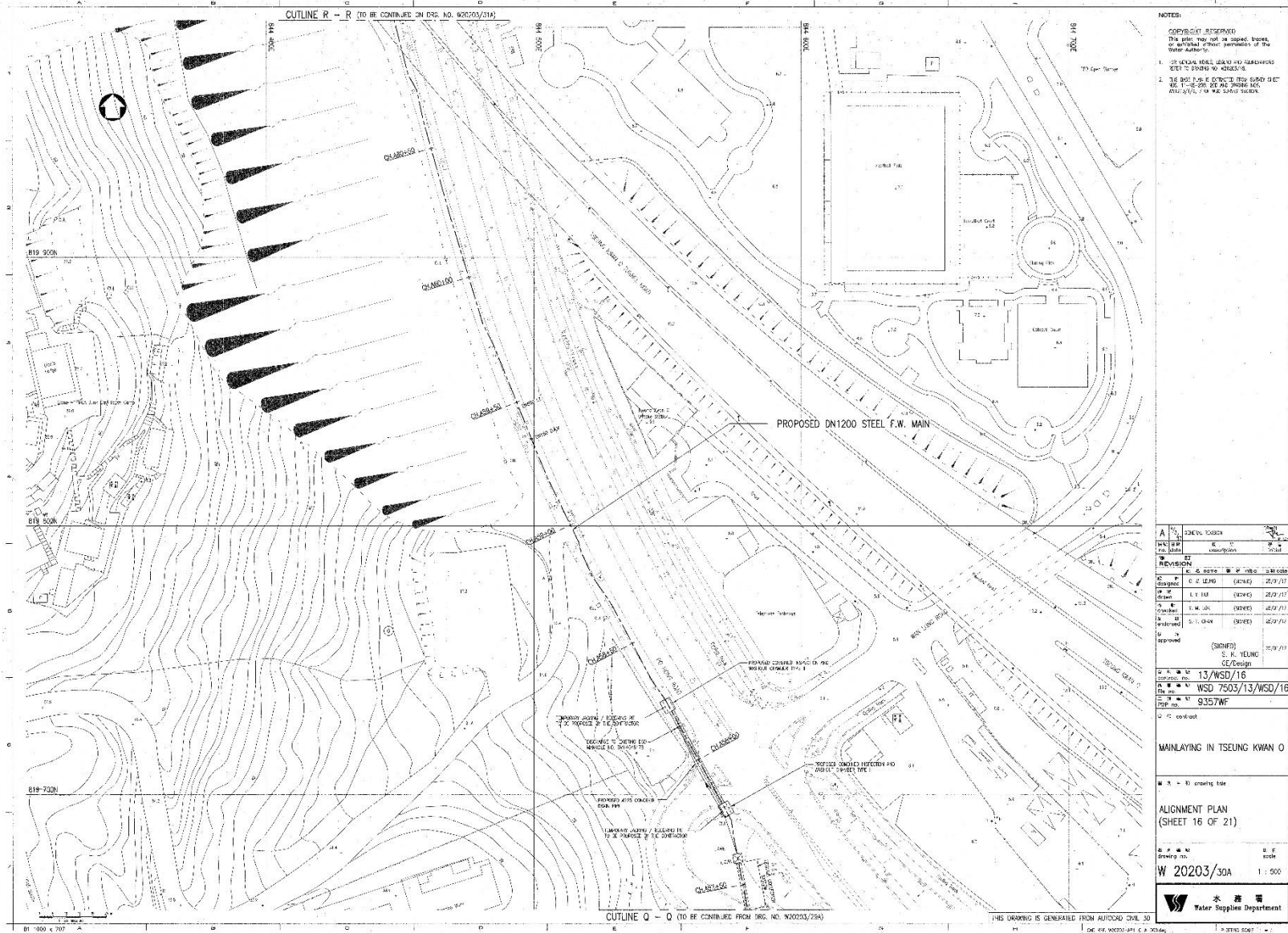
NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	20/08/19	ISSUED FOR TENDER	S. K. YEUNG		
2	20/08/19	REVISED	S. K. YEUNG		
3	20/08/19	REVISED	S. K. YEUNG		
4	20/08/19	REVISED	S. K. YEUNG		
5	20/08/19	REVISED	S. K. YEUNG		
6	20/08/19	REVISED	S. K. YEUNG		
7	20/08/19	REVISED	S. K. YEUNG		
8	20/08/19	REVISED	S. K. YEUNG		
9	20/08/19	REVISED	S. K. YEUNG		
10	20/08/19	REVISED	S. K. YEUNG		

**MAINLAYING IN TSEUNG KWAN O**  
 ALIGNMENT PLAN  
 (SHEET 15 OF 21)  
 W 20203/29A  
 1 : 500





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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2. THE DRAWING IS FOR REFERENCE ONLY. THE WATER AUTHORITY SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE WATER MAIN.

NO.	DATE	DESCRIPTION
1	25/09/13	ISSUED FOR TENDER
2	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
3	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
4	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
5	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
6	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
7	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
8	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
9	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
10	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
11	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
12	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
13	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
14	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
15	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
16	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
17	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
18	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
19	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER
20	10/10/13	REVISED TO REFLECT THE RESULTS OF THE TENDER

MAINLAYING IN TSEUNG KWAN O

ALIGNMENT PLAN  
(SHEET 16 OF 21)

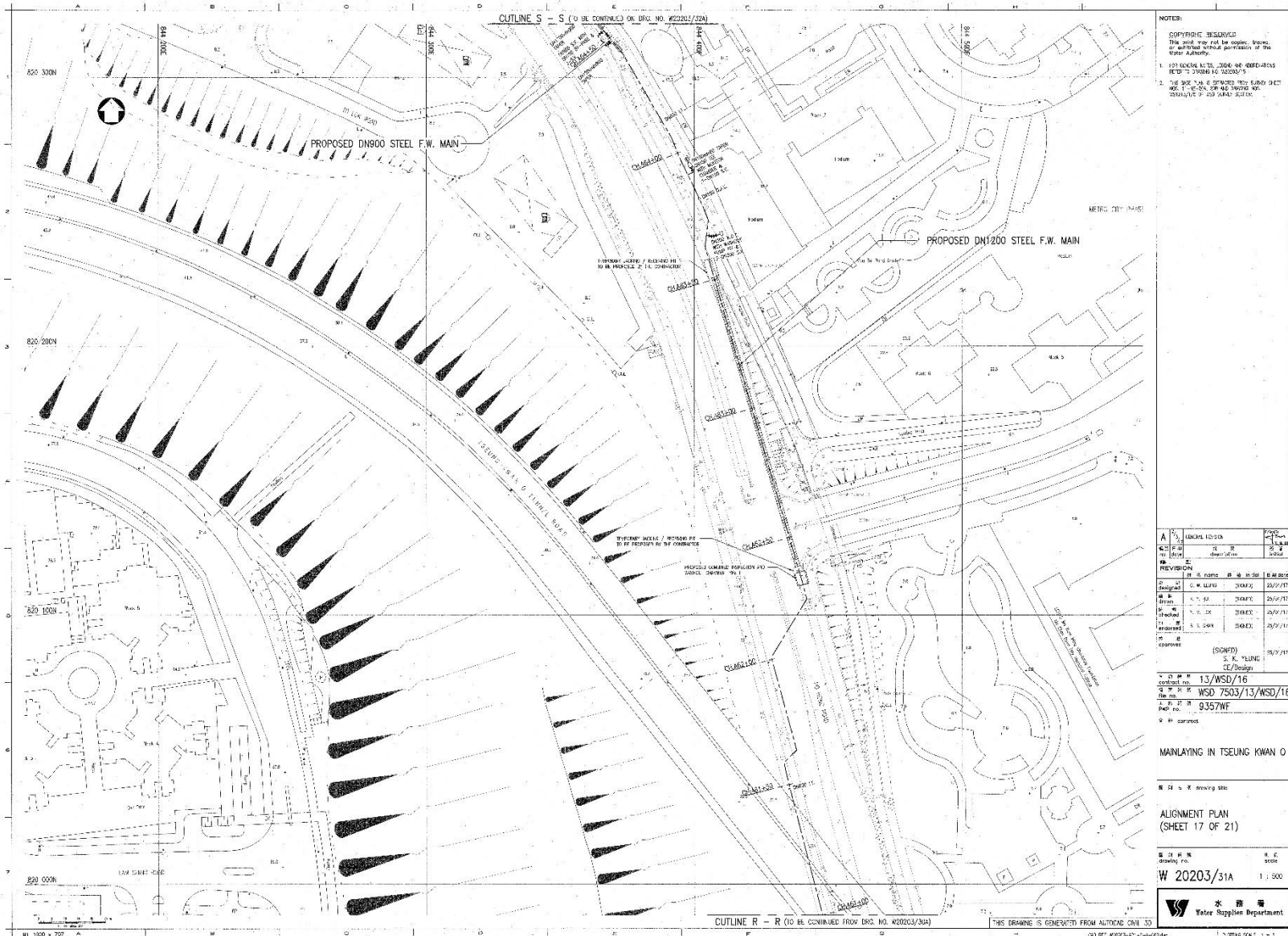
DRAWING NO. W 20203/30A

SCALE 1:500

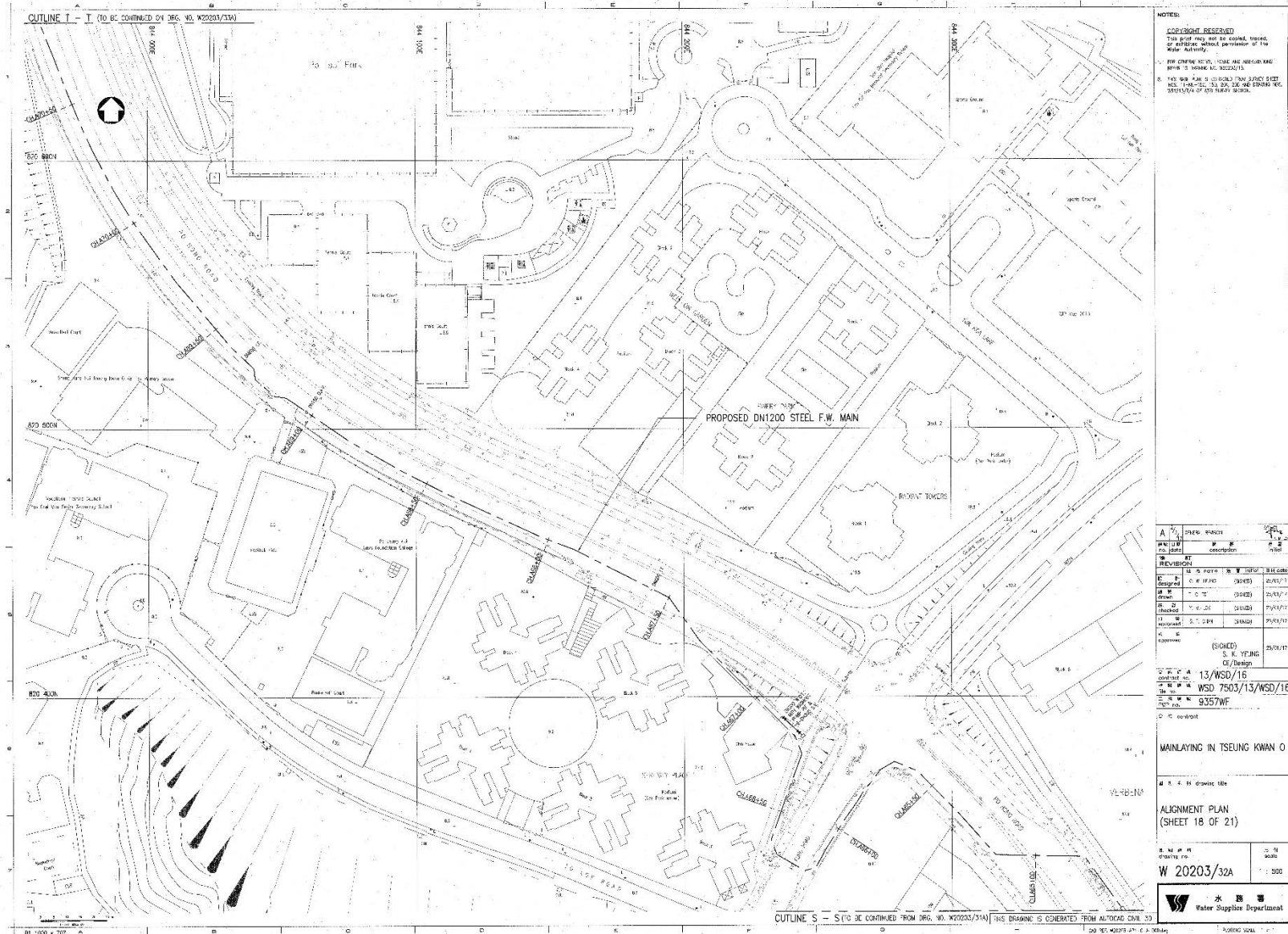




**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**

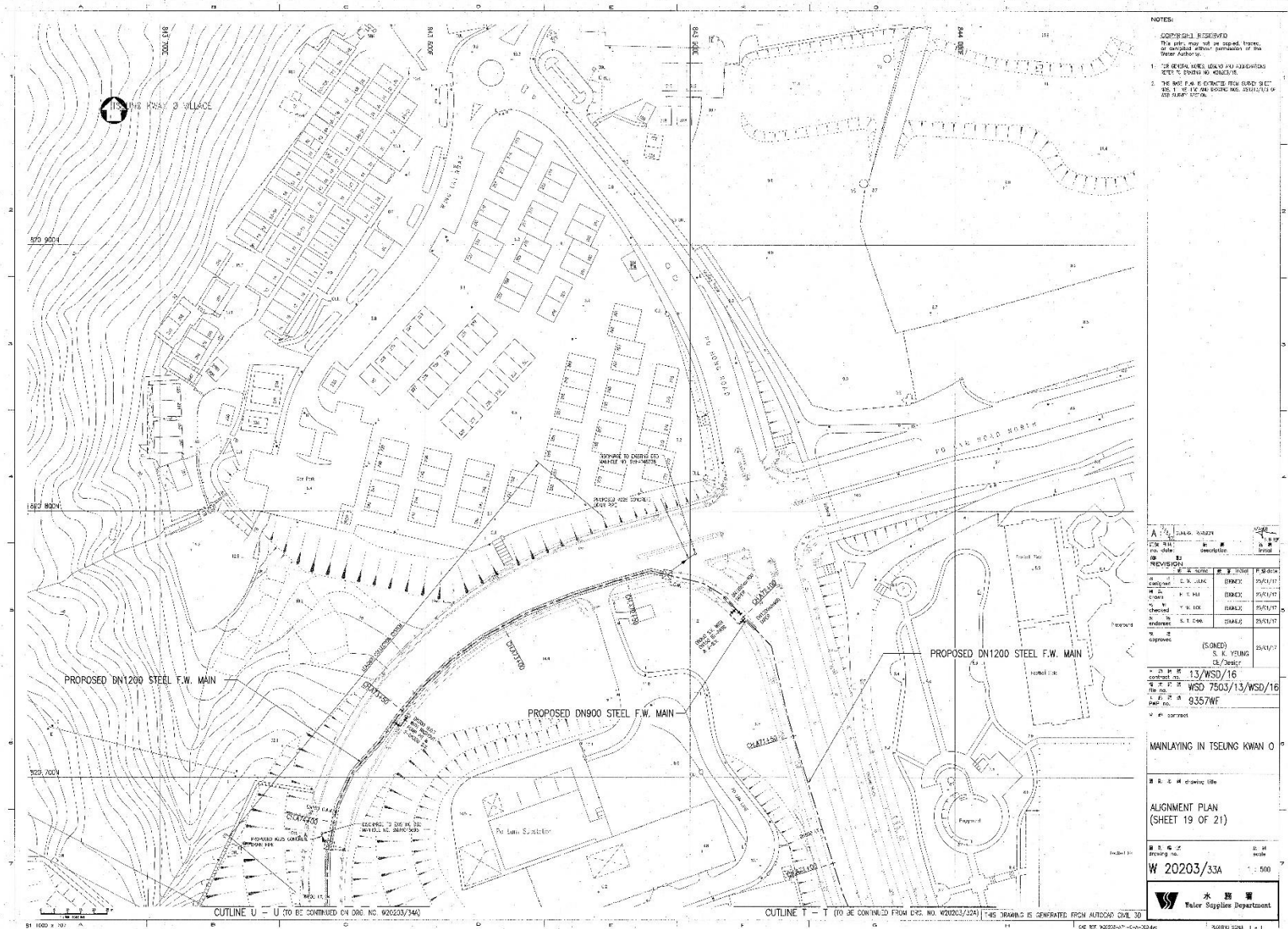


**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**





**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



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NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	25/01/17	ISSUED FOR TENDERS	S. K. YU	S. K. YU	S. K. YU
2	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
3	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
4	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
5	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
6	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
7	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
8	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
9	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
10	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
11	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
12	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
13	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
14	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
15	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
16	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
17	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
18	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
19	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
20	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
21	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
22	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
23	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
24	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
25	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
26	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
27	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
28	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
29	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
30	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
31	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
32	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
33	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
34	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
35	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
36	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
37	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
38	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
39	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
40	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
41	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
42	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
43	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
44	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
45	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
46	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
47	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
48	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
49	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU
50	25/01/17	REVISED	S. K. YU	S. K. YU	S. K. YU

**MAINLAYING IN TSEUNG KWAN O**

**ALIGNMENT PLAN (SHEET 19 OF 21)**

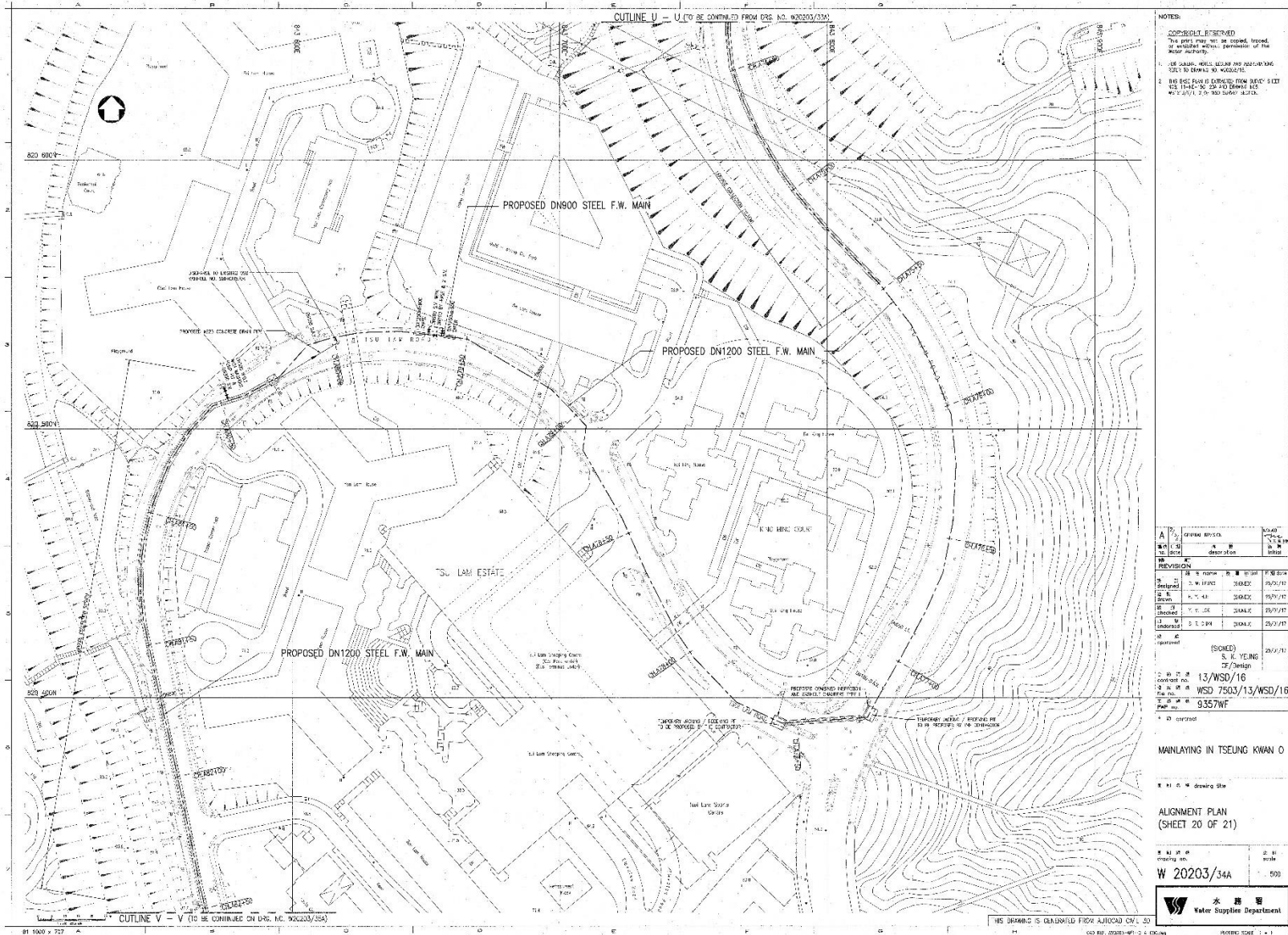
W 20203/33A

Scale: 1:500

Water Supplies Department



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**NOTES:**  
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 1. ALL DIMENSIONS, UNLESS OTHERWISE SPECIFIED, ARE IN METERS.  
 2. THIS PLAN IS DERIVED FROM DATA WHICH IS THE PROPERTY OF THE WATER AUTHORITY.

NO.	REVISION	DATE	BY	CHKD.	APP'D.
1	DESIGNED	18/05/18	S. K. YEUNG	DMALD	DMALD
2	CHECKED	18/05/18	S. K. YEUNG	DMALD	DMALD
3	APPROVED	18/05/18	S. K. YEUNG	DMALD	DMALD

(SIGNED)  
 S. K. YEUNG  
 CF/Design

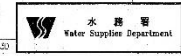
Contract no. 13/WSD/16  
 Drawing no. WSD 7503/13/WSD/16  
 Part no. 9357WF

**MAINLAYING IN TSEUNG KWAN O**

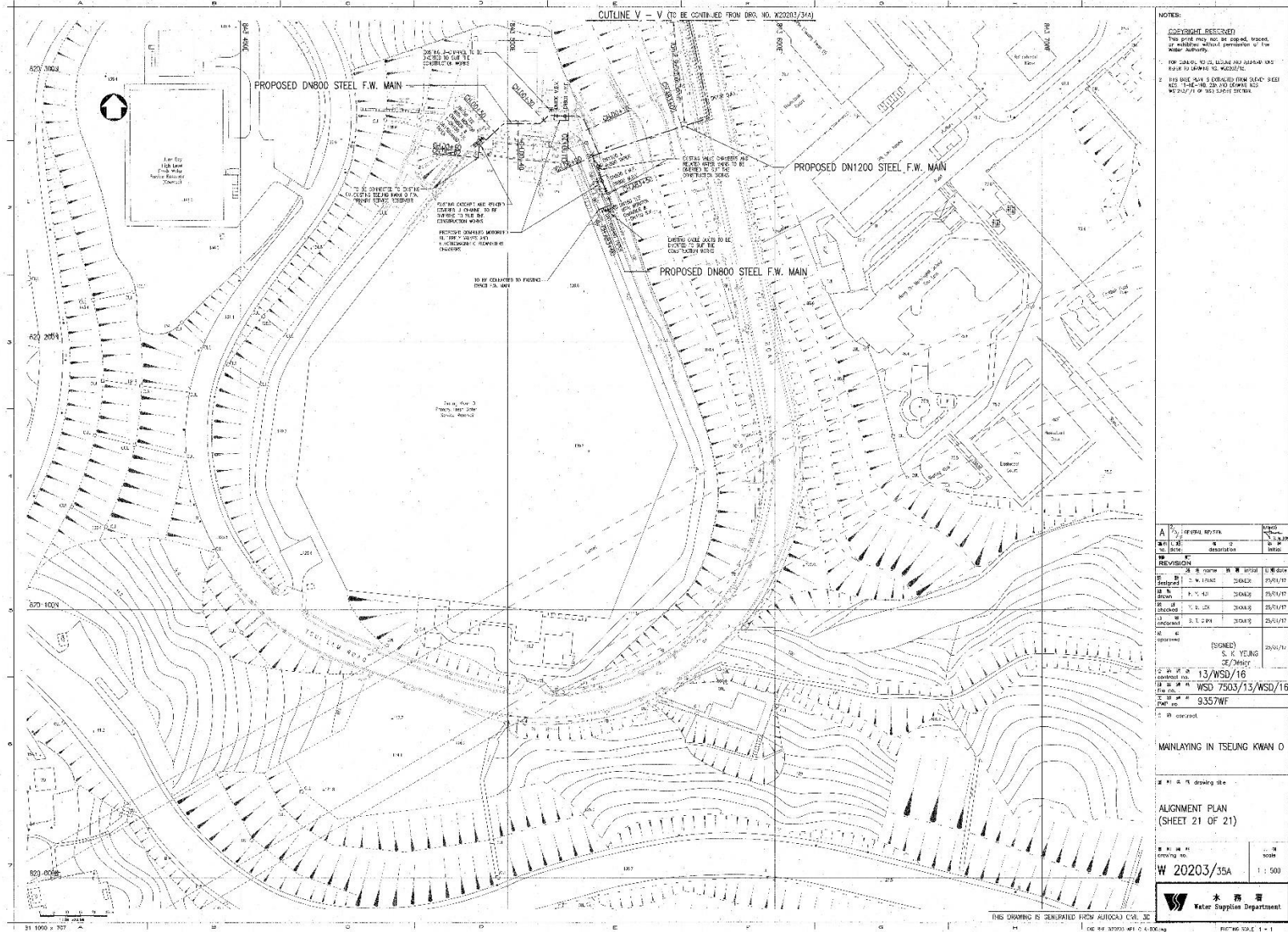
Sheet 20 of 21

ALIGNMENT PLAN  
 (SHEET 20 OF 21)

Scale: 1:500



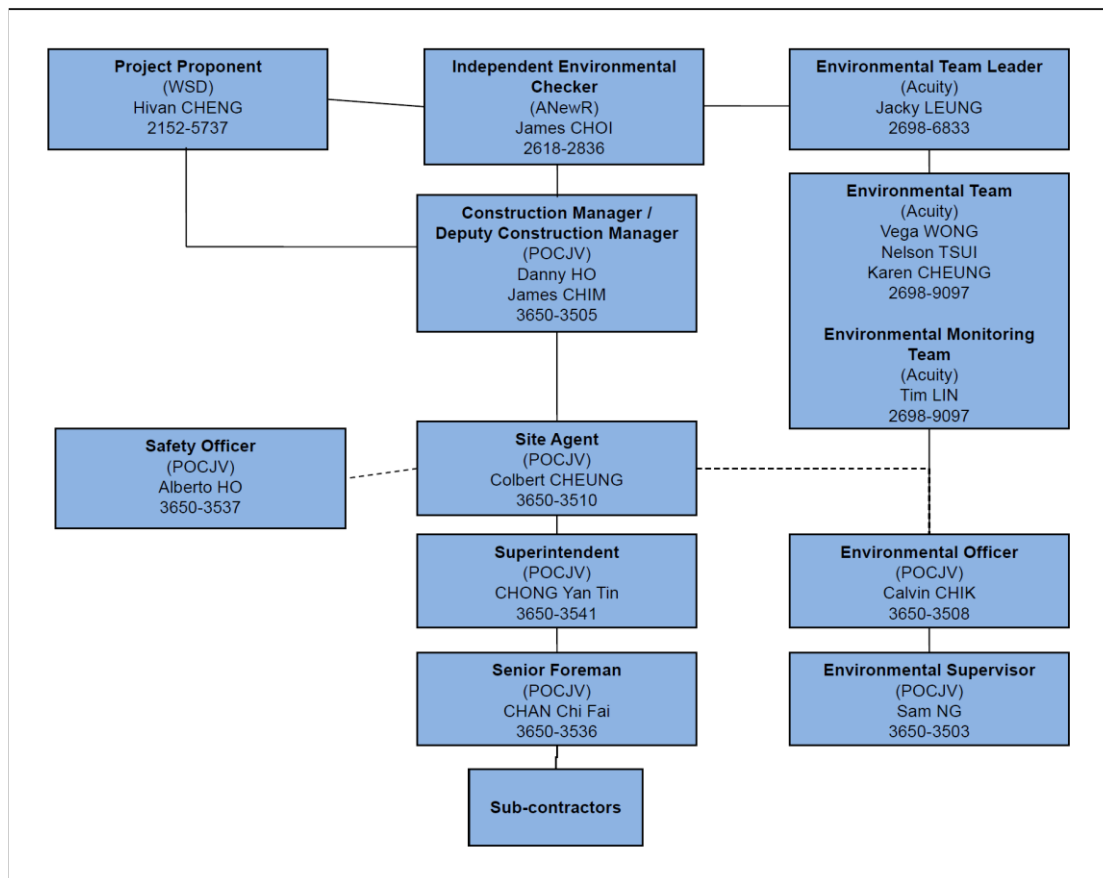
**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



# Appendix B

## Project Organization Chart





# Appendix C

## Construction Programme

**Contract No. 13/WSD/16  
Mainlaying in Tseung Kwan O  
1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



13/WSD/16 - Mainlaying in Tseung Kwan O  
Outline Construction Programme (As on 31 Aug 2018)

YEAR	LOCATION		FROM	TO	2018												2019												2020												2021											
	PJ-ID	ROAD			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
<b>Section A (TKO137 to Wan Po Road)</b>																																																				
Section A1 (Open-trench)	-	Wan Po Road	0	362																																																
Section A2 (Pipe-Jacking)	A	Wan Po Road	362	530																																																
Section A3 (Open-trench)	-	Wan Po Road	530	1379																																																
Section A4 (Pipe-Jacking)	B	Wan Po Road	1379	2268																																																
Section A5 (Open-trench)	-	Wan Po Road	2268	4113																																																
<b>Section B (Po Yap Road to Po Hong Road)</b>																																																				
Section B1 (Pipe-Jacking)	C	Po Yap Road	4113	4200																																																
Section B2 (Open-trench)	-	Po Yap & Po Hong Rd	4200	5500																																																
Section B3 (Pipe-Jacking)	D1 & D2	Po Hong & Ling Hong Rd	5500	5600																																																
Section B4 (Open-trench)	-	Ling Hong Road	5600	5799																																																
Section B5 (Pipe-Jacking)	E	Po Hong Road	5799	5838																																																
Section B6 (Open-trench)	-	Po Hong Road	5838	6254																																																
Section B7 (Pipe-Jacking)	F	Po Hong Road	6254	6368																																																
Section B8 (Open-trench)	-	Po Hong Road	6368	7250																																																
<b>Section C (Po Lam Road to Tsui Lam to TKOFWPSR*)</b>																																																				
Section C1 (Open-trench)	-	Po Lam Road	7250	7740																																																
Section C2 (Pipe-Jacking)	G	Tsui Lam Road	7740	7770																																																
Section C3 (Open-trench)	-	Tsui Lam Road	7770	8300																																																
Section C4 (Slope)	-	TKOFWPSR	8300	8376																																																

# Commencement of works at CHA 720 on 30 Aug 2018.  
\*TKOFWPSR - Tseung Kwan O Fresh Water Primary Service Reservoir  
\*\*Remaining 1581m within TKO137 with site possession from Nov 2019



# Appendix D

## Waste Flow Table

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**Monthly Summary Waste Flow Table**

**Name of Department:** WSD **Contract No. / Works Order No.:** 13/WSD/16

**Monthly Summary Waste Flow Table for** August 2018 to December 2018

Month	Actual Quantities of <u>Inert</u> Construction Waste Generated Monthly					
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed of as Public Fill	Imported Fill (see Note 1)
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )
Jan 2018	0.000	0.000	0.000	0.000	0.000	0.000
Feb 2018	0.000	0.000	0.000	0.000	0.000	0.000
Mar 2018	0.011	0.000	0.000	0.000	0.011	0.000
Apr 2018	0.013	0.000	0.000	0.000	0.013	0.000
May 2018	0.010	0.000	0.000	0.000	0.010	0.000
Jun 2018	0.003	0.000	0.000	0.000	0.003	0.000
Sub-total	0.037	0.000	0.000	0.000	0.037	0.000
Jul 2018	0.014	0.004	0.000	0.000	0.014	0.000
Aug 2018	0.004	0.003	0.000	0.000	0.004	0.000
Sep 2018	0.231	0.014	0.000	0.000	0.231	0.000
Oct 2018	0.364	0.025	0.000	0.000	0.364	0.089
Nov 2018	0.453	0.038	0.000	0.000	0.453	0.250
Dec 2018	0.222	0.000	0.000	0.000	0.222	0.179
Total	1.325	0.084	0.000	0.000	1.325	0.518

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



Month	Actual Quantities of <u>Non-inert</u> Construction Waste Generated Monthly				
	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. General Refuse disposed at Landfill
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan 2018	0.000	0.000	0.000	0.000	0.000
Feb 2018	0.000	0.000	0.000	0.000	0.000
Mar 2018	0.000	0.000	0.000	0.000	0.000
Apr 2018	0.000	0.014	0.000	0.000	0.000
May 2018	0.000	0.000	0.000	0.000	0.003
Jun 2018	0.000	0.032	0.000	0.000	0.000
Sub-total	0.000	0.046	0.000	0.000	0.003
Jul 2018	0.000	0.038	0.000	0.000	0.030
Aug 2018	0.000	0.042	0.000	0.000	0.000
Sep 2018	0.000	0.069	0.000	0.000	0.046
Oct 2018	0.000	0.083	0.000	0.000	0.046
Nov 2018	0.000	0.061	0.000	0.000	0.005
Dec 2018	0.000	0.078	0.000	0.000	0.009
Total	0.000	0.417	0.000	0.000	0.139

Notes:

1. The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
2. Plastic refer to plastic bottles/containers, plastic sheets/foam from packaging materials.
3. Broken concrete for recycling into aggregate.



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



**Monthly Summary Waste Flow Table**

**Name of Department:** WSD **Contract No. / Works Order No.:** 13/WSD/16

**Monthly Summary Waste Flow Table for January 2019 to August 2019**

Month	Actual Quantities of <u>Inert</u> Construction Waste Generated Monthly					
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed of as Public Fill	Imported Fill (see Note 1)
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )
2018	1.325	0.084	0.000	0.000	1.325	0.518
Jan 2019	2.758	0.021	2.118	0.000	0.457	0.331
Feb 2019	0.731	0.004	0.093	0.000	0.372	0.407
Mar 2019	0.575	0.004	0.000	0.000	0.575	0.140
Apr 2019	0.101	0.000	0.000	0.000	0.101	0.086
May 2019	0.035	0.000	0.000	0.000	0.035	0.019
Jun 2019	0.252	0.000	0.000	0.000	0.252	0.039
Sub-total	5.777	0.113	2.211	0.000	3.117	1.540
Jul 2019	0.176	0.000	0.000	0.000	0.176	0.074
Aug 2019	0.359	0.005	0.000	0.000	0.359	0.133
Sep 2019						
Oct 2019						
Nov 2019						
Dec 2019						
Total	6.312	0.118	2.211	0.000	3.652	1.747

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



Month	Actual Quantities of <u>Non-inert</u> Construction Waste Generated Monthly				
	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. General Refuse disposed at Landfill
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
2018	0.000	0.417	0.000	0.000	0.139
Jan 2019	0.000	0.000	0.000	0.000	0.012
Feb 2019	0.000	0.000	0.000	0.000	0.000
Mar 2019	0.000	0.000	0.000	0.000	0.006
Apr 2019	0.000	0.000	0.000	0.000	0.009
May 2019	0.000	0.000	0.000	0.000	0.028
Jun 2019	0.000	0.000	0.000	0.000	0.013
Sub-total	0.000	0.000	0.000	0.000	0.207
Jul 2019	0.000	0.000	0.000	0.000	0.012
Aug 2019	0.000	0.000	0.000	0.000	0.001
Sep 2019					
Oct 2019					
Nov 2019					
Dec 2019					
Total	0.000	0.417	0.000	0.000	0.22

Notes:

1. The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
2. Plastic refer to plastic bottles/containers, plastic sheets/foam from packaging materials.
3. Broken concrete for recycling into aggregate.
4. Calculation of Total Quantity Generated:  
 = Inert C&D materials generated in TTAs + Inert C&D materials generated in TKO 137 (Length of trench excavated) x (trench width) x (trench depth)
  - January, 2019: = 456.75m<sup>3</sup> + (1534.17m x 1m x 1.5m) = 2758 m<sup>3</sup>

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**

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- February, 2019: =  $372.35\text{m}^3 + (239\text{m} \times 1\text{m} \times 1.5\text{m}) = 730.85 \text{ m}^3$
5. Reused in the Contract:  
= Inert C&D materials generated in TKO 137 – (Qty. of sub-base material imported from K.Wah + Public fill imported from Tseung Kwan O Area 137 Fill Bank)
- January, 2019: =  $2301.255 \text{ m}^3 - 182.78 \text{ m}^3 = 2758 \text{ m}^3$
  - February, 2019: =  $358.50 \text{ m}^3 - 265.84 \text{ m}^3 = 92 \text{ m}^3$



## Appendix E

# Summary of Implementation Status of Environmental Mitigation

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
<b>Air Quality</b>								
S4.8.1	Impervious dust screen or sheeting will be provided to enclose scaffolding from the ground floor level of building for construction of superstructure of the new buildings.	Land site/ During Construction	Contractor(s)		✓		N/A	Air Pollution Control (Construction Dust)
S4.8.1	Impervious sheet will be provided for skip hoist for material transport.	Land site/ During Construction, particularly dry season	Contractor(s)		✓		Implemented	
S4.8.1	The area where dusty work takes place should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after dusty activities as far as practicable.	Land site/ During Construction	Contractor(s)		✓		Implemented, rectified after observation	
S4.8.1	All dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation.	Land site/ During Construction	Contractor(s)		✓		Implemented	
S4.8.1	Dropping heights for excavated materials should be controlled to a practical height to minimise the fugitive dust arising from unloading.	Land site/ During Construction	Contractor(s)		✓		Implemented	
S4.8.1	During transportation by truck, materials should not be loaded to a level higher than the side and tail boards, and should be dampened or covered before transport.	Land site/ During Construction	Contractor(s)		✓		Implemented	
S4.8.1	Wheel washing device should be provided at the exits of the work sites. Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty material from its body and wheels as far as practicable.	Land site/ During Construction	Contractor(s)		✓		Implemented	

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
S4.8.1	Road sections between vehicle-wash areas and vehicular entrance will be paved.	Land site/ During Construction	Contractor(s)		✓		Implemented	
S4.8.1	Hoarding of not less than 2.4m high from ground level will be provided along the length of the Project Site boundary.	Land site/ During construction	Contractor(s)	✓	✓		Implemented	
S4.8.1	Haul roads will be kept clear of dusty materials and will be sprayed with water so as to maintain the entire road surface wet at all times.	Land site/ During construction	Contractor(s)		✓		Implemented	
S4.8.1	Temporary stockpiles of dusty materials will be either covered entirely by impervious sheets or sprayed with water to maintain the entire surface wet all the time.	Land site/ During construction	Contractor(s)		✓		Implemented	
S4.8.1	Stockpiles of more than 20 bags of cement, dry pulverised fuel ash and dusty construction materials will be covered entirely by impervious sheeting sheltered on top and 3-sides.	Land site/ During construction	Contractor(s)		✓		N/A	
S4.8.1	All exposed areas will be kept wet always to minimise dust emission.	Land site/ During construction	Contractor(s)		✓		N/A	
S4.8.1	Ultra-low-sulphur diesel (ULSD) will be used for all construction plant on-site, as defined as diesel fuel containing not more than 0.005% sulphur by weight) as stipulated in Environment, Transport and Works Bureau Technical Circular (ETWB-TC(W)) No 19/2005 on Environmental Management on Construction Sites.	Land site/ During construction/ During Operation	Contractor(s)		✓	✓	Implemented	Environment, Transport and Works Bureau Technical Circular (ETWB- TC(W)) No 19/2005 on Environmental Management on Construction Sites
S4.8.1	The engine of the construction equipment during idling will be switched off.	Land site/ During construction	Contractor(s)		✓		Implemented	



**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
S4.8.1	Concrete batching plant will be required on site. control measures recommended in the Guidance Note on a Best Practicable Means for Cement Works (Concrete Batching Plant) (BPM 3/2 (93)) will be implemented. The control measures recommended in the Guidance Note on a Best Practicable Means for Cement Works (Concrete Batching Plant) (BPM 3/2 (93)) will be implemented.	Land site/ During construction	Contractor(s)		✓		N/A	Guidance Note on a Best
S4.8.1	Regular maintenance of construction equipment deployed on-site will be conducted to prevent black smoke emission.	Land site/ During construction	Contractor(s)		✓		Implemented	
S4.10	To ensure proper implementation of the recommended dust mitigation measures and good construction site practices during the construction phase, environmental site audits on weekly basis is recommended throughout the construction period.	Land site/ During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		Implemented	

Note: D – Design stage C – Construction O – Operation

**Contract No. 13/WSD/16**  
**Mainlaying in Tseung Kwan O**  
**1<sup>st</sup> Annually EM&A Review Report for August 2018 to August 2019**



EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
<b>Noise</b>								
S5.7	Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction phase.	All area/ During construction	Contractor(s)		✓		Implemented	A Practical Guide for the Reduction of Noise from Construction Works,
S5.7	Silencers or mufflers on construction equipment will be utilised and will be properly maintained during the construction phase.	Noise control/ During construction	Contractor(s)		✓		N/A	A Practical Guide for the Reduction of Noise from Construction Works,
S5.7	Mobile plant, if any, will be sited as far away from NSRs as possible.	Noise control/ During construction	Contractor(s)		✓		N/A	A Practical Guide for the Reduction of Noise from Construction Works,
S5.7	Machines and plant (such as trucks) that may be in intermittent use will be shut down between work periods or will be throttled down to a minimum.	Noise control/ During construction	Contractor(s)		✓		Implemented	A Practical Guide for the Reduction of Noise from Construction Works,
S5.7	Plants known to emit noise strongly in one direction will, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.	Noise control/ During construction	Contractor(s)		✓		Implemented	A Practical Guide for the Reduction of Noise from Construction Works,
S5.7	Material stockpiles and other structures will be effectively utilised, wherever practicable, in screening noise from on-site construction activities.	Noise control/ During construction	Contractor(s)		✓		N/A	A Practical Guide for the Reduction of Noise from Construction Works,

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S5.7	Use of Quite Powered Mechanical Equipment (QPME).	Noise control/ During construction	Contractor(s)		✓		N/A	A Practical Guide for the Reduction of Noise from Construction Works,
S5.7	Movable noise barriers of 3m in height with skid footing should be used and located within a few metres of stationary plant and mobile plant such that the line of sight to the NSR is blocked by the barriers. The length of the barrier should be at least five times greater than its height. The noise barrier material should have a superficial surface density of at least 7 kg m <sup>-2</sup> and have no openings or gaps.	Noise control/ During construction	Contractor(s)		✓		N/A	A Practical Guide for the Reduction of Noise from Construction Works,
S5.7	The noise insulating sheet should be deployed such that there would be no opening or gaps on the joints.	Noise control/ During construction	Contractor(s)		✓		N/A	A Practical Guide for the Reduction of Noise from Construction Works,
S5.7	Construction activities (e.g. excavation/shoring, reinstatement (asphalt), and pipe jacking) will be planned and carried out in sequence, such that items of PME proposed for these activities will not be operated simultaneously.	Noise control/ During construction	Contractor(s)		✓		Implemented	A Practical Guide for the Reduction of Noise from Construction Works
S5.7	PMEs will not be used at the works areas near educational institutions with residual impact (ie the "influence area" within a radius of 40m) during school hours in order to reduce impact to the educational institutions.	Noise control / During construction	Contractor(s)		✓		N/A	A Practical Guide for the Reduction of Noise from Construction Works



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S5.7	Noise enclosures or acoustic sheds would be used to cover stationary PME such as generators. Portable/Movable noise enclosure made of material with superficial surface density of at least 7 kg m <sup>-2</sup> may be used for screening the noise from operation of the saw/groover, concrete.	Noise control/ Pre-construction/ During construction	Contractor(s)	✓	✓		Implemented	
S5.9	Sawcutting pavement, breaking up of pavement, excavation /shoring, pipe laying, backfilling, reinstatement (concrete) and pipe jacking shall be scheduled outside the examination period.	Noise control/ Pre-construction/ During construction	Contractor(s)	✓	✓		N/A	
S5.9	In view the duration of noise exceedance at Creative Secondary School, PLK Laws Foundation College, TKO Kei Tak Primary School and School of Continuing and Professional Studies-CUHK is limited to 8 weeks, the construction work in the influence areas near the four schools shall be scheduled during long school holidays (eg summer holiday, Easter holiday or Christmas holiday, etc) as far as practicable. Scheduling the construction work for the four schools.	Noise control/ Pre-construction/ During construction	Contractor(s)	✓	✓		N/A	
S5.10	A noise monitoring programme shall be implemented for the construction phase.	Designated monitoring stations as defined in EM&A Manual/During construction phase	Environmental Team (ET)		✓		N/A	
S5.10	The effectiveness of on-site control measures could also be evaluated through the regular site audits.	All facilities/ During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		Implemented	-

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<b>Water Quality</b>								
S6.9	Dredged marine sediment will be disposed of in a gazetted marine disposal area in accordance with marine dumping permit conditions of the Dumping at Sea Ordinance (DASO).	Marine Dredging/ During construction	Contractor(s)		✓		N/A	Dumping at Sea Ordinance (DASO)
S6.9	Disposal vessels will be fitted with tight bottom seals in order to prevent leakage of material during transport.	Marine Dredging/ During construction	Contractor(s)		✓		N/A	-
S6.9	Barges will be filled to a level, which ensures that material does not spill over during transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.	Marine Dredging/ During construction	Contractor(s)		✓		N/A	-
S6.9	After dredging, any excess materials will be cleaned from decks and exposed fittings before the vessel is moved from the dredging area.	Marine Dredging/ During construction	Contractor(s)		✓		N/A	-
S6.9	All vessels should be well maintained and inspected before use to limit any potential discharges to the marine environment.	Marine Dredging/ During construction	Contractor(s)		✓		N/A	-
S6.9	All vessels must have a clean ballast system.	Marine Dredging/ During construction	Contractor(s)		✓		N/A	-
S6.9	No discharge of sewage/grey wastewater should be allowed. Waste water from potentially contaminated area on working vessels should be minimized and collected. These kinds of wastewater should be brought back to port and discharged at appropriate collection and treatment system.	Marine Dredging/ During construction	Contractor(s)		✓		N/A	-
S6.9	No soil waste is allowed to be disposed overboard.	Marine Dredging/ During construction	Contractor(s)		✓		N/A	-

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S6.9	Silt removal facilities such as silt traps or sedimentation facilities will be provided to remove silt particles from runoff to meet the requirements of the TM standard under the WPCO. The design of silt removal facilities will be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures will be inspected on a regular basis and maintained to confirm proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit will be removed regularly.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented, rectified after observation	ProPECC PN 1/94 TM Standard under the WPCO
S6.9	Earthworks to form the final surfaces will be followed up with surface protection and drainage works to prevent erosion caused by rainstorms.	Land site & drainage/ During construction	Contractor(s)		✓		N/A	-
S6.9	Appropriate surface drainage will be designed and provided where necessary.	Land site & drainage/ During construction	Contractor(s)		✓		N/A	-
S6.9	The precautions to be taken at any time of year when rainstorms are likely together with the actions to be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented	ProPECC PN 1/94
S6.9	Oil interceptors will be provided in the drainage system where necessary and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented, rectified after observation	-
S6.9	Temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge, if any, will be adequately designed for the controlled release of storm flows.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented	-



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S6.9	The temporary diverted drainage, if any, will be reinstated to the original condition when the construction work has finished or when the temporary diversion is no longer required.	Land site & drainage/ During construction	Contractor(s)		✓		N/A	-
S6.9	Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented	-
S6.9 and S6.12	The sterilization water should be dechlorinated with total residual chlorine (TRC) level below 1 mg/L before discharge to public sewer. In situ testing of TRC should also be conducted for the discharge of chlorinated water for pipeline disinfection to ensure sufficient dechlorination before discharge to public sewer.	Sterilization of water mains prior to commissioning	Contractor(s)		✓	✓	N/A	Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems Inland and Coastal Waters
S6.9	The cleaning and flushing water should also be treated and desilted to the relevant discharge requirement stipulated in TM-DSS before discharging.	Sterilization of water mains prior to commissioning	Contractor(s)		✓	✓	N/A	Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems Inland and Coastal Waters
S6.9	Site drainage should be well maintained and good construction practices should be observed to ensure that oil, fuels, solvents and other chemicals are managed, stored and handled properly and do not enter the nearby water streams.	Land site & drainage/ During construction/ During operation	Contractor(s)		✓	✓	Implemented, rectified after observation	-

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S6.12	Regular site inspections will be carried out in order to confirm that regulatory requirements are being met and that contractors are implementing the standard site practice and mitigation measures as proposed to reduce potential impacts to water quality.	During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		Implemented	-

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<b>Waste Management</b>								
S8.5	Nomination of approved personnel to be responsible for standard site practices, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site.	Contract mobilisation/ During construction	Contractor(s)		✓		Implemented	-
S8.5	Training of site personnel in proper waste management and chemical handling procedures. Training will be provided to workers on the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling at the beginning of the construction works.	Contract mobilisation/ During construction	Contractor(s)		✓		Implemented	-
S8.5	Provision of sufficient waste disposal points and regular collection for disposal.	All area/ During construction/ During operation	Contractor(s)		✓	✓	Implemented rectified after observation	DEVB TC(W) No. 8/2010, Enhanced Specification for Site Cleanliness and Tidiness.
S8.5	Appropriate measures to reduce windblown litter and dust transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	All area/ During construction	Contractor(s)		✓		Implemented	DEVB TC(W) No. 8/2010, Enhanced Specification for Site Cleanliness and Tidiness.
S8.5	A waste management plan (WMP) as stated in the "ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites" for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established and implemented during the construction phase as part of the Environmental Management Plan (EMP). The Contractor will be required to prepare the EMP and submits it to the Architect/ Engineer under the Contract for approval prior to implementation.	All area/ During construction	Contractor(s)		✓		Implemented	ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites
S8.5	Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre at Tsing Yi.	All area/ During construction	Contractor(s)		✓		Implemented	Chapters 2 & 3 Code of Practice on the Packaging, Labelling, Storage of Chemical Wastes published and



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								the Waste Disposal Ordinance (Cap 354), Section 35
S8.5	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	Land site/ During construction	Contractor(s)		✓		Implemented, rectified after observation	Waste Disposal Ordinance (Cap 354)
S8.5	A recording system for the amount of wastes generated/ recycled and disposal sites. The trip- ticket system will be included as one of the contractual requirements and implemented by the contractor(s).	Land site/ During construction	Contractor(s)		✓		Implemented	DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials
S8.5	Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal.	Land site/ During construction/ During operation	Contractor(s)		✓		Implemented	WBTC 32/92, The Use of Tropical Hard Wood on Construction Site
S8.5	Encourage collection of aluminium cans and waste paper by individual collectors during construction with separate labelled bins provided to segregate these wastes from other general refuse by the workforce.	Land site/ During construction	Contractor(s)		✓		Implemented	ETWB TCW No. 33/2002, Management of Construction and Demolition Material Including Rock
S8.5	Any unused chemicals and those with remaining functional capacity will be recycled as far as possible.	Land site/ During construction	Contractor(s)		✓		Implemented	-
S8.5	Use of reusable non-timber formwork to reduce the amount of C&D materials.	All areas/ During construction	Contractor(s)		✓		N/A	WBTC 32/92, The Use of Tropical Hard Wood on Construction Site
S8.5	Prior to disposal of construction waste, wood, steel and other metals will be separated to the extent practical, for re-use and/or recycling to reduce the quantity of waste to be disposed of to landfill.	All areas/ During construction	Contractor(s)		✓		Implemented	DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials
S8.5	Proper storage and site practices to reduce the potential for damage or contamination of construction materials.	All areas/ During construction	Contractor(s)		✓		Implemented, rectified after observation	-

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S8.5	Plan and stock construction materials carefully to reduce amount of waste generated and avoid unnecessary generation of waste.	All areas/ During construction	Contractor(s)		✓		Implemented	-
S8.5	A Sediment Quality Report (SQR) for sampling and chemical testing of the sediment will be prepared and submitted to the EPD for approval. The approved detailed sampling and chemical testing will be carried out prior to the commencement of the dredging activities to confirm the sediment disposal method.	Marine works/ During construction	Contractor(s)		✓		N/A	ETWB TC(W) No. 34/2002 and Dumping at Sea Ordinance (DASO)
S8.5	The management of dredged/ excavated sediment management requirement from <i>ETWB TC(W) No. 34/2002</i> will be incorporated in the Specification of the Contract Documents.	Marine works/ During construction	WSD/ Contractor(s)		✓		Implemented	ETWB TC(W) No. 34/2002 and Dumping at Sea Ordinance (DASO)
S8.5	The contractor will open a billing account with EPD in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation for the payment of disposal charges.	Contract mobilisation/ During construction	Contractor(s)		✓		Implemented	Cap 354N Waste Disposal (Charges for Disposal of Construction Waste) Regulation
S8.5	A trip-ticket system will be established in accordance with DEVB TC(W) No. 6/2010 to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at transfer facilities/ landfills, and to control fly-tipping.	Contract mobilisation/ During construction	Contractor(s)		✓		Implemented	DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials
S8.5	The project proponent will also conduct regular inspection of the waste management measures implemented on site as described in the Waste Management Plan.	All area/ During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		Implemented	ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites

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S8.5	A recording system (similar to summary table as shown in Annex 5 and Annex 6 of Appendix G of ETWB TC(W) No. 19/2005) for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established during the construction phase.	All area/ During construction	Contractor(s)		✓		Implemented	Annex 5 and Annex 6 of Appendix G of ETWB TC(W) No. 19/2005
S8.5	Inert C&D materials (public fill) will be reused within the Project as far as practicable.	All area/ During construction	Contractor(s)		✓		N/A	-
S8.5	Public fill and construction waste shall be segregated and stored in different containers or skips to facilitate reuse or recycling of materials and their proper disposal.	All area/ During construction	Contractor(s)		✓		N/A	-
S8.5	Specific areas of the work site will be designated for such segregation and storage if immediate use is not practicable.	All area/ During construction	Contractor(s)		✓		N/A	-
S8.5	To reduce the potential dust and water quality impacts of site formation works, C&D materials will be wetted as quickly as possible to the extent practice after filling.	All area/ During construction	Contractor(s)		✓		Implemented	Air Pollution Control (Construction Dust) Regulation (Cap 311R); WPCO (Cap 358)
S8.5	Open stockpiles of excavated/ fill materials or construction wastes on-site should be covered with tarpaulin or similar fabric.	Land site/ During Construction, particularly dry season	Contractor(s)		✓		N/A	Air Pollution Control (Construction Dust) Regulation (Cap 311R)
S8.5	Chemical waste container shall be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	Chemical waste container shall have a capacity of less	All area/ During construction/	Contractor(s)/		✓	✓	Implemented	Waste Disposal



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	than 450 L unless the specifications have been approved by the EPD.	During operation	WSD					(Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	A label in English and Chinese shall be displayed on the chemical container in accordance with instructions prescribed in Schedule 2 of the Regulations.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	Storage areas for chemical waste shall be enclosed on at least 3 sides.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	Storage areas for chemical waste shall have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	Storage areas for chemical waste shall have adequate ventilation.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste)

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								(General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	Storage areas for chemical waste shall be covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary).	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	Storage areas for chemical waste shall be arranged so that incompatible materials are appropriately separated.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	General refuse will be stored in enclosed bins or compaction units separately from construction and chemical wastes.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	Adequate number of waste containers will be provided to avoid over-spillage of waste.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	DEVB TC(W) No. 8/2010 Enhanced

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								Specification for Site Cleanliness and Tidiness.
S8.5	A reputable waste collector will be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	N/A	-
S8.5	Recycling bins will be provided at strategic locations within the Site to facilitate recovery of recyclable materials (including aluminium can, waste paper, glass bottles and plastic bottles) from the Site. Materials recovered will be sold for recycling.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	-
S8.5	To avoid any odour and litter impact, accurate number of portable toilets will be provided for workers on-site.	All area/ During construction	Contractor(s)		✓		Implemented	-
S8.5	The burning of refuse on construction sites is prohibited by law.	All area/ During construction	Contractor(s)		✓		Implemented	Air Pollution Control Ordinance (Cap 311)
S8.7	To facilitate monitoring and control over the contractors' performance on waste management, a waste inspection and audit programme will be implemented throughout the construction phase.	All facilities/ During construction	ET/ IEC		✓		Implemented	-

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<b>Ecology</b>								
S9.7	For slope mitigation works within the Clear Water Bay Country Park, to avoid tree felling and damages to trees, the exact locations of the flexible barrier foundation plates, soil nails and rock dowels can be adjusted during detailed design, and a setback distance from existing trees is recommended to be maintained as far as practical. A detailed specification describing the exact locations of the flexible barrier foundation plates, soil nails and rock dowels will be prepared to illustrate how the setback distance from existing trees would be implemented for tree avoidance.	Slope mitigation works area/ During detailed design/ During construction	Contractor(s)	✓	✓		N/A	-
S9.7	Pruning of tree canopies along the alignment of the flexible barriers shall be limited to a minimum.	Slope mitigation works area/ During construction	Contractor(s)		✓		N/A	
S9.7	The alignment of flexible barriers shall be optimized to preserve all species of conservation interest and minimize the impact to the existing vegetation as far as practicable. All individuals of <i>Marsdenia lachnostoma</i> within the slope mitigation areas shall be retained <i>in-situ</i> , by positioning the alignment of flexible barrier at a minimum 1.5m in a radius away from these individuals.	Slope mitigation works area/ During detailed design/ During construction	Contractor(s)	✓	✓		N/A	-
S9.7 and 9.10	At the detailed design stage prior to the commencement of the slope mitigation works, a vegetation survey shall be carried out at the slope mitigation areas within the Clear Water Bay Country Park to assess the condition and identify the location of each individual of <i>Marsdenia lachnostoma</i> and other flora species of conservation interest that may be directly affected by the construction works.	Slope mitigation works area/ During detailed design/ During construction	Contractor(s)	✓	✓		N/A	-
S9.7	Temporary fencing will be installed to fence off the concerned species either in groups of individually within the works area and in the close proximity to prevent from being damaged and disturbed during construction. A sign identifying the site shall be attached to the fence and flagging tape shall be attached to the individuals to visualize their locations.	Slope mitigation works area/ During construction	Contractor(s)		✓		N/A	-
S9.7 and S9.10	A specification for fencing and demarcating individuals	Slope mitigation works area/	Contractor(s)		✓		N/A	-

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EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
	of <i>Marsdenai lachnostoma</i> (or other flora species of conservation interest, if found) adjacent to the proposed alignment of the flexible barriers will be prepared to protect the species.	During construction						
S9.7	Induction training shall also be provided to all site personnel in order to brief them on this flora of conservation interest including the locations and their importance.	Slope mitigation works area/ During construction	Contractor(s)		✓		Implemented	-
S9.7	The resident site supervisory staff will closely monitor the conditions of concerned individuals during construction of flexible barriers in the close proximity.	Slope mitigation works area/ During construction	Contractor(s)		✓		N/A	-
S9.7	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(s)		✓		N/A	-
S9.7	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(s)/ Environmental Team (ET)		✓		N/A	-
S9.7	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(s)		✓		N/A	-
S9.7	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(s)		✓		N/A	-
S9.7	Affected habitats within the Clear Water Bay Country Bay shall be reinstated by hydro-seeding and planting of climbers and native shrub seedlings where practical upon completion of the slope mitigation works.	All area/ During construction	Contractor(s)		✓		N/A	-

Note: D – Design stage C – Construction O – Operation

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				D	C	O		
<b>Landscape &amp; Visual</b>								
S11.10 & 11.11	The construction area and area allowed for temporary structures, such as the contractor's office, will be minimized to a practical minimum. (MM1)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	-
S11.10 & 11.11	At the detailed design stage, the design team will seek to minimize the landscape footprint of the Project and above ground facilities, while satisfying all other requirements. (MM2)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	-
S11.10 & 11.11	Design principles will be adopted to take into account the surrounding area, particularly Clear Water Bay Country Park behind and the nearby waterfront, with due consideration given to: - green roofs where practical (ie without equipment on the roof); - roadside planting; - aesthetic treatment of all structures; - vertical greening; screen planting along application site; and - landscape enhancement with amenity planting where practical including planting along the edge (site boundary) fence with native shrubs where feasible, - to reduce their visual impact and blend them into the surrounding landscape. (MM3)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	-
S11.10 & 11.11	All trees within the Project Site or the potential slope mitigation works area will be carefully protected during construction according to DEVB TCW No. 10/2013 – Tree Preservation (MM4)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	ETWB TCW No. 3/2006 - Tree Preservation.
S11.10 & 11.11	No tree within the Country Park will be felled. Trees within the Site unavoidably affected by the works will be transplanted where necessary and practical. For trees that need to be felled, compensatory planting will be provided to the satisfaction of relevant Government departments. A compensatory tree planting proposal including locations of tree compensation will be submitted to seek relevant government department's approval, in accordance with DEVB TC(W) No. 10/2013.	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	DEVB TC(W) No. 10/2013

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	(MM5)							
S11.10 & 11.11	Any slope mitigation works necessary to address natural terrain hazards, will be minimized to minimize any potential environmental impact to the Country Park e.g. soil nailing and rock stabilization will aim to avoid existing trees e.g. should any restoration of vegetation be necessary, the best planting matrix with native species will be established, with the aim of resembling the existing vegetation. (MM6)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	
S11.10 & 11.11	Dredging works for the installation of intake structures and outfall diffusers should be minimized to avoid or reduce any potential environmental impacts to as low as reasonably practicable (ALARP). The intake and outfall structures (e.g. intake openings and diffuser heads) will be prefabricated and transferred to site for installation. (MM7)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	N/A	
S11.10 & 11.11	All night-time lighting will be reduced to a practical minimum both in terms of number of level and will be hooded and directional. (MM8) units and lux level and will be hooded and directional. (MM8)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	-

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<b>Landfill Gas Hazard</b>								
S12.7	During all works, safety procedures should be implemented to minimise the risks of fires and explosions, asphyxiation of workers and toxicity effects resulting from contact with contaminated soil and groundwater.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	-
S12.7	During trenching and excavation as well as creation of confined spaces at near to or below ground level, precautions should be clearly laid down and rigidly Gas detection equipment and appropriate breathing apparatus should be available and used when entering confined spaces or trenches deeper than 1 metre.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	N/A	
S12.7	The Contractor should make the workers are aware of potential hazards of working in confined spaces (any chamber, manhole or culvert which is large enough to permit access to personnel). Such work in confined spaces is controlled by the Factories and Industrial Undertakings (Confined Spaces) Regulations of the Factories and Industrial Undertakings Ordinance. Following the Safety Guide to Working in Confined Spaces ensures compliance with the above regulations.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Safety officers, specifically trained with regard to landfill gas and leachate related hazards and the appropriate actions to take in adverse circumstances, should be present on the site throughout the works, in particular, when works are undertaken below grade.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	All personnel who work on site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of the works, the possible presence of contaminated water and the need to avoid physical contact with it.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Monitoring for landfill gas should be undertaken in all excavations, manholes, chambers (particularly during pipe jacking) and any confined spaces through the use of an intrinsically safe portable instrument, appropriately calibrated and capable of measuring the concentrations of methane, carbon dioxide and oxygen.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	N/A	

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S12.7	Monitoring frequency and areas to be monitored should be specified prior to commencement of groundwork, either by the Safety Officer, or by an appropriately qualified person. All measurements should be recorded and documented.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	N/A	
S12.7	Proceed drilling with adequate care and precautions against the potential hazards which may be encountered.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Prior to the commencement of the site works, the drilling contractor should devise a 'method-of- working' statement covering all normal and emergency procedures (including but not limited to number of operatives, experience and special skills of operatives, normal method of operations, emergency procedures, supervisors responsibilities, storage and use of safety equipment, safety procedures and signs, barriers and guarding). The site supervisor and all operatives must be familiar with this statement.	All area/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Where below ground service entries are necessary to the Incoming Switchgear Room, 132 kV Substation and Chlorine Store (I) and (II), the entry point should be sealed to prevent gas entry. In addition, any below grade cable trenches entering the Incoming Switchgear Room and 132 kV Substation can become the pathway for landfill gas and hence grilled metal covers should be used.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	N/A	
S12.7	It is recommended regular landfill gas monitoring should be carried out at the Incoming Switchgear Room, 132 kV Substation and Chlorine Store (I) and (II). The monitoring frequency will be monthly for the first year of operation. If the monitoring results show no sign of landfill gas migration, reduce the monitoring frequency to once every six months.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	N/A	
S12.7	The manholes and utility pits within the Project Site and along the fresh water mains. Each manhole/ utility pit should be monitored with two measurements (at mid depth and base). Each measurement should be	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	N/A	

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	monitored for a minimum of 10 minutes. A steady reading and peak reading should be recorded at each manhole/ utility pit and for each measurement. The need for venting the manhole/ utility pit and further monitoring will be reviewed after the initial monitoring.							
S12.7	All construction, operation and maintenance personnel working on-site as well as visitors should be made aware of the hazards of landfill gas and its possible presence on-site. This should be achieved through a combination of posting warning signs in prominent places and also by access to detailed information on landfill gas hazards and the designs and procedural means by which these hazards are being minimised on-site.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	

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## Appendix F

# Action and Limit Level for Noise and Landfill Gas



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**Action/ Limit Level for Noise Monitoring**

<b>Time Period</b>	<b>Action</b>	<b>Limit (dB(A))</b>
0700-1900 hours on normal weekdays	When one documented complaint is received from any one of the noise sensitive receivers	<ul style="list-style-type: none"><li>• 70 dB(A) for school and</li><li>• 65 dB(A) during examination period</li></ul>
Notes: (b) Limits specified in the GW-TM and IND-TM for construction and operation noise, respectively.		

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**Action Level for Landfill Gas Monitoring**

<b>Parameters</b>	<b>Level</b>
Oxygen (O <sub>2</sub> )	Action Level < 19% O <sub>2</sub>  Limit Level < 19% O <sub>2</sub>
Methane (CH <sub>4</sub> )	Action Level >10% LEL  Limit Level >20% LEL
Carbon Dioxide (CO <sub>2</sub> )	Action Level >0.5% CO <sub>2</sub> Limit Level >1.5% CO <sub>2</sub>

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## Appendix G

### Complaint Log and Regulatory Compliance Proforma

**Statistical Summary of Environmental Complaints**

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1 Aug 2018-31 Oct 2018	0	0	N/A

**Statistical Summary of Environmental Summons**

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Details
1 Aug 2018-31 Oct 2018	0	0	N/A

**Statistical Summary of Environmental Prosecution**

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Details
1 Aug 2018-31 Oct 2018	0	0	N/A



# Appendix H

## Noise Impact Monitoring Result

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