# CONTRACT NO. SPW 25/2018

# ENVIRONMENTAL TEAM FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS – SITE PREPARATION AND ACCESS TUNNEL CONSTRUCTION

## UNDER ENVIRONMENTAL PERMIT NO. EP-533/2017

# QUARTERLY ENVIRONMENTAL MONITORING & AUDIT SUMMARY REPORT

## - JUNE 2019 TO AUGUST 2019 -

**CLIENTS:**

**Drainage Services Department**

**PREPARED BY:**

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**CERTIFIED BY:**

Derek LO
Environmental Team Leader

**DATE:**

September 2019

MOTT MACDONALD

AECOM Asia Co. Ltd.
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**Attn: Mr. Simon Leung**

**Your Reference**

**Our Reference**
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**Sha Tin Cavern Sewage Treatment Works**

**Environmental Permit No. EP-533/2017**

**Contract No. DC/2018/05 Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction**

**Quarterly EM&A Summary Report (June – August 2019)**

26 September 2019

**By Email**

Dear Sir,

I refer to the letter dated 26 September 2019 (ref: LES/J2019-02/CS/L032) from the Environmental Team Leader certifying the captioned Quarterly EM&A Summary Report for June – August 2019 pursuant to Section 13.5 of the EM&A Manual for the captioned Project.

I have no comment on the captioned report and hereby verify it in accordance with Condition 2.10(ii) of Environmental Permit No. EP-533/2017.

Should you have any queries regarding the captioned or require any further information, please contact the undersigned at 2828 5875.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Brandon Wong
Independent Environmental Checker
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Encl.

| | | | |
|---|---|---|---|
| c.c. | DSD | Mr. Kenneth Poon | By Email |
| | Lam Environmental Services Limited | Mr. Derek Lo | By Email |
| | China State Joint Venture | Mr. F M Chung | By Email |

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## EXECUTIVE SUMMARY

i. This is the Quarterly Environmental Monitoring and Audit (EM&A) Summary Report – June 2019 to August 2019 of Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction under Environmental Permit no. EP-533/2017 (Hereafter as "the Project"). The report presenting the environmental monitoring findings and information recorded during the period of 1 June 2019 to 31 August 2019.

Construction activities for the reporting period

During this reporting period, the principal work activities are included as follow:

| June 2019 | July 2019 | August 2019 |
|---|---|---|
| • Site clearance<br>• Demolition of site office<br>• Hoarding erection<br>• Hand dig trial pit excavation<br>• Root pruning<br>• Site entrance construction | • Site Clearance<br>• Construction of site office<br>• Hoarding erection<br>• Hand dig trial pit excavation<br>• Root pruning and transplantation<br>• Site entrance construction<br>• Ground investigation<br>• Excavation for temporary haul road construction | • Site Clearance<br>• Construction of site office<br>• Hoarding erection<br>• Hand dig trial pit excavation<br>• Root pruning and transplantation<br>• Site entrance construction<br>• Ground investigation<br>• Excavation for temporary haul road construction<br>• Construction of cycle track |

Air Quality Monitoring

ii. 1-hour Total Suspended Particulates (TSP) monitoring would be conducted at five monitoring stations. The sampling frequency is 3 times in every 6 days.

iii. Air quality monitoring for the stations AM1 and AM2 were commenced on 12 April 2019 while station AM5 was commenced on 18 April 2019. Air quality monitoring for the station AM4 was commenced on 3 May 2019. AM3(A) is under liaison for approval.

iv. No action or limit level exceedance was determined in the reporting period for the stations of AM1, AM2, AM4 and AM5.

Noise Monitoring

v. Noise monitoring would be conducted at five noise monitoring stations once per week.

vi. Noise monitoring for stations CM4 and CM5 were commenced on 13 April 2019 and 18 April 2019 respectively. Noise monitoring for stations CM1 and CM3 were commenced on 2 May 2019. CM2(A) is under liaison for approval.

vii. No action or limit level exceedance was determined in the reporting period for the stations of CM1, CM3, CM4 and CM5.

Site Inspection and Audit

viii. Within this reporting period, weekly environmental site audits, bi-weekly landscape site audits and monthly ecology site audits were conducted by Environmental Team, ER and the Contractor, IEC attended the joint site inspection on 27 June, 24 July and 26 August 2019.

Complaints, Notifications of Summons and Successful Prosecutions

ix. A public complaint regarding construction dust received by DSD on 29 July 2019 was subsequently referred to ET on 6 August 2019. The complainant reported that exposed slope surface without any covering at Portion 6. Based on the information provided by the Contractor, the concerned area was under slope cutting and filling works for temporary haul road construction.

Based on the observation on 6 August 2019 and weekly site inspection on 7 August 2019, the concerned slope was observed covered with the tarpaulin sheets to alleviate the potential dust impact to the surroundings.

Upon review on the monitoring data, no exceedances were recorded at the air quality monitoring stations AM2 - Block H, Kam Tai Court and AM4 - Wellborn Kindergarten (located nearest to the concerned slope) during the 1hr TSP monitoring on 23 July 2019 and 29 July 2019 respectively.

Follow up site inspection was conducted by the Environmental Team on 07 August 2019 and it was observed that the slope at Portion 6 was properly covered.

Nevertheless, in view of the public concern, the Contractor of DC/2018/05 was reminded to enhance the dust suppression measure by providing adequate watering to any exposed surface during cutting slope and fill works to avoid potential dust impact to the surroundings.

x. No notification of summons and successful prosecutions was received in the reporting period.

# 1 Introduction

## 1.1 Scope of the Report

1.1.1. Lam Environmental Services Limited (LES) has been appointed to work as the Environmental Team (ET) under Environmental Permit (EP) no. EP-533/2017 to implement the Environmental Monitoring and Audit (EM&A) programme as stipulated in the EM&A Manual of the approved Environmental Impact Assessment (EIA) Report for Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction (Register No.: AEIAR-202/2016).

1.1.2. This report documents the finding of EM&A works for this project and during the period of 1 June 2019 to 31 August 2019.

1.1.3. In accordance with Section 13.5 of the Project EM&A Manual, the Quarterly EM&A Summary Report should be prepared and submitted to the IEC, the ER and EPD.

## 1.2 Structure of the Report

**Section 1** ***Introduction*** – details the scope and structure of the report.

**Section 2** ***Project Background*** – summarizes background and scope of the project, site description, project organization and contact details of key personnel during the reporting period.

**Section 3** ***Monitoring Requirements*** – summarizes all monitoring parameters, monitoring locations, monitoring frequency, criteria and respective event and action plan and monitoring programmes.

**Section 4** ***Monitoring Results*** – summarizes the monitoring results obtained in the reporting period.

**Section 5** ***Compliance Audit*** – summarizes the auditing of monitoring results, all exceedances environmental parameters.

**Section 6** ***Complaints, Notification of summons and Prosecution*** – summarizes the cumulative statistics on complaints, notification of summons and prosecution

**Section 7** ***Conclusion***

# 2 Project Background

## 2.1 Background

2.1.1. The Relocation of Sha Tin Sewage Treatment Works (STSTW) to Caverns (the Project) is implemented so as to release the existing site, of a size about 28 hectares, for other uses.

2.1.2. In May 2012, Drainage Services Department (DSD), the Project Proponent commenced a detailed feasibility study on "Relocation of Sha Tin Sewage Treatment Works to Caverns" (the Feasibility Study). The findings of Feasibility Study affirmed that relocating the STSTW to caverns to be constructed at Nui Po Shan of A Kung Kok is technically feasible and financially viable.

2.1.3. The Project is a Designated Project (DP) under the Environmental Impact Assessment Ordinance (EIAO). An application for an Environmental Impact Assessment (EIA) Study Brief under section 5(1)(a) of the EIAO was submitted on 12 May 2014 with a Project Profile (No. PP-508/2014) for the Project. An EIA Study Brief (No. ESB-273/2014) was issued in June 2014. An EIA for the Project was then undertaken, as part of the Assignment, in accordance with this EIA Study Brief and the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). The location of the Project is shown ***Figure 2.1.***

## 2.2 Scope of the Project and Site Description

2.2.1. The Project covers the following DP elements as specified in Schedule 2 of the EIAO (Cap.499), ***Table 2.1*** summarises the DPs under this Project.

***Table 2.1 Schedule 2 Designated Projects under this Project***

| Item | Designated Project | EIAO Reference |
|---|---|---|
| DP1 | Sewage treatment works with an installed capacity of more than 15,000 m3 per day under Item F.1 | Schedule 2, Part I, |
| DP2 | Sewage treatment works under Item F.2<br>• With an installed capacity of more than 5,000 m3 per day; and<br>• A boundary of which is less than 200m from the nearest boundary of an existing or planned residential area, educational institution and health care institution. | Schedule 2 Part I |
| DP3 | An activity for the reuse of treated sewage effluent from a treatment plant under Item F.4 | Schedule 2 Part I |

| | | |
|---|---|---|
| DP4 | Underground rock caverns under Item Q.2 | Schedule 2 Part I |
| DP5 | An explosives depot in a stand-alone, purpose built building under Item K.10 | Schedule 2 Part I; |
| DP6 | Decommissioning of an explosives depot under Item 11 | Schedule 2 Part II |

## 2.3 Project Organization and Contact Personnel

2.3.1 Drainage Services Department is the overall project controllers for the Project. For the construction phase of the Project, Project Engineer, Contractor(s), Environmental Team and Independent Environmental Checker are appointed to manage and control environmental issues.

2.3.2 The proposed project organization and lines of communication with respect to environmental protection works are shown in ***Figure 2.2***. Key personnel and contact particulars are summarized in ***Table 2.2***:

***Table 2.2 Contact Details of Key Personnel***

| Party | Role | Post | Name | Contact No. | Contact Fax |
|---|---|---|---|---|---|
| AECOM | Engineer's Representative | Chief Resident Engineer | Mr .Leung Chi Man, Simon | 6393 8645 | 3020 6780 |
| China State Joint Venture | Contractor | Site Agent | Mr. KONG Ming, Elvis | 9186 2081 | 2672 2501 |
| | | Environmental Officer | Ms. CHIU Mei Yu, Gloria | 9224 2413 | |
| Mott MacDonald Hong Kong Limited | Independent Environmental Checker (IEC) | Independent Environmental Checker (IEC) | Mr. Brandon Wong | 2828 5875 | 2827 1823 |
| Lam Environmental Services Limited | Environmental Team (ET) | Environmental Team Leader (ETL) | Mr. Derek Lo | 2882 3939 | 2882 3331 |
| **Hotline telephone number for the public to make enquiries:** | | | | 3142 2256 | |

## 2.4 Construction Activities

2.4.1 In the reporting period, the principal work activities conducted are as follow.

| June 2019 | July 2019 | August 2019 |
|---|---|---|
| • Site clearance<br>• Demolition of site office<br>• Hoarding erection<br>• Hand dig trial pit excavation<br>• Root pruning<br>• Site entrance construction | • Site Clearance<br>• Construction of site office<br>• Hoarding erection<br>• Hand dig trial pit excavation<br>• Root pruning and transplantation<br>• Site entrance construction<br>• Ground investigation<br>• Excavation for temporary haul road construction | • Site Clearance<br>• Construction of site office<br>• Hoarding erection<br>• Hand dig trial pit excavation<br>• Root pruning and transplantation<br>• Site entrance construction<br>• Ground investigation<br>• Excavation for temporary haul road construction<br>• Construction of cycle track |

2.4.2 Mitigation measures according to the environmental mitigation implementation schedule and the EIA were generally implemented by the Contractor in this reporting period. The Environmental Mitigation Implementation Schedule (EMIS) such as air quality, construction noise, water quality, Ecological, Landscape & Visual Impact and wastes management is presented in ***Appendix 2.1***

# 3 Monitoring Requirements

## 3.1 Air Monitoring

AIR QUALITY MONITORING STATIONS

3.1.1. Air monitoring stations AM1 and AM2 were setup and commencement of monitoring on 12 April 2019 while AM5 was setup and commencement of monitoring on 18 April 2019. Air quality monitoring for the station AM4 was commenced on 3 May 2019. AM3(A) is under liaison for approval, no monitoring for AM3(A) was conducted in the reporting period.

3.1.2. The air monitoring stations for the Project are listed and shown in ***Table 3.1*** and ***Figure 3.1***.

***Table 3.1 Air Monitoring Station***

| Monitoring Station ID | Monitoring Location | Level (in terms of no. of floor) |
|---|---|---|
| AM1 | Ah Kung Kok Fishermen Village | G/F |
| AM2 | Block H, Kam Tai Court | Roof |
| AM3(A) | Kowloon City Baptist Church Hay Nien Primary School | G/F (tentative) |
| AM4 | Wellborn Kindergarten | G/F |
| AM5 | The Neighbourhood Advice-Action Council Harmony Manor | Roof |

AIR MONITORING PARAMETERS, FREQUENCY AND DURATION

3.1.3. One-hour TSP levels should be measured to indicate the impacts of construction dust on air quality.

3.1.4. The sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs.

## 3.2 Noise Monitoring

NOISE MONITORING STATIONS

3.2.1. Noise monitoring stations CM4 and CM5 were setup and commencement of monitoring on 13 April 2019 and 18 April 2019 respectively. Noise monitoring for stations CM1 and CM3 were commenced on 2 May 2019. CM2(A) is under liaison for approval, no monitoring for CM2(A) was conducted in the reporting period.

3.2.2. The noise monitoring stations for the Project are listed and shown in ***Table 3.2*** and ***Figure 3.1.***

***Table 3.2 Noise Monitoring Station***

| Monitoring Station ID | Monitoring Location | Measurement Type | Level (in terms of no. of floor) |
|---|---|---|---|
| CM1 | Wellborn Kindergarten | Free field | G/F |
| CM2(A) | Kowloon City Baptist Church Hay Nien Primary School | Free field (tentative) | G/F (tentative) |
| CM3 | S.K.H. Ma On Shan Holy Spirit Primary School | Façade | Roof |
| CM4 | Ah Kung Kok Fishermen Village | Free field | G/F |
| CM5 | The Neighbourhood Advice-Action Council Harmony Manor | Façade | Roof |

NOISE MONITORING PARAMETERS, FREQUENCY AND DURATION

3.2.3. Noise monitoring shall be carried out at all the designated monitoring stations. The monitoring frequency shall depend on the scale of the construction activities. The following is an initial guide on the regular monitoring frequency for each station on a weekly basis when noise generating activities are underway:

- One set of measurements between 0700-1900 hours on normal weekdays;
- One set of measurements between 1900-2300 hours;
- One set of measurements between 2300-0700 hours of next day; and
- One set of measurements between 0700-2300 hours on holidays (three consecutive Leq/5min readings).

3.2.4. If construction works are extended to include works during the hours of 1900-0700, additional weekly impact monitoring shall be carried out during evening and night-time works for the latter 3 sets of measurements specified in Section 3.2.3 above, one set of measurements shall at least include 3 consecutive Leq (5min) results.

3.2.5. Supplementary information for data auditing, statistical results such as L10 and L90 shall also be obtained for reference.

3.2.6. If a school exists near the construction activity, noise monitoring shall be carried out at the monitoring stations for the schools during the examination periods. The ET leader shall liaise with the school's personnel and the examination authority to ascertain the exact dates and times of all examination periods during the course of the contract.

## 4. Monitoring Results

4.0.1 The environmental monitoring will be implemented based on the division of works areas of each designed projects. Overall layout showing work areas and monitoring stations is shown in ***Figure 2.1*** and ***Figure 3.1*** respectively**.**

### 4.1 Air Monitoring Results

4.1.1 1-hour TSP monitoring was conducted at AM1, AM2, AM4 and AM5 in the reporting period. No 1-hour TSP monitoring was scheduled at AM3(A) due to approval of monitoring station is still under liaison.

4.1.2 No action or limit level exceedance was determined in the reporting period at stations of AM1, AM2, AM4 and AM5

4.1.3 Air quality monitoring results measured in this reporting period for AM1, AM2, AM4 and AM5 are reviewed and summarized. Details of air monitoring results and graphical presentation can be referred in ***Appendix 4.1***.

### 4.2 Noise Monitoring Results

4.2.1 Noise monitoring was conducted at CM1, CM3, CM4 and CM5 in the reporting period. No noise monitoring was scheduled at CM2(A) due to approval of monitoring station is still under liaison.

4.2.2 No action or limit level exceedance was determined in the reporting period at stations of CM1, CM3, CM4 and CM5.

4.2.3 Noise monitoring results measured in this reporting period for CM1, CM3, CM4 and CM5 are reviewed and summarized. Details of noise monitoring results and graphical presentation can be referred in ***Appendix 4.2***.

### 4.3 Waste Management

4.3.1 The quantities of waste for disposal in the Reporting Period are summarized in ***Table 4.1***. The updated Monthly Summary waste Flow Table is shown in ***Appendix 4.3***. Whenever possible, materials were reused on-site as far as practicable.

***Table 4.1 Details of Waste Disposal for Contract no. DC/2018/05***

| Waste Type | Quantity this report period | Cumulative Quantity-to-Date | Disposal / Dumping Grounds |
|---|---|---|---|
| Inert C&D materials disposed**, m$^3$** | 67 | 67 | Fill Bank at Tuen Mun Area 38 |
| Inert C&D materials recycled**, m$^3$** | 108.9 | 108.9 | Fill Bank at Tuen Mun Area 38 |
| Non-inert C&D materials disposed**, tonne** | 141.71 | 146.91 | NENT |
| Non-inert C&D materials recycled**, kg** | 0 | 0 | |

| **Waste Type** | **Quantity this report period** | **Cumulative Quantity-to-Date** | **Disposal / Dumping Grounds** |
|---|---|---|---|
| Chemical waste disposed, **L** | 0 | 0 | |
| Asbestos waste disposed, **Kg** | 0 | 0 | |

# 5 Compliance Audit

5.0.1 The Event Action Plan for construction noise, air quality are presented in ***Appendix 5.1***.

## 5.1 Air Monitoring

5.1.1 No action or limit level exceedance was determined in the reporting period at stations of AM1, AM2, AM4 and AM5. No 1hr TSP monitoring was scheduled at stations of AM3(A) due to approval of monitoring station is still under liaison.

## 5.2 Noise Monitoring

5.2.1 No action or limit level exceedance was determined in the reporting period at stations of CM1, CM3, CM4 and CM5, No noise monitoring was scheduled at stations of CM2(A) due to approval of monitoring station is still under liaison.

## 5.3 Review of the Reasons for and the Implications of Non-compliance

5.3.1 No environmental non-compliance was recorded in the reporting period.

## 5.4 Summary of action taken in the event of and follow-up on non-compliance

5.4.1 There was no particular action taken since no non-compliance was recorded in the reporting period.

## 6 Complaints, Notification of Summons and Prosecution

6.0.1 A public complaint regarding construction dust received by DSD on 29 July 2019 was subsequently referred to ET on 6 August 2019. The complainant reported that exposed slope surface without any covering at Portion 6. Based on the information provided by the Contractor, the concerned area was under slope cutting and filling works for temporary haul road construction.

Based on the observation on 6 August 2019 and weekly site inspection on 7 August 2019, the concerned slope was observed covered with the tarpaulin sheets to alleviate the potential dust impact to the surroundings.

Upon review on the monitoring data, no exceedances were recorded at the air quality monitoring stations AM2 - Block H, Kam Tai Court and AM4 - Wellborn Kindergarten (located nearest to the concerned slope) during the 1hr TSP monitoring on 23 July 2019 and 29 July 2019 respectively.

Follow up site inspection was conducted by the Environmental Team on 07 August 2019 and it was observed that the slope at Portion 6 was properly covered.

Nevertheless, in view of the public concern, the Contractor of DC/2018/05 was reminded to enhance the dust suppression measure by providing adequate watering to any exposed surface during cutting slope and fill works to avoid potential dust impact to the surroundings.

6.0.2 No notification of summons and successful prosecutions was received in the reporting period.

6.0.3 The details of cumulative complaint log and updated summary of complaints are presented in ***Appendix 6.1***.

6.0.4 Cumulative statistic on complaints and successful prosecutions are summarized in ***Table 6.1*** and ***Table 6.2*** respectively.

***Table 6.1 Cumulative Statistics on Complaints***

| Reporting Period | No. of Complaints |
|---|---|
| June 2019 to August 2019 | 1 |
| **Total** | **1** |

***Table 6.2 Cumulative Statistics on Successful Prosecutions***

| Environmental Parameters | Cumulative No. Brought Forward | No. of Successful Prosecutions in this reporting period (Offence Date) | Cumulative No. Project-to-Date |
|---|---|---|---|

| Environmental Parameters | Cumulative No. Brought Forward | No. of Successful Prosecutions in this reporting period (Offence Date) | Cumulative No. Project-to-Date |
|---|---|---|---|
| Air | - | 0 | 0 |
| Noise | - | 0 | 0 |
| Waste | - | 0 | 0 |
| **Total** | **-** | **0** | **0** |

# 7 Conclusion

7.0.1 The EM&A programme was carried out in accordance with the EM&A Manual requirements, minor alterations to the programme proposed were made in response to changing circumstances.

7.0.2 No non-compliances were noted and no prosecutions were received during the reporting period.

7.0.3 Mitigation measures according to the environmental mitigation implementation schedule and the EIA were generally implemented by the Contractor in this reporting period. Weekly environmental site audits, bi-weekly landscape site audits and monthly ecology site audits were conducted by Environmental Team, ER and the Contractor and no cumulative environmental impact was identified in the reporting period. Hence, the EM&A programme was considered effective and shall be maintained.

7.0.4 The construction programmes of individual contracts are provided in ***Appendix 7.1***

***Figure 2.1***

***Project Layout***

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

838800 E

840000 E

841200 E

830400 N

829200 N

828000 N

SHA TIN HOI

TAI SHUI HANG

NUI PO SHAN

SHING MUN RIVER CHANNEL

LUK CHAU AU

KAU TO HANG

渡輪碼頭 Ferry Pier

大埔公路

雍雅山 De Yucca

配水庫 Ser Res

九肚村 Kau To Village

瞭望台 Lookout

駿發山 Sha Tin Knoll

Windsor Park

賀栢苑

皓朗山莊 Double Haven

污水處理廠 Sewage Treatment Works

錦泰苑 Kam Tai Court

大水坑 Tai Shui Hang

富安花園 Chevalier Garden

錦欣苑 Kam On Court

恒安邨 Heng On Estate

天宇海 Oceanaire

海典灣 Ocean View

欣安邨 Yan On Estate

嘉華星灣 La Costa

Sausalito

曉峰灣畔 Mountain Shore

MA ON SHAN ROAD

落路下 Lok Lo Ha

駿景園 Royal Ascot

沙田馬場 Sha Tin Racecourse

彭福公園 Penfold Park

亞公角漁民新村 Ah Kung Kok Fishermen Village

亞公角 A KUNG KOK

沙田醫院 Shatin Hospital

突破青年村 Breakthrough Youth Village

碧濤花園 Pictorial Garden

香港體育學院 Hong Kong Sports Institute

翠湖花園 Garden Vista

濱景花園 Ravana Garden

石門 SHEK MUN

城門河道

女婆坳 TURRET PASS

梅子林 Mui Tsz Lam

Water Tunnel

100 200 300

N

LEGEND:

- PROJECT BOUNDARY
- EXISTING EMERGENCY SUBMARNIE OUTFALL
- CAVERNS OF RELOCATED SHA TIN SEWAGE TREATMENT WORKS (UNDERGROUND)
- MAIN PORTAL AREA
- SECONDARY PORTAL AREA
- EXISTING SHA TIN SEWAGE TREATMENT WORKS
- TEMPORARY WORKS AREA
- AH KUNG KOK SHAN ROAD SURFACE MAGAZINE SITE WITH ACCESS ROAD



AECOM

**PROJECT** 項目

RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS: CAVERNS AND SEWAGE TREATMENT WORKS - INVESTIGATION, DESIGN AND CONSTRUCTION

**CLIENT** 業主

渠務署 Drainage Services Department

**CONSULTANT** 工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

**SUB-CONSULTANTS** 分判工程顧問公司

**ISSUE/REVISION** 修訂

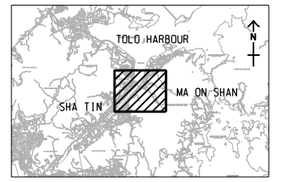
| I/R 修訂 | DATE 日期 | DESCRIPTION 內容摘要 | CHK. 核查 |
|---|---|---|---|
| | | | |

**STATUS** 階段

**SCALE** 比例 A3 1 : 12000

**DIMENSION UNIT** 尺寸單位 METRES

**KEY PLAN** 索引圖 A3 1 : 500000




**PROJECT NO.** 項目編號 60334056

**CONTRACT NO.** 合約編號 CE 30/2014 (DS)

**SHEET TITLE** 圖紙名稱

LOCATION PLAN OF THE PROJECT

**SHEET NUMBER** 圖紙編號

60334056/EM&A/1.01

Plot File by: PENGW 2016/5/24
PATH: P:\Projects\60334056\DRAWING\REPORT\EM&A\EM&A_711.dgn

***Figure 2.2***

***Project Organization Chart***

# Project Organization Chart

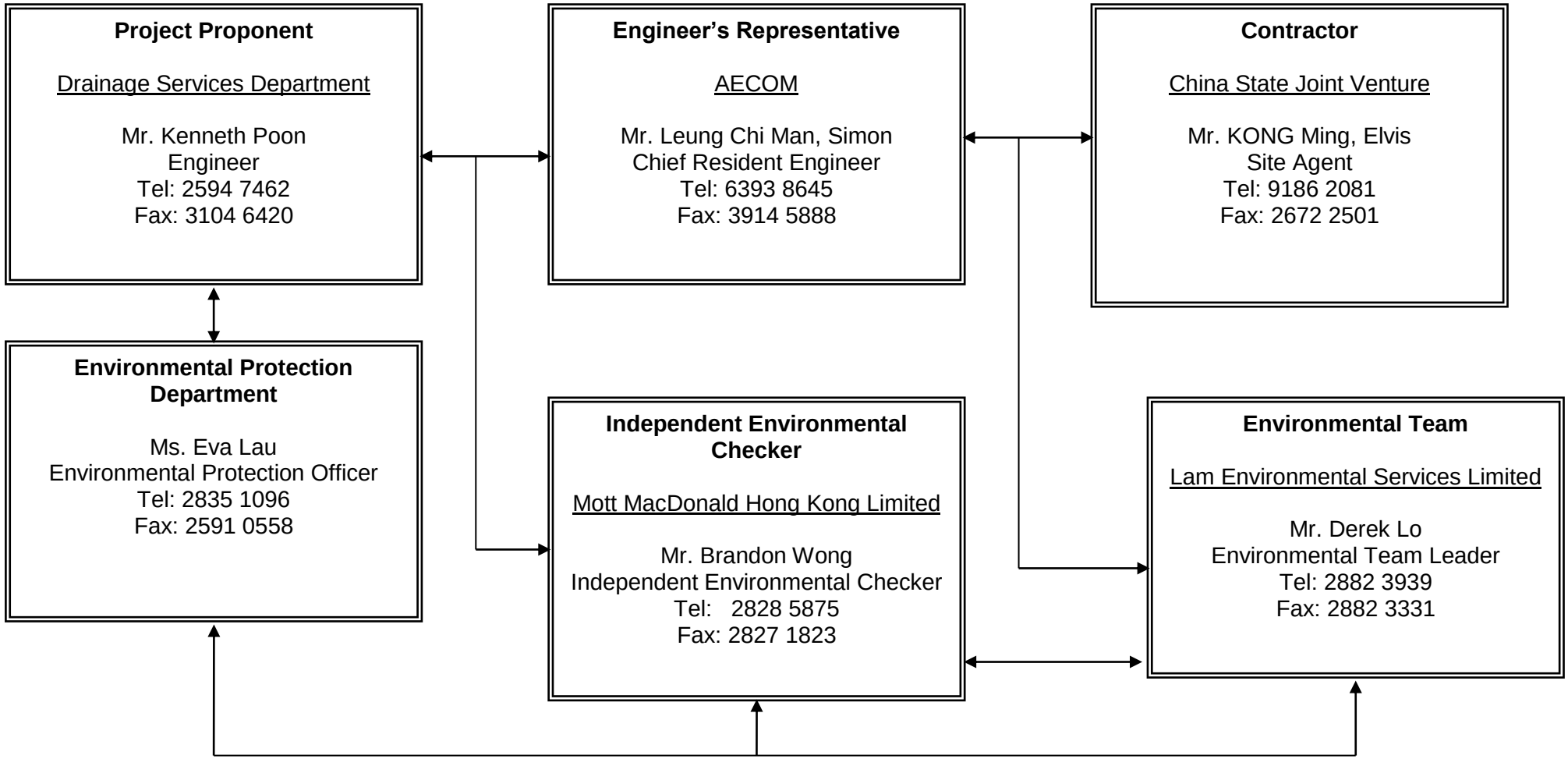
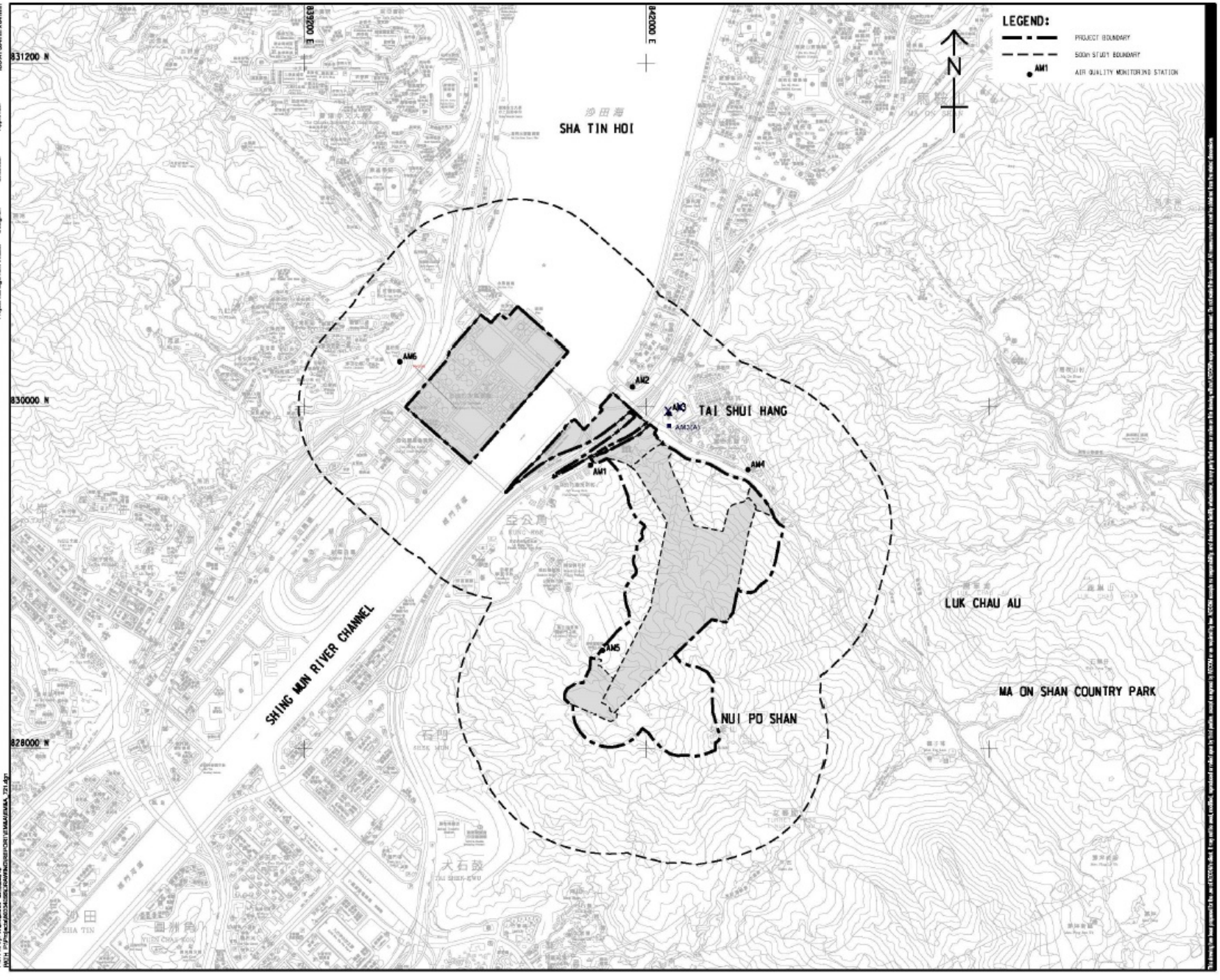


***Figure 3.1***

***Locations of Environmental Monitoring Station***




AECOM

**PROJECT**

RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS: CAVERNS AND SEWAGE TREATMENT WORKS - INVESTIGATION, DESIGN AND CONSTRUCTION

**CLIENT**

Drainage Services Department

**CONSULTANT**

AECOM Asia Company Ltd.
www.aecom.com

**SUB-CONSULTANTS**

**ISSUE/REVISION**

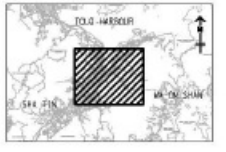
| RE | DATE | DESCRIPTION | CHK |
|---|---|---|---|

**STATUS**

**SCALE** A3 1 : 16000

**DIMENSION UNIT** METRES

**KEY PLAN** A3 1 : 400000




**PROJECT NO.** 60334056

**CONTRACT NO.** CE 30/2014 (DS)

**SHEET TITLE**

LOCATION OF AIR QUALITY MONITORING STATION DURING CONSTRUCTION PHASE

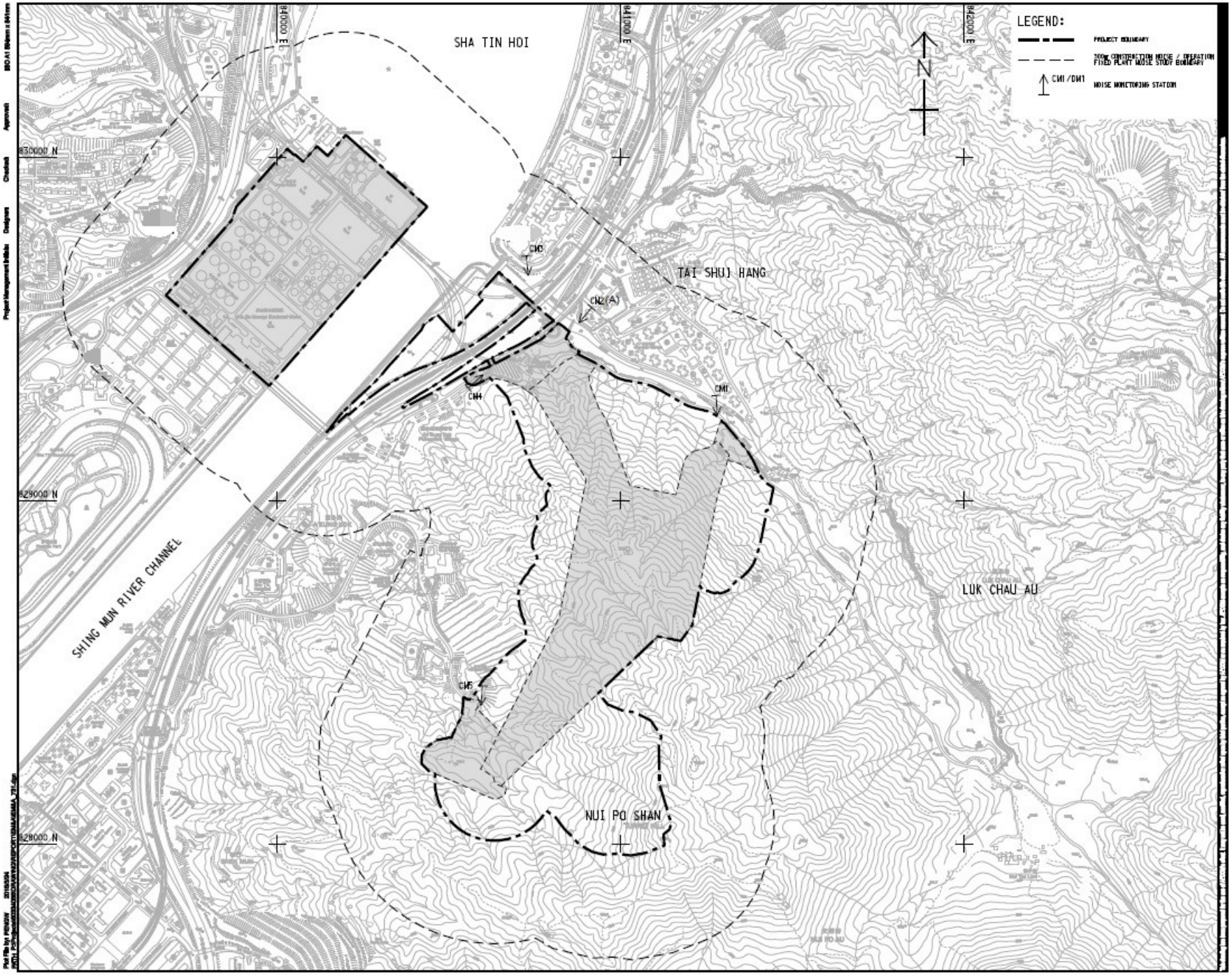
**SHEET NUMBER**

60334056/EM&A/2.01

Project Management Units: Designer: Checked: Approved:

ISO A1 (841mm x 841mm)

Plot Plot by: WONGSOC 27/05/2015
I:\60334056\ENVIRONMENTAL\EMA\EMA_T21.dgn




AECOM

**PROJECT**

RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS: CAVERNS AND SEWAGE TREATMENT WORKS - INVESTIGATION, DESIGN AND CONSTRUCTION

**CLIENT**

Drainage Services Department

**CONSULTANT**

AECOM Asia Company Ltd.
www.aecom.com

**SUB-CONSULTANTS**

**ISSUE/REVISION**

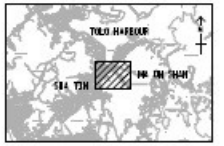
| ID | Date | Description | Chk'd |
|---|---|---|---|

**STATUS**

**SCALE** A3 1 : 10000

**DIMENSION UNIT** METRES

**KEY PLAN** A3 1 : 800000




**PROJECT NO.** 60334056

**CONTRACT NO.** CE 30/2014 (DS)

**SHEET TITLE**

LOCATION OF CONSTRUCTION PHASE TRAFFIC NOISE MONITORING STATION

**SHEET NUMBER**

60334056/EM&A/3.01

***Appendix 2.1***

***Environmental Mitigation Implementation Schedule***

# APPENDIX C IMPLEMENTATION SCHEDULE OF RECOMMENDED MITIGATION MEASURES

## C.1 Introduction

C.1.1 This section presents the implementation schedule of mitigation measures for the Project. **Table C.1** summarises the details of the recommended mitigation measures for all works areas. For each recommended mitigation measures, both the location and timing for the measure have clearly been identified as well as the parties responsible for implementing the measure and for maintenance (where applicable).

*Table C.1 Implementation Schedule of Recommended Mitigation Measures*

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | **Air Quality Impact** | | | | | | | | |
| | Construction Phase | | | | | | | | |
| Table 3.5 | 2.4.1 | The rock crushing plant is configured as an enclosed system.<br>Dust collector with dust removal efficiency of 99% will be provided at the exhaust of the rock crusher during rock crushing.<br>Watering will be provided to maintain material in wet condition.<br>Vehicles would be required to pass through the wheel washing facilities provided at site exit. | Rock Crushing Plant / Construction Phase | Contractor | √ | √ | | √ | Air Pollution Control Ordinance (APCO) |
| 3.8.1 | 2.4.1 | Watering eight times a day on active works areas, exposed areas and unpaved haul roads to reduce dust emission by 87.5%. | All active works areas, exposed areas and unpaved haul roads | Contractor | | √ | | √ | APCO |

[1] Des = Design; C = Construction; O = Operation; Dec = Decommissioning

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| | | | | | Des | C | O | Dec | |
| 3.8.1 | 2.4.1 | Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices:<br>• Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.<br>• Use of frequent watering for particularly dusty construction areas and areas close to ASRs.<br>• Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.<br>• Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.<br>• Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.<br>• Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.<br>• Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area | Construction Sites | Contractor | | √ | | √ | APCO and Air Pollution Control (Construction Dust) Regulation |

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| | | where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods.<br>• Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit.<br>• Imposition of speed controls for vehicles on site haul roads.<br>• Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.<br>• Every stock of more than 20 bags of cement or dry PFA should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.<br>• Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. | | | | | | | |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
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| | Operation Phase | | | | | | | | |
| 3.5.2 | - | Sludge tanks with totally enclosed design proven by DSD should be deployed for transporting sludge.<br>With thorough cleaning practice and regular condition test of the sludge tanks, odour emission and leachate leakage during storage and transportation are not anticipated. | Cavern Sewage Treatment Works (CSTW) / Operation Phase | Project Proponent / Operator | √ | | √ | | - |
| 3.6.2, 3.7.2 | 2.4.2 | All treatment units with potential odour emission will be covered and the exhausted air will be conveyed to the deodouriser (with 80 – 97% odour removal efficiency) for treatment before discharge to the environment. | CSTW / Operation Phase | Design team / Project Proponent / Operator | √ | | √ | | - |
| 3.7.2 | 2.4.2 | The following appropriate odour control measures would be implemented.<br>(i) Adopting the advantage of caverns as natural barriers for odour control;<br>(ii) Covering up of odour sources;<br>(iii) Preventing odour leakage through the access tunnels by applying negative pressure inside caverns;<br>(iv) Installing deodourizing units to clean up the collected foul air;<br>(v) Discharging exhausted air at height to further enhance the dilution effect; and<br>(vi) Enhancing the odour management of the sludge transportation. | CSTW / Operation Phase | Design team / Project Proponent / Operator | √ | | √ | | - |

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| | | | | | Des | C | O | Dec | |
| 3.10.2 | 2.3.1 | Odour monitoring at the inlet and outlet of the deodourizing units is proposed to be conducted for first three years of the operation of CSTW, quarterly in the first year, and once every 6 months in the second and third years if monitoring results remain below the limit levels. | CSTW / Operation Phase | Project Proponent / Operator | √ | | √ | | - |
| 3.10.2 | 2.3.2 | An Odour Complaint Registration System is also proposed in the EM&A programme to check whether the deodorizing units can fulfill the recommended odour removal performance. | CSTW / Operation Phase | Operator | | | √ | | - |
| 3.10.2 | - | Any unexpected leakage from tanks could be observed with monitoring equipment. Monitoring equipment would be installed in the CSTW to monitor the concentration of $H_2S$, CO and $CO_2$ and methane. Investigation and repair works would be carried out immediately if abrupt increase of these concentrations are reported. Emergency Plan would be established for these upset conditions. | CSTW / Operation Phase | Project Proponent / Operator | √ | | √ | | - |
| | **Noise Impact** | | | | | | | | |
| | Construction Phase | | | | | | | | |
| 4.5.1.6 | - | Re-provision of 220m length noise barrier with 10mPD on temporary access haul road to replace the existing 150m length noise barrier with 9.2mPD to 10mPD on Ma On Sha Road. The | Proposed temporary access / Construction Phase | Contractor | | √ | | | Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Noise Control Ordinance (NCO) |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
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| | | location of the relocated noise barrier is shown in **Figure No. 60334056/EIA/4.02** and **Appendix 4.07**. Once the construction work for the CSTW is completed, the temporary access roads would be demolished and the relevant section of Ma On Shan Road and associated noise barrier would be recovered as before. | | | | | | | |
| 4.8.1 | 3.8.1 | The use of quiet plant associated with the construction works is prescribed in British Standard "Code of practice for noise and vibration control on construction and open sites, BS5228" which contains the SWLs for specific quiet PME. | All Construction Work Sites | Contractor | | √ | | √ | EIAO-TM, NCO |
| 4.8.1 | 3.8.1 | To alleviate the construction noise impact on the affected NSRs, movable noise barrier for Air Compressor, Bar Bender and Cutter, Breaker, Chisel, Saw, Compactor, Mixers, Pump, Crane, Desander, Drilling Rig, Dump Truck, Excavator, Generator, Grab, Lorry, Paver, Poker and Roller are proposed. | All Construction Work Sites | Contractor | | √ | | √ | EIAO-TM, NCO |
| 4.8.1 | 3.8.1 | Provision of noise barrier/acoustic mats for Drilling Jumbo so as to have screening effecting with 10 dB(A) noise attenuation | Drilling Jumbo operate outside the portal and within 20m inside the portal | Contractor | | √ | | | EIAO-TM, NCO |
| 4.8.1 | 3.8.1 | To further alleviate the construction noise impact on the Neighbourhood Advice-Action Council Harmony | Construction Site for access road for | Contractor | | √ | | √ | EIAO-TM, NCO |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
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| | | Manor, it is proposed to limit the number of on-time operating PMEs within 120m of this NSR during construction of access road. | magazine at A Kung Kok Road | | | | | | |
| 4.9.1 | 3.8.1 | In addition to the above-mentioned mitigation measures, good site practices listed below shall be adopted by all the contractors to further ameliorate the noise impacts.<br>• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.<br>• Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program.<br>• Mobile plant, if any, should be sited as far away from NSRs as possible.<br>• Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.<br>• Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. | All Construction Work Sites | Contractor | | √ | | √ | EIAO-TM, NCO |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
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| | | | | | Des | C | O | Dec | |
| | | • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. | | | | | | | |
| | Operation Phase | | | | | | | | |
| 4.7.4 | 3.8.2 | The maximum allowable sound power levels for the ventilation shaft, ventilation buildings at main portal and emergency portal, ventilation fan for chiller plant room and cooling tower at the administration building as presented in Table 4.16 of the EIA Report should be achieved such that the nearest affected NSRs can be in compliance with the noise criteria | Ventilation Shaft, Administration Building and Ventilation Buildings/ Operation Phase | Project Proponent | √ | | √ | | EIAO-TM, NCO |
| 4.11.2 | 3.8.2 | Prior to the operational phase of the Project, a commissioning test for the ventilation buildings, the ventilation shaft, ventilation fan for chiller plant room at administration building and cooling tower at the administration building would be conducted to ensure compliance with the relevant allowable maximum sound power levels. | Ventilation Shaft, Administration Building and Ventilation Buildings/ Operation Phase | Contractor | | | √ | | EIAO-TM, NCO |

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| | | | | | Des | C | O | Dec | |
| | **Water Quality Impact** | | | | | | | | |
| | Construction Phase | | | | | | | | |
| 5.7.2 | 4.10 | Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities. | Construction Sites / Construction Phase | Contractor | | √ | | | Water Pollution Control Ordinance (WPCO), EIAO-TM |
| 5.7.2 | 4.10 | All vehicles and plant should be cleaned before they leave a construction site to minimise the deposition of earth, mud, debris on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfill to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains. | Construction Sites / Construction Phase | Contractor | | √ | | | Professional Persons Environmental Consultative Committee (ProPECC) Practice Note (PN) 1/94, WPCO, Waste Disposal Ordinance (WDO) |
| 5.7.2 | 4.10 | Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM |

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| | | | | | Des | C | O | Dec | |
| 5.7.2 | 4.10 | The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed where applicable to minimise surface run-off and the chance of erosion. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM, ProPECC PN 1/94 |
| 5.7.2 | 4.10 | There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS). The beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., can minimise water consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO licence which is under the ambit of RO of EPD. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM, (TM-DSS) |
| 5.7.2 | 4.10 | Contractor must register as a chemical waste producer if chemical wastes would be produced from the | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM, WDO |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
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| | | | | | Des | C | O | Dec | |
| | | construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes. | | | | | | | |
| 5.7.2 | 4.10 | Any service shop and maintenance facilities should be located on hard standings within a bonded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM |
| 5.7.2 | 4.10 | Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance should be followed to avoid leakage or spillage of chemicals. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM, WDO |
| 5.7.2 | 4.10 | Sufficient chemical toilets should be provided in the works areas. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
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| | | | | | Des | C | O | Dec | |
| 5.7.2 | 4.10 | Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM |
| 5.7.2 | 4.10 | The practices outlined in ETWB TC (Works) No. 5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works" should also be adopted where applicable to minimise the water quality impacts upon any natural streams or surface water systems. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM, ETWB TC (Works) No. 5/2005 |
| 5.7.2 | 4.10 | Appropriate measures during the construction of the cavern construction should be implemented to minimise the groundwater infiltration. | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM |
| 5.7.2 | 4.10 | No directly discharge of groundwater from contaminated areas should be adopted. Prior to any excavation works within the potentially contaminated areas at the existing STSTW site, the baseline groundwater quality in these areas should be reviewed based on the relevant SI data and any additional groundwater quality measurements to be performed with reference to *Guidance Note for Contaminated Land Assessment and Remediation* and the review results should be submitted to EPD for examination. If the review results indicated that the groundwater to be generated from the excavation | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM, Guidance Note for Contaminated Land Assessment and Remediation |

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| | | works would be contaminated, this contaminated groundwater should be either properly treated or properly recharged into the ground in compliance with the requirements of the TM-DSS. If wastewater treatment is to be deployed for treating the contaminated groundwater, the wastewater treatment unit shall deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (such as TPH) to an undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be either discharged into the foul sewers or tankered away for proper disposal. | | | | | | | |
| 5.7.2 | 4.10 | If deployment of wastewater treatment is not feasible for handling the contaminated groundwater, groundwater recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in section 2.3 of the TM-DSS. The baseline groundwater quality should be determined prior to the selection of the recharge wells, and submit a working plan to EPD for agreement. Pollution | Construction Sites / Construction Phase | Contractor | | √ | | | WPCO, EIAO-TM, TM-DSS |

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| | | levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Groundwater monitoring wells should be installed near the recharge points to monitor the effectiveness of the recharge wells and to ensure that no likelihood of increase of groundwater level and transfer of pollutants beyond the site boundary. Prior to recharge, free products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater | | | | | | | |
| 5.7.2 | 4.10 | THEES connection works should be synchronized with the THEES maintenance, for a duration not longer than 4 weeks each outside the algae blooming season (January to May) and frequency of THEES maintenance shall be no more than once per year during the construction phase of the Project. | Tolo Harbour / Construction Phase | Project Proponent / Contractor | √ | √ | | | EIAO-TM |
| | Construction and Operation Phases | | | | | | | | |
| 5.10.2 | 4.10 | Shutdown of the THEES for maintenance should be shortened as far as possible. It is recommended that the maintenance of the THEES tunnel should be avoided during the algae blooming season (January to May). | Tolo Harbour / Construction and Operation Phase | Project Proponent | | √ | √ | | WPCO, EIAO-TM |

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| | | | | | Des | C | O | Dec | |
| 5.10.2 | 4.10 | Relevant government departments including EPD, WSD, AFCD as well as the key stakeholders for mariculture and fisheries in Tolo Harbour should be informed of the maintenance event prior to any discharge. | Tolo Harbour / Construction and Operation Phase | Project Proponent | | √ | √ | | WPCO, EIAO-TM |
| 5.10.3 | 4.2-4.5 | An event and action plan and a water quality monitoring programme (as presented in the EM&A Manual) should be implemented for the THEES maintenance discharge | Tolo Harbour / Construction and Operation Phase | Project Proponent | | √ | √ | | WPCO, EIAO-TM |
| 5.10.1 | 4.10 | Silt screen may be installed at the flushing water intakes during the THEES maintenance discharge should it appear necessary. Close communication between DSD and WSD should be maintained to minimize any impact on the flushing water intakes due to THEES maintenance discharge. | WSD flushing water intakes / Construction and Operation Phase | WSD / Project Proponent | | √ | √ | | WPCO, EIAO-TM |
| | Design and Operation Phases | | | | | | | | |
| 5.8.3 | 4.6 | In case adverse impact on KTN is identified based on the result of the three-month monitoring programme after commissioning of the project, the operation conditions of the treatment and THEES system should be investigated, and corrective and remedial action should be implemented to improve the effluent discharge from the CSTW. Furthermore, DSD should extend the water quality monitoring | Project site / Design and Operation Phases | Project Proponent | | | √ | | WPCO, EIAO-TM |

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| | | programme for at least three months or as agreed by the Director of Environmental Protection. | | | | | | | |
| 5.11.2 | 4.10 | Dual power supply or ring main supply from CLP Power Hong Kong Ltd. CLP should be provided for the CSTW to prevent the occurrence of power failure. In addition, standby facilities for the main treatment units and standby equipment parts / accessories should also be provided in order to minimise the chance of emergency discharge. CLP should be consulted in order to ascertain the power supply for normal plant operation within the caverns. It is recommended that government departments including EPD, WSD and AFCD as well as the key stakeholders for mariculture and fisheries in Tolo Harbour should be informed as soon as possible in case of any emergency discharge so that appropriate actions can be taken. | Project site / Design and Operation Phases | Project Proponent | √ | | √ | | WPCO, EIAO-TM |
| 5.11.2 | 4.10 | In case of emergency discharge, the plant operators of CSTW should carry out necessary follow-up actions according to the procedures of the current contingency plan formulated for the existing STSTW to minimise the water quality impact. | Project site / Operation Phase | Project Proponent | | | √ | | WPCO, EIAO-TM |
| 5.11.2 | 4.10 | WSD may also consider, should it appear necessary, to shut down the Sha Tin seawater pumping station for a short period of time in case of | Sha Tin seawater pumping station / Operation Phase | WSD / Project Proponent | | | √ | | WPCO, EIAO-TM |

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| | | emergency discharge in order to minimize any adverse impacts. | | | | | | | |
| 5.13.2 | 4.10 | Best Management Practices to reduce storm water and non-point source pollution are also proposed as follows:<br><u>Design Measures</u><br>• Exposed surface shall be avoided within the road and portal sites to minimise soil erosion. The access road and the portal areas shall be either hard paved or covered by landscaping area where appropriate.<br>• Streams near the Project site will be retained to maintain the original flow path. The drainage system will be designed to avoid flooding.<br>• Green areas / planting etc. should be introduced alongside the access road and within the portal areas, as far as possible, to minimise runoff pollution.<br><u>Devices/ Facilities to Control Pollution</u><br>• Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening off large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system.<br>• Road gullies with standard design and silt traps should be provided to | Project site / Design and Operation Phase | Project Proponent | √ | | √ | | WPCO, ProPECC PN 5/93 |

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| | | remove particles present in stormwater runoff, where appropriate.<br><u>Administrative Measures</u><br>• Good management measures such as regular cleaning and sweeping of road surface/ open areas are suggested. The road surface/ open area cleaning should also be carried out prior to occurrence rainstorm.<br>• Manholes, as well as stormwater gullies, ditches provided at the Project site should be regularly inspected and cleaned (e.g. monthly). Additional inspection and cleansing should be carried out before forecast heavy rainfall. | | | | | | | |
| | **Land Contamination** | | | | | | | | |
| 6.7.1 | - | Further site walkover and/or detailed land contamination assessment will be required for sites that are inaccessible or currently in operation / yet to be constructed (i.e. existing STSTW, David Camp and part of existing Sha Tin VDC, and proposed A Kung Kok Shan Road surface magazine site within the Project boundary). The site walkover, detailed land contamination assessment and if necessary, remediation works should be carried out after decommissioning of the sites | Existing STSTW, David Camp and VDC / Construction Phase | Project Proponent / Contractor | | √ | | √ (for existing STSTW) | Guidance Note for Contaminated Land Assessment and Remediation, Practice Guide for Investigation and Remediation of Contaminated Land, Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management |

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| | | but prior to re-development and should include the following:<br>• Prior to the commencement of the SI works, review the CAP to confirm whether the proposed SI works (e.g. sampling locations, testing parameters etc.) are still valid and to confirm the appropriate RBRGs land use scenario for the development;<br>• Submit supplementary CAP(s), presenting the findings of the above review for EPD endorsement. If land contamination issues were identified within David Camp or part of existing VDC / proposed A Kung Kok Shan Road surface magazine site within the Project boundary in the further site walkover, findings of the site walkover and the proposal for SI works should also be presented in the supplementary CAP(s);<br>• Carry out SI works according to the supplementary CAP endorsed by EPD;<br>• Submit CAR(s), detailing findings of the SI works and nature/extent of any soil/groundwater contamination, and, if contaminated identified, RAP(s), discussing the appropriate remedial methods and mitigation | | | | | | | |

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| | | measures, for the identified contamination, for EPD agreement; and<br>• Carry out soil/groundwater remediation works according to EPD agreed RAP and submit RR(s) afterwards for EPD agreement. The remediation works and agreement of RR should be completed prior to re-development. | | | | | | | |
| 6.7.2 | - | If contamination were identified, mitigation measures as recommended in the RAP should be followed and should include the following:<br>• Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety;<br>• Excavation shall be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils;<br>• Supply of suitable clean backfill material (or treated soil) after excavation;<br>• Stockpiling site(s) shall be lined with impermeable sheeting and bunded. Stockpiles shall be fully covered by impermeable sheeting to reduce dust emission. If this is not practicable due to frequent | Project Site / Construction Phase | Contractor | | √ | | √ (for existing STS TW) | Guidance Note for Contaminated Land Assessment and Remediation, Practice Guide for Investigation and Remediation of Contaminated Land, Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management |

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| | | usage, regular watering shall be applied. However, watering shall be avoided on stockpiles of contaminated soil to minimise contaminated runoff.<br>• Vehicles containing any excavated materials shall be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates shall be sealed to prevent any discharge during transport or during wet conditions;<br>• Speed control for the trucks carrying contaminated materials shall be enforced;<br>• Vehicle wheel and body washing facilities at the site's exist points shall be established and used; and<br>• Pollution control measures for air emissions (e.g. from biopile blower and handling of cement), noise emissions (e.g. from blower or earthmoving equipment), and water discharges (e.g. runoff control from treatment facility) shall be implemented and complied with relevant regulations and guidelines. | | | | | | | |

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| | **Hazard to Life** | | | | | | | | |
| | Construction Phase | | | | | | | | |
| 7.14.1 | 6.2.2 | The following recommendations are justified to be implemented to meet the EIAO-TM requirements:<br>• The truck should be designed to minimise the amount of combustible in the cabin. The fuel carried in the fuel tank should also be minimised to reduce the duration of any fire;<br>• The accident involvement frequency of the explosives delivery truck should be minimised through implementation of several administrative measures, such as providing training programme to the driver, regular "tool box" briefing session, implementing a defensive driving attitude, selecting driver with good safety record, and providing regular medical checks for the driver;<br>• Avoidance of returning unused explosives to the magazine, only the required quantity of explosives for a particular blast should be transported;<br>• Maintain a minimum headway of 10 minutes between two | Explosives dlivery route / Construction Phase | Contractor | √ | √ | | | EIAO-TM |

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| | | consecutive truck convoys whenever practicable; and<br>• The fire involvement frequency should be minimised by carrying better types of fire extinguishers and with bigger capacity onboard of the explosives delivery truck. Emergency plans and trainings could also be provided to make sure that the fire extinguishers are used adequately. | | | | | | | |
| 7.14.2 | 6.2.3 | The magazine should be designed, built, operated and maintained in accordance with Mines Division's guidelines and appropriate industry best practice. In addition, the following recommendations should be implemented:<br>• The security plan should address different alert security level to reduce opportunity for arson or deliberate initiation of explosives;<br>• Emergency plan should be developed to address uncontrolled fire in magazine area, and drill of the emergency plan should be regularly carried out;<br>• Suitable work control system should be set-up, such as an operational manual including Permit-to-Work system, to ensure that work activities undertaken | Magazine Site/ Construction Phase | Contractor | √ | √ | | | - |

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| | | during operation of the magazine are properly controlled;<br>• Good house-keeping within the magazine to ensure no combustible materials are accumulated;<br>• Good house-keeping outside the magazine stores to ensure no combustible materials are accumulated; and<br>• Regular checking of the magazine store to ensure no water seepage through the roof, walls or floor. | | | | | | | |
| 7.14.3 | 6.2.4 | The following recommendations should be implemented:<br>• Emergency plan should be developed to address uncontrolled fire during transport. Case of fire near an explosive delivery truck in jammed traffic should be included in the plan. Activation of fuel and battery isolation switches on vehicle when fire breaks out should also be included in the emergency plan to reduce likelihood of prolonged fire leading to explosion;<br>• Working guideline should be developed to define procedure for explosives transport during adverse weather such as thunderstorm; | To and from Magazine Site / Construction Phase | Contractor | √ | √ | | | - |

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| | | • Detonators should be transported separately from other Class 1 explosives. Separation of vehicles should also be maintained through the trip;<br>• Develop procedure to ensure the availability of parking space on site for the explosives delivery truck. Delivery should not be commenced if parking space on site is not secured;<br>• Hot work or other activities should be banned in the vicinity of the explosives offloading or charging activities;<br>• Lining should be provided within the transportation box on the vehicle;<br>• Fire screen should be used between cabin and the load on the vehicle;<br>• Ensure packaging of detonators remains intact until handed over at blasting site;<br>• Ensure that cartridged emulsion packages are not damaged before every trip; and<br>• Use experienced driver with good safety record. | | | | | | | |

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| 7.14.4 | 6.2.5 | The following recommendations should be implemented for the safe use of explosives:<br>• Blast Charge Weight should be within MIC as specified for the given blast face;<br>• Temporary mitigation measures such as blast doors or heavy duty blast curtains should be installed at the portals or shafts and at suitable locations underground to prevent flyrock and control the air overpressure;<br>• Multiple faces blasting will be carried out for the construction of cavern in this project. Good communication and control will need to be adopted in ensuring that the works are carried out safely;<br>• It is not intended to carry out complete evacuation of the construction areas and secure refuge areas should be identified to workers in the areas;<br>• A Chief Shotfirer and a Blasting Engineer shall be employed in addition to the normal blasting personnel to ensure that the works are safe and coordinated between blasting areas;<br>• Shotfirer to be provided with a lightning detector, and appropriate | CSTW / Construction Phase | Contractor | √ | √ | | | - |

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| | | control measures should be in place;<br>• Speed limit for the diesel vehicle truck and bulk emulsion truck in the access tunnel and cavern should be imposed. The truck may be escorted while underground to ensure route is clear from hazards and obstructions; and<br>• Hot work should be suspended during passage of the diesel vehicle truck and bulk emulsion truck in the access tunnel and cavern.<br>• A boulder survey should be undertaken based on the likely PPV values that would result from the blasting process. Those boulders subject to the vibration higher than the allowable limit should be strengthened, removed, or constructed with boulder fence, prior to the commencement of blasting. | | | | | | | |
| | Operation Phase | | | | | | | | |
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| | **Ecological Impact (Terrestrial and Marine)** | | | | | | | | |
| | Construction Phase | | | | | | | | |
| 8.8.2 | 7.2.1 | Construction of access roads and other temporary works should be carefully designed (e.g. elevated road for crossing streams) to avoid / minimise habitat loss and fragmentation. | Project site – areas access road / Pre-Construction Phase | Design team / Project Proponent | √ | | | | - |
| 8.8.3 | 7.2.2 | Minimise habitat loss to nearby habitats and associated wildlife by implementing the following mitigation measures: -<br>• confining the works within the site boundary;<br>• controlling access of site staff to avoid damage to the vegetation in surrounding areas; and<br>• placement of equipment or stockpile in the existing disturbed / urbanised land within the site boundary of the Project to minimise disturbance to vegetated areas; | Project site / Construction Phase | Contractor | | √ | | | - |
| 8.8.3 | 7.2.2 | Reinstatement planting should be implemented upon the completion of construction works to minimise the ecological impact arising from the temporary habitat loss | Project Site (Main Portal Area / Secondary Portal Area / Access Road / Temporary Works Area) /Construction Phase | Project Proponent | √ | √ | | √ | |

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| 8.8.2, 8.8.3 & 8.10 | 7.2.2 | Detailed Vegetation Survey shall be conducted by a suitably qualified botanist / ecologist within the works area requiring vegetation clearance prior to commencement of works to identify plant species of conservation importance.<br>The potentially affected individuals shall be tagged and fenced off for preservation, and in the case of unavoidable loss, for transplantation to nearby suitable habitat(s). | Proposed works areas (Main Portal, Secondary Portal, Access Road) / Pre-Construction Phase | Project Proponent / Qualified botanist or ecologist | | √ | | | |
| 8.8.2, 8.8.3 & 8.10 | 7.3.1 | A Protection and Transplantation Proposal including the subsequent monitoring visit for the affected plant species should be prepared and conducted by a suitably qualified local ecologist. The Proposal should be submitted for approval at least one month before works commencement.<br>To review the performance of the transplantation exercise, monitoring of transplanted flora should be conducted monthly after the transplantation throughout the construction phase. The parameters to be monitored should include the health condition and survival rate of the transplanted flora and presence of weedy species. Any observations and recommendations should be reported in monthly EM&A reports | Recipient Site for transplanted species / Construction Phase | Project Proponent / Qualified botanist or ecologist | | √ | | | |

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| 8.8.3 | 7.2.2 | Mitigation measures should be implemented to control runoff from the construction site, as well as the adopting guidelines and good site practices for handling and disposal of construction discharges in order to minimise the potential indirect impact on the streams (particularly S2) resulting from site runoff.<br>Precautionary measures should also be implemented to minimise indirect impacts to the streams, such as isolating the work site by placing sandbags and silt curtains, covering up construction materials, debris and spoil to avoid being washed into the stream, and properly collecting and treating construction effluent and sewage. | Access Road on Nui Po Shan / Construction Phase | Contractor | | √ | | | ETWB TCW No. 5/2005 |
| 8.8.3 | 7.2.2 | Implement good site practice to further minimise impacts from disturbance such as noise, air quality and water quality issues, such as: -<br>• the use of quiet plant and EPD's QPME and the availability of British Standards 5228 has been considered;<br>• the use of movable noise barrier;<br>• the use of temporary noise screening structures or purpose-built temporary noise barriers; | Project site / Construction Phase | Contractor | | √ | | | - |

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| | | • install site hoarding as temporary noise barrier where construction works are undertaken;<br>• only well-maintained plant should be operated on site and plant should be serviced regularly during the construction programme;<br>• Mitigation measures stipulated in the ProPECC PN 1/94 "Construction Site Drainage" should be complied to minimise water quality impact;<br>• Installation of stand-by pump, emergency power supply and telemetry system to avoid sewage overflow and surcharge to sewerage system due to power/equipment failure. | | | | | | | |
| 8.8.3 | 7.2.2 | Minimise groundwater infiltration during cavern construction with the following water control strategies:-<br>• Probing Ahead: As a normal practice, the Contractor will undertake rigorous probing of the ground ahead of excavation works to identify zones of significant water inflow. The probe drilling results will be evaluated to determine specific grouting requirements in line with the tunnel / cavern advance. In such zones of significant water inflow that could occur as a result of discrete, permeable features, the intent | Project site / Construction Phase | Contractor | | √ | | | - |

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| | | would be to reduce overall inflow by means of cut-off grouting executed ahead of the tunnel / cavern advance;<br>• Pre-grouting: Where water inflow quantities are excessive, pre-grouting will be required to reduce the water inflow into the tunnel / cavern. The pre-grouting will be achieved via a systematic and carefully specified protocol of grouting;<br>• In principle, the grout pre-treatment would be designed on the basis of probe hole drilling ahead of the tunnel / cavern face;<br>• The installation of waterproof lining would also be adopted after the formation of the tunnels and caverns. | | | | | | | |
| 8.8.3 | 7.2.2 | In the event of excessive infiltration being observed as a result of the tunnelling or excavation works even after incorporation of the water control strategies, post-grouting should be applied as far as practicable as described below:<br>• Post-grouting: Groundwater drawdown will be most likely due to inflows of water into the tunnel / cavern that have not been sufficiently controlled by the pre-grouting measures in high permeability area. Where this | Project site / Construction Phase | Contractor | | √ | | | - |

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| | | occurs post grouting will be undertaken before the lining is installed. Whilst unlikely to be required in significant measure, such a contingency should be allowed for reduction in permeability of the tunnel / cavern surround (by grouting) to limit inflow to acceptable levels.<br>The practical groundwater control measures stated above are proven technologies and have been extensively applied in other past projects. These measures or other similar methods, as approved by the Engineer to suit the works condition shall be applied to minimise the groundwater infiltration. | | | | | | | |
| 8.8.3 | 7.2.2 | In case seepage of groundwater occurs, groundwater should be pumped out from works areas and discharged to the storm system via silt trap. Uncontaminated groundwater from dewatering process should also be discharged to the storm system via silt removal facilities. | Project site / Construction Phase | Contractor | | √ | | | - |

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| 8.8.3 | 7.2.2 | Mitigation measures recommended in the water quality impact assessment for controlling water quality impact will also serve to protect marine ecological resources from indirect impacts and ensure no unacceptable impact on marine ecological resources.<br>Relevant government departments including EPD, WSD and AFCD as well as key stakeholders for mariculture and fisheries in Tolo Harbour should be informed of the THEES maintenance / emergency discharge event prior to any discharge.<br>It is recommended that the temporary effluent bypass event and the THEES maintenance period should be shortened as far as possible. | Tolo Harbour / Construction Phase | Contractor and Operator | | √ | | | - |
| | Construction and Operation Phase | | | | | | | | |
| 8.8.3 | 7.2.2 | Overall reduction of glare during both construction and operation phase should be considered. A balance between lighting for safety, and avoiding excessive lighting can be achieved through the use of directional lighting to avoid light spill into sensitive areas, and control/timing of lighting periods of some facilities, particularly at the secondary portal which lies approximately 200 m northwest of Ma On Shan Country Park. | Project site / Construction and Operation Phase | Contractor and Operator | | √ | √ | | - |

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| 8.8.3 | 7.2.2 | During the decommissioning and demolition of the existing STSTW, the direction and lighting periods should be controlled during ardeid breeding season (March to August) to minimise the potential indirect impact on Penfold Park Egretry and the ardeids flying over the existing STSTW. | Existing STSTW / Decommissioning / March to August | Contractor | | | | √ | - |
| 8.10 | 7.3 | It is anticipated that the construction of rock caverns would not have adverse impacts on groundwater in Nui Po Shan. Nonetheless, surface water level or groundwater level near the caverns will be closely monitored during the construction and operation stage. | Project site / Construction and Operation Phase | Contractor and Operator | | √ | √ | | - |
| | Compensatory Planting | | | | | | | | |
| 8.8.4& 8.10.1 | 7.2.3 | Compensatory planting would be provided at main and secondary portal areas, and along the access road. | Main portal, secondary portal, and along access road | Project Proponent | √ | √ | | | DEVB TC(W) No. 7/2015 |
| 8.8.4 & 8.10.1 | 7.2.3 | To facilitate successful planting, a detailed Woodland Compensation Plan should be prepared by local ecologists with at least 10 years relevant experience to form the basis of the proposed compensatory planting. The Woodland Compensation Plan should include implementation details, management requirement, as well as monitoring requirements (e.g. frequency and parameters) of the | Compensatory planting area (Main portal, secondary portal, and along access road) / pre-construction | Project Proponent | √ | √ | | | |

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| | | compensatory planting area. Approval of the Plan should be obtained from EPD at least three months before the prior to commencement of compensatory woodland planting. | | | | | | | |
| 8.8.4 & 8.10.1 | 7.2.3 | Upon the completion of planting, monitoring of the woodland compensation areas should be implemented, with maintenance works (e.g. irrigation, weeding, pruning, control of pests and diseases, replacement planting, repair of damage, etc.) conducted as necessary. | Compensatory planting area (Main portal, secondary portal, and along access road) / Operation | Project Proponent / CSTW Operator | | | √ | | |
| | **Fisheries Impact** | | | | | | | | |
| 9.6 | 8.2 | Potential impacts on fisheries resources and fishing operations arising from the Project have been avoided and minimised by construction of a connection pipes to the existing emergency outfall of STSTW by trenchless method underneath Shing Mun River with the least water quality impact. In addition, the temporary effluent bypass event for THEES connection work would be synchronized within regular THEES maintenance. Therefore, additional water quality impact and fisheries impact from changes of water quality have been avoided. Furthermore, the THEES maintenance discharge would avoid the blooming season of algae (i.e. January to May) to minimise the potential water quality impacts. It is | Tolo Harbour /Construction and Operation Phase | Project Proponent / Contractor | √ | √ | | | - |

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| | | recommended that any THEES maintenance period should be shortened as far as possible. | | | | | | | |
| 9.6 | 8.2 | Mitigation measures recommended in the water quality impact assessment for controlling water quality impact will also serve to protect fisheries from indirect impacts and ensure no unacceptable impact on fisheries resources and operations. For more detailed mitigation measures regarding water quality refer to Sections 5.7.2 and 5.13.2 of the EIA Report. | Construction and Operation Phase | Contractor and Operator | | √ | √ | | - |
| 9.6 | 8.2 | Relevant government departments including EPD, WSD and AFCD as well as key stakeholders for mariculture and fisheries in Tolo Harbour should be informed prior to the THEES maintenance / emergency discharge events. | Tolo Harbour / Construction and Operation Phase | Project Proponent | | √ | √ | | |
| | **Landscape and Visual Impact** | | | | | | | | |
| Table 10.10 | - | CM1 - Preservation of Existing Vegetation | Construction Sites/ Construction Phase | Project Proponent | √ | √ | | √ | DEVB TCW No. 7/2015 and latest Guidelines on Tree Preservation during Development issued by GLTM Section of DEVB |
| Table 10.10 | - | CM2 - Transplanting of Affected Trees | Construction Sites/ Construction Phase | Project Proponent | √ | √ | | √ | DEVB TCW No. 7/2015 and the latest Guidelines on Tree Transplanting issued by GLTM Section of DEVB |

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| Table 10.10 | - | CM3 - Compensatory Tree Planting | Construction Sites/ Construction Phase | Project Proponent | √ | √ | | √ | DEVB TCW No. 7/2015 |
| Table 10.10 | - | CM4 - Control of Night-time Lighting Glare | Construction Sites/ Construction Phase | Project Proponent | √ | √ | | √ | |
| Table 10.10 | - | CM5 - Erection of Decorative Screen Hoarding | Construction Sites/ Construction Phase | Project Proponent | √ | √ | | √ | |
| Table 10.10 | - | CM6 - Management of Construction Activities and Facilities | Construction Sites/ Construction Phase | Project Proponent | √ | √ | | √ | |
| Table 10.10 | - | CM7 - Reinstatement of Temporarily Disturbed Landscape Areas | Construction Sites/ Construction Phase | Project Proponent | √ | √ | | √ | |
| Table 10.11 | - | OM1 - Tree and Shrub Planting at the Temporary Project Magazine Site after Completion of Engineering Works | Temporary Project Magazine Site / Operation Phase | Project Proponent | √ | √ | √ | | |
| Table 10.11 | - | OM2 - Aesthetically pleasing design of Aboveground Structures | Tunnel Portals, Administration Building, Ventilation Buildings, Electrical Substations and Ventilation Shaft / Operation Phase | Project Proponent | √ | √ | √ | | |

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| Table 10.11 | - | OM3 - Aesthetically pleasing design of Highways Structures | Access Road to Ventilation Shaft / Operation Phase | Highways Department | √ | √ | √ | | |
| Table 10.11 | - | OM4 - Reprovision of Cycle Track | Cycle track / Operation Phase | Highways Department | √ | √ | √ | | |
| Table 10.11 | - | OM5 - Provision of Green Roof | Administration Building and Ventilation Buildings / Operation Phase | Project Proponent | √ | √ | √ | | |
| Table 10.11 | - | OM6 - Provision of Buffer Planting | Main and Secondary Portal Areas / Operation Phase | Project Proponent | √ | √ | √ | | |
| Table 10.11 | - | OM7 - Hydroseeding on the disturbed ground surface after demolition works prior to future redevelopment of the existing STSTW | Existing STSTW / Operation Phase | Lands Department (LandsD) or future development agent in existing STSTW | √ | √ | √ | | |
| Table 10.11 | - | OM8 - Woodland Mix Planting on Soil Slopes | Soil Slopes / Operation Phase | Project Proponent | √ | √ | √ | | |

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| | **Cultural Heritage Impact** | | | | | | | | |
| 11.5.1.1 | 10.1.1 | No potential direct or indirect impact to cultural heritage resource is anticipated, and therefore no mitigation measures are required. | N/A | N/A | | | | | EIAO<br>EIAO-TM<br>Antiquities and Monuments Ordinance<br>Guidelines for Cultural Heritage Impact Assessment |
| | **Wastes Management Implications** | | | | | | | | |
| 12.6.2 | 11.2.2 | Appropriate waste handling, transportation and disposal methods for all waste arising generated during the construction works for the Project should be implemented to ensure that construction wastes do not enter the nearby streams or drainage channel.<br>It is anticipated that adverse impacts would not arise on the construction site, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities include:<br>• Nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility. | Project Site Area / Construction Phase | Contractor | | √ | | √ | Waste Disposal Ordinance |

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| | | • Training of site personnel in proper waste management and chemical waste handling procedures.<br>• Provision of sufficient waste reception/ disposal points, of a suitable vermin-proof design that minimises windblown litter.<br>• Arrangement for regular collection of waste for transport off-site and final disposal.<br>• Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.<br>• Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.<br>• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed.<br>• A Waste Management Plan should be prepared and should be submitted to the Engineer for approval. One may make reference to ETWB TCW No. 19/2005 for details.<br>In order to monitor the disposal of C&D material at landfills and public filling areas, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual | | | | | | | | |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | | requirements to be implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. One may make reference to DEVB TCW No.6/2010 for details. | | | | | | | |
| 12.6.3 | 11.2.3 | Good management and control of construction site activities / processes can minimise the generation of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:<br>• Segregate and store different types of construction related waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.<br>• Provide separate labelled bins to segregate recyclable waste such as aluminium cans from other general refuse generated by the work force, and to encourage collection by individual collectors.<br>• Any unused chemicals or those with remaining functional capacity shall be recycled.<br>• Maximising the use of reusable steel formwork to reduce the amount of C&D material.<br>• Prior to disposal of C&D waste, it is recommended that wood, steel | Project Site Area / Construction Phase | Contractor | | √ | | √ | Waste Disposal Ordinance |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | | and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill.<br>• On-site crushing and sorting facilities are being considered to reduce the rock size to fulfill the size requirements from relevant waste collection / transfer / disposal facilities;<br>• Adopt proper storage and site practices to minimise the potential for damage to, or contamination of, construction materials.<br>• Plan the delivery and stock of construction materials carefully to minimise the amount of surplus waste generated.<br>• Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structures as much as possible; and<br>• Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering.<br>In addition to the above measures, other specific mitigation measures are recommended below to minimise environmental impacts during handling, transportation and disposal of wastes. | | | | | | | |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| 12.6.4 | 11.2.4 | Storage of materials on site may induce adverse environmental impacts if not properly managed, recommendations to minimise the impacts include:<br>• Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution;<br>• Maintain and clean storage areas routinely;<br>• Stockpiling area should be provided with covers as much as practicable and water spraying system to prevent materials from wind-blown or being washed away; and<br>• Different locations should be designated to stockpile each material to enhance reuse. | Project Site Area / Construction Phase | Contractor | | √ | | √ | - |
| 12.6.4 | 11.2.4 | Licensed waste haulers should be employed for the collection and transportation of waste generated. The following measures should be enforced to minimise the potential adverse impacts:<br>• Remove waste in timely manner;<br>• Waste collectors should only collect wastes prescribed by their permits;<br>• Impacts during transportation, such as dust and odour, should be | Project Site Area / Construction Phase | Contractor | | √ | | √ | Waste Disposal Ordinance<br><br>Waste Disposal (Charges for Disposal of Construction Waste) Regulation<br><br>Land (Miscellaneous Provisions) Ordinance |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | | mitigated by the use of covered trucks or in enclosed containers;<br>• Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28);<br>• Waste should be disposed of at licensed waste disposal facilities; and<br>• Maintain records of quantities of waste generated, recycled and disposed. | | | | | | | |
| 12.6.4 | 11.2.4 | Land transport will be used for transportation of excavated and stockpile materials. It is expected there will be 1260 vehicles per day for transporting waste during peak construction phase. The tentative transportation routings for the disposal of various types of wastes are shown in Table 12.4. The transportation routing may be changed subject to the traffic conditions. Nevertheless, it is anticipated that there is no adverse impact from the waste during transportation with the implementation of appropriated measures (e.g. using water-tight containers and covered trucks). | Transportation Route of Waste / Construction Phase | Contractor | | √ | | | - |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| 12.6.4 | 11.2.4 | In order to monitor the disposal of C&D materials at PFRFs and landfills and to control fly-tipping, a trip-ticket system should be established in accordance with DEVB TCW No. 6/2010. A recording system for the amount of waste generated, recycled and disposed, including the disposal sites, should also be set up. Warning signs should be put up to remind the designated disposal sites. Close-circuited television should be installed at the vehicular entrance and exit of the site as additional measures to prevent fly-tipping. | Project Site Area / Construction Phase | Contractor | | √ | | √ | DEVB TCW No. 6/2010 |
| 12.6.4 | 11.2.5 | In addition to the above general measures, other specific mitigation measures on handling the C&D materials and materials generated from site formation and demolition work are recommended below, which should form the basis of the WMP to be prepared by the contractor(s) in construction phase. | Project Site Area / Construction Phase | Contractor | | √ | | √ | Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site |
| 12.6.5 | 11.2.5 | In order to minimise the impact resulting from collection and transportation of C&D materials for off-site disposal, the excavated material arising from site formation and foundation works should be reused on-site as backfilling material and for landscaping works as far as practicable. Other mitigation requirements are listed below: | Project Site Area / Construction Phase | Contractor | | √ | | √ | Waste Disposal Ordinance<br>ETWB TCW No.19/2005<br>DEVB TCW No. 6/2010 |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | | • A WMP, which becomes part of the EMP, should be prepared in accordance with ETWB TCW No.19/2005;<br>• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be adopted for easy tracking; and<br>• In order to monitor the disposal of C&D materials at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be adopted (refer to DEVB TCW No. 6/2010).<br>It is recommended that specific areas should be provided by the Contractors for sorting and to provide temporary storage areas (if required) for the sorted materials. | | | | | | | |
| 12.6.5 | 11.2.5 | The Contactor should prepare and implement an EMP in accordance with ETWB TCW No.19/2005, which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should | Project Site Area / Construction Phase | Contractor | | √ | | | ETWB TCW No.19/2005 |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | | be submitted to the Engineer for approval. The Contractor should implement waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor, preferably on a monthly basis. | | | | | | | |
| 12.6.5 | 11.2.5 | All surplus C&D materials arising from or in connection with construction works should become the property of the Contractor when it is removed unless otherwise stated. The Contractor would be responsible for devising a system to work for on-site sorting of C&D materials and promptly removing all sorted and process materials arising from the construction activities to minimise temporary stockpiling on-site. The system should be included in the EMP identifying the source of generation, estimated quantity, arrangement for on-site sorting, collection, temporary storage areas and frequency of collection by recycling Contractors or frequency of removal off-site. | Project Site Area / Construction Phase | Contractor | | √ | | √ | - |
| 12.6.6 | 11.2.6 | The practices of good housekeeping for CSTW listed below should be followed to ameliorate any odour impact from handling, collection, transportation and disposal of sludge: | Operation Phases | Operator | | | √ | | Waste Disposal Ordinance |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | | • Screens should be cleaned regularly to remove any accumulated organic debris<br>• Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit<br>• Grit and screened materials should be transferred to closed containers<br>• Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics<br>• Skim and remove floating solids and grease from primary clarifiers regularly<br>• Frequent sludge withdrawal from tanks is necessary to prevent the production of gases<br>• Sludge should be transported to the STF by water-tight containers to avoid Hydrogen Sulphide ($H_2S$)/odour emission and ingress of water into the containers which would lower the sludge dryness during transportation<br>• Sludge cake should be transferred to closed containers<br>• Sludge containers should be flushed with water regularly | | | | | | | |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | | • Sludge trucks and containers should be washed thoroughly before leaving the CSTW to avoid any odour nuisance during transportation | | | | | | | |
| 12.6.6 | 11.2.6 | In addition, all wastewater generated from the sludge dewatering process and all contaminated water from the cleaning operations recommended for odour control will be diverted to the relocated STSTW for proper treatment. | Operation Phases | Operator | | | √ | | Waste Disposal Ordinance |
| 12.6.7 | 11.2.7 | If chemical wastes are produced at the construction site or during operation, the Contractor during construction or the operator during operation will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to the licensed Chemical Waste Treatment Centre, or other | Construction and Operation Phases | Contractor / Operator | | √ | √ | | Waste Disposal (Chemical Waste) (General) Regulation<br><br>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes |

| EIA Ref. | EM&A Log Ref. | Environmental Protection Measures | Location / Duration of Measures / Timing of Completion of Measures | Implementation Agent | Implementation Stage [1] | | | | Relevant Legislation & Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Des | C | O | Dec | |
| | | licensed facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. | | | | | | | |
| 12.6.8 | 11.2.8 | Recycling of waste paper, aluminium cans and plastic bottles should be encouraged, it is recommended to place clearly labelled recycling bins at designated locations which could be accessed conveniently. Other general refuse should be separated from chemical and industrial waste by providing separated bins for storage to maximise the recyclable volume. | Construction and Operation Phases | Contractor / Operator | | √ | √ | | Public Health and Municipal Services Ordinance (Cap.132) |
| 12.6.8 | 11.2.8 | A reputable licensed waste collector should be employed to remove general refuse on a daily basis to minimise odour, pest and litter impacts. | Construction and Operation Phases | Contractor / Operator | | √ | √ | | Public Health and Municipal Services Ordinance (Cap. 132) |
| | **Health Impact** | | | | | | | | |
| - | - | Not applicable. | | | | | | | |

***Appendix 3.1***

***Action and Limit Level***

## Action and Limit Level

### *Action and Limit Level for Noise Monitoring*

| Monitoring Station | Action Level | Limit Level (dB(A)) | | |
|---|---|---|---|---|
| | | 0700-1900 hrs on normal weekdays | 0700-2300 hrs on holidays (including Sundays); and 1900-2300 hrs on all days [2] | 2300-0700 hrs of all days [2] |
| CM1 | When one documented complaint is received | 65 / 70 [1] | 60 / 65 / 70 [3] | 45 / 50 / 55 [3] |
| CM2(A) | | 65 / 70 [1] | | |
| CM3 | | 65 / 70 [1] | | |
| CM4 | | 75 | | |
| CM5 | | 75 | | |

Remark 1: Limit level of CM1, CM2(A) and CM3 reduce to 65 dB (A) during examination periods if any.
Remark 2: Construction noise during restricted hours is under the control of Noise Control Ordinance Limit Level to be selected based on Area Sensitivity Rating.
Remark 3: Limit Level for restricted hour monitoring shall act as reference level only. Investigation would be conducted on CNP compliance if exceedance recorded during restricted hour noise monitoring period.

### *Action and Limit Level for Air Quality Monitoring*

| Monitoring Locations | 1-hour TSP Level in µg/m3 | |
|---|---|---|
| | Action Level | Limit Level |
| AM1 | 294 | 500 |
| AM2 | 325 | 500 |
| AM3(A) | 360 | 500 |
| AM4 | 297 | 500 |
| AM5 | 349 | 500 |

***Appendix 4.1***

***Air Quality Monitoring Results and Graphical Presentations***

Report on 1-hour TSP monitoring at AM1 - Ah Kung Kok Fishermen Village

Action Level (μg/m3) - 294
Limit Level (μg/m3) - 500

| Date | Weather Condition | Time | Mass Concentration (μg/m3) |
|---|---|---|---|
| 1-Jun-19 | Cloudy | 08:14 | 27 |
| 1-Jun-19 | Cloudy | 09:15 | 18 |
| 1-Jun-19 | Cloudy | 10:16 | 14 |
| 6-Jun-19 | Cloudy | 09:25 | 18 |
| 6-Jun-19 | Cloudy | 10:26 | 17 |
| 6-Jun-19 | Cloudy | 13:00 | 13 |
| 12-Jun-19 | Cloudy | 08:13 | 23 |
| 12-Jun-19 | Cloudy | 09:14 | 22 |
| 12-Jun-19 | Cloudy | 10:15 | 28 |
| 18-Jun-19 | Cloudy | 08:39 | 18 |
| 18-Jun-19 | Cloudy | 09:40 | 7 |
| 18-Jun-19 | Cloudy | 10:41 | 6 |
| 24-Jun-19 | Cloudy | 08:02 | 15 |
| 24-Jun-19 | Cloudy | 09:03 | 13 |
| 24-Jun-19 | Cloudy | 10:04 | 15 |
| 29-Jun-19 | Cloudy | 08:50 | 12 |
| 29-Jun-19 | Cloudy | 09:51 | 10 |
| 29-Jun-19 | Cloudy | 10:52 | 9 |
| 5-Jul-19 | Cloudy | 08:30 | 19 |
| 5-Jul-19 | Cloudy | 09:32 | 20 |
| 5-Jul-19 | Cloudy | 10:33 | 19 |
| 11-Jul-19 | Cloudy | 08:30 | 73 |
| 11-Jul-19 | Cloudy | 09:31 | 35 |
| 11-Jul-19 | Cloudy | 10:32 | 32 |
| 17-Jul-19 | Cloudy | 08:52 | 62 |
| 17-Jul-19 | Cloudy | 09:53 | 61 |
| 17-Jul-19 | Cloudy | 10:54 | 72 |
| 23-Jul-19 | Fine | 08:42 | 28 |
| 23-Jul-19 | Fine | 09:44 | 24 |
| 23-Jul-19 | Fine | 10:45 | 24 |
| 29-Jul-19 | Fine | 08:29 | 21 |
| 29-Jul-19 | Fine | 09:30 | 21 |
| 29-Jul-19 | Fine | 10:31 | 21 |
| 3-Aug-19 | Fine | 08:26 | 12 |
| 3-Aug-19 | Fine | 09:27 | 9 |
| 3-Aug-19 | Fine | 10:28 | 9 |
| 9-Aug-19 | Fine | 08:33 | 57 |
| 9-Aug-19 | Fine | 09:34 | 52 |
| 9-Aug-19 | Fine | 10:35 | 51 |
| 15-Aug-19 | Fine | 08:20 | 32 |
| 15-Aug-19 | Fine | 09:21 | 20 |
| 15-Aug-19 | Fine | 10:22 | 24 |
| 21-Aug-19 | Fine | 13:05 | 23 |
| 21-Aug-19 | Fine | 14:06 | 21 |
| 21-Aug-19 | Fine | 15:07 | 19 |
| 27-Aug-19 | Cloudy | 08:15 | 36 |
| 27-Aug-19 | Cloudy | 09:16 | 16 |
| 27-Aug-19 | Cloudy | 10:17 | 14 |

Report on 1-hour TSP monitoring at AM2 - Block H, Kam Tai Court

Action Level (μg/m3) - 325
Limit Level (μg/m3) - 500

| Date | Weather Condition | Time | Mass Concentration (μg/m3) |
|---|---|---|---|
| 1-Jun-19 | Cloudy | 08:58 | 26 |
| 1-Jun-19 | Cloudy | 09:59 | 22 |
| 1-Jun-19 | Cloudy | 11:00 | 33 |
| 6-Jun-19 | Cloudy | 09:44 | 13 |
| 6-Jun-19 | Cloudy | 10:45 | 11 |
| 6-Jun-19 | Cloudy | 13:00 | 8 |
| 12-Jun-19 | Cloudy | 08:56 | 18 |
| 12-Jun-19 | Cloudy | 09:57 | 10 |
| 12-Jun-19 | Cloudy | 10:58 | 18 |
| 18-Jun-19 | Cloudy | 09:00 | 8 |
| 18-Jun-19 | Cloudy | 10:01 | 7 |
| 18-Jun-19 | Cloudy | 13:00 | 7 |
| 24-Jun-19 | Cloudy | 09:46 | 25 |
| 24-Jun-19 | Cloudy | 10:47 | 33 |
| 24-Jun-19 | Cloudy | 13:00 | 39 |
| 29-Jun-19 | Cloudy | 08:58 | 17 |
| 29-Jun-19 | Cloudy | 09:59 | 13 |
| 29-Jun-19 | Cloudy | 11:00 | 12 |
| 5-Jul-19 | Cloudy | 08:28 | 27 |
| 5-Jul-19 | Cloudy | 09:29 | 28 |
| 5-Jul-19 | Cloudy | 10:30 | 23 |
| 11-Jul-19 | Cloudy | 08:57 | 19 |
| 11-Jul-19 | Cloudy | 09:58 | 19 |
| 11-Jul-19 | Cloudy | 10:59 | 23 |
| 17-Jul-19 | Cloudy | 09:20 | 48 |
| 17-Jul-19 | Cloudy | 10:21 | 53 |
| 17-Jul-19 | Cloudy | 13:00 | 51 |
| 23-Jul-19 | Fine | 08:58 | 20 |
| 23-Jul-19 | Fine | 09:59 | 18 |
| 23-Jul-19 | Fine | 11:00 | 16 |
| 29-Jul-19 | Fine | 08:57 | 19 |
| 29-Jul-19 | Fine | 09:58 | 15 |
| 29-Jul-19 | Fine | 10:59 | 12 |
| 3-Aug-19 | Fine | 08:58 | 6 |
| 3-Aug-19 | Fine | 09:59 | 9 |
| 3-Aug-19 | Fine | 11:00 | 9 |
| 9-Aug-19 | Fine | 08:58 | 39 |
| 9-Aug-19 | Fine | 09:59 | 39 |
| 9-Aug-19 | Fine | 11:00 | 39 |
| 15-Aug-19 | Fine | 08:14 | 25 |
| 15-Aug-19 | Fine | 09:15 | 16 |
| 15-Aug-19 | Fine | 10:16 | 19 |
| 21-Aug-19 | Fine | 13:00 | 17 |
| 21-Aug-19 | Fine | 14:01 | 16 |
| 21-Aug-19 | Fine | 15:02 | 16 |
| 27-Aug-19 | Cloudy | 08:58 | 18 |
| 27-Aug-19 | Cloudy | 09:59 | 14 |
| 27-Aug-19 | Cloudy | 11:00 | 12 |

Report on 1-hour TSP monitoring at AM4 - Wellborn Kindergarten

Action Level (μg/m3) - 297
Limit Level (μg/m3) - 500

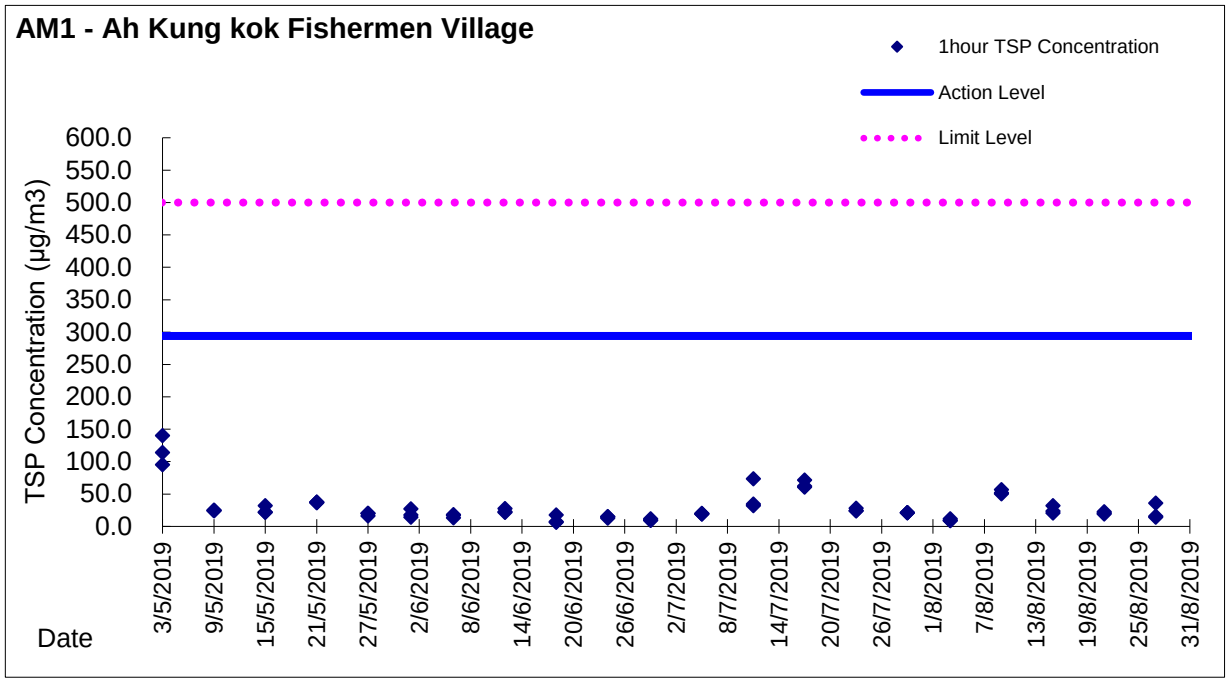
| Date | Weather Condition | Time | Mass Concentration (μg/m3) |
|---|---|---|---|
| 1-Jun-19 | Cloudy | 08:10 | 12 |
| 1-Jun-19 | Cloudy | 09:11 | 10 |
| 1-Jun-19 | Cloudy | 10:12 | 8 |
| 6-Jun-19 | Cloudy | 09:41 | 12 |
| 6-Jun-19 | Cloudy | 10:43 | 10 |
| 6-Jun-19 | Cloudy | 13:00 | 8 |
| 12-Jun-19 | Cloudy | 08:22 | 13 |
| 12-Jun-19 | Cloudy | 09:24 | 14 |
| 12-Jun-19 | Cloudy | 10:25 | 17 |
| 18-Jun-19 | Cloudy | 08:48 | 16 |
| 18-Jun-19 | Cloudy | 09:49 | 6 |
| 18-Jun-19 | Cloudy | 10:50 | 6 |
| 24-Jun-19 | Cloudy | 08:00 | 15 |
| 24-Jun-19 | Cloudy | 09:01 | 14 |
| 24-Jun-19 | Cloudy | 10:02 | 15 |
| 29-Jun-19 | Cloudy | 08:04 | 9 |
| 29-Jun-19 | Cloudy | 09:05 | 11 |
| 29-Jun-19 | Cloudy | 10:06 | 10 |
| 5-Jul-19 | Cloudy | 08:50 | 22 |
| 5-Jul-19 | Cloudy | 09:51 | 17 |
| 5-Jul-19 | Cloudy | 10:52 | 13 |
| 11-Jul-19 | Cloudy | 08:41 | 36 |
| 11-Jul-19 | Cloudy | 09:42 | 18 |
| 11-Jul-19 | Cloudy | 10:43 | 18 |
| 17-Jul-19 | Cloudy | 08:58 | 45 |
| 17-Jul-19 | Cloudy | 09:59 | 43 |
| 17-Jul-19 | Cloudy | 13:00 | 42 |
| 23-Jul-19 | Fine | 08:52 | 15 |
| 23-Jul-19 | Fine | 09:53 | 11 |
| 23-Jul-19 | Fine | 10:54 | 11 |
| 29-Jul-19 | Fine | 08:53 | 8 |
| 29-Jul-19 | Fine | 09:54 | 5 |
| 29-Jul-19 | Fine | 10:55 | 5 |
| 3-Aug-19 | Fine | 08:29 | 6 |
| 3-Aug-19 | Fine | 09:30 | 6 |
| 3-Aug-19 | Fine | 10:31 | 5 |
| 9-Aug-19 | Fine | 08:28 | 56 |
| 9-Aug-19 | Fine | 09:29 | 53 |
| 9-Aug-19 | Fine | 10:30 | 50 |
| 15-Aug-19 | Fine | 08:20 | 25 |
| 15-Aug-19 | Fine | 09:21 | 16 |
| 15-Aug-19 | Fine | 10:22 | 20 |
| 21-Aug-19 | Fine | 13:00 | 17 |
| 21-Aug-19 | Fine | 14:01 | 16 |
| 21-Aug-19 | Fine | 15:02 | 17 |
| 27-Aug-19 | Cloudy | 08:03 | 37 |
| 27-Aug-19 | Cloudy | 09:04 | 46 |
| 27-Aug-19 | Cloudy | 10:05 | 28 |

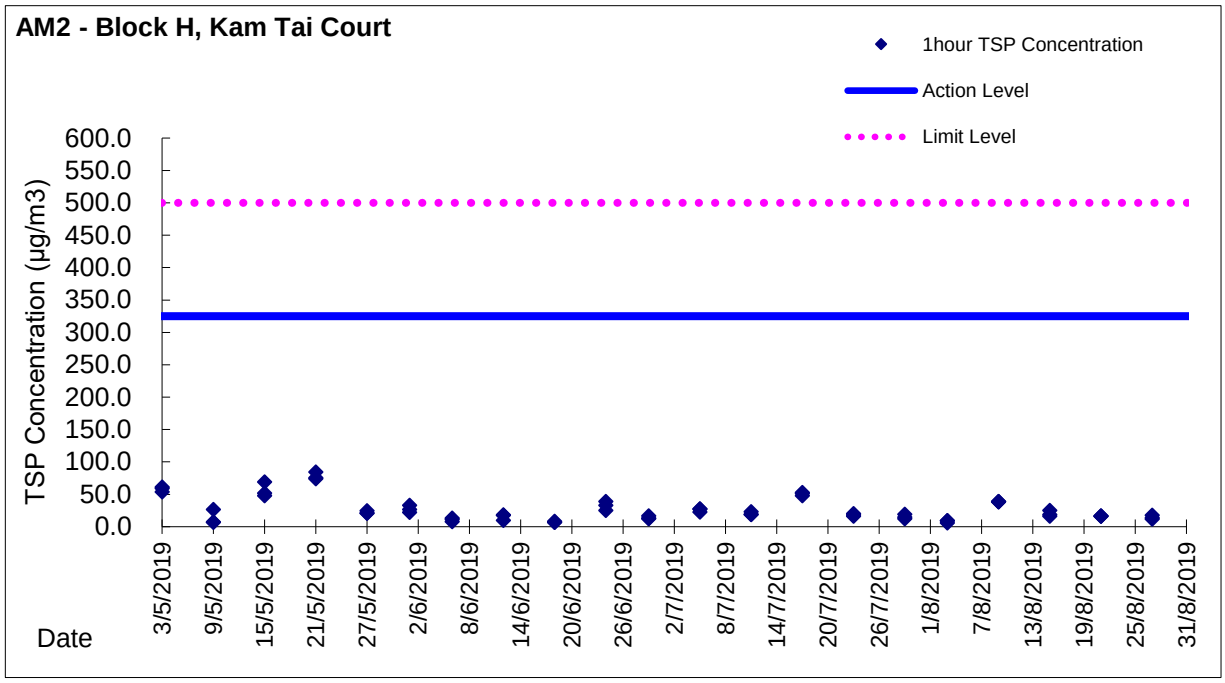
Report on 1-hour TSP monitoring at AM5 - The NAAC Harmony Manor

Action Level (μg/m3) - 349
Limit Level (μg/m3) - 500

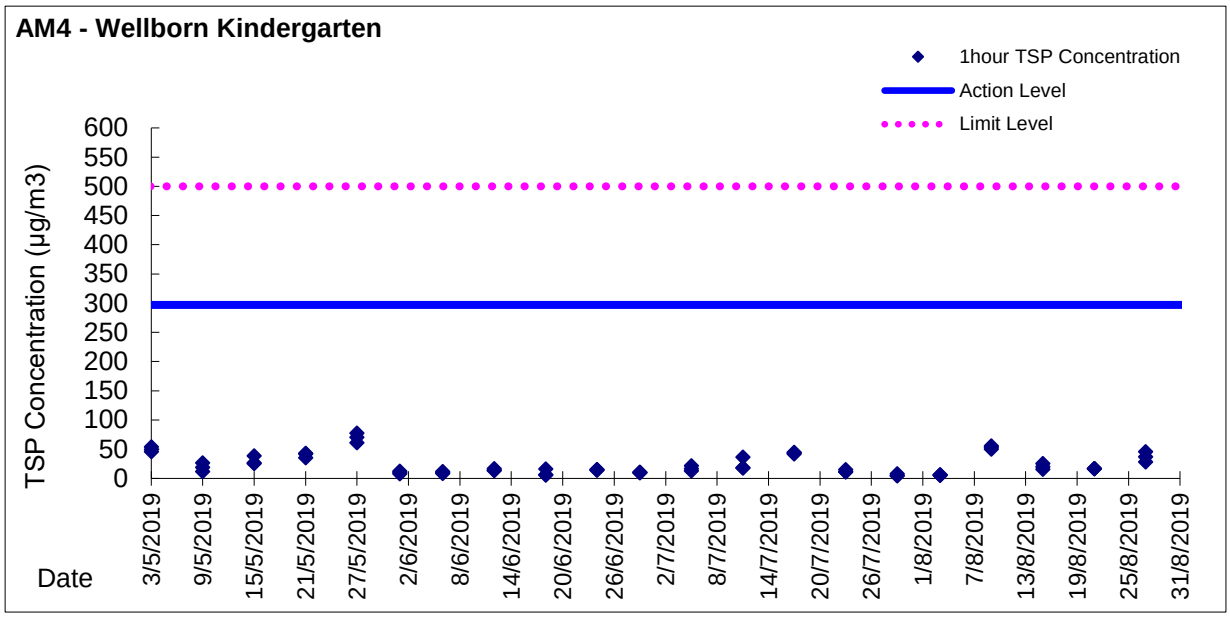
| Date | Weather Condition | Time | Mass Concentration (μg/m3) |
|---|---|---|---|
| 1-Jun-19 | Cloudy | 08:04 | 13 |
| 1-Jun-19 | Cloudy | 09:05 | 9 |
| 1-Jun-19 | Cloudy | 10:06 | 8 |
| 6-Jun-19 | Cloudy | 09:27 | 28 |
| 6-Jun-19 | Cloudy | 10:28 | 27 |
| 6-Jun-19 | Cloudy | 13:00 | 25 |
| 12-Jun-19 | Cloudy | 08:11 | 25 |
| 12-Jun-19 | Cloudy | 09:12 | 26 |
| 12-Jun-19 | Cloudy | 10:13 | 24 |
| 18-Jun-19 | Cloudy | 08:41 | 18 |
| 18-Jun-19 | Cloudy | 09:42 | 22 |
| 18-Jun-19 | Cloudy | 10:43 | 21 |
| 24-Jun-19 | Cloudy | 08:13 | 14 |
| 24-Jun-19 | Cloudy | 09:14 | 14 |
| 24-Jun-19 | Cloudy | 10:15 | 19 |
| 29-Jun-19 | Cloudy | 08:22 | 18 |
| 29-Jun-19 | Cloudy | 09:23 | 17 |
| 29-Jun-19 | Cloudy | 10:24 | 15 |
| 5-Jul-19 | Cloudy | 08:49 | 15 |
| 5-Jul-19 | Cloudy | 09:51 | 15 |
| 5-Jul-19 | Cloudy | 10:52 | 12 |
| 11-Jul-19 | Cloudy | 08:42 | 22 |
| 11-Jul-19 | Cloudy | 09:44 | 16 |
| 11-Jul-19 | Cloudy | 10:45 | 19 |
| 17-Jul-19 | Cloudy | 09:52 | 57 |
| 17-Jul-19 | Cloudy | 10:53 | 56 |
| 17-Jul-19 | Cloudy | 13:00 | 56 |
| 23-Jul-19 | Fine | 08:27 | 8 |
| 23-Jul-19 | Fine | 09:28 | 13 |
| 23-Jul-19 | Fine | 10:29 | 11 |
| 29-Jul-19 | Fine | 08:32 | 10 |
| 29-Jul-19 | Fine | 09:33 | 7 |
| 29-Jul-19 | Fine | 10:34 | 8 |
| 3-Aug-19 | Fine | 08:24 | 5 |
| 3-Aug-19 | Fine | 09:25 | 15 |
| 3-Aug-19 | Fine | 10:26 | 18 |
| 9-Aug-19 | Fine | 08:29 | 51 |
| 9-Aug-19 | Fine | 09:30 | 54 |
| 9-Aug-19 | Fine | 10:31 | 54 |
| 15-Aug-19 | Fine | 08:36 | 33 |
| 15-Aug-19 | Fine | 09:37 | 21 |
| 15-Aug-19 | Fine | 10:38 | 31 |
| 21-Aug-19 | Fine | 13:08 | 10 |
| 21-Aug-19 | Fine | 14:09 | 10 |
| 21-Aug-19 | Fine | 15:10 | 14 |
| 27-Aug-19 | Cloudy | 08:19 | 19 |
| 27-Aug-19 | Cloudy | 09:20 | 14 |
| 27-Aug-19 | Cloudy | 10:21 | 12 |

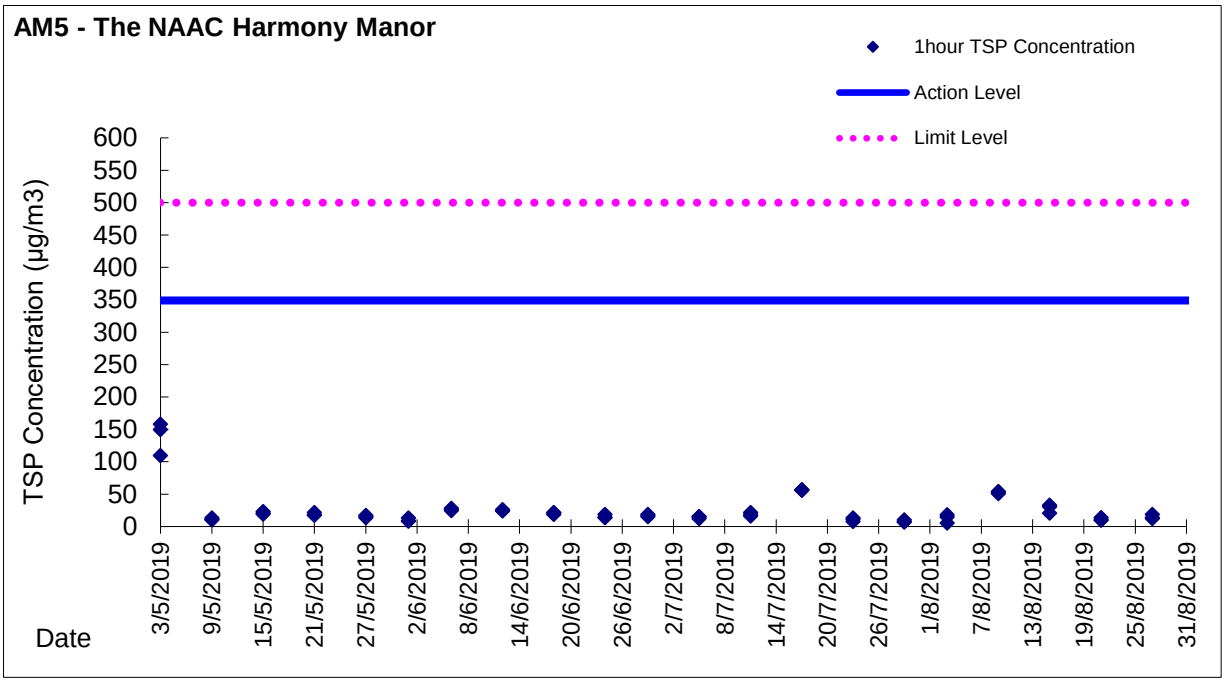
**Graphic Presentation of TSP Result**



**Graphic Presentation of TSP Result**



***Appendix 4.2***

***Noise Monitoring Results and Graphical Presentations***

**Noise Monitoring Result**

**Day Time (0700 - 1900hrs on normal weekdays)**

Location: CM1 - G/F, Wellborn Kindergarten

| Date | Time | Weather | Wind Speed (m/s) | Measurement Noise Level Leq | L10 | L90 | Limit Level Leq |
|---|---|---|---|---|---|---|---|
| | | | | Unit: dB(A), (30min) | | | |
| 05/06/2019 | 10:15 | Fine | 0.7 | 55.9 | 58.0 | 51.2 | 70 |
| 11/06/2019 | 09:20 | Cloudy | 0.0 | 55.1 | 56.4 | 51.4 | 70 |
| 18/06/2019 | 10:30 | Cloudy | 0.4 | 58.2 | 60.5 | 49.5 | 70 |
| 24/06/2019 | 08:45 | Cloudy | 0.0 | 58.5 | 62.5 | 49.5 | 70 |
| 04/07/2019 | 09:55 | Cloudy | 0.0 | 58.6 | 62.5 | 51.5 | 70 |
| 10/07/2019 | 08:50 | Cloudy | 0.0 | 55.1 | 56.4 | 51.4 | 70 |
| 16/07/2019 | 15:15 | Fine | 0.0 | 59.4 | 61.0 | 57.5 | 70 |
| 22/07/2019 | 10:50 | Fine | 0.0 | 49.3 | 50.5 | 45.5 | 70 |
| 30/07/2019 | 13:00 | Fine | 0.0 | 57.4 | 58.0 | 48.5 | 70 |
| 06/08/2019 | 14:40 | Fine | 0.0 | 49.1 | 52.5 | 46.0 | 70 |
| 14/08/2019 | 09:00 | Fine | 0.0 | 59.3 | 61.0 | 50.5 | 70 |
| 20/08/2019 | 13:00 | Fine | 0.0 | 60.1 | 61.9 | 52.4 | 70 |
| 27/08/2019 | 09:30 | Cloudy | 0.0 | 62.7 | 65.5 | 58.5 | 70 |

* Limit level of noise monitoring station CM1 was adjusted to 65dB(A) during examination period.

Location: CM3 - R/F, S.K.H. Ma On Shan Holy Spirit Primary School

| Date | Time | Weather | Wind Speed (m/s) | Measurement Noise Level Leq | L10 | L90 | Limit Level Leq |
|---|---|---|---|---|---|---|---|
| | | | | Unit: dB(A), (30min) | | | |
| 05/06/2019 | 09:20 | Fine | 0.0 | 64.1 | 65.5 | 61.8 | 65 |
| 10/06/2019 | 08:40 | Cloudy | 0.0 | 64.3 | 65.7 | 62.0 | 65 |
| 18/06/2019 | 09:40 | Cloudy | 0.5 | 63.4 | 65.0 | 60.5 | 70 |
| 24/06/2019 | 10:45 | Cloudy | 0.0 | 62.7 | 64.5 | 60.0 | 70 |
| 04/07/2019 | 09:15 | Cloudy | 0.6 | 63.4 | 64.5 | 61.5 | 70 |
| 10/07/2019 | 09:30 | Cloudy | 0.6 | 63.8 | 65.5 | 61.0 | 70 |
| 16/07/2019 | 14:30 | Fine | 0.7 | 64.3 | 66.5 | 61.5 | 70 |
| 22/07/2019 | 11:30 | Fine | 0.0 | 60.4 | 62.0 | 57.5 | 70 |
| 30/07/2019 | 11:30 | Fine | 0.1 | 61.4 | 63.0 | 59.0 | 70 |
| 06/08/2019 | 15:15 | Fine | 0.0 | 60.2 | 62.5 | 57.0 | 70 |
| 14/08/2019 | 08:20 | Fine | 0.0 | 63.7 | 65.5 | 59.5 | 70 |
| 20/08/2019 | 11:18 | Fine | 0.1 | 63.6 | 65.7 | 60.0 | 70 |
| 27/08/2019 | 08:50 | Cloudy | 0.6 | 61.1 | 62.5 | 58.5 | 70 |

* Limit level of noise monitoring station CM3 was adjusted to 65dB(A) during examination period.

Location: CM4 - G/F, Ah Kung Kok Fishermen Village

| Date | Time | Weather | Wind Speed (m/s) | Measurement Noise Level Leq | L10 | L90 | Limit Level Leq |
|---|---|---|---|---|---|---|---|
| | | | | Unit: dB(A), (30min) | | | |
| 05/06/2019 | 11:10 | Fine | 0.0 | 62.8 | 64.5 | 59.2 | 75 |
| 11/06/2019 | 10:10 | Cloudy | 0.0 | 63.7 | 64.9 | 60.4 | 75 |
| 18/06/2019 | 16:00 | Cloudy | 0.0 | 63.3 | 65.0 | 60.8 | 75 |
| 24/06/2019 | 11:30 | Cloudy | 0.2 | 67.6 | 72.0 | 57.5 | 75 |
| 04/07/2019 | 10:30 | Cloudy | 0.0 | 60.8 | 62.5 | 56.5 | 75 |
| 10/07/2019 | 08:00 | Cloudy | 0.3 | 61.8 | 65.5 | 58.5 | 75 |
| 16/07/2019 | 16:00 | Fine | 0.0 | 61.2 | 63.5 | 59.0 | 75 |
| 22/07/2019 | 10:15 | Fine | 0.0 | 66.3 | 67.0 | 65.5 | 75 |
| 30/07/2019 | 13:38 | Fine | 0.0 | 62.4 | 64.0 | 59.5 | 75 |
| 06/08/2019 | 14:00 | Fine | 0.0 | 58.7 | 60.5 | 55.5 | 75 |
| 14/08/2019 | 09:45 | Fine | 0.0 | 63.2 | 65.5 | 58.5 | 75 |
| 20/08/2019 | 10:29 | Fine | 0.0 | 63.9 | 66.4 | 59.8 | 75 |
| 27/08/2019 | 10:10 | Cloudy | 0.0 | 59.3 | 61.0 | 56.0 | 75 |

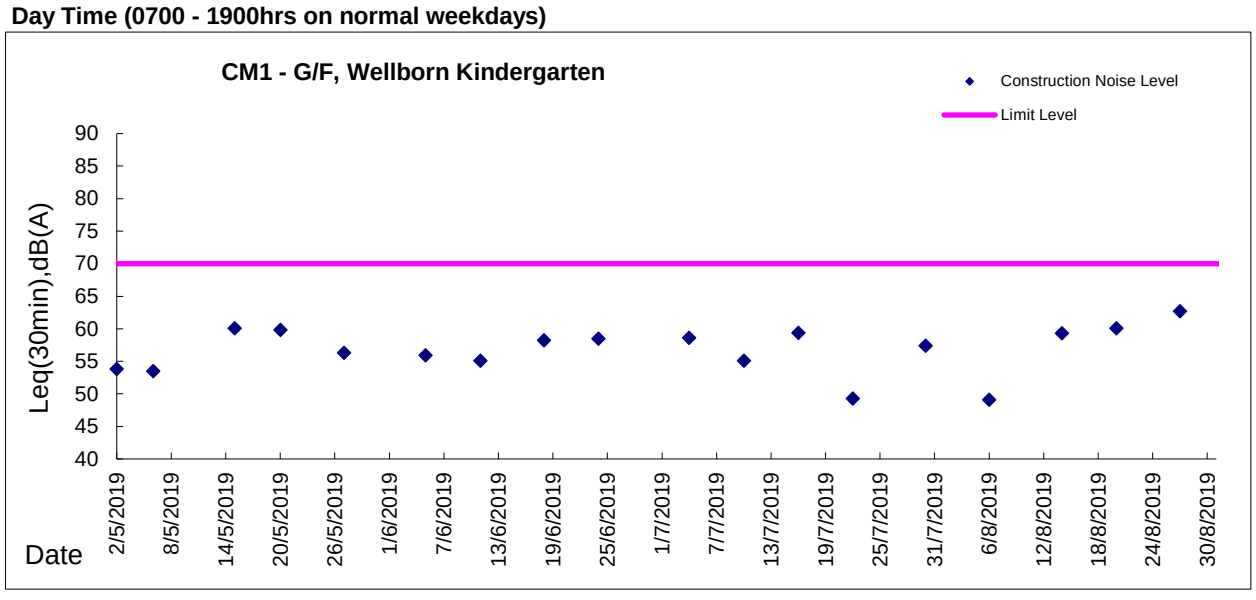
Location: CM5 - R/F, The Neighbourhood Advice-Action Council Harmony Manor

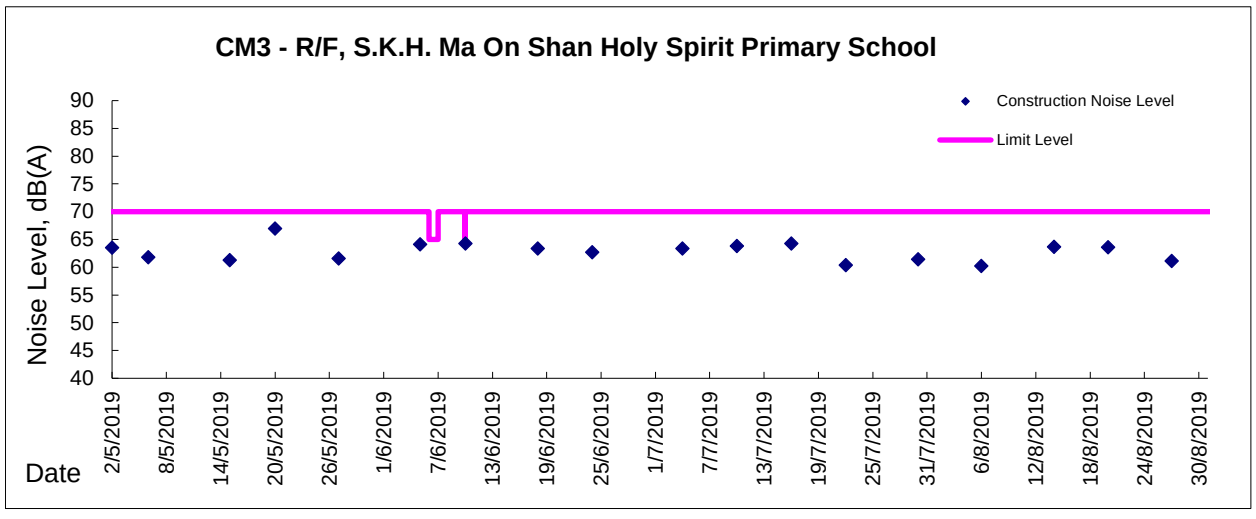
| Date | Time | Weather | Wind Speed (m/s) | Measurement Noise Level Leq | L10 | L90 | Limit Level Leq |
|---|---|---|---|---|---|---|---|
| | | | | Unit: dB(A), (30min) | | | |
| 05/06/2019 | 14:50 | Fine | 1.3 | 64.5 | 65.9 | 62.4 | 75 |
| 11/06/2019 | 11:20 | Cloudy | 0.0 | 55.6 | 59.8 | 51.8 | 75 |
| 18/06/2019 | 15:20 | Cloudy | 0.0 | 56.1 | 58.3 | 52.0 | 75 |
| 24/06/2019 | 13:50 | Cloudy | 1.5 | 53.1 | 55.5 | 49.0 | 75 |
| 04/07/2019 | 13:30 | Cloudy | 0.4 | 55.7 | 58.5 | 51.0 | 75 |
| 10/07/2019 | 15:00 | Cloudy | 0.4 | 59.8 | 63.5 | 56.0 | 75 |
| 16/07/2019 | 16:45 | Fine | 0.0 | 65.3 | 68.0 | 59.5 | 75 |
| 22/07/2019 | 09:30 | Fine | 0.0 | 64.6 | 68.5 | 55.0 | 75 |
| 30/07/2019 | 14:30 | Fine | 0.0 | 56.6 | 58.5 | 53.5 | 75 |
| 06/08/2019 | 13:00 | Fine | 0.0 | 57.4 | 59.5 | 53.5 | 75 |
| 14/08/2019 | 10:30 | Fine | 0.0 | 63.4 | 67.0 | 56.0 | 75 |
| 20/08/2019 | 09:47 | Fine | 0.1 | 63.2 | 66.5 | 54.7 | 75 |
| 27/08/2019 | 08:10 | Cloudy | 0.6 | 62.3 | 65.0 | 58.5 | 75 |

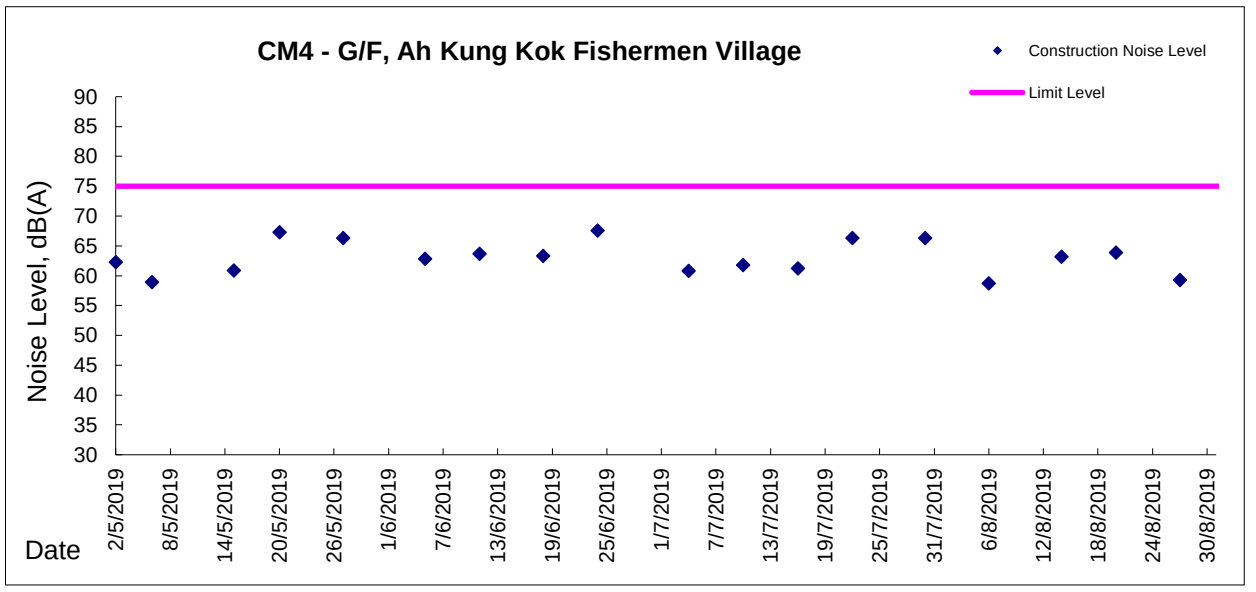
* Free field correction (Additional 3dB(A)) was made on CM1&CM4 measurement result

**Graphic Presentation of Noise Monitoring Result**

**Day Time (0700 - 1900hrs on normal weekdays)**

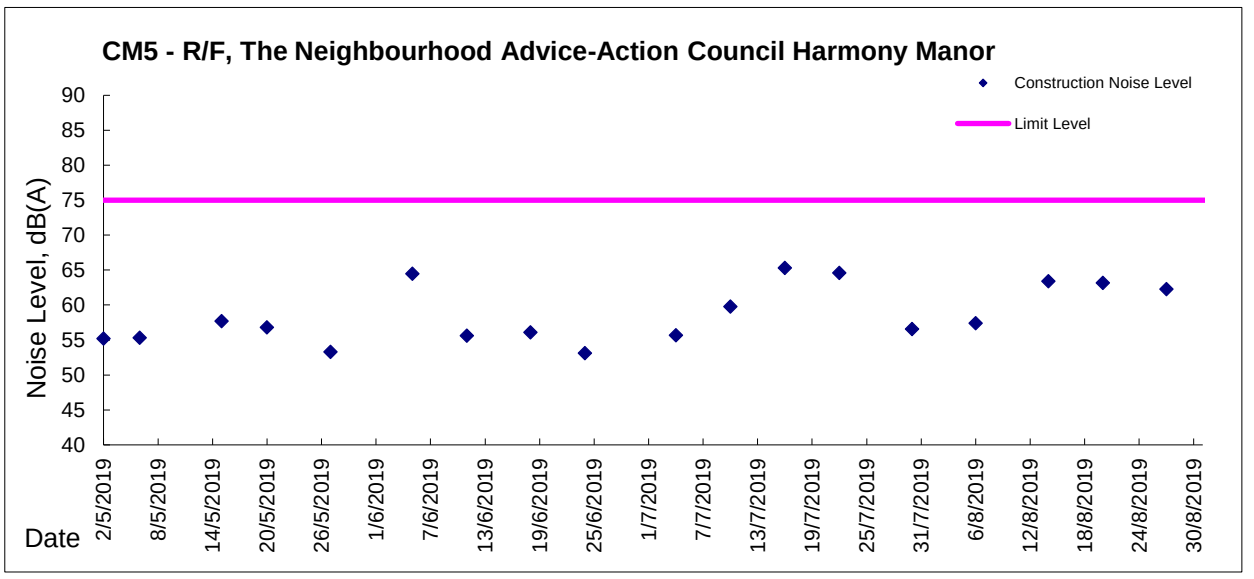


**Graphic Presentation of Noise Monitoring Result**

**Day Time (0700 - 1900hrs on normal weekdays)**



***Appendix 4.3***

***Monthly Summary Waste Flow Table***

# Monthly Summary Waste Flow Table

**Name of Department: Drainage Services Department** **Contract No.: DC/2018/05**

## Monthly Summary Waste Flow Table for August 2019 [to be submitted not later than the 15th day of each month following reporting month]

(All quantities shall be rounded off to 3 decimal places.)

| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | Actual Quantities of C&D Wastes Generated Monthly | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (a)=(b)+(c)+(d)+(e) Total Quantity Generated | (b) Broken Concrete (see Note 3) | (c) Reused in the Contract | (d) Reused in other Projects | (e) Disposed as Public Fill | (f) Metals | (g) Paper/cardboard packaging | (h) Plastics (see Note 2) | (i) Chemical Waste | (j) Others, e.g. general refuse disposed at Landfill |
| | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000kg) | (in '000kg) | (in '000kg) | (in L) | (in tonne) |
| Feb-19 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.0 | 0.00 |
| Mar-19 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.0 | 0.00 |
| Apr-19 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.0 | 0.00 |
| May-19 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.0 | 5.20 |
| Jun-19 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 41.18 |
| Jul-19 | 0.055 | 0.055 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 89.55 |
| Sub-total | 0.055 | 0.055 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 135.93 |
| Aug-19 | 0.121 | 0.054 | 0.000 | 0.000 | 0.067 | 0.000 | 0.000 | 0.000 | 0.000 | 10.98 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Total | 0.176 | 0.109 | 0.000 | 0.000 | 0.067 | 0.000 | 0.000 | 0.000 | 0.000 | 146.91 |

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) Plastics refer to plastics bottles/containers, plastic sheets/foam from packaging material.

(3) Broken concrete for recycling into aggregates.

(4) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 5 $m^3$ by volume.

***Appendix 5.1***

***Event and Action Plans***

**Event and Action Plan for Construction Air Quality**

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | **ET** | **IEC** | **ER** | **CONTRACTOR** |
| **ACTION LEVEL** | | | | |
| 1. Action level being exceedance by one sampling | 1. Identify source, investigate the causes of exceedance and propose remedial measures;<br>2. Inform Contractor, IEC and ER;<br>3. Repeat measurement to confirm finding; and<br>4. Increase monitoring frequency to daily. | 1. Check monitoring data submitted by ET;<br>2. Check Contractor's working method; and<br>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. | 1. Notify Contractor. | 1. Identify source(s), investigate the causes of exceedance and propose remedial measures;<br>2. Implement remedial measures; and<br>3. Amend working methods agreed with the ER as appropriate |
| 2. Action level being exceeded by two or more consecutive sampling | 1. Identify source;<br>2. Inform Contractor, IEC and ER;<br>3. Advise the Contractor and ER on the effectiveness of the proposed remedial measures;<br>4. Repeat measurements to confirm findings;<br>5. Increase monitoring frequency to daily;<br>6. Discuss with IEC and Contractor on remedial actions required;<br>7. If exceedance continues, arrange meeting with Contractor, IEC and ER;<br>8. If exceedance stops, cease additional monitoring. | 1. Check monitoring data submitted by ET;<br>2. Check Contractor's working method;<br>3. Discuss with ET, ER and Contractor on possible remedial measures;<br>4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and<br>5. Supervise Implementation of remedial measures. | 1. Confirm receipt of notification of exceedance in writing;<br>2. Notify Contractor;<br>3. Ensure remedial measures properly implemented.<br>4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Identify source and investigate the causes of exceedance;<br>2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification;<br>3. Implement the agreed proposals; and<br>4. Amend proposal as appropriate. |

**Event and Action Plan for Construction Air Quality (Con't)**

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | ET | IEC | ER | CONTRACTOR |
| **LIMIT LEVEL** | | | | |
| 1. Limit level exceedance by one sampling | 1. Identify source, investigate the causes of exceedance and propose remedial measures;<br>2. Inform Contractor, IEC, ER, and EPD;<br>3. Repeat measurement to confirm finding;<br>4. Increase monitoring frequency to daily; and<br>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. | 1. Check monitoring data submitted by ET;<br>2. Discuss amongst ER, ET, and Contractor on the potential remedial actions;<br>3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and<br>4. Supervise implementation of remedial measures. | 1. Confirm receipt of notification of exceedance in writing;<br>2. Notify Contractor;<br>3. Ensure remedial measures properly implemented. | 1. Identify source(s) and investigate the causes of exceedance;<br>2. Take immediate action to avoid further exceedance;<br>3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification;<br>4. Implement the agreed proposals; and<br>5. Amend proposal if appropriate. |
| 2. Limit level exceedance by two or more consecutive sampling | 1. Notify IEC, ER, Contractor and EPD;<br>2. Identify source;<br>3. Repeat measurement to confirm findings;<br>4. Increase monitoring frequency to daily;<br>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;<br>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;<br>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and<br>8. If exceedance stops, cease additional monitoring. | 1. Check monitoring data submitted by the ET;<br>2. Discuss amongst ER, ET, and Contractor on the potential remedial actions;<br>3. Review Contractor' s remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;<br>4. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of exceedance in writing;<br>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;<br>3. Supervise the implementation of remedial measures; and<br>4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Identify source(s) and investigate the causes of exceedance;<br>2. Take immediate action to avoid further exceedance;<br>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification;<br>4. Implement the agreed proposals;<br>5. Revise and resubmit proposals if problem still not under control; and<br>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated. |

**Event and Action Plan for Construction Noise**

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | **ET** | **IEC** | **ER** | **CONTRACTOR** |
| Action Level | 1. Notify IEC and Contractor;<br>2. Carry out investigation;<br>3. Report the results of investigation to the IEC, ER and Contractor;<br>4. Discuss with the Contractor and formulate remedial measures; and<br>5. Increase monitoring frequency to check mitigation effectiveness. | 1. Review the analysed results submitted by the ET;<br>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; and<br>3. Supervise the implementation of remedial measures | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Require Contractor to propose remedial measures for the analyzed noise problem; and<br>4. Ensure remedial measures are properly implemented. | 1. Submit noise mitigation proposals to IEC; and<br>2. Implement noise mitigation proposals. |
| Limit Level | 1. Identify source;<br>2. Inform IEC, ER, EPD and Contractor;<br>3. Repeat measurements to confirm findings;<br>4. Increase monitoring frequency;<br>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;<br>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;<br>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;<br>8. If exceedance stops, cease additional monitoring. | 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;<br>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and<br>3. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Require Contractor to propose remedial measures for the analysed noise problem;<br>4. Ensure remedial measures properly implemented; and<br>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Take immediate action to avoid further exceedance;<br>2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification;<br>3. Implement the agreed proposals;<br>4. Resubmit proposal if problem still not under control; and<br>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated. |

***Appendix 6.1***

***Complaint Log***

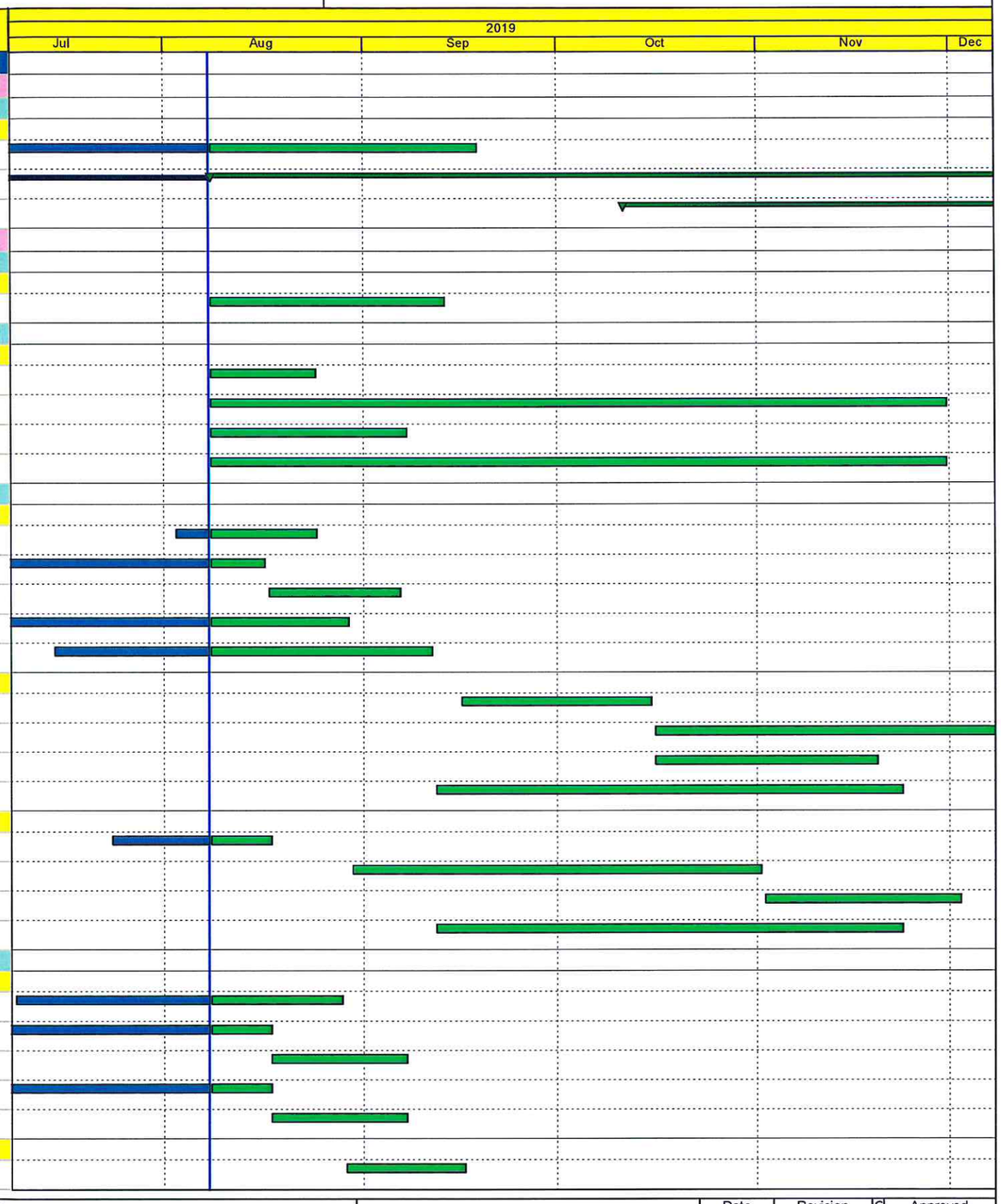
## *Environmental Complaints Log*

| Complaint Log No. | Date of Complaint | Received From and Received By | Location of Complainant | Nature of Complaint | Outcome | Status |
|---|---|---|---|---|---|---|
| 190808 | 29 July 2019 | DSD | Construction site area Portion 6 | Exposed slope surface without any covering was observed at Portion 6 | A public complaint regarding construction dust received by DSD on 29 July 2019 was subsequently referred to ET on 6 August 2019. The complainant reported that exposed slope surface without any covering at Portion 6. Based on the information provided by the Contractor, the concerned area was under slope cutting and filling works for temporary haul road construction.<br>Based on the observation on 6 August 2019 and weekly site inspection on 7 August 2019, the concerned slope was observed covered with the tarpaulin sheets to alleviate the potential dust impact to the surroundings.<br>Upon review on the monitoring data, no exceedances were recorded at the air quality monitoring stations AM2 - Block H, Kam Tai Court and AM4 - Wellborn Kindergarten (located nearest to the concerned slope) during the 1hr TSP monitoring on 23 July 2019 and 29 July 2019 respectively.<br>Follow up site inspection was conducted by the Environmental Team on 07 August 2019 and it was observed that the slope at Portion 6 was properly covered.<br>Nevertheless, in view of the public concern, the Contractor of DC/2018/05 was reminded to enhance the dust suppression measure by providing adequate watering to any exposed surface during cutting slope and fill works to avoid potential dust impact to the surroundings. | Interim investigation report was issue on 16 August 2019 |

***Appendix 7.1***

***Construction Programme of Individual Contracts***

| Activity ID | Activity Name | Original Duration | Start | Finish | Total Float | Late Start | Late Finish | Time Risk Allowances |
|---|---|---|---|---|---|---|---|---|
| **Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation & Access Tunnel** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| Preliminary Works | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| A10020 | Site office erection | 76 | 20-Jun-19 A | 18-Sep-19* | 34 | 18-Sep-19 | 30-Oct-19 | 1 |
| A11980 | Preservation and Protection of Existing Trees | 836 | 28-Feb-19 A | 28-Dec-21 | 0 | 28-Feb-19 | 28-Dec-21 | 0 |
| A12340 | Establishment Works to landscape softworks (Section 7) | 653 | 11-Oct-19 | 28-Dec-21 | 0 | 01-Jun-20 | 28-Dec-21 | 0 |
| **Access Road to Main Portal Area** | | | | | | | | |
| Hoarding | | | | | | | | |
| **Hoarding** | | | | | | | | |
| A10070 | Hoarding erection along Ma On Shan Road (portion 4) | 32 | 08-Aug-19 | 13-Sep-19 | 27 | 09-Sep-19 | 18-Oct-19 | 6 |
| Tree Treatment | | | | | | | | |
| **Tree Treatment** | | | | | | | | |
| A11030 | Tree felling & protection (Portion 4) | 15 | 08-Aug-19 | 24-Aug-19 | 26 | 07-Sep-19 | 25-Sep-19 | 6 |
| A11032 | Tree transplant (Portion 4) | 96 | 08-Aug-19 | 30-Nov-19 | 139 | 24-Jan-20 | 28-May-20 | 6 |
| A15290 | Tree felling & protection (Mui Tsz Lam Road realigment) | 27 | 08-Aug-19 | 07-Sep-19 | 588 | 07-Aug-21 | 08-Sep-21 | 6 |
| A15300 | Tree transplant (Mui Tsz Lam Road realigment) | 96 | 08-Aug-19 | 30-Nov-19 | 519 | 15-May-21 | 08-Sep-21 | 6 |
| Steel Bridge | | | | | | | | |
| **Design** | | | | | | | | |
| A10250 | Steel Bridge Design approval (Foundation) | 22 | 03-Aug-19 A | 24-Aug-19 | 16 | 24-Aug-19 | 09-Sep-19 | 0 |
| A16650 | Steel Bridge Design preparation & submission (Superstructure) | 40 | 02-Jul-19 A | 16-Aug-19 | 13 | 23-Aug-19 | 31-Aug-19 | 0 |
| A16660 | Steel Bridge Design approval (Superstructure) | 21 | 17-Aug-19 | 06-Sep-19 | 16 | 02-Sep-19 | 22-Sep-19 | 0 |
| A16662 | Sub-letting (steel bridge piling) | 51 | 02-Jul-19 A | 29-Aug-19 | 9 | 19-Aug-19 | 09-Sep-19 | 0 |
| A16664 | Sub-letting (steel bridge superstructure) | 51 | 15-Jul-19 A | 11-Sep-19 | 8 | 17-Aug-19 | 21-Sep-19 | 0 |
| **North Tower of Steel Bridge** | | | | | | | | |
| A10270 | Footings at North Tower (1 nos) | 24 | 16-Sep-19 | 15-Oct-19 | 27 | 19-Oct-19 | 15-Nov-19 | 6 |
| A10290 | Footings at North Ramp (5 nos) | 60 | 16-Oct-19 | 24-Dec-19 | 27 | 16-Nov-19 | 04-Feb-20 | 2 |
| A10293 | Abutment (North Ramp) | 30 | 16-Oct-19 | 19-Nov-19 | 57 | 21-Dec-19 | 04-Feb-20 | 0 |
| A10295 | Steel Piers & deck fabrication (North Tower & Ramp) | 60 | 12-Sep-19 | 23-Nov-19 | 8 | 23-Sep-19 | 03-Dec-19 | 5 |
| **South Tower of Steel Bridge** | | | | | | | | |
| A10310 | Pre-drilling Works | 22 | 24-Jul-19 A | 17-Aug-19 | 19 | 30-Aug-19 | 09-Sep-19 | 3 |
| A10320 | Piling (pre-bored H, 15no) | 52 | 30-Aug-19 | 01-Nov-19 | 9 | 10-Sep-19 | 12-Nov-19 | 0 |
| A10330 | Pile test | 26 | 02-Nov-19 | 02-Dec-19 | 9 | 13-Nov-19 | 12-Dec-19 | 0 |
| A10345 | Steel Piers & deck fabrication (South Tower & Ramp) | 60 | 12-Sep-19 | 23-Nov-19 | 16 | 03-Oct-19 | 12-Dec-19 | 5 |
| Noise Barrier | | | | | | | | |
| **Design** | | | | | | | | |
| A15020 | Noise Barrier Design approval (NB1 & NB3) | 51 | 09-Jul-19 A | 28-Aug-19 | 28 | 05-Sep-19 | 25-Sep-19 | 0 |
| A16670 | Noise Barrier Design preparation (NB2 - foundation) | 41 | 02-Jul-19 A | 17-Aug-19 | 15 | 26-Aug-19 | 04-Sep-19 | 0 |
| A16680 | Noise Barrier Design approval (NB2 - foundation | 21 | 17-Aug-19 | 07-Sep-19 | 18 | 05-Sep-19 | 25-Sep-19 | 0 |
| A16690 | Noise Barrier Design preparation (NB2 - Supstructure) | 51 | 19-Jun-19 A | 17-Aug-19 | 150 | 13-Feb-20 | 22-Feb-20 | 0 |
| A16700 | Noise Barrier Design approval (NB2 - Supstructure) | 21 | 17-Aug-19 | 07-Sep-19 | 190 | 24-Feb-20 | 15-Mar-20 | 0 |
| **NB1** | | | | | | | | |
| A10780 | Excavation - NB1 (0-75m) | 15 | 29-Aug-19 | 16-Sep-19 | 48 | 28-Oct-19 | 13-Nov-19 | 3 |




Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Crit. Milestone

Project ID: MP005 (1908)
Layout: 3 Month Rolling Programme
Data Date: 08-Aug-19
Page 1 of 5
*Primavera Systems, Inc.*

**Contract No. DC/2018/05**

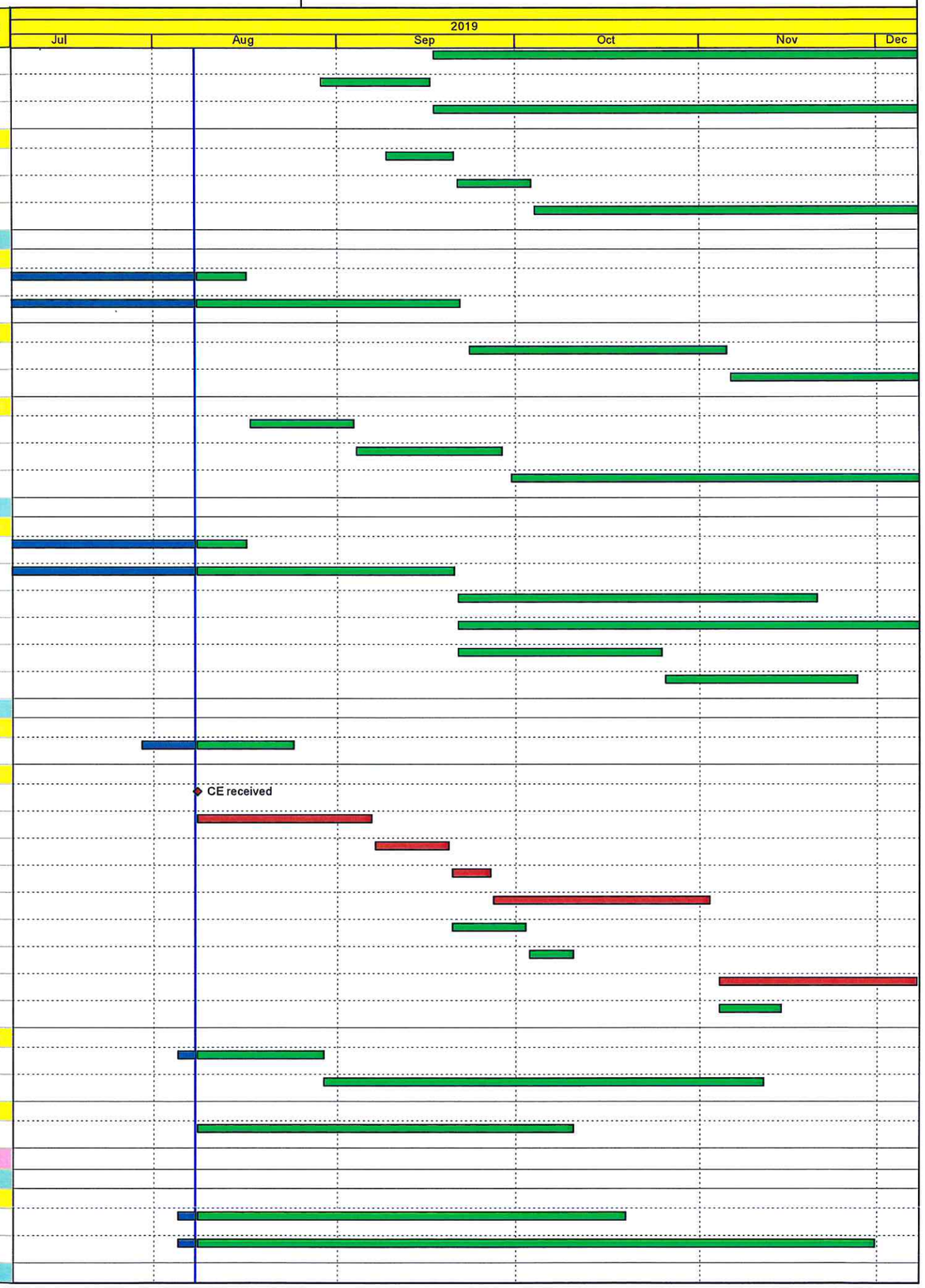
**Relocation of Sha Tin Sewge Treatment Works to Caverns - Site Preparation and Access Tunnel Construction**

**3 Month Rolling Programme**

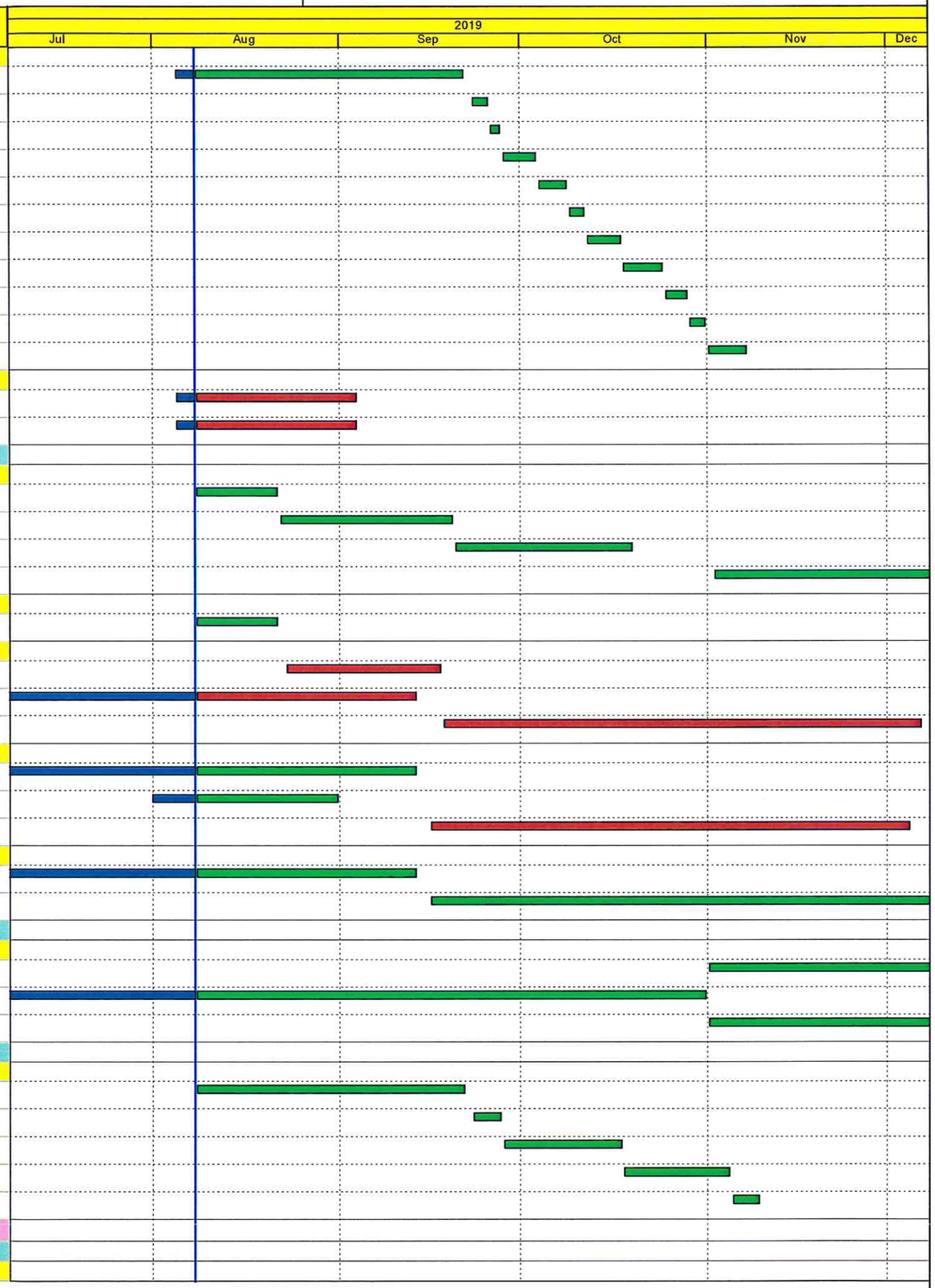
**CHINA STATE JOINT VENTURE**

| Date | Revision | C | Approved |
|---|---|---|---|
| 10-May-19 | First Progra... | | |
| 15-Jul-19 | Detail Progra... | | |

| Activity ID | Activity Name | Original Duration | Start | Finish | Total Float | Late Start | Late Finish | Time Risk Allowances |
|---|---|---|---|---|---|---|---|---|
| A10790 | Footing & wall structure - NB1 (0-75m) | 75 | 17-Sep-19 | 14-Dec-19 | 48 | 14-Nov-19 | 19-Feb-20 | 3 |
| A10830 | Excavation - NB1 (75-150m) | 15 | 29-Aug-19 | 16-Sep-19 | 54 | 04-Nov-19 | 20-Nov-19 | 3 |
| A10840 | Footing & wall structure - NB1 (75-150m) | 75 | 17-Sep-19 | 14-Dec-19 | 54 | 21-Nov-19 | 26-Feb-20 | 3 |
| **NB2** | | | | | | | | |
| A10870 | ELS - NB2 (0-63m) | 10 | 09-Sep-19 | 20-Sep-19 | 14 | 26-Sep-19 | 09-Oct-19 | 1 |
| A10880 | Excavation - NB2 (0-63m) | 10 | 21-Sep-19 | 03-Oct-19 | 14 | 10-Oct-19 | 21-Oct-19 | 1 |
| A10890 | Footing & wall structure - NB2 (0-63m) | 73 | 04-Oct-19 | 31-Dec-19 | 14 | 22-Oct-19 | 17-Jan-20 | 1 |
| Water Mains Diversion | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| A13110 | XP application for Water mains construction | 180 | 18-Feb-19 A | 16-Aug-19 | 468 | 17-Nov-20 | 26-Nov-20 | 0 |
| A13130 | TTA submission & approval | 79 | 20-Jun-19 A | 21-Sep-19 | 348 | 12-Oct-20 | 26-Nov-20 | 6 |
| **DN600 Water Main** | | | | | | | | |
| A10550 | Jacking pit at CHA 80.2 (Portion 4) | 36 | 23-Sep-19 | 05-Nov-19 | 348 | 26-Nov-20 | 11-Jan-21 | 6 |
| A10560 | Jacking pit at CHA 115.1 (Portion 6) | 36 | 06-Nov-19 | 17-Dec-19 | 348 | 11-Jan-21 | 01-Mar-21 | 6 |
| **DN450 Water Main** | | | | | | | | |
| A10660 | ELS (CHB 0 - 37) | 15 | 17-Aug-19 | 03-Sep-19 | 400 | 22-Dec-20 | 12-Jan-21 | 3 |
| A10670 | Excavation (CHB 0 - 37) | 21 | 04-Sep-19 | 28-Sep-19 | 400 | 12-Jan-21 | 05-Feb-21 | 3 |
| A10680 | Laying DN450 (CHB 0 - 37) | 60 | 30-Sep-19 | 10-Dec-19 | 400 | 05-Feb-21 | 27-Apr-21 | 3 |
| Drainage Works | | | | | | | | |
| **Mui Tsz Lam Road Realigment** | | | | | | | | |
| A10395 | XP application for Mui Tsz Lam Road realigment | 180 | 18-Feb-19 A | 16-Aug-19 | 565 | 22-Feb-21 | 03-Mar-21 | 17 |
| A10400 | TTA submission & approval | 64 | 08-Jul-19 A | 20-Sep-19 | 37 | 21-Sep-19 | 05-Nov-19 | 6 |
| A10990 | Drainage work from SMH1009 (3mh ~6m depth)(TTA) | 50 | 21-Sep-19 | 20-Nov-19 | 423 | 03-Mar-21 | 05-May-21 | 5 |
| A10995 | Drainage work from SMH2010 to 2011 (2mh ~6 to 7.5m depth) | 100 | 21-Sep-19 | 21-Jan-20 | 37 | 06-Nov-19 | 11-Mar-20 | 10 |
| A13230 | Jacking pit in portion 6 for 1350 dia pipe jacking | 28 | 21-Sep-19 | 25-Oct-19 | 72 | 16-Dec-19 | 21-Jan-20 | 2 |
| A13240 | Jacking pit in portion 4 for 1350 dia pipe jacking | 28 | 26-Oct-19 | 27-Nov-19 | 72 | 21-Jan-20 | 29-Feb-20 | 2 |
| Road Works | | | | | | | | |
| **Cycle Track and footpath** | | | | | | | | |
| A10460 | Site clearance | 23 | 30-Jul-19 A | 24-Aug-19 | 15 | 26-Aug-19 | 11-Sep-19 | 2 |
| **PMI-010: Additional RW along Cycle Track and Footpath in Portion 1** | | | | | | | | |
| A16742 | CE received | 0 | 08-Aug-19 | | 4 | 13-Aug-19 | | |
| A16744 | Approval of quotation, preparation of materials and mobilization of plant (Assume subletting under ACC C9 not | 26 | 08-Aug-19 | 06-Sep-19 | 4 | 13-Aug-19 | 11-Sep-19 | 0 |
| A16840 | ELS - Cycle track RW (Bay 1- 3, 0-19m) | 10 | 07-Sep-19 | 19-Sep-19 | 4 | 12-Sep-19 | 24-Sep-19 | 1 |
| A16850 | Excavation - Cycle track RW (Bay 1- 3, 0-19m) | 6 | 20-Sep-19 | 26-Sep-19 | 4 | 25-Sep-19 | 02-Oct-19 | 1 |
| A16860 | Footing & wall structure - Cycle track RW (Bay 1- 3, 0-19m) | 30 | 27-Sep-19 | 02-Nov-19 | 4 | 03-Oct-19 | 07-Nov-19 | 4 |
| A16880 | ELS - Cycle track RW (Bay 4-6, 19- 42-m) | 10 | 20-Sep-19 | 02-Oct-19 | 24 | 21-Oct-19 | 31-Oct-19 | 1 |
| A16890 | Excavation - Cycle track RW (Bay 4-6, 19- 42-m) | 6 | 03-Oct-19 | 10-Oct-19 | 24 | 01-Nov-19 | 07-Nov-19 | 1 |
| A16900 | Footing & wall structure - Cycle track RW (Bay 4-6, 19- 42-m) | 30 | 04-Nov-19 | 07-Dec-19 | 4 | 08-Nov-19 | 12-Dec-19 | 4 |
| A16920 | Miradrain & pipe sleeve installation - Cycle track RW (Bay 1- 3, 0-19m) | 10 | 04-Nov-19 | 14-Nov-19 | 34 | 13-Dec-19 | 24-Dec-19 | 2 |
| **Haul Road Under Ma On Shan Rail** | | | | | | | | |
| A11935 | Trial pits excavation & U/G utility detection | 22 | 05-Aug-19 A | 29-Aug-19 | 72 | 04-Nov-19 | 25-Nov-19 | 2 |
| A11936 | Haul Road Design preparation | 60 | 29-Aug-19 | 11-Nov-19 | 72 | 26-Nov-19 | 13-Feb-20 | 2 |
| **Construction Access connecting Ma On Shan Road** | | | | | | | | |
| A13420 | Construction Access Connecting Ma On Shan Road construction at Portion 2 | 52 | 08-Aug-19 | 10-Oct-19 | 183 | 23-Mar-20 | 28-May-20 | 2 |
| **Main Portal Area** | | | | | | | | |
| Tree Treatment | | | | | | | | |
| **Tree Treatment** | | | | | | | | |
| A11041 | Tree felling & protection (Portion 6) - remaining | 63 | 05-Aug-19 A | 19-Oct-19 | 645 | 18-Oct-21 | 28-Dec-21 | 0 |
| A11042 | Tree transplant (Portion 6) | 99 | 05-Aug-19 A | 30-Nov-19 | 315 | 01-Sep-20 | 28-Dec-20 | 6 |
| Site Formation for Main Portal | | | | | | | | |



| Activity ID | Activity Name | Original Duration | Start | Finish | Total Float | Late Start | Late Finish | Time Risk Allowances |
|---|---|---|---|---|---|---|---|---|
| **Slope SMP 2** | | | | | | | | |
| A12570 | Temp. Access Road Formation | 41 | 05-Aug-19 A | 21-Sep-19 | 177 | 14-Mar-20 | 05-May-20 | 2 |
| A12580 | Form temp working platform for soil nail | 3 | 23-Sep-19 | 25-Sep-19 | 177 | 05-May-20 | 08-May-20 | 0 |
| A12590 | Soil Nail at 53.3mpd (As1-6 & TN8)- 7nos | 2 | 26-Sep-19 | 27-Sep-19 | 177 | 08-May-20 | 11-May-20 | 0 |
| A12600 | Soil Nail at 51.3mpd (Ar1-15)- 15nos | 4 | 28-Sep-19 | 03-Oct-19 | 177 | 11-May-20 | 15-May-20 | 0 |
| A12610 | Excavation (55- 50.3mpd) | 3 | 04-Oct-19 | 08-Oct-19 | 177 | 15-May-20 | 19-May-20 | 0 |
| A12620 | Form temp working platform for soil nail | 3 | 09-Oct-19 | 11-Oct-19 | 177 | 19-May-20 | 22-May-20 | 0 |
| A12630 | Soil Nail at 50.3mpd (Aq1-20)- 20nos | 5 | 12-Oct-19 | 17-Oct-19 | 177 | 22-May-20 | 28-May-20 | 0 |
| A12640 | Soil Nail at 47.8mpd (Ap1-22 & TN7)- 23nos | 6 | 18-Oct-19 | 24-Oct-19 | 177 | 28-May-20 | 04-Jun-20 | 0 |
| A12650 | Excavation (50.3 - 45.8mpd) | 3 | 25-Oct-19 | 28-Oct-19 | 177 | 04-Jun-20 | 08-Jun-20 | 0 |
| A12660 | Form temp working platform for soil nail | 3 | 29-Oct-19 | 31-Oct-19 | 177 | 08-Jun-20 | 11-Jun-20 | 0 |
| A12670 | Soil Nail at 45.8mpd (An1-24)- 24nos | 6 | 01-Nov-19 | 07-Nov-19 | 177 | 11-Jun-20 | 18-Jun-20 | 0 |
| **Temp Site Formation at SMP2 +23mpd Portal Area** | | | | | | | | |
| A15970 | Cut slope to designed profile from +50.3 to +23mpd of SMP2 | 26 | 05-Aug-19 A | 03-Sep-19 | 2 | 09-Aug-19 | 05-Sep-19 | 0 |
| A16050 | Fill access & working platform at +23mpd of SMP2 | 26 | 05-Aug-19 A | 03-Sep-19 | 2 | 09-Aug-19 | 05-Sep-19 | 0 |
| Retaining Wall for Main Portal | | | | | | | | |
| **Retaining Wall RMP3** | | | | | | | | |
| A13160 | Temp access road formation | 12 | 08-Aug-19 | 21-Aug-19 | 56 | 15-Oct-19 | 29-Oct-19 | 6 |
| A13170 | Erect temp working platform for piling | 24 | 22-Aug-19 | 19-Sep-19 | 56 | 29-Oct-19 | 26-Nov-19 | 6 |
| A13180 | Pre-drilling work - RMP3 | 24 | 20-Sep-19 | 19-Oct-19 | 56 | 26-Nov-19 | 24-Dec-19 | 3 |
| A13190 | Piling (Pre-bored H, 610mm, 33nos) - RMP3 | 102 | 02-Nov-19 | 10-Mar-20 | 45 | 24-Dec-19 | 08-May-20 | 3 |
| **Retaining Wall RMP2** | | | | | | | | |
| A13260 | Temp access road formation | 12 | 08-Aug-19 | 21-Aug-19 | 206 | 22-Apr-20 | 08-May-20 | 6 |
| **Retaining Wall RMP6 - CSD** | | | | | | | | |
| A13320 | Pre-drilling work - RMP6 | 21 | 23-Aug-19 | 17-Sep-19 | 2 | 24-Aug-19 | 19-Sep-19 | 3 |
| A15320 | CSD approval period (CSD) | 105 | 01-Jun-19 A | 13-Sep-19 | 6 | 13-Aug-19 | 19-Sep-19 | 0 |
| A15330 | Piling (pre-bored H, 15no, 23mpd) - CSD RMP6 | 67 | 18-Sep-19 | 06-Dec-19 | 2 | 19-Sep-19 | 09-Dec-19 | 0 |
| **Retaining Wall RMP5 - CSD (Tunnel Portal Area)** | | | | | | | | |
| A15560 | CSD approval period (CSD) | 105 | 01-Jun-19 A | 13-Sep-19 | 8 | 15-Aug-19 | 21-Sep-19 | 0 |
| A15565 | Pre-drilling work - RMP5 | 27 | 01-Aug-19 A | 31-Aug-19 | 17 | 27-Aug-19 | 21-Sep-19 | 3 |
| A15570 | Piling (pre-bored H, 15no, 23mpd)(P35-49) - CSD RMP5 (Tunnel Portal Area) | 67 | 16-Sep-19 | 04-Dec-19 | 6 | 21-Sep-19 | 11-Dec-19 | 0 |
| **Retaining Wall RMP5 - CSD** | | | | | | | | |
| A15800 | CSD approval period (CSD) | 105 | 01-Jun-19 A | 13-Sep-19 | 276 | 09-May-20 | 15-Jun-20 | 0 |
| A15810 | Piling (pre-bored H, 25no, 23mpd)(P1-25) - CSD RMP5 | 106 | 16-Sep-19 | 22-Jan-20 | 218 | 15-Jun-20 | 21-Oct-20 | 0 |
| Tunnel | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| A11810 | TTA submission and approval during blasting works | 75 | 01-Nov-19 | 06-Feb-20 | 166 | 29-May-20 | 27-Aug-20 | 3 |
| A11815 | Boulder survey & condition survey | 109 | 22-Jun-19 A | 31-Oct-19 | 166 | 02-Mar-20 | 29-May-20 | 2 |
| A11820 | Update BAR (Blasting Assessment Report) - preparation and submission | 75 | 01-Nov-19 | 06-Feb-20 | 166 | 29-May-20 | 27-Aug-20 | 3 |
| Rigid Barriers | | | | | | | | |
| **Rigid Barrier BMP1** | | | | | | | | |
| A13430 | Temp. Access Road Formation | 38 | 08-Aug-19 | 21-Sep-19 | 161 | 25-Feb-20 | 14-Apr-20 | 5 |
| A13440 | Form temp working platform for soil nail | 5 | 23-Sep-19 | 27-Sep-19 | 161 | 14-Apr-20 | 20-Apr-20 | 2 |
| A13450 | Soil Nail at 33.6mpd (Rows D & TN2)- 25nos | 15 | 28-Sep-19 | 17-Oct-19 | 161 | 20-Apr-20 | 09-May-20 | 2 |
| A13460 | Soil Nail at 32.1mpd (Rows C)- 25nos | 15 | 18-Oct-19 | 04-Nov-19 | 161 | 09-May-20 | 27-May-20 | 2 |
| A13470 | Excavation (34.2- 31.1mpd) | 5 | 05-Nov-19 | 09-Nov-19 | 161 | 27-May-20 | 02-Jun-20 | 2 |
| **Access Road to Portion 12 - Phase 1** | | | | | | | | |
| Preliminary Works | | | | | | | | |
| **Temporary Access** | | | | | | | | |



| Activity ID | Activity Name | Original Duration | Start | Finish | Total Float | Late Start | Late Finish | Time Risk Allowances |
|---|---|---|---|---|---|---|---|---|
| A11088 | Temp access to bridge A | 56 | 08-Jul-19 A | 10-Sep-19 | 7 | 16-Aug-19 | 19-Sep-19 | 0 |
| A11098 | Temp access for bridge B | 26 | 11-Sep-19 | 14-Oct-19 | 20 | 08-Oct-19 | 06-Nov-19 | 0 |
| Tree Treatment | | | | | | | | |
| Tree Treatment | | | | | | | | |
| A11070 | Tree felling & protection (Portion 11) | 74 | 25-Jun-19 A | 20-Sep-19 | 41 | 26-Sep-19 | 09-Nov-19 | 1 |
| A11072 | Tree transplant (Portion 11) | 15 | 21-Sep-19 | 10-Oct-19 | 359 | 08-Dec-20 | 28-Dec-20 | 2 |
| A11078 | Tree felling (Portion 12) | 32 | 21-Sep-19 | 30-Oct-19 | 311 | 12-Oct-20 | 19-Nov-20 | 2 |
| Bridge A | | | | | | | | |
| Piling | | | | | | | | |
| A11090 | Pre-drilling - Pier A2-1 | 3 | 11-Sep-19 | 13-Sep-19 | 7 | 20-Sep-19 | 23-Sep-19 | 0 |
| A11100 | Piling (mini-pile, 6nos) - Pier A2-1 | 6 | 16-Sep-19 | 21-Sep-19 | 7 | 24-Sep-19 | 30-Sep-19 | 0 |
| A11110 | Pre-drilling - Pier A2-2 | 3 | 16-Sep-19 | 18-Sep-19 | 10 | 27-Sep-19 | 30-Sep-19 | 0 |
| A11120 | Piling (mini-pile, 6nos) - Pier A2-2 | 6 | 23-Sep-19 | 28-Sep-19 | 7 | 02-Oct-19 | 09-Oct-19 | 0 |
| A11130 | Pre-drilling - Pier A3-2 | 3 | 19-Sep-19 | 21-Sep-19 | 13 | 05-Oct-19 | 09-Oct-19 | 0 |
| A11140 | Piling (mini-pile, 6nos) - Pier A3-2 | 6 | 30-Sep-19 | 08-Oct-19 | 7 | 10-Oct-19 | 16-Oct-19 | 0 |
| A11150 | Pre-drilling - Pier A4-1 | 3 | 23-Sep-19 | 25-Sep-19 | 16 | 14-Oct-19 | 16-Oct-19 | 0 |
| A11160 | Piling (mini-pile, 6nos) - Pier A4-1 | 6 | 09-Oct-19 | 15-Oct-19 | 7 | 17-Oct-19 | 23-Oct-19 | 0 |
| A11170 | Pre-drilling - Pier A4-2 | 3 | 26-Sep-19 | 28-Sep-19 | 19 | 21-Oct-19 | 23-Oct-19 | 0 |
| A11180 | Piling (mini-pile, 4nos) - Pier A4-2 | 4 | 16-Oct-19 | 19-Oct-19 | 7 | 24-Oct-19 | 28-Oct-19 | 0 |
| A11210 | Pile Test | 28 | 21-Oct-19 | 21-Nov-19 | 7 | 29-Oct-19 | 29-Nov-19 | 2 |
| Abutment A1 | | | | | | | | |
| A11220 | ELS - Abutment A1 | 12 | 11-Sep-19 | 25-Sep-19 | 50 | 12-Nov-19 | 25-Nov-19 | 1 |
| A11230 | Excavation - Abutment A1 | 31 | 26-Sep-19 | 02-Nov-19 | 50 | 26-Nov-19 | 03-Jan-20 | 1 |
| A11240 | Base slab - Abutment A1 | 13 | 04-Nov-19 | 18-Nov-19 | 50 | 04-Jan-20 | 18-Jan-20 | 1 |
| Pier A3 | | | | | | | | |
| A11430 | ELS - Pier A3-1 | 13 | 21-Oct-19 | 04-Nov-19 | 34 | 29-Nov-19 | 13-Dec-19 | 1 |
| A11440 | Excavation - Pier A3-1 | 12 | 05-Nov-19 | 18-Nov-19 | 34 | 14-Dec-19 | 30-Dec-19 | 1 |
| Abutment A5 | | | | | | | | |
| A11280 | ELS - Abutment A5 | 13 | 11-Sep-19 | 26-Sep-19 | 12 | 26-Sep-19 | 12-Oct-19 | 1 |
| A11290 | Excavation - Abutment A5 | 31 | 27-Sep-19 | 04-Nov-19 | 12 | 14-Oct-19 | 18-Nov-19 | 1 |
| A11300 | Base slab - Abutment A5 | 13 | 05-Nov-19 | 19-Nov-19 | 12 | 19-Nov-19 | 03-Dec-19 | 1 |
| Bridge B | | | | | | | | |
| Abutment B1 | | | | | | | | |
| A11680 | ELS - Abutment B1 | 6 | 15-Oct-19 | 21-Oct-19 | 20 | 07-Nov-19 | 13-Nov-19 | 1 |
| A11690 | Excavation - Abutment B1 | 12 | 22-Oct-19 | 04-Nov-19 | 20 | 14-Nov-19 | 27-Nov-19 | 1 |
| A11700 | Base slab - Abutment B1 | 12 | 05-Nov-19 | 18-Nov-19 | 20 | 28-Nov-19 | 11-Dec-19 | 1 |
| Abutment B2 | | | | | | | | |
| A11740 | ELS - Abutment B2 | 6 | 05-Nov-19 | 11-Nov-19 | 44 | 28-Dec-19 | 04-Jan-20 | 1 |
| Site Formation for Access Road to Portion 12 | | | | | | | | |
| Retaining Wall RMZ1 | | | | | | | | |
| A13880 | Erect temp working platform for piling | 13 | 11-Sep-19 | 26-Sep-19 | 17 | 03-Oct-19 | 18-Oct-19 | 1 |
| A13890 | Pre-drilling work - RMZ1 (bay 9-10) | 13 | 27-Sep-19 | 14-Oct-19 | 17 | 19-Oct-19 | 02-Nov-19 | 1 |
| A13900 | Piling (mini-pile, 30nos) - RMZ1 (bay 9-10) | 30 | 21-Oct-19 | 23-Nov-19 | 12 | 04-Nov-19 | 07-Dec-19 | 0 |
| A13930 | ELS - RMZ1 (Bay 1- 5, 0-37.5m) | 8 | 21-Sep-19 | 30-Sep-19 | 41 | 11-Nov-19 | 19-Nov-19 | 1 |
| A13940 | Excavation - RMZ1 (Bay 1- 5, 0-37.5m) | 8 | 02-Oct-19 | 11-Oct-19 | 41 | 20-Nov-19 | 28-Nov-19 | 1 |
| A13950 | Footing & wall structure - RMZ1 (Bay 1- 5, 0-37.5m) | 85 | 12-Oct-19 | 22-Jan-20 | 41 | 29-Nov-19 | 17-Mar-20 | 1 |
| Access Road to Portion 12 - Phase 2 | | | | | | | | |
| Road Works | | | | | | | | |
| Road work at A Kung Kok Shan Road Roundabout | | | | | | | | |

| Activity ID | Activity Name | Original Duration | Start | Finish | Total Float | Late Start | Late Finish | Time Risk Allowances |
|---|---|---|---|---|---|---|---|---|
| A15230 | Demolish existing footpath at A Kung Kok Shan Road Roundabout | 6 | 08-Aug-19 | 14-Aug-19 | 474 | 20-Mar-21 | 26-Mar-21 | 1 |
| A15240 | Demolish existing planter at Cul-De-Sac | 6 | 15-Aug-19 | 21-Aug-19 | 474 | 27-Mar-21 | 06-Apr-21 | 1 |
| **Other Works Area** | | | | | | | | |
| Tree Treatment | | | | | | | | |
| **Tree Treatment** | | | | | | | | |
| A11050 | Tree felling & protection (Portion 8) | 15 | 21-Aug-19 | 06-Sep-19 | 6 | 28-Aug-19 | 13-Sep-19 | 1 |
| A11052 | Tree transplant (Portion 8) | 91 | 07-Sep-19 | 27-Dec-19 | 294 | 07-Sep-20 | 28-Dec-20 | 1 |
| A11060 | Tree felling & protection (Portion 10) | 61 | 21-Sep-19 | 03-Dec-19 | 222 | 26-Jun-20 | 07-Sep-20 | 1 |
| Community Liaison Centre | | | | | | | | |
| **Design** | | | | | | | | |
| A10100 | Community Liaison Centre Design Preparation (Foundation & Structure) | 49 | 20-Jun-19 A | 16-Aug-19 | 98 | 04-Dec-19 | 12-Dec-19 | 1 |
| A10110 | Community Liaison Centre Design approval (Foundation & Structure) | 65 | 04-Jul-19 A | 06-Sep-19 | 9 | 17-Aug-19 | 15-Sep-19 | 0 |
| A16710 | Community Liaison Centre Design Preparation (Architectual) | 35 | 08-Jul-19 A | 16-Aug-19 | 97 | 03-Dec-19 | 11-Dec-19 | 1 |
| A16720 | Community Liaison Centre Design approval (Architectual) | 21 | 17-Aug-19 | 06-Sep-19 | 117 | 12-Dec-19 | 01-Jan-20 | 0 |
| A16730 | Community Liaison Centre Design Preparation (Drainage & E&M) | 22 | 17-Aug-19 | 11-Sep-19 | 98 | 13-Dec-19 | 10-Jan-20 | 1 |
| A16740 | Community Liaison Centre Design approval (Drainage & E&M) | 21 | 12-Sep-19 | 02-Oct-19 | 156 | 15-Feb-20 | 06-Mar-20 | 0 |
| A16750 | Community Liaison Centre Design Preparation (Landscape) | 22 | 12-Sep-19 | 10-Oct-19 | 98 | 11-Jan-20 | 12-Feb-20 | 1 |
| A16760 | Community Liaison Centre Design approval (Landscape) | 21 | 11-Oct-19 | 31-Oct-19 | 125 | 13-Feb-20 | 04-Mar-20 | 0 |
| **Community Liaison Centre** | | | | | | | | |
| A10115 | TTA for access to Portion 8 | 52 | 20-Jun-19 A | 20-Aug-19 | 3 | 12-Aug-19 | 23-Aug-19 | 0 |
| A10120 | Site Clearance | 18 | 21-Aug-19 | 10-Sep-19 | 3 | 24-Aug-19 | 13-Sep-19 | 1 |
| A10130 | Site formation | 12 | 11-Sep-19 | 25-Sep-19 | 3 | 16-Sep-19 | 28-Sep-19 | 1 |
| A10140 | Excavation | 12 | 26-Sep-19 | 11-Oct-19 | 3 | 30-Sep-19 | 15-Oct-19 | 1 |
| A10150 | G/F slab | 12 | 12-Oct-19 | 25-Oct-19 | 3 | 16-Oct-19 | 29-Oct-19 | 1 |
| A10160 | Superstructure Works | 52 | 26-Oct-19 | 27-Dec-19 | 3 | 30-Oct-19 | 31-Dec-19 | 1 |