

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## ENVIRONMENTAL MONITORING & AUDIT MONTHLY REPORT

January 2018

**Client** : SANG HING – KULY JOINT VENTURE

**Contract Name** : Castle Peak Road Trunk Sewer and Tuen Mun Village Sewerage (Sewage Pumping Station at Lok Chui Street near Castle Peak Villas)

**Contract No.** : DC/2014/01


**EP No.** : EP-068/2000/A

**Title of Project** : Sewage Pumping Stations at Tai Lam Chung Tsuen Luen On San Tsuen, Tai Lam Valley and Lok Chui Street near Castle Peak Villas under the scope of “Tuen Mun Sewerage – Eastern Coastal Sewerage Extension”

**Report No.** : 0367/15/ED/0976

**Prepared by** : Wingo H. W. So

**Reviewed by** : Cyrus C. Y. Lai

**Certified by** :   
Colin K. L. Yung  
Environmental Team Leader  
Fugro Technical Services Limited

7 February 2018



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

Your reference:

Our reference: HKDSD202/50/104798

Date: 14 February 2018

Attention: Ms Winnie Ng

**BY EMAIL & POST**  
**(email: [wyng03@dsd.gov.hk](mailto:wyng03@dsd.gov.hk))**

Dear Sirs

Agreement No.: PM 08/2014  
Services for Independent Environmental Checker for  
Construction of Lok Chui Street Sewage Pumping Station  
Verification of Monthly EM&A Report (January 2018)

We refer to email of 7 February 2018 attaching a monthly EM&A Report (January 2018) for the captioned project prepared by the ET.

We have no comment and hereby verify the monthly EM&A Report in accordance with Clause 3.5 of the Environmental Permit no. EP-068/2000/A.

Please do not hesitate to contact the undersigned or our Ms Lucita Lee at 2618 2831 should you have any queries.

Yours faithfully  
ANEWR CONSULTING LIMITED

Adi Lee  
Independent Environmental Checker

LYMA/LHHN/LPYL/lhnh

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>1. INTRODUCTION</b>	<b>2</b>
<b>2. AIR QUALITY</b>	<b>5</b>
<b>3. NOISE</b>	<b>7</b>
<b>4. LANDSCAPE AND VISUAL</b>	<b>10</b>
<b>5. ENVIRONMENTAL SITE INSPECTION AND AUDIT</b>	<b>11</b>
<b>6. ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS</b>	<b>12</b>
<b>7. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE</b>	<b>13</b>
<b>8. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES</b>	<b>14</b>
<b>9. FUTURE KEY ISSUES</b>	<b>15</b>
<b>10. CONCLUSIONS</b>	<b>16</b>

## FIGURES

Figure 1	Site Layout Plan
Figure 2	Air Quality and Noise Monitoring Stations

## LIST OF APPENDICES

Appendix A	Construction Programme
Appendix B	Project Organization Chart
Appendix C	Action and Limit Levels for Air Quality and Noise
Appendix D	Calibration Certificates of Monitoring Equipment
Appendix E	Environmental Monitoring and Data Recovery Schedules
Appendix F	Air Quality Monitoring Data and Graphical Presentations
Appendix G	Noise Monitoring Data and Graphical Presentations
Appendix H	Cumulative Statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions
Appendix I	Site Audit Summary
Appendix J	Event and Action Plans
Appendix K	Implementation Status of Environmental Mitigation Measures
Appendix L	Weather and Meteorological Conditions during Monitoring Period
Appendix M	Monthly Summary of Waste Flow Table
Appendix N	Proactive Environmental Protection Proforma



---

## **EXECUTIVE SUMMARY**

- i. This is the 23<sup>rd</sup> monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project within the period from 1 January to 31 January 2018.

### **Construction Activities for the Reporting Period**

- ii. During this reporting period, the principal work activities within the site included:
- Construction of Pumping Station (Transformer Room)

### **Breaches of Action and Limit Levels for Air Quality**

- iii. No Action or Limit Level Exceedance of 1-hr TSP monitoring was recorded in the reporting period.

### **Breaches of Action and Limit Levels for Noise**

- iv. No exceedance was recorded at all monitoring stations in the reporting period.

### **Complaint, Notifications of Summons and Successful Prosecutions**

- v. No Action or Limit Level Exceedance of noise monitoring was recorded in the reporting period.

### **Reporting Change**

- vi. There was no reporting change required in the reporting period.

### **Future Key Issues**

### **Construction Activities for the Coming Reporting Period**

- vii. During the coming reporting period, the principal work activities within the site included:
- Construction of Pumping Station (Transformer Room)
- viii. Potential environmental impacts due to the construction activities, including air quality, noise, water quality, waste, landscape and visual, will be monitored or reviewed. The ET will continue to implement the environmental monitoring & audit programme in accordance with the EM&A Manual and Environmental Permit requirements. The recommended environmental mitigation measures shall be implemented on site and regular inspections as required will be carried out to ensure that the environmental conditions are acceptable.



## 1. INTRODUCTION

### 1.1 Background

- 1.1.1 Contract No. DC/2014/01 – Castle Peak Road Trunk Sewer and Tuen Mun Village Sewerage (“the Project”) includes the construction of a sewage pumping station at Lok Chui Street near Castle Peak Villas as shown in **Figure 1**.
- 1.1.2 The environmental impact assessment (EIA) report (Tuen Mun Sewerage - Eastern Coastal Sewerage Extension) – EIA Report (Register No. AEIAR-034/2000) for the Project was approved by Environmental Protection Department (EPD) dated 7 June 2000. The EIA Report involves the construction of four sewage pumping stations at Tai Lam Chung Tsuen, Luen On San Tsuen, Tai Lam Valley and Lok Chui Street near Castle Peak Villas. The scope of this EM&A Manual focuses on the Sewage Pumping Station at Lok Chui Street near Castle Peak Villas in the EIA Report. The Project is designated under Schedule 2, section F3(b) and Q1 of the Environmental Impact Assessment Ordinance (EIAO). EPD subsequently issued the Environmental Permit (EP) EP- 068/2000 on 25 July 2000.
- 1.1.3 A Register of Change to Environmental Permit was submitted to EPD to register any change to the conditions in the EP for adoption of the latest design of the Pumping Station at Lok Chui Street and justify that the latest changes would not violate the conditions as stated in the approved EIA Report and EP based on the latest engineering design information. A Variation of Environmental Permit (VEP) EP-068/2000/A was issued on 10 April 2015 and it is the current permit for the Project.
- 1.1.4 The amended EP (EP-068/2000/A) is the current permit for the Project.
- 1.1.5 In accordance to EP-068/2000/A Condition 2.3 and 2.4, an updated EM&A Manual was duly certified by ETL and verified by IEC and submitted to EPD for approval on 18 January 2016.
- 1.1.6 The construction phase and EM&A programme of the Project commenced on 29 February 2016.
- 1.1.7 This is the 23<sup>rd</sup> monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project within the period from 1 January to 31 January 2018.



**1.2 Project Organization**

1.2.1 The Project Organization structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Drainage Services Department, HKSAR (DSD)	Project Management	Ms. Winnie Ng	2594 7265	2827 8526
Engineer/Engineer's Representative (AECOM)	Resident Engineer	Ms. Jacqueline Chan	3127 5103	2441 1755
	Senior Inspector of Works	Mr. Raymond Au	3127 5160	
Independent Environmental Checker (ANEWR)	Independent Environmental Checker	Mr. Adi Lee	2618 2836	3007 8648
Contractor (SKLV)	Site Agent	Mr. Alan Lo	2674 3888	2674 6688
	Environmental Officer	Mr. Billy Wong		
Environmental Team (FTS)	Environmental Team Leader	Mr. Colin Yung	3565 4114	3565 4160

**1.3 Construction Programme and Activities**

1.3.1 The construction phase of the Project under the EP commenced on 29 February 2016.

1.3.2 The construction programme of the Project is shown in **Appendix A**.


**1.4 Works undertaken during the month**

1.4.1 During this reporting period, the principal work activities within the site included:

- Construction of Pumping Station (Transformer Room)

1.4.2 Illustrations of works undertaken during the reporting period are shown in **Table 1.2**:

**Table 1.2 Works undertaken Illustrations**

	
<p>Construction of Pumping Station (Transformer Room)</p>	

**1.5 Status of Environmental Licences, Notification and Permits**

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

**Table 1.3 Status of Environmental Licences, Notification and Permits**

Permit / Direction / License	Ref No	Valid From	Valid Till
Environmental Permit	EP-068/2000/A	10/04/2015	N/A
Notification of Works Under APCO	391923	06/08/2015	N/A
Wastewater Discharge Licence	WT00022654-2015	23/10/2015	31/10/2020
Registration as a Chemical Waste Producer	5111-421-S3879-01	02/09/2015	N/A
Billing Account for Disposal of Construction Waste	7022922	06/08/2015	N/A



**2. AIR QUALITY**

**2.1 Monitoring Requirement**

2.1.1 In accordance with the updated EM&A Manual, for regular impact monitoring, the sampling frequency of at least once per week shall be strictly observed at designated monitoring stations for 1-hr TSP monitoring using the direct reading method.

**2.2 Monitoring Equipment and Detection Limits**

2.2.1 The impact air quality (1-hr TSP) monitoring was performed using the portable TSP Monitors (Sibata Model LD-3B).

2.2.2 **Table 2.1** summarizes the detail of monitoring equipment and detection limits:

Table 2.1 Air Quality Monitoring Equipment

Item	Equipment	Model Number	Serial Number	Measuring accuracy	Measuring range
1	Portable TSP Monitor	Sibata Model LD-3B	2Z6243	±10% of calibrated particles	0.001 – 10.00mg/m <sup>3</sup>
2			2Z6244		

**2.3 Monitoring Parameters, Frequency and Duration**

2.3.1 **Table 2.2** summarizes the monitoring parameters, monitoring duration and frequencies of air quality monitoring.

Table 2.2 Monitoring Parameters, Frequency and Duration of Air Quality Monitoring

Parameter	Duration	Frequency
1-hr TSP	1 hour	At least 3 times in every 6 days

**2.4 Monitoring Locations**

2.4.1 In accordance with the updated EM&A Manual, two designated air quality monitoring stations, LC6a and LC9 are selected for the Project Area of constructing a sewage pumping station at Lok Chui Street near Castle Peak Villas as they are the representative air sensitive receivers located near to the Project site. All designated air quality monitoring stations listed in the updated EM&A Manual and the air quality monitoring stations are shown in **Table 2.3** and the monitoring locations are shown in **Figure 2**.

Table 2.3 Air Quality Monitoring Locations

Monitoring Station	Location
LC6a	The Castle Bay
LC9	Castle Peak Villas Block C





## 2.5 Monitoring Methodology and QA/QC Procedures

2.5.1 The measuring procedures of the 1-hr dust meter are in accordance with the Manufacturer's instruction Manual as follows:

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG with once
- Push Start/Stop switch once
- Turn the knob to SENSI.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

### Maintenance / Calibration

2.5.2 The portable TSP Monitors should be calibrated at 1 year intervals, Current calibration certificates are given in **Appendix D**.

## 2.6 Results and Observations

2.6.1 The schedule of air quality monitoring and data recovery schedule in reporting period is provided in **Appendix E**.

2.6.2 The weather conditions during the monitoring are provided in **Appendix L**.

2.6.3 The monitoring data of 1-hr TSP are summarized in **Table 2.4**. Detailed monitoring data are presented in **Appendix F**.

Table 2.4 Summary of 1-hr TSP Monitoring Results

Monitoring Station	Average ( $\mu\text{g}/\text{m}^3$ )	Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
LC6a	51	18-92	344	500
LC9	48	22-85	335	500

2.6.4 The adopted Action and Limit Levels for air quality impact monitoring are presented in **Appendix C**.

2.6.5 The Event and Action Plan for air quality is given in **Appendix J**.

2.6.6 No Action or Limit Level Exceedance of 1-hr TSP monitoring was recorded in the reporting period.

### **Other factor influencing the monitoring results**

2.6.7 There were no other noticeable external factors generally affecting the monitoring results in this reporting period.



**3. NOISE**

**3.1 Monitoring Requirement**

3.1.1 In accordance with the updated EM&A Manual, Leq (30min) monitoring is conducted for at least once a week during the construction phase between 0700 and 1900 on normal weekdays at the designated monitoring locations.

**3.2 Monitoring Equipment and Detection Limits**

3.2.1 The sound level meter used in noise monitoring will comply with the International Electrotechnical Commission Publication (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications as referred to in the Technical Memorandum issued under the Noise Control Ordinance (NCO).

3.2.2 Sound level calibrator will be used for the on-site calibration of the meter. This calibrator complies with the IEC Publication 942 (1988) Class 1 and ANSI S1.40 - 1984. Noise measurements were only accepted to be valid if the calibration levels from before and after the measurement agree to within 1.0dB.

3.2.3 Measurements shall be recorded to the nearest 1dB(A). This noise monitors are programmed to measure A-weighted equivalent continuous sound pressure level at 30-minute intervals between 0700 and 1900 during the daytime. The noise measurement shall be carried out at each of the designated monitoring stations closest to the areas of active construction works once every week.

3.2.4 **Table 3.1** summarizes the detail of monitoring equipment and detection limits:

Table 3.1 Noise Monitoring Equipment

Item	Equipment	Model Number	Serial Number	Measuring accuracy	Measuring range
1	Integrating Sound Level Meter	Casella CEL-63X Series	1367959	N.A	20-140 dB
2	Calibrator	Casella CEL-120/1	0255083	±0.1dB	94/114 dB
3	Wind Speed Anemometer	Smart Sensor AR816+	N.A	±5%	0-30m/s

**3.3 Monitoring Parameters and Frequency**

3.3.1 **Table 3.2** presents the noise monitoring parameters and frequencies.

Table3.2 Monitoring Parameters and Frequencies of Noise Monitoring

Monitoring Stations	Parameter	Frequency and Period
LC6a & LC9	LAeq (30min) L10 and L90 will be recorded for reference	At each station at 0700-1900 hours on normal weekdays at a frequency of once a week



**3.4 Monitoring Locations**

3.4.1 Noise monitoring were conducted at two designated monitoring stations as described in **Table 3.3** and the monitoring locations are shown in **Figure 2**.

Table 3.3 Location of noise monitoring station

Monitoring Station	Location
LC6a <sup>1</sup>	The Castle Bay
LC9	Castle Peak Villas Block C

Note:

1. The measurement of sound level is carried out at the fence wall outside the building of the sensitive receiver, a correction should be made to the measured level during impact monitoring in order to represent the actual sound level at the sensitive receiver building façade (Block E6, The Castle Bay).

**3.5 Monitoring Methodology and QA/QC Procedures**

3.5.1 The monitoring procedures are as follows:

- Monitoring Stations:
  - LC6a: The monitoring station was set at a point 1m from the exterior of the sensitive receiver fence wall and set at a position 1.2m above the ground. Façade measurement is carried out for noise monitoring.
  - LC9: The monitoring station was set at the top of parapet wall of sensitive receivers building and the noise monitoring station is set at a point 1m from the exterior of the sensitive receivers building façade and set at a position 5m above the ground.
- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time was set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - measurement time : Leq<sub>(30min)</sub> was used as the monitoring parameter for the time period between 0700 - 1900 hours on normal weekdays. For all other time periods, Leq<sub>(5min)</sub> was recorded.
- Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement will be considered invalid and repeat of noise measurement is required after re-calibration or repair of the equipment.
- The wind speed at the monitoring station was checked with the portable wind meter. Noise monitoring should be cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance / Calibration

3.5.2 Maintenance and Calibration procedures are as follows:

- The microphone head of the sound level meter and calibrator should be cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator should be calibrated annually by a HOKLAS laboratory.
- Relevant calibration certificates are provided in **Appendix D**.



**3.6 Results and Observations**

- 3.6.1 The schedule of noise monitoring and data recovery schedule in reporting period is provided in **Appendix E**.
- 3.6.2 The weather conditions during the monitoring period are provided in **Appendix L**.
- 3.6.3 The noise monitoring data are summarized in **Table 3.4**. Detailed monitoring data are presented in **Appendix G**.

Table 3.4 Summary of Noise Impact Monitoring Results

Monitoring Station	Leq <sub>(30min)</sub> Range, dB(A)		Leq <sub>(30min)</sub> Limit Level, dB(A)
	Measured	Corrected	
LC6a <sup>1</sup>	60-71	55-66	75
LC9	58-64	N.A	75

Note:

- Leq<sub>(30min)</sub> was measured at day-time (0700-1900) on normal weekdays.
- 1) A distance correction of -5dB(A) has been applied in monitoring data of LC6a according to baseline monitoring report (Appendix G).

- 3.6.4 The adopted Action and Limit Levels for noise impact monitoring are presented in **Appendix C**.
- 3.6.5 The Event and Action Plan for noise is given in **Appendix J**.
- 3.6.6 No Action or Limit Level Exceedance of noise monitoring was recorded in the reporting period.

**Other factor influencing the monitoring results**

- 3.6.7 There were no other noticeable external factors generally affecting the monitoring results in this reporting period.



---

## **4. LANDSCAPE AND VISUAL**

### **4.1 Audit Requirements**

4.1.1 In accordance with the updated EM&A Manual, the landscape and visual mitigation measures during the construction phase are audited by a Landscape Architect, as a member of the ET, on a regular basis to ensure compliance with the intended aims of the measures. Site inspections are undertaken at least once every two weeks throughout the construction period and once every two months during the operational phase to ensure compliance with the intended aims of the measures.

### **4.2 Results and Observations**

4.2.1 Site audits were carried out to monitor and audit the implementation of landscape and visual mitigation measures. The summary of the site audits are given in **Appendix I**.

4.2.2 Should non-compliance of the landscape and visual impact occur, action in accordance to the event action plan presented in **Appendix J** shall be carried out.

4.2.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



---

### 5. ENVIRONMENTAL SITE INSPECTION AND AUDIT

#### 5.1 Site Inspection

- 5.1.1 Weekly site inspections and bi-weekly landscape and visual impact inspections were carried out to monitor the implementation of proper environmental pollution control and mitigation measures for the Project.
- 5.1.2 In the reporting period, site inspections were carried out on 4, 11, 18, 25 and 30 January 2018 and the landscape and visual impact inspections were carried out on 11 and 25 January 2018.
- 5.1.3 The summary of the site audits are given in **Appendix I**.

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### 6. Advice on the Solid and Liquid Waste Management status

- 6.1.1 The Contractor has been registered as a chemical waste producer for the Project. Construction and demolition (C&D) material sorting was carried out on site. Receptacles were available for general refuse collection.
- 6.1.2 As advised by the Contractor, 350m<sup>3</sup> of inert C&D materials were generated and 0m<sup>3</sup> general refuse was generated in the reporting period. Monthly summary of waste flow table is detailed in **Appendix M**.

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



---

### 7. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

#### 7.1 Environmental Exceedance

- 7.1.1 No Action or Limit Level Exceedance of 1-hr TSP monitoring was recorded in the reporting period.
- 7.1.2 No Action or Limit Level Exceedance of noise monitoring was recorded in the reporting period.

#### 7.2 Complaints, Notification of Summons and Successful Prosecution

- 7.2.1 No complaints, notification of summons or successful prosecutions were received in the reporting period.
- 7.2.2 Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in **Appendix H**.



## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



---

### 8. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

#### 8.1 Implementation Status

- 8.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and the EM&A Manuals. The implementation status of the mitigation measures during the reporting period is summarized in **Appendix K**.



## **9. FUTURE KEY ISSUES**

### **9.1 Construction Works for the Coming Month**

9.1.1 During the coming reporting period, the principal work activities within the site included:

- Construction of Pumping Station (Transformer Room)

### **9.2 Key Issues for the Coming Month**

9.2.1 Potential environmental impacts due to the construction activities, including air quality, noise, water quality, waste, landscape and visual, will be monitored or reviewed. The ET will continue to implement the environmental monitoring & audit programme in accordance with the EM&A Manual and Environmental Permit requirement. The recommended environmental mitigation measures shall be implemented on site and regular inspections as required will be carried out to ensure that the environmental conditions are acceptable.

9.2.2 The anticipated impact of principal work activities within the site and the recommended mitigation measures are shown in **Appendix N**.

### **9.3 Monitoring Schedules for the Coming Months**

9.3.1 The tentative schedules for environmental monitoring in the coming months are provided in **Appendix E**.

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### 10. CONCLUSIONS

- 10.1.1 The construction phase and EM&A programme of the Project commenced on 29 February 2016.
- 10.1.2 No Action or Limit Level Exceedance of 1-hr TSP monitoring was recorded in the reporting period.
- 10.1.3 No Action or Limit Level Exceedance of noise monitoring was recorded in the reporting period.
- 10.1.4 In the reporting period, site inspections were carried out on 4, 11, 18, 25 and 30 January 2018 and the landscape and visual impact inspections were carried out on 11 and 25 January 2018.
- 10.1.5 No complaints, notification of summons or successful prosecutions were received in the reporting period.

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

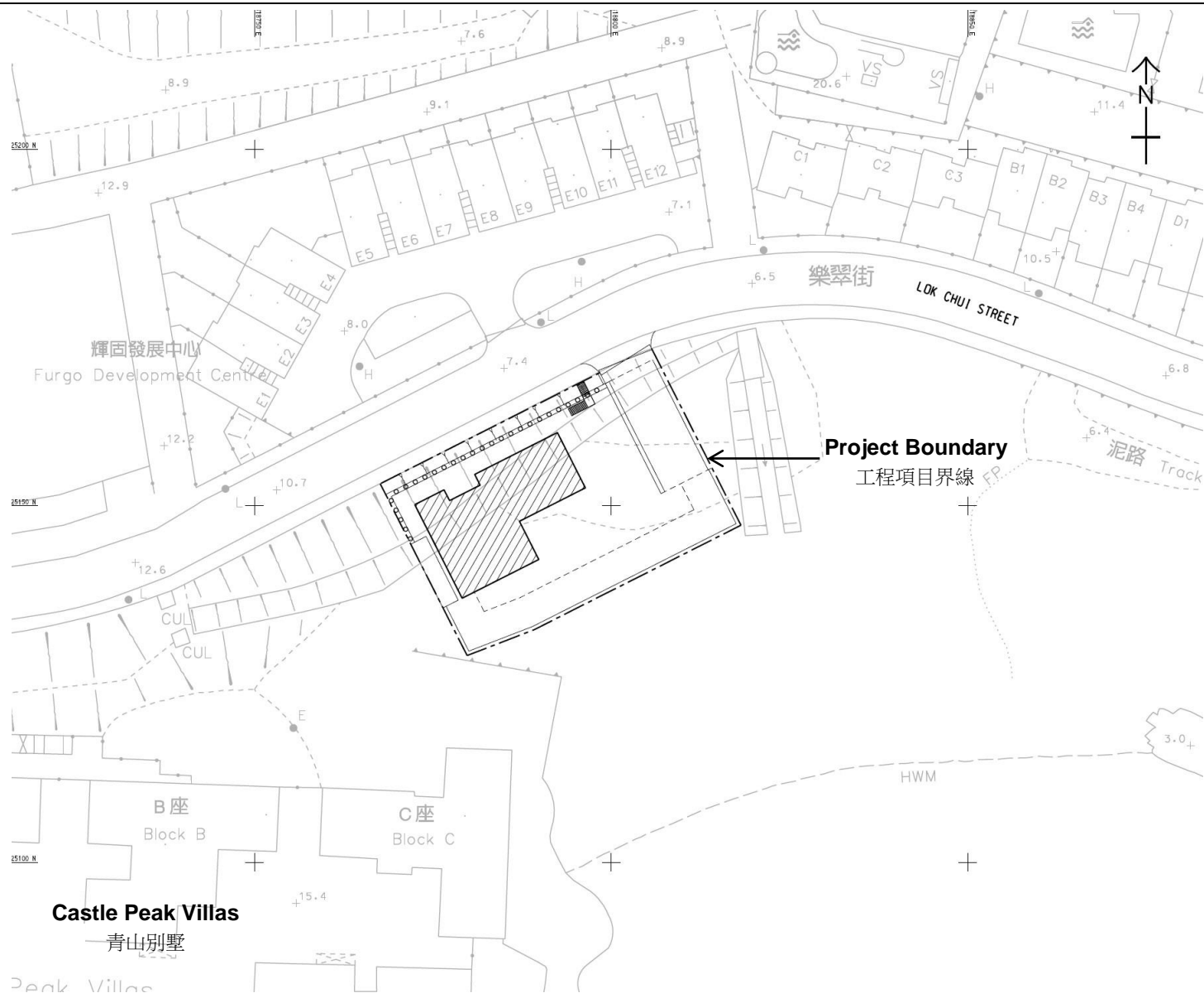
Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Figure 1**

### **Project General Layout**



**Location of the Proposed Sewage Pumping Station at Lok Chui Street near Castle Peak Villas**  
 位於樂翠街近青山別墅的擬建污水泵水站

Figure 1

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

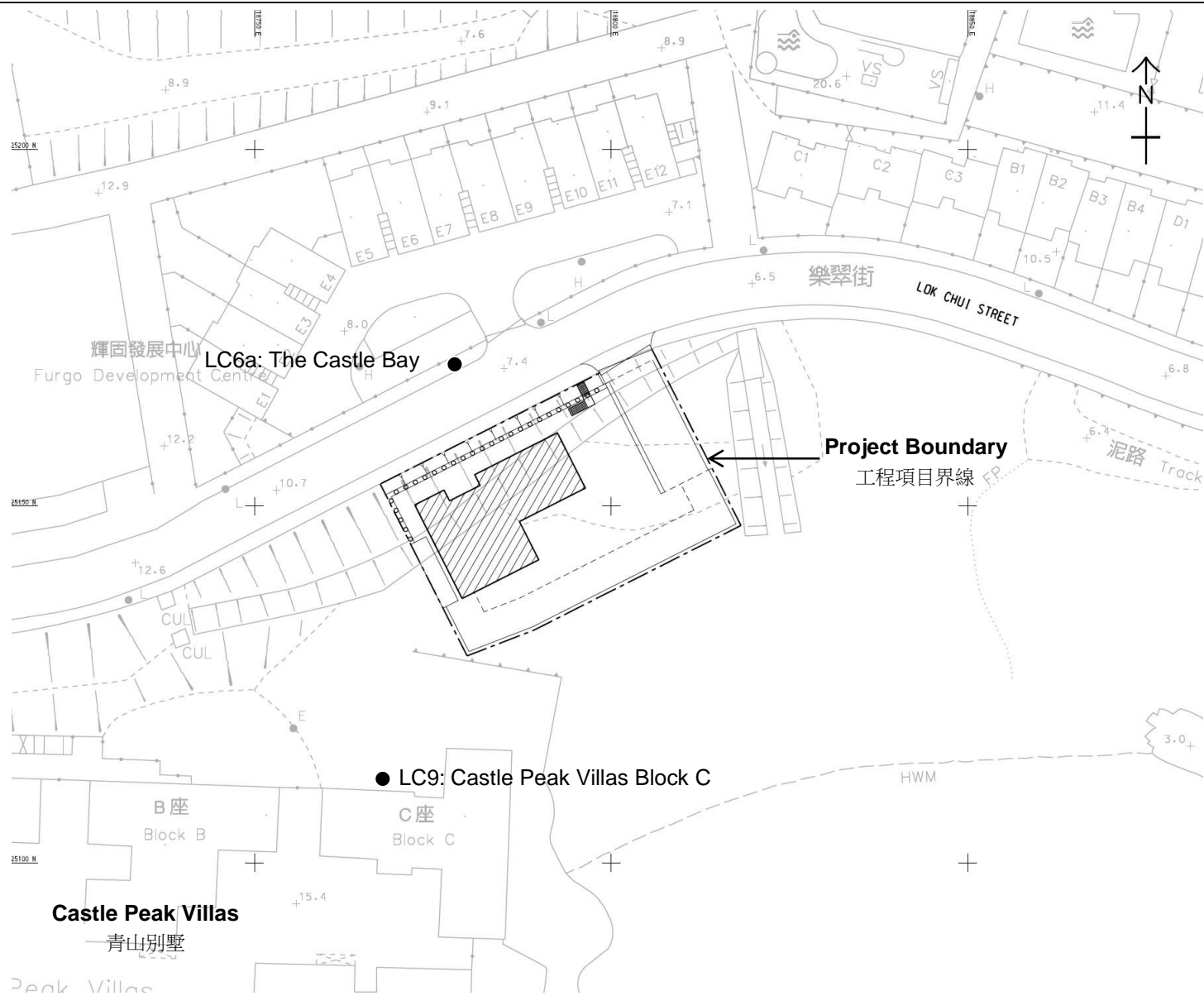
Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Figure 2**

#### **Air and Noise Monitoring Locations**



**Air and Noise Monitoring Locations**

**Figure 2**

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



LC6a: The Castle Bay






LC9: Castle Peak Villas Block C



**Note:**

1) LC6a: The air and noise monitoring station is set at a point 1m from the exterior of the sensitive receiver fence wall, and set at a position 1.2m above ground. Façade measurement will be carried out for noise monitoring.

2) LC9: The air monitoring station is set at the top of parapet wall of sensitive receivers building and the noise monitoring station is set at a point 1m from the exterior of the sensitive receivers building façade and set at a position 5m above the ground.

- Legend:**
-  Proposed Air Monitoring Location
  -  Proposed Noise Monitoring Location
  -  1m from the exterior building façade



## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---

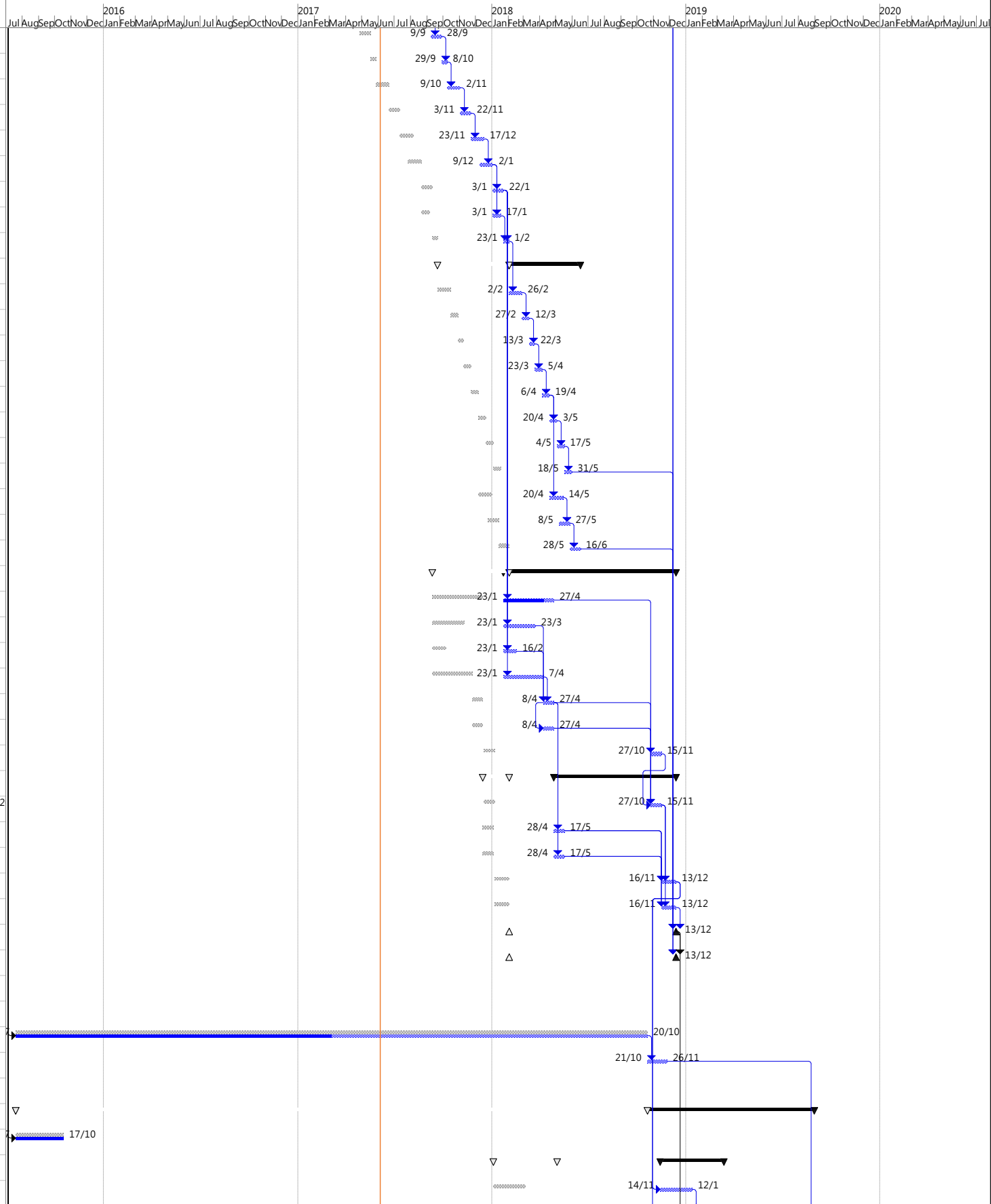


### **Appendix A**

### **Construction Programme**



ID	Task Name	Baseline Duration	Duration	Baseline Start	Baseline Finish	Actual Start	Actual Finish	% complet	Start	Finish	Predecessors
1233	Excavation to formation level of switch room and transformer rooms	20 days	20 days	Fri 28/4/17	Wed 17/5/17	NA	NA	0%	Sat 9/9/17	Thu 28/9/17	1232
1234	Welding pile head (ie. PA01 to PA12)	10 days	10 days	Thu 18/5/17	Sat 27/5/17	NA	NA	0%	Fri 29/9/17	Sun 8/10/17	1233
1235	Construction of walls below ground level	25 days	25 days	Sun 28/5/17	Wed 21/6/17	NA	NA	0%	Mon 9/10/17	Thu 2/11/17	1234
1236	Construction of ground floor slab	20 days	20 days	Thu 22/6/17	Tue 11/7/17	NA	NA	0%	Fri 3/11/17	Wed 22/11/17	1235
1237	Backfilling to ground floor slab	25 days	25 days	Wed 12/7/17	Sat 5/8/17	NA	NA	0%	Thu 23/11/17	Sun 17/12/17	1236
1238	Construction of walls up to roof slab	25 days	25 days	Fri 28/7/17	Mon 21/8/17	NA	NA	0%	Sat 9/12/17	Tue 2/1/18	1237FS-9 days
1239	Construction of roof slab	20 days	20 days	Tue 22/8/17	Sun 10/9/17	NA	NA	0%	Wed 3/1/18	Mon 22/1/18	1238
1240	Water Tightness test of wet well	15 days	15 days	Tue 22/8/17	Tue 5/9/17	NA	NA	0%	Wed 3/1/18	Wed 17/1/18	1238
1241	Roof kerb and staircase	10 days	10 days	Mon 11/9/17	Wed 20/9/17	NA	NA	0%	Tue 23/1/18	Thu 1/2/18	1239,1240
1242	Internal Finishes	135 days	135 days	Thu 21/9/17	Fri 2/2/18	NA	NA	0%	Fri 2/2/18	Sat 16/6/18	
1243	Plastering & Painting	25 days	25 days	Thu 21/9/17	Sun 15/10/17	NA	NA	0%	Fri 2/2/18	Mon 26/2/18	1241
1244	Glaze Tile (Toilet)	14 days	14 days	Mon 16/10/17	Sun 29/10/17	NA	NA	0%	Tue 27/2/18	Mon 12/3/18	1243
1245	Expoxy coating	10 days	10 days	Mon 30/10/17	Wed 8/11/17	NA	NA	0%	Tue 13/3/18	Thu 22/3/18	1244
1246	Skirting	14 days	14 days	Thu 9/11/17	Wed 22/11/17	NA	NA	0%	Fri 23/3/18	Thu 5/4/18	1245
1247	Granlithic screen and expoxy coating floor screen	14 days	14 days	Thu 23/11/17	Wed 6/12/17	NA	NA	0%	Fri 6/4/18	Thu 19/4/18	1246
1248	Painting on ceiling	14 days	14 days	Thu 7/12/17	Wed 20/12/17	NA	NA	0%	Fri 20/4/18	Thu 3/5/18	1247
1249	Installation of lourves and Doors	14 days	14 days	Thu 21/12/17	Wed 3/1/18	NA	NA	0%	Fri 4/5/18	Thu 17/5/18	1248
1250	Ladder and Handrail	14 days	14 days	Thu 4/1/18	Wed 17/1/18	NA	NA	0%	Fri 18/5/18	Thu 31/5/18	1249
1251	Cover to cable trench	25 days	25 days	Thu 7/12/17	Sun 31/12/17	NA	NA	0%	Fri 20/4/18	Mon 14/5/18	1247
1252	cement sand screen for roofing system	20 days	20 days	Mon 25/12/17	Sat 13/1/18	NA	NA	0%	Tue 8/5/18	Sun 27/5/18	1251FS-7 days
1253	Roofing system	20 days	20 days	Sun 14/1/18	Fri 2/2/18	NA	NA	0%	Mon 28/5/18	Sat 16/6/18	1252
1254	External Works & External Finishes	145 days	325 days	Mon 11/9/17	Fri 2/2/18	Tue 23/1/18	NA	18%	Tue 23/1/18	Thu 13/12/18	
1255	Lagging wall and capping beam on soldier piles	95 days	95 days	Mon 11/9/17	Thu 14/12/17	Tue 23/1/18	NA	80%	Tue 23/1/18	Fri 27/4/18	1239
1256	Backfilling to ground floor slab	60 days	60 days	Mon 11/9/17	Thu 9/11/17	NA	NA	0%	Tue 23/1/18	Fri 23/3/18	1239
1257	Installation of Emergency overflow pipe	25 days	25 days	Mon 11/9/17	Thu 5/10/17	NA	NA	0%	Tue 23/1/18	Fri 16/2/18	1239
1258	Retaining Wall & Mass concrete wall	75 days	75 days	Mon 11/9/17	Fri 24/11/17	NA	NA	0%	Tue 23/1/18	Sat 7/4/18	1239
1259	Access Ramp and backfilling	20 days	20 days	Sat 25/11/17	Thu 14/12/17	NA	NA	0%	Sun 8/4/18	Fri 27/4/18	1258,1256,1257
1260	Rising main from Pumping Station to CBH 712 for future connection	20 days	20 days	Sat 25/11/17	Thu 14/12/17	NA	NA	0%	Sun 8/4/18	Fri 27/4/18	1259SS
1261	Connection of sewer drain from Pumping Station to Manhole 1807	20 days	20 days	Sun 17/12/17	Fri 5/1/18	NA	NA	0%	Sat 27/10/18	Thu 15/11/18	1038FS-28 days,1260
1262	Plumbing Work & Drawpits for utilities	50 days	230 days	Fri 15/12/17	Fri 2/2/18	NA	NA	0%	Sat 28/4/18	Thu 13/12/18	
1263	Water meter box	20 days	20 days	Sun 17/12/17	Fri 5/1/18	NA	NA	0%	Sat 27/10/18	Thu 15/11/18	1259,1255,1261FS-2
1264	CLP drawpits and cable ducts	20 days	20 days	Fri 15/12/17	Wed 3/1/18	NA	NA	0%	Sat 28/4/18	Thu 17/5/18	1259
1265	Lighting pits	20 days	20 days	Fri 15/12/17	Wed 3/1/18	NA	NA	0%	Sat 28/4/18	Thu 17/5/18	1259
1266	Installation of watermain	28 days	28 days	Sat 6/1/18	Fri 2/2/18	NA	NA	0%	Fri 16/11/18	Thu 13/12/18	1263,1264,1265
1267	Cabling and Installation of Transformer	28 days	28 days	Sat 6/1/18	Fri 2/2/18	NA	NA	0%	Fri 16/11/18	Thu 13/12/18	1264,1263,1265
1268	CLP energization	0 days	0 days	Fri 2/2/18	Fri 2/2/18	NA	NA	0%	Thu 13/12/18	Thu 13/12/18	1267,1253,1191
1269	Completion of Section 11A	0 days	0 days	Fri 2/2/18	Fri 2/2/18	NA	NA	0%	Thu 13/12/18	Thu 13/12/18	1268,1250,1190
1270											
1271											
1272	Duration of Section 11B	1189 days	1189 days	Mon 20/7/15	Sat 20/10/18	Mon 20/7/15	NA	50%	Mon 20/7/15	Sat 20/10/18	1SS
1273	<i>Inclment Weather Granted (EOT Claim No. 3.10, up to 31 Oct 16)</i>	<i>0 days?</i>	<i>37 days</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>0%</i>	<i>Sun 21/10/18</i>	<i>Mon 26/11/18</i>	<i>1272</i>
1274											
1275	Section 11B - Lok Chui street Sewage Pumping Station - E&M and Remaining Works	1189 days	1503 days	Mon 20/7/15	Sat 20/10/18	Mon 20/7/15	NA	13%	Mon 20/7/15	Fri 30/8/19	
1276	Portion 11 - Time of Possession of Site	90 days	90 days	Mon 20/7/15	Sat 17/10/15	Mon 20/7/15	Sat 17/10/15	100%	Mon 20/7/15	Sat 17/10/15	1SS
1277	Remaining works and Handing Over to E&M for Testing and Commissioning	120 days	120 days	Thu 4/1/18	Thu 3/5/18	NA	NA	0%	Wed 14/11/18	Wed 13/3/19	
1278	Recycle Timber plastic cladding of External Finishign of Pumping Station	60 days	60 days	Thu 4/1/18	Sun 4/3/18	NA	NA	0%	Wed 14/11/18	Sat 12/1/19	1266FS-30 days



**Project: Rolling Programme (Feb 2017)**

Task	Milestone	Rolled Up Milestone	Split	Inactive Task	Duration-only	External Tasks
Task Progress	Baseline Milestone	Baseline Summary	Baseline Split	Inactive Milestone	Manual Summary Rollup	External Milestone
Critical Task	Summary	Rolled Up Baseline	Baseline Tasks	Inactive Summary	Manual Summary	Deadline
Critical Task Progress	Rolled Up Task	Rolled Up Baseline Milestone	Project Summary	Manual Task	Start-only	Finish-only
Baseline	Rolled Up Critical Task	Rolled Up Progress	Group By Summary			

ID	Task Name	Baseline Duration	Duration	Baseline Start	Baseline Finish	Actual Start	Actual Finish	% complete	Start	Finish	Predecessors	2016	2017	2018	2019	2020
1279	Metal fence wall & Gate	60 days	60 days	Thu 4/1/18	Sun 4/3/18	NA	NA	0%	Wed 14/11/18	Sat 12/1/19	1266FS-30 days					
1280	Tempred glass fence on roof	30 days	30 days	Sat 3/2/18	Sun 4/3/18	NA	NA	0%	Fri 14/12/18	Sat 12/1/19	1279FS-30 days,127					
1281	Green Roof	45 days	45 days	Mon 5/3/18	Wed 18/4/18	NA	NA	0%	Sun 13/1/19	Tue 26/2/19	1280					
1282	U-channel	50 days	50 days	Tue 13/2/18	Tue 3/4/18	NA	NA	0%	Mon 24/12/18	Mon 11/2/19	1279FS-20 days					
1283	Road pavement around Pumping Station	50 days	50 days	Mon 5/3/18	Mon 23/4/18	NA	NA	0%	Sun 13/1/19	Sun 3/3/19	1282FS-30 days					
1284	Landscaping work	60 days	60 days	Mon 5/3/18	Thu 3/5/18	NA	NA	0%	Sun 13/1/19	Wed 13/3/19	1283FS-50 days					
1285	Handing Over to E&M (1019 days after commencement of Pumping Station)	0 days	0 days	Thu 3/5/18	Thu 3/5/18	NA	NA	0%	Wed 13/3/19	Wed 13/3/19	155+1019 days,1281FF,1284					
1286	E&M Work	260 days	260 days	Sat 3/2/18	Sat 20/10/18	NA	NA	0%	Fri 14/12/18	Fri 30/8/19						
1287	Installation of E&M work	120 days	120 days	Sat 3/2/18	Sat 2/6/18	NA	NA	0%	Fri 14/12/18	Fri 12/4/19	1268					
1288	Installation of E&M works & Testing and Commissioning	140 days	140 days	Sun 3/6/18	Sat 20/10/18	NA	NA	0%	Sat 13/4/19	Fri 30/8/19	1287					
1289	Completion Section 11B	0 days	0 days	Sat 20/10/18	Sat 20/10/18	NA	NA	0%	Fri 30/8/19	Fri 30/8/19	1288,1285FF+170 d					
1290																
1291																
1292																
1293																
1294																
1295	Duration of Section 10A	750 days	750 days	Mon 20/7/15	Mon 7/8/17	Mon 20/7/15	NA	80%	Mon 20/7/15	Mon 7/8/17	155					
1296	Incident Weather Granted (EOT Claim No. 3.10, up to 31 Oct 16)	0 days?	22 days	NA	NA	NA	NA	0%	Tue 8/8/17	Tue 29/8/17	1295					
1297	Section 10A - Siu Lam Psychiatric Centre Sewage	750 days	1200 days?	Mon 20/7/15	Mon 7/8/17	Mon 20/7/15	NA	29%	Mon 20/7/15	Wed 31/10/18						
1298	Portion 10 - Time Possession of Site	60 days	60 days	Mon 20/7/15	Thu 17/9/15	Mon 20/7/15	Thu 17/9/15	100%	Mon 20/7/15	Thu 17/9/15	155					
1299	Preparation Work	90 days	90 days	Fri 18/9/15	Wed 16/12/15	Fri 18/9/15	Wed 16/12/15	100%	Fri 18/9/15	Wed 16/12/15						
1300	Initial Survey	60 days	60 days	Fri 18/9/15	Mon 16/11/15	Fri 18/9/15	Mon 16/11/15	100%	Fri 18/9/15	Mon 16/11/15	1298					
1301	Site clearance	30 days	30 days	Tue 17/11/15	Wed 16/12/15	Tue 17/11/15	Wed 16/12/15	100%	Tue 17/11/15	Wed 16/12/15	1300					
1302																
1303	EOT Claim 021 - Delay due to Change of Design at SLPC SPS	0 days?	80 days?	NA	NA	Sat 10/9/16	Tue 29/11/16	100%	Sat 10/9/16	Tue 29/11/16						
1304	Works were suspended due to design change	0 days?	0 days	NA	NA	Sat 10/9/16	Sat 10/9/16	100%	Sat 10/9/16	Sat 10/9/16						
1305	Partially updated design information was reviewed by AECOM and provided	0 days?	79 days?	NA	NA	Sun 11/9/16	Mon 28/11/16	100%	Sun 11/9/16	Mon 28/11/16	1304					
1306	Works resumed	0 days?	0 days	NA	NA	Tue 29/11/16	Tue 29/11/16	100%	Tue 29/11/16	Tue 29/11/16	1305					
1307																
1308	EOT Claim XXX (34A) - Change of Design in Siu Lam Psychiatric Centre SPS	0 days?	168 days?	NA	NA	Mon 28/11/16	NA	26%	Mon 28/11/16	Sun 14/5/17						
1309	Additional cast-in socket for davit is requested to install under updated construction details	0 days?	0 days	NA	NA	Mon 28/11/16	Mon 28/11/16	100%	Mon 28/11/16	Mon 28/11/16	1306					
1310	Order, Fabrication and Delivery of socket	0 days?	42 days?	NA	NA	Tue 29/11/16	Mon 9/1/17	100%	Tue 29/11/16	Mon 9/1/17	1309					
1311	Ready for installation	0 days?	0 days	NA	NA	Tue 10/1/17	Tue 10/1/17	100%	Tue 10/1/17	Tue 10/1/17	1310					
1312	Installation of cast-in davit and modification of installed RC bars	0 days?	3 days	NA	NA	Tue 10/1/17	Thu 12/1/17	100%	Tue 10/1/17	Thu 12/1/17	1311					
1313	Construct Rasing main (CH 307 to CH 282) from Pump House in advance Koisk due to increase of depth of pumping station	0 days?	55 days	NA	NA	NA	NA	0%	Wed 22/2/17	Mon 17/4/17	1336					
1314	Confirm details of additional 45 degree bend by AECOM	0 days?	0 days	NA	NA	NA	NA	0%	Wed 1/3/17	Wed 1/3/17						
1315	Additional time for ordering of 45 degree bend in front of pumping station to avoid conflict with Koisk	0 days?	75 days	NA	NA	NA	NA	0%	Wed 1/3/17	Sun 14/5/17	1314					
1316																
1317	EOT Claim XXX (33A) - Pending Details for Boundary Fencing and Vehicular Gate in Siu Lam Psychiatric Centre SPS	0 days?	659 days	NA	NA	Wed 11/1/17	NA	0%	Wed 11/1/17	Wed 31/10/18						
1318	Preliminary details for cost estimation were provided by AECOM	0 days?	0 days	NA	NA	Wed 11/1/17	Wed 11/1/17	100%	Wed 11/1/17	Wed 11/1/17						
1319	Provision of final construction details from AECOM (interim only)	0 days?	60 days	NA	NA	NA	NA	0%	Wed 11/1/17	Sat 11/3/17	1318					
1320	Subletting	0 days?	120 days	NA	NA	NA	NA	0%	Sun 12/3/17	Sun 9/7/17	1319					
1321	Prepare shop drawings	0 days?	60 days	NA	NA	NA	NA	0%	Mon 10/7/17	Thu 7/9/17	1320					
1322	Submission of shop drawings	0 days?	0 days	NA	NA	NA	NA	0%	Thu 7/9/17	Thu 7/9/17	1321					
1323	Approval of shop drawings	0 days?	60 days	NA	NA	NA	NA	0%	Fri 8/9/17	Mon 6/11/17	1322					
1324	Place order	0 days?	14 days	NA	NA	NA	NA	0%	Tue 7/11/17	Mon 20/11/17	1323					

Project: Rolling Programme (Feb 2017)

Task		Milestone		Rolled Up Milestone		Split		Inactive Task		Duration-only		External Tasks		External Milestone
Task Progress		Baseline Milestone		Baseline Summary		Baseline Split		Inactive Milestone		Manual Summary Rollup		External Milestone		External Milestone
Critical Task		Summary		Rolled Up Baseline		Baseline Tasks		Inactive Summary		Manual Summary		Deadline		Deadline
Critical Task Progress		Rolled Up Task		Rolled Up Baseline Milestone		Project Summary		Start-only		Finish-only				
Baseline		Rolled Up Critical Task		Rolled Up Progress		Group By Summary		Manual Task						

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



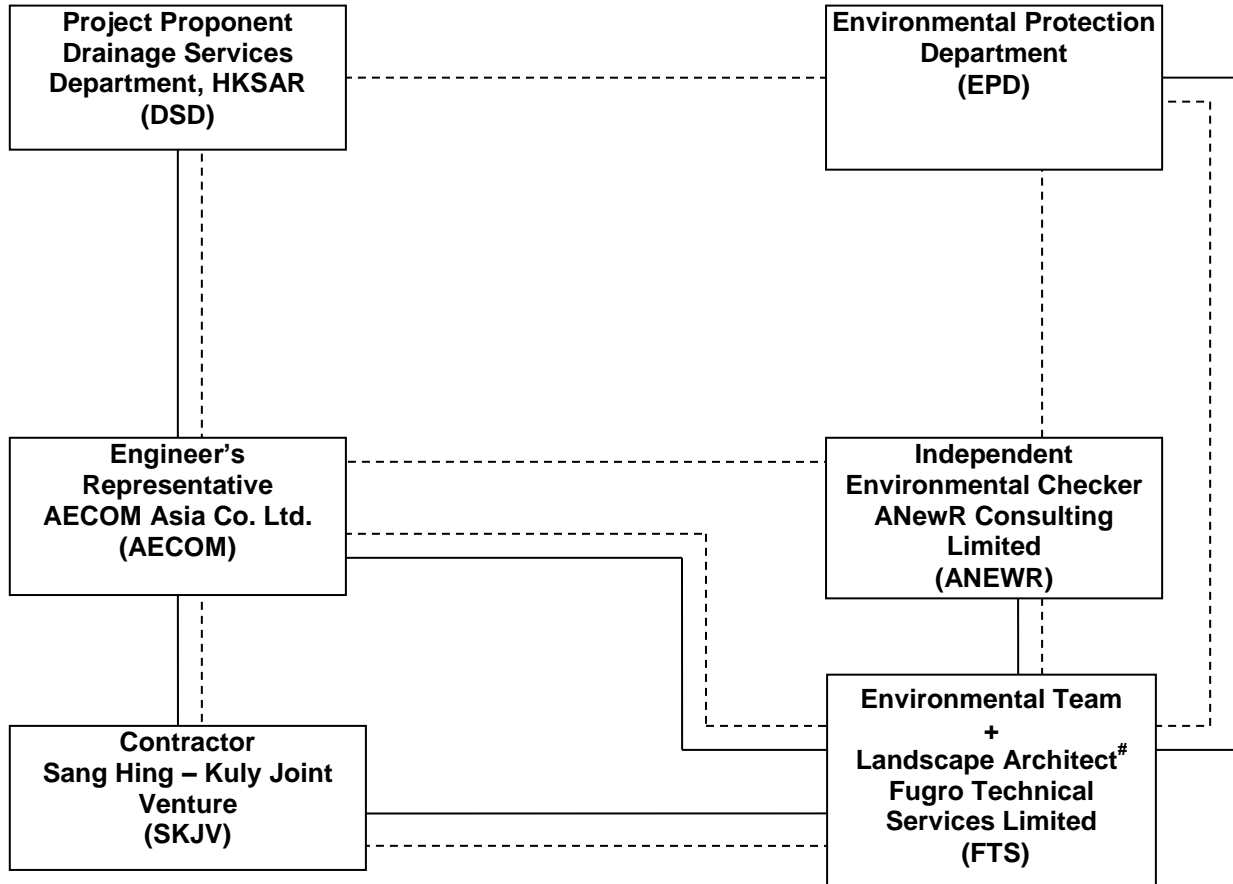
## Appendix B

### Project Organization Chart

# FUGRO TECHNICAL SERVICES LIMITED

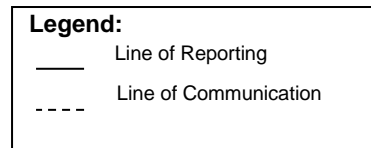
Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



Remark:

# The Landscape Architect with a minimum of 1-2years on site experience as a member of the ET to monitor and audit the landscaping installation works and landscape protection measures.



## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix C**

#### **Action and Limit Levels for Air Quality and Noise**

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### Action and Limit Levels for Air Quality

Parameter	Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
1-hr TSP ( $\mu\text{g}/\text{m}^3$ )	LC6a	344	500
	LC9	335	

### Action and Limit Levels for Construction Noise

Time Period	Location	Action	Limit
0700-1900 hrs on normal weekdays	LC6a LC9	When one documented complaint is received	75* dB(A)

\* reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.



## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix D**

#### **Calibration Certificates of Monitoring Equipment**

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

# MateriaLab

Report no. : 940891CA171177(3)

Page 1 of 1

## CALIBRATION CERTIFICATE OF DUST METER

### Client Supplied Information

Client : Fugro Technical Services Limited

Project : Calibration Services

### Details of Unit Under Test, UUT

Description : Laser Dust Monitor  
Manufacturer : SIBATA  
Model No. : LD-3B  
Serial No. : 2Z6243  
Specification Limit : NA  
Next Calibration Date : 14-May-2018

### Laboratory Information

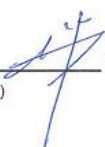
Description : Reference balance  
Equipment ID. : R-039-10  
Date of Calibration : 15-May-2017 Ambient Temperature : 26 °C  
Calibration Location : Calibration Lab. of MateriaLab  
Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.


### Calibration Results :

Reference concentration (mg/m <sup>3</sup> )	Total count for 1 hour	CPM (Count per minute)
0.0573	2520	42.00
0.0763	2600	43.33
0.0455	2440	40.67

### Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m<sup>3</sup>) = K x UUT reading (CPM) where K = 0.001421
3. Correlation coefficient (r) : 0.9911

Checked by :  Date: 22-5-2017  
CA-R-297 (22/07/2009)

Certified by :  Date: 23.5.2017  
Chan Chun Wai (Manager)

\*\* End of Report \*\*

The copyright of this document is owned by Fugro Technical Services Limited. It may not be reproduced except with prior written approval from the Company.

GEN01/0916

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

# MaterialLab

Report no. : 940891CA171177(4)

Page 1 of 1

## CALIBRATION CERTIFICATE OF DUST METER

### Client Supplied Information

Client : Fugro Technical Services Limited  
Project : Calibration Services

### Details of Unit Under Test, UUT

Description : Laser Dust Monitor  
Manufacturer : SIBATA  
Model No. : LD-3B  
Serial No. : 2Z6244  
Specification Limit : NA  
Next Calibration Date : 14-May-2018

### Laboratory Information


Description : Reference balance  
Equipment ID. : R-039-10  
Date of Calibration : 15-May-2017 Ambient Temperature : 26 °C  
Calibration Location : Calibration Lab. of MaterialLab  
Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

### Calibration Results :

Reference concentration (mg/m <sup>3</sup> )	Total count for 1 hour	CPM (Count per minute)
0.0573	2500	41.67
0.0763	2580	43.00
0.0457	2450	40.83

### Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m<sup>3</sup>) = K x UUT reading (CPM) where K = 0.001427
3. Correlation coefficient (r) : 0.9996

Checked by :   
CA-R-297 (22/07/2009)

Date : 22-5-2017

Certified by :   
Chan Chun Wai (Manager)

Date : 23.5.2017

\*\* End of Report \*\*

The copyright of this document is owned by Fugro Technical Services Limited. It may not be reproduced except with prior written approval from the Company.

GEN01/0916

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

# MaterialLab

Report no.: 161966CA170720

Page 1 of 1

## CALIBRATION CERTIFICATE OF SOUND LEVEL METER

### Client Supplied Information

Client : MaterialLab Consultants Ltd.

Address : Room 723 & 725, 7/F., Block B Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Chung, N.T.

Project : Calibration Services

### Details of Unit Under Test, UUT

Description : Sound Level Meter  
Manufacturer : Casella  
Model No. : Casella (Model no. CEL-63X(meter), CEL-251(microphone), CEL-495(Preamplifier))  
Serial No. : 1367959 (meter), 01308 (microphone), 002748 (Preamplifier)  
Next Calibration Date : 29-Mar-2018  
Specification Limit : EN 61672: 2003 Type 1

### Laboratory Information


Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)  
Equipment ID. : R-108-1  
Date of Calibration : 30-Mar-2017 Ambient Temperature : 22 °C  
Calibration Location : Calibration Laboratory of MaterialLab  
Method Used : By direct comparison

### Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	2.5	2.6 to -0.6
	2000Hz	0.4	2.8 to -0.4
	1000Hz	-0.9	1.1 to -1.1
	500Hz	-4.0	-1.8 to -4.6
	250Hz	-9.2	-7.2 to -10.0
	125Hz	-16.6	-14.6 to -17.6
	63Hz	-26.6	-24.7 to -27.7
	31.5Hz	-39.3	-37.4 to -41.4
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.2	± 0.6

### Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration; Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighing is fast
4. The equipment does comply with EN 61672: 2003 Type 1 sound level meter for the above measurement.

Checked by :   
CA-R-297 (22/07/2009)

Date : 30.3.2017

Certified by : 

Chan Chun Wai (Manager)

Date : 3.4.2017

\*\* End of Report \*\*

The copyright of this document is owned by Fugro Technical Services Limited. It may not be reproduced except with prior written approval from the Company.

GEN01/0315

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

# MaterialLab

Report no.: 172379CA171674(1)

Page 1 of 1

## CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

### Client Supplied Information

Client : MaterialLab Consultants Ltd.

Address : Room 723 & 725, 7F., Block B Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Chung, N.T.

Project : Calibration Services

### Details of Unit Under Test, UUT

Description : Sound Calibrator  
Manufacturer : Casella (Model no. CEL-120/1)  
Serial No. : 0255083  
Next Calibration Date : 30-Jul-2018  
Specification Limit :  $\pm 0.5$ dB

### Laboratory Information



Description : Reference Sound Level Meter  
Equipment ID. : R-119-1  
Date of Calibration : 31-Jul-2017 Ambient Temperature : 21 °C  
Calibration Location : Calibration Laboratory of MaterialLab  
Method Used : By direct comparison

### Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit (dB)
94dB	0.1 dB	$\pm 0.5$ dB
114dB	0.1 dB	

### Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment does comply with the specification limit.

Checked by :  Date : 28/07/2017 Certified by :  Date : 4/8/2017  
CA-R-297 (22/07/2009) Kwok Chi Wa (Assistant Manager)

\*\* End of Report \*\*

The copyright of this document is owned by Fugro Technical Services Limited. It may not be reproduced except with prior written approval from the Company.

GEN01/0916

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix E**

#### **Environmental Monitoring and Data Recovery Schedule**

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### **Project: Sewage Pumping Stations at Tai Lam Chung Tsuen Luen On San Tsuen, Tai Lam Valley and Lok Chui Street near Castle Peak Villas under the scope of “Tuen Mun Sewerage – Eastern Coastal Sewerage Extension” – DC/2014/01**

#### Impact Monitoring Schedule (January 2018)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
	1	2	3 A & N Impact Monitoring	4	5	6
7	8	9 A & N Impact Monitoring	10	11	12	13
14	15 A & N Impact Monitoring	16	17	18	19	20 A & N Impact Monitoring
21	22	23	24	25	26 A & N Impact Monitoring	27
28	29	30	31			

#### Remarks

1. A: 1-hr TSP monitoring at LC6a and LC9.
2. N: Noise monitoring at LC6a and LC9.

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## DATA RECOVERY SCHEDULE

Date	Air Quality Monitoring		Noise Monitoring	
	Monitoring Station* 1-hr TSP		Monitoring Station* LAeq (30min)	
	LC6a	LC9	LC6a	LC9
1				
2				
3	√	√	√	√
4				
5				
6				
7				
8				
9	√	√	√	√
10				
11				
12				
13				
14				
15	√	√	√	√
16				
17				
18				
19				
20	√	√	√	√
21				
22				
23				
24				
25				
26	√	√	√	√
27				
28				
29				
30				
31				
% of R	100	100	100	100

\* Remark type of parameters

% of R The percentage of Data Recovery is the actual monitoring over the scheduled monitoring



## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### **Project: Sewage Pumping Stations at Tai Lam Chung Tsuen Luen On San Tsuen, Tai Lam Valley and Lok Chui Street near Castle Peak Villas under the scope of “Tuen Mun Sewerage – Eastern Coastal Sewerage Extension” – DC/2014/01**

Tentative Impact Monitoring Schedule (February 2018)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1 A & N Impact Monitoring	2	3
4	5	6	7 A & N Impact Monitoring	8	9	10
11	12	13 A & N Impact Monitoring	14	15 A & N Impact Monitoring	16	17
18	19	20	21 A & N Impact Monitoring	22	23	24
25	26	27 A & N Impact Monitoring	28			

#### **Remarks**

1. A: 1-hr TSP monitoring at LC6a and LC9.
2. N: Noise monitoring at LC6a and LC9.
3. Actual monitoring schedule may be subjected to change due to any safety concern or adverse weather condition.

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix F**

#### **Air Quality Monitoring Data and Graphical Presentations**

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

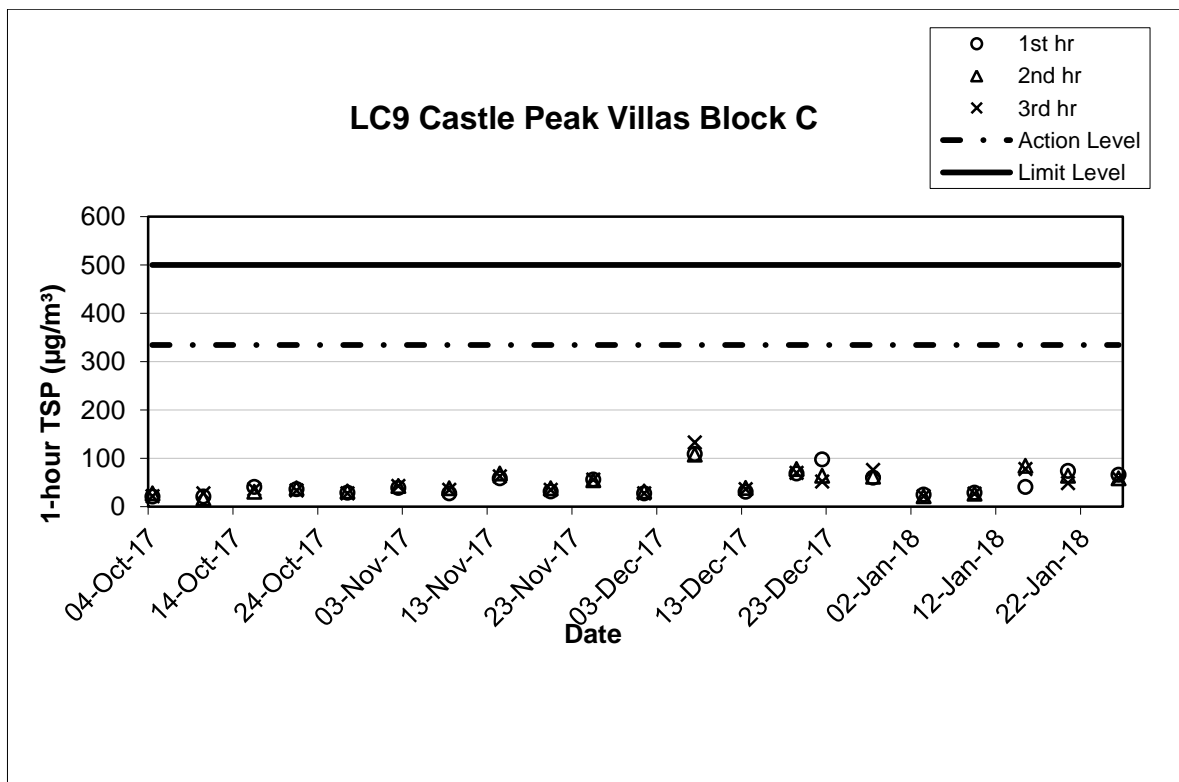
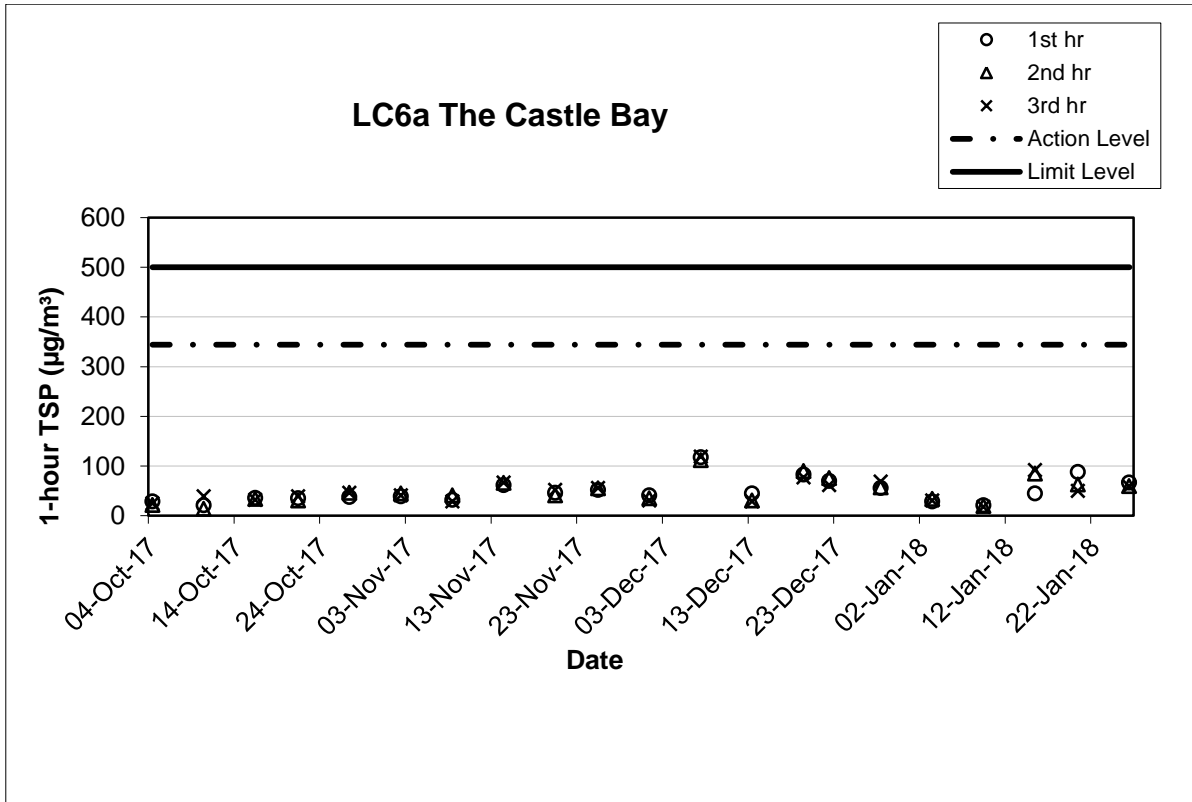


### LC6a The Castle Bay

1-hour TSP ( $\mu\text{g}/\text{m}^3$ )					
Date	Start Time	1st hr	2nd hr	3rd hr	Weather
03-Jan-18	14:00	29	34	31	Fine
09-Jan-18	08:51	21	20	18	Cloudy
15-Jan-18	14:43	45	85	92	Fine
20-Jan-18	08:36	88	63	50	Fine
26-Jan-18	08:38	67	60	59	Fine
	<b>Average</b>	51			
	<b>Max</b>	92			
	<b>Min</b>	18			

### LC9 Castle Peak Villas Block C

1-hour TSP ( $\mu\text{g}/\text{m}^3$ )					
Date	Start Time	1st hr	2nd hr	3rd hr	Weather
03-Jan-18	14:15	25	22	22	Fine
09-Jan-18	08:35	29	27	27	Cloudy
15-Jan-18	14:04	41	85	78	Fine
20-Jan-18	08:51	74	64	49	Fine
26-Jan-18	08:55	66	59	59	Fine
	<b>Average</b>	48			
	<b>Max</b>	85			
	<b>Min</b>	22			



**Note:**

- 1) The QA/QC procedures and detection Limits refer to section 2.2 and 2.5.
- 2) The other factors influencing the monitoring results refer to section 2.7.

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix G**

#### **Noise Monitoring Data and Graphical Presentations**

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### LC6a The Castle Bay

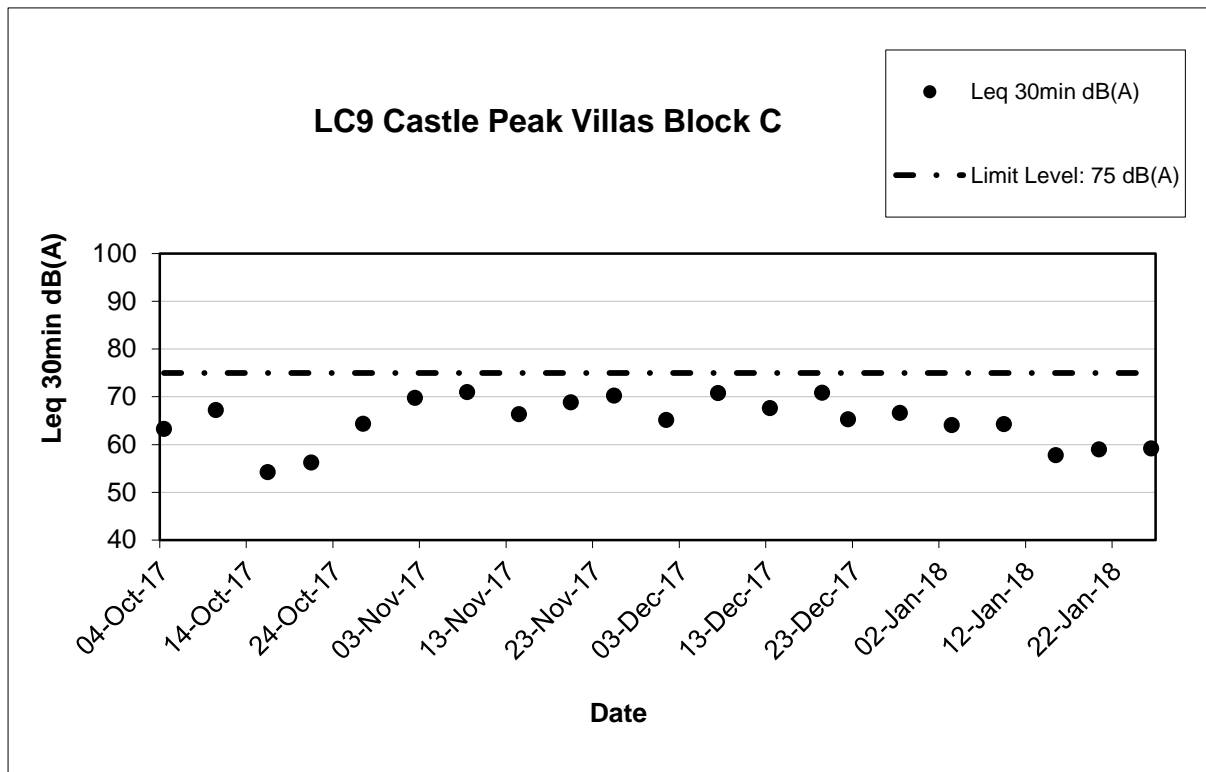
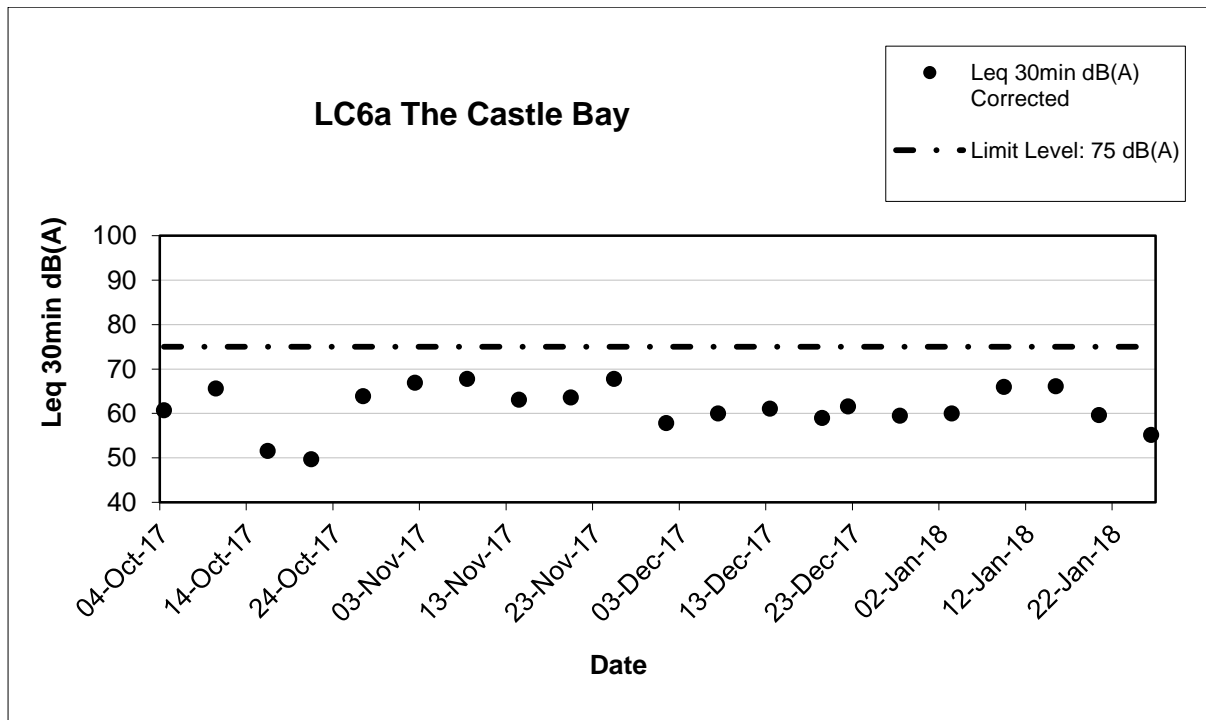
Date	Start Time	L <sub>eq</sub> 30min dB(A)	Corrected L <sub>eq</sub> 30min dB(A) <sup>1</sup>	L <sub>90</sub> dB(A)	L <sub>10</sub> dB(A)	Weather
03-Jan-18	14:00	65	60	64	67	Fine
09-Jan-18	09:15	71	66	63	74	Cloudy
15-Jan-18	14:43	71	66	56	73	Fine
20-Jan-18	09:48	65	60	56	67	Fine
26-Jan-18	10:00	60	55	50	66	Fine

Note:

1) A distance correction of -5dB(A) has been applied in monitoring data of LC6a according to baseline monitoring report (Appendix G).

### LC9 Castle Peak Villas Block C

Date	Start Time	L <sub>eq</sub> 30min dB(A)	Corrected L <sub>eq</sub> 30min dB(A)	L <sub>90</sub> dB(A)	L <sub>10</sub> dB(A)	Weather
03-Jan-18	14:40	64	N.A	61	65	Fine
09-Jan-18	10:27	64	N.A	61	66	Cloudy
15-Jan-18	14:04	58	N.A	51	60	Fine
20-Jan-18	09:07	59	N.A	55	62	Fine
26-Jan-18	09:16	59	N.A	54	62	Fine



**Note:**

- 1) The QA/QC procedures and detection Limits refer to section 3.2 and 3.5.
- 2) The other factors influencing the monitoring results refer to section 3.7.

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix H**

#### **Cumulative Statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions**



## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### Environmental Complaints Log

Complaint Log No.	Date of Receipt	Received From and Received By	Nature of Complaint	Date Investigated	Outcome	Date of Reply
Nil	-	-	-	-	-	-

### Cumulative Statistics on Complaints

Environmental Parameters	Cumulative No. Brought Forward	No. of Complaints This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

### Cumulative Statistics on Notifications of Summons and Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Prosecutions This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix I**

### **Site Audit Summary**

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## Summary of Site Audit

Inspection Date	Observation/ Comment	Follow Up Action	Completion Date
Follow-up action(s) of last reporting month:			
Dec 2017	Open stockpiles were not proper covering.	Open stockpiles were sprayed with water on-site.	04/01/2018
	Environmental Permit was not display at site entrances/exits	The Contractor should display a copy of permit at site entrances/exits for public information at all times.	30/01/2018
04/01/2018 & 11/01/2018	Chemical materials were not provided with drip tray near the site entrance.	The Contractor should provide drip tray to store chemical materials.	Follow up action will be reported in the next reporting month.
25/01/2018	Chemical materials were not provided with drip tray near the site entrance.	The Contractor should provide drip tray to store chemical materials.	
	Water pump was not working.	The Contractor should regularly check and review the wastewater treatment system is proper function.	
30/01/2018	Chemical materials were not provided with drip tray near the site entrance.	The Contractor should provide drip tray to store chemical materials.	
	Water pump was not working.	The Contractor should regularly check and review the wastewater treatment system is proper function.	
	Water Barriers were collapsed around the existing trees.	The Contractor should properly erect the water barriers in the site boundaries and prevent damage the existing trees.	
<b>Landscape and Visual Impact Inspection</b>			
11/01/2018	Trunks of the dead trees LC-TC03 (R), LC-TC04 (R) and T0483 (R) should be stabilized with external support before tree felling is completed.	Letter has been sent to DLO by AECOM, seeking their advice/ approval for tree removal.  Tree specialist/ Site safety staff should continue to access and monitor the risk of falling.	ASAP
	A suspected bird nest was found on T0482 (R). but it seems to be abandoned in the last 4 months  T0480 (R) was leaning on T0479 (R). Root was exposed.	Precaution is needed for any tree works nearby to avoid any disturbance to the nest, if it is not abandoned.  Tree specialist should conduct a tree risk assessment.	ASAP

**FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



Inspection Date	Observation/ Comment	Follow Up Action	Completion Date
	A few tree protecting hoarding and fencing were leaning. Concrete was covered too closely to trunk base of LC-TC07 (R)	Hoarding and fencing shall be well maintained to protect the retained trees. Materials should be placed at least 1m away from trunk base to avoid compression/ blocking on core root zone.  Concrete which is too close to the trunk base should be removed.	ASAP
25/01/2018	Trunks of the dead trees T0483 (R) should be stabilized with external support before tree felling is completed.	Tree specialist/ Site safety staff should continue to access and monitor the risk of falling.	ASAP
	T0480 (R) was leaning on T0479 (R). Root was exposed.	Tree specialist should conduct a tree risk assessment.	ASAP

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix J**

#### **Events and Action Plans**

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	Contractor
<b>Action Level</b>				
Exceedance for one sample.	<ul style="list-style-type: none"> <li>Identify the source.</li> <li>Inform the IEC and the ER.</li> <li>Repeat measurement to confirm finding.</li> <li>Increase monitoring frequency to daily.</li> </ul>	<ul style="list-style-type: none"> <li>Check monitoring data submitted by the ET.</li> <li>Check Contractor's working method.</li> </ul>	<ul style="list-style-type: none"> <li>Notify Contractor.</li> </ul>	<ul style="list-style-type: none"> <li>Rectify any unacceptable practice.</li> <li>Amend working methods if appropriate.</li> </ul>
Exceedance for two or more consecutive samples.	<ul style="list-style-type: none"> <li>Identify the source.</li> <li>Inform the IEC and the ER.</li> <li>Repeat measurements to confirm findings.</li> <li>Increase monitoring frequency to daily.</li> <li>Discuss with the IEC and the Contractor on remedial actions required.</li> <li>If exceedance continues, arrange meeting with the IEC and the ER.</li> <li>If exceedance stops, cease additional monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Check monitoring data submitted by the ET.</li> <li>Check the Contractor's working method.</li> <li>Discuss with the ET and the Contractor on possible remedial measures.</li> <li>Advise the ER on the effectiveness of the proposed remedial measures.</li> <li>Supervisor implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Confirm receipt of notification of failure in writing.</li> <li>Notify the Contractor.</li> <li>Ensure remedial measures properly implemented.</li> </ul>	<ul style="list-style-type: none"> <li>Submit proposals for remedial actions to IEC within 3 working days of notification.</li> <li>Implement the agreed proposals.</li> <li>Amend proposal if appropriate.</li> </ul>
<b>Limit Level</b>				
Exceedance for one sample.	<ul style="list-style-type: none"> <li>Identify the source.</li> <li>Inform the ER and the DEP.</li> <li>Repeat measurement to confirm finding.</li> <li>Increase monitoring frequency to daily.</li> <li>Assess effectiveness of Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results.</li> </ul>	<ul style="list-style-type: none"> <li>Check monitoring data submitted by the ET.</li> <li>Check Contractor's working method.</li> <li>Discuss with the ET and the Contractor on possible remedial measures.</li> <li>Advise the ER on the effectiveness of the proposed remedial measures.</li> <li>Supervisor implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Confirm receipt of notification of failure in writing.</li> <li>Notify the Contractor.</li> <li>Ensure remedial measures are properly implemented.</li> </ul>	<ul style="list-style-type: none"> <li>Take immediate action to avoid further exceedance.</li> <li>Submit proposals for remedial actions to IEC within 3 working days of notification.</li> <li>Implement the agreed proposals.</li> <li>Amend proposal if appropriate.</li> </ul>
Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> <li>Notify the IEC, the ER, the DEP and the Contractor.</li> <li>Identify the source.</li> <li>Repeat measurements to confirm findings.</li> <li>Increase monitoring frequency to daily.</li> <li>Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>Arrange meeting with the IEC and the ER to discuss the remedial actions to be taken.</li> <li>Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results.</li> <li>If exceedance stops, cease additional monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Discuss amongst the ER, ET and the Contractor on the potential remedial actions.</li> <li>Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.</li> <li>Supervise the implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Confirm receipt of notification of failure in writing.</li> <li>Notify the Contractor.</li> <li>In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented.</li> <li>Ensure remedial measures are properly implemented.</li> <li>If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.</li> </ul>	<ul style="list-style-type: none"> <li>Take immediate action to avoid further exceedance.</li> <li>Submit proposals for remedial actions to IEC within 3 working days of notification.</li> <li>Implement the agreed proposals.</li> <li>Resubmit proposals if problem still not under control.</li> <li>Stop the relevant activity of works as determined by the ER until the exceedance is abated.</li> </ul>

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level	<ul style="list-style-type: none"> <li>Notify the IEC and the Contractor.</li> <li>Carry out investigation.</li> <li>Report the results of investigation to the IEC and the Contractor.</li> <li>Discuss with the Contractor and formulate remedial measures.</li> <li>Increase monitoring frequency to check mitigation effectiveness.</li> </ul>	<ul style="list-style-type: none"> <li>Review the analysed results submitted by the ET.</li> <li>Review the proposed remedial measures by the Contractor and advise the ER accordingly.</li> <li>Supervise the implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Confirm receipt of notification of failure in writing.</li> <li>Notify the Contractor.</li> <li>Require the Contractor to propose remedial measures for the analysed noise problem.</li> <li>Ensure remedial measures are properly implemented.</li> </ul>	<ul style="list-style-type: none"> <li>Submit noise mitigation proposals to IEC</li> <li>Implement noise mitigation proposals</li> </ul>
Limit Level	<ul style="list-style-type: none"> <li>Notify the IEC, the ER, the DEP and the Contractor.</li> <li>Identify the source.</li> <li>Repeat measurement to confirm findings.</li> <li>Increase monitoring frequency.</li> <li>Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>Inform the IEC, the ER and the DEP the causes &amp; actions taken for the exceedances.</li> <li>Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results.</li> <li>If exceedance stops, cease additional monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Discuss amongst the ER, the ET and the Contractor on the potential remedial actions.</li> <li>Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.</li> <li>Supervise the implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Confirm receipt of notification of failure in writing.</li> <li>Notify the Contractor.</li> <li>Require the Contractor to propose remedial measures for the analysed noise problem.</li> <li>Ensure remedial measures are properly implemented.</li> <li>If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.</li> </ul>	<ul style="list-style-type: none"> <li>Take immediate action to avoid further exceedance.</li> <li>Submit proposals for remedial actions to IEC within 3 working days of notification.</li> <li>Implement the agreed proposals.</li> <li>Resubmit proposals if problem still not under control.</li> <li>Stop the relevant activity of works as determined by the ER until the exceedance is abated.</li> </ul>

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## Event / Action Plan for Landscape and Visual Impact

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	Contractor
Design Check	<ul style="list-style-type: none"> <li>Check final design conforms to the requirements of EP and prepare report.</li> </ul>	<ul style="list-style-type: none"> <li>Check report.</li> <li>Recommend remedial design if necessary</li> </ul>	<ul style="list-style-type: none"> <li>Undertake remedial design if necessary</li> </ul>	
Nonconformity on one occasion	<ul style="list-style-type: none"> <li>Identify Source</li> <li>Inform IEC and ER</li> <li>Discuss remedial actions with IEC, ER and Contractor</li> <li>Monitor remedial actions until rectification has been completed</li> </ul>	<ul style="list-style-type: none"> <li>Check report</li> <li>Check Contractor's working method</li> <li>Discuss with ET and Contractor on possible remedial measures</li> <li>Advise ER on effectiveness of proposed remedial measures.</li> <li>Check implementation of remedial measures</li> </ul>	<ul style="list-style-type: none"> <li>Notify Contractor</li> <li>Ensure remedial measures are properly implemented</li> </ul>	<ul style="list-style-type: none"> <li>Amend working methods</li> <li>Rectify damage and undertake any necessary replacement</li> </ul>
Repeated Nonconformity	<ul style="list-style-type: none"> <li>Identify Source</li> <li>Inform IEC and ER</li> <li>Increase monitoring frequency</li> <li>Discuss remedial actions with IEC, ER and Contractor</li> <li>Monitor remedial actions until rectification has been completed</li> <li>If nonconformity stops, cease additional monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Check monitoring report</li> <li>Check Contractor's working method</li> <li>Discuss with ET and Contractor on possible remedial measures</li> <li>Advise ER on effectiveness of proposed remedial measures</li> <li>Supervise implementation of remedial measures</li> </ul>	<ul style="list-style-type: none"> <li>Notify Contractor</li> <li>Ensure remedial measures are properly implemented</li> </ul>	<ul style="list-style-type: none"> <li>Amend working methods</li> <li>Rectify damage and undertake any necessary replacement</li> </ul>



## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix K**

#### **Implementation Status of Environmental Mitigation Measures**

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## Air Quality

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
4.5	Undertake all air pollution measures to prevent dust nuisance as a result of and during construction activities.	All unpaved haul roads, bulldozed material, exposed site areas / Throughout construction period	Contractor	TMEIA	*
4.5	No debris or other materials shall be burnt on the works areas.	All areas / Throughout construction period	Contractor	TMEIA. Avoid smoke impacts and disturbance	^
4.5	Dust suppression measures shall be provided and to be submitted to and approved by the Engineer.	All areas / Throughout construction period	Contractor	TMEIA	^
4.5	Stockpiles of imported material kept on site shall be contained within hoardings, dampened and/or covered during dry and windy weather.	All areas / Throughout construction period	Contractor	TMEIA Avoid dust generation	^
4.5	Material stockpiled along side trenches should be covered with tarpaulins whenever works are within village boundaries.	All areas / Throughout construction period	Contractor	TMEIA Avoid dust generation / visual impacts	^
4.5	Water sprays shall be used during the delivery and handling of cement, sands aggregates and the like.	All areas / Throughout construction period	Contractor	TMEIA Avoid dust generation	^
4.5	No batching of concrete should be carried out on site. Concrete should be used in ready mixed form and off loaded adjacent to designated works areas.	All areas / Throughout construction period	Contractor	TMEIA	^

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
4.5	Any vehicle used for moving cement, sands, aggregates and construction waste and the like shall have properly fitting side and tail boards. Materials shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	All areas / Throughout construction period	Contractor	TMEIA Avoid dust and spillage of material	^
4.5	No earth, mud, debris, dust and the like shall be deposited on public roads. Details of proposals for the wheel cleaning facilities shall be agreed with the Engineer. Such wheel washing facility shall be usable prior to any earthworks excavation activity on the Site.	All areas, particularly pumping station sites / Throughout construction period	Contractor	TMEIA Avoid spread/ deposition of mud	^
4.6.9	Pumping station vent shafts should be located away from sensitive receivers.	All pumping stations	DSD	TMEIA Avoid odour impacts	N/A
4.6.18	Use a covered container to store and transport the screenings from the pump house.	All pumping stations /operational phase	DSD	TMEIA Avoid odour impacts	N/A
4.6.18	Undertake the collection of the screenings and transfer to the covered container within the confines of the pump house.	All pumping stations / operational phase	DSD	TMEIA Avoid odour impacts	N/A
11.2.8	EM&A in the form of 1 hour total suspended particulates monitoring once per week	All sensitive representative receivers / Throughout construction period	Contractor	EM&A Manual	^

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### Noise

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
5.7.1 & 5.8.1	Ensure silencers are installed on the exhaust pipes of the trucks, excavators, compactors, concrete lorry mixer, and cranes for all activities.	All areas / Throughout construction period	Contractor	TMEIA	^
5.7.1 & 5.8.1	Use of mufflers on the breakers for all activities.	All areas / Throughout construction period	Contractor	TMEIA	N/A
5.7.1 & 5.8.1	Use of temporary noise barriers for all activities at the pumping station sites and during main sewer construction. During main sewer construction, barriers should be used to screen the activities of mobile equipment including the crane and excavator.	All pumping stations and main sewer construction locations / Throughout construction period	Contractor	TMEIA	N/A
5.5.10	Use of temporary noise barriers for all activities in the villages, where there is at least a 5m clearance	Village sewer alignment / Throughout construction period	Contractor	TMEIA	^
5.8.6 & 5.9.6	Manual breaking of concrete, where the concrete is less than 50mm thick.	Sewer alignment construction / concrete breaking activities	Contractor	TMEIA	N/A
5.8.6 & 5.9.6	Use of alternative pavement removal methods/equipment (kick ripper), where the concrete is less than 100mm thick	Sewer alignment construction / concrete breaking activities	Contractor	TMEIA	N/A

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
5.8.6 & 5.9.6	Use of acoustic enclosure in place of a barrier where there is a 6m clearance.	Sewer alignment construction / Throughout construction period	Contractor	TMEIA	N/A
5.8.6 & 5.9.6	Scheduling the numbers and operating times of equipment, when noise levels cannot be reduced to within the standards by other means	Sewer alignment construction / Throughout construction period	Contractor	TMEIA	^
5.8.11	The construction activities should be carried out in the daytime period (08.00- 18.00) only and shall exclude Sundays and public holidays.	All areas	Contractor	TMEIA	^
5.8.11	Powered mechanical equipment shall not be used within 5m of an NSR without the permission of the Engineer	All areas / Throughout construction period	Contractor	TMEIA	^
5.8.11	Carry out good site practice to limit noise emission at source.	All areas / Throughout construction period	Contractor	TMEIA	^
5.8.11	Avoid simultaneous noisy activities.	All areas / Throughout construction period	Contractor	TMEIA	^
11.2.8	EM&A in the form of noise monitoring.	All representative receivers / Throughout construction period	Contractor	EM&A Manual	^

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### Water Quality

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
6.4.3	Stockpiles of excavated material should be kept to a minimum and covered during times of heavy rainfall.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.4.10	Pass any trench dewatering through a portable sand/silt removal traps prior to discharge.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	When works are carried out during the rainy season exposed slopes, stockpiles should be covered with tarpaulin and temporary access roads protected with a layer of gravel or crushed stone.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	N/A
6.5.2	Surface run off should be discharged to storm drains via sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	Channels, bunds or sand bags should be used to direct any storm water to the traps and perimeter channels should be constructed before the main works begin to prevent external run off from crossing the site.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	Silt removal structures, channels and manholes should be maintained to remove accumulated material, specifically at the onset and end of rainy periods.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	/

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
6.5.2	Trenches for the sewer main should be dug and backfilled in short sections to minimise the quantities of rain water which will need to be pumped from them and upslope bunding provided to prevent surface water from flowing into the trenches.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	N/A
6.5.2	Rainwater pumped from the trenches should be discharged to storm drains via sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	N/A
6.5.2	Discharges to natural water courses should only take place when the effluent can be shown to comply with the relevant specified standards.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94 & Technical Memorandum on Standards for Effluent Discharged in Drainage and Sewerage Systems, Inland and Coastal Waters	^
6.5.3	All plant should be in proper working order and maintained such that there is no leakage of fuel or oil. Any waste oils should be collected in designated tanks prior to disposal off site.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.3	All mechanical plant maintenance and refuelling areas shall be sited on paved areas. All storm water run-off from these areas should be discharged via oil separators/petrol separators and sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
6.5.4	Groundwater pumped out of excavations for the construction of pump sumps should only be discharged following removal of silt by sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.5	Water from drilling of rock should be discharged following removal of silt by sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.6	The wheels of all vehicles leaving the construction site should be washed before leaving the site to minimise the carry over of mud onto public roads. Wheel wash water should be recycled and only discharged following removal of silt by sand/silt removal traps.	All areas particularly pumping station sites / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.7	Run off from the roofs of site buildings should be conveyed in closed drains to the nearest surface water course to prevent the generation of excessive quantities of surface water run off carrying suspended solids.	Site Office areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.7	All spillages should be cleaned up immediately to prevent their downward migration into the groundwater.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.7	Sewage from toilets and any kitchens in the site facilities should be treated via a septic tank system or if this is not practicable chemical toilets should be provided and the waste from these together with 'grey water' removed from the site on a daily basis for disposal at an appropriate receiving point.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^



## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
6.6.2	Overflow bypasses to be used in emergency situations only and no effluent should be discharged during regular maintenance.	All pumping stations / Operation	DSD	WPCO, TMEIA	N/A
6.6.3 & 6.6.4	Supply pumping stations with stand-by pumps, emergency power supplies and telemetry system.	All Pumping Stations	DSD	WPCO, TMEIA & ProPECC PN 1/94	N/A
11.2.8	EM&A in the form of site supervision to ensure water quality protection measures are implemented.	All areas/ Throughout construction period	Contractor	EM&A	^

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### Waste Management

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
7.12.1	The Contractor shall identify a coordinator for the management of waste. The coordinator shall prepare a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. The Waste Management Plan shall be prepared with reference to Works Branch Technical Circular (WBTC) No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material and issued to the DEP and CED to confirm the availability for C&D and public fill waste.	Plan to be prepared prior to the start of construction, Implementation throughout construction period / All areas	Contractor	TMEIA.Works Branch Technical Circular (WBTC) No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material	^
7.12.1	Stockpiled material should avoid vegetated areas where possible and covered by tarpaulins. Storage of material on site should be kept to a minimum.	All areas/ Throughout construction period	Contractor	TMEIA. Prevent windblown dust and/or surface run-off / avoid nuisance to local residents	^
7.12.1	Surplus material should be sorted on site into C&D waste and that suitable for public fill	All areas /throughout construction period	Contractor	TMEIA. Maximise reusable material	^
7.12.1	The contractor should provide a temporary storage area for general refuse during the construction phase which should be enclosed to avoid refuse being windblown and affected by rain. General refuse should be stored on site for a minimum period and disposed of at a licenced facility.	All areas / throughout construction period	Contractor	TMEIA	^

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
7.12.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage.	All areas / throughout construction period	Contractor	TMEIA	^
7.12.1	Suitable chemical waste storage areas shall be formed on the site for temporary storage pending collection. All chemical wastes shall be handled, stored, transported and disposed of in accordance with the relevant practices.	All areas / throughout construction period	Contractor	TMEIA/ Code of Practice on the Package, Labelling and Storage of Chemical Wastes and A Guide to the Chemical Waste Control Scheme	/
7.12.1	Nightsoil arising from chemical toilets and on site chemical treatment facilities shall be transported by a licensed contractor to government Sewage Treatment Works for disposal.	All areas / throughout construction period	Contractor	TMEIA/ Sanitation and Conservancy (Regional Council) By-laws	^
7.12.1	Any screenings and grit that are removed during maintenance shall be disposed of at a landfill site. The material shall be suitably contained and covered.	All areas / operational phase	DSD	TMEIA	N/A
11.2.8	EM&A in the form of supervision of waste management practices	All areas / throughout construction period	Contractor	EM&A	^

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



## Landscape and Visual

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
10.8.5, 10.9.15, 10.10.6, 10.10.11, 10.10.20, 10.11.6	Use of a suitable colour scheme to the pump station building to match the design of the adjacent properties.	All pumping stations	DSD & Contractor	Reduce visual intrusion of pumping stations	N/A
10.8.5, 10.9.15, 10.10.11, 10.10.20, 10.11.6	Construction of boundary wall similar to the adjacent housing instead of standard chain link and barbed wire fence.	All pumping stations except Tai Lam Correctional Institution	DSD & Contractor	Screen pumping stations	N/A
10.8.5, 10.9.15, 10.10.11, 10.10.20, 10.11.6	Planting of trees and shrubs to the boundary of the pumping station compound.	All pumping stations except Tai Lam Correctional Institution	DSD & Contractor	Screen pumping stations	N/A
10.8.6	Minimise damage to the rootball of the tree east of the pumping station site.	East of Castle Peak Villas pumping station/ During excavation	DSD and Contractor		^
11.2.8	EM&A in the form of site supervision of protection measures for trees and landscaping and compensatory planting establishment during the construction and operational phases respectively	All areas	Contractor	EM&A	/

Remarks: ^ Compliance of mitigation measure  
 \* Recommendation was made during site audit but improved/ rectified by the Contractor  
 / Recommendation was made during site audit but not improved/ rectified by the Contractor  
 x Non-compliance of mitigation measure  
 N/A Not Applicable at this stage as no such site activities were conducted in the reporting month

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix L**

#### **Weather and Meteorological Conditions during Monitoring Period**

**FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
January 2018						
1	1020.5	19.0	17.3	16.3	78	0.0
2	1019.3	19.2	17.8	16.0	78	0.0
3	1018.5	22.0	19.4	18.2	76	0.0
4	1016.7	20.5	18.8	18.1	82	0.2
5	1015.3	22.8	19.3	17.2	87	0.2
6	1014.6	17.3	16.2	15.9	92	3.7
7	1014.3	17.6	16.8	15.7	93	16.2
8	1015.2	18.7	15.1	9.5	95	11.6
9	1023.1	10.7	9.0	7.9	82	9.9
10	1024.9	15.2	12.8	10.5	46	Trace
11	1026.1	16.1	13.8	12.1	42	Trace
12	1027.1	15.3	12.8	10.5	46	0.0
13	1026.0	14.6	12.9	11.3	67	0.0
14	1022.9	17.2	14.2	12.0	70	0.0
15	1018.9	18.2	15.3	13.0	79	0.0
16	1015.4	22.6	17.8	14.8	75	0.0
17	1014.4	25.5	19.8	15.9	60	0.0
18	1016.6	24.0	19.2	15.9	76	0.0
19	1017.8	19.3	18.6	17.9	89	0.8
20	1016.8	22.7	19.1	17.4	79	Trace
21	1015.6	21.5	18.7	16.8	81	0.0
22	1013.9	24.8	20.0	17.1	80	0.0
23	1015.3	22.8	19.2	17.2	78	0.0
24	1015.5	18.6	17.7	16.6	78	0.0
25	1015.7	18.8	17.2	16.1	79	0.0
26	1017.2	18.3	17.1	15.6	85	Trace
27	1017.0	17.1	15.5	14.0	81	Trace
28	1014.7	18.4	16.5	12.6	81	0.0
29	1020.1	12.9	10.5	8.9	76	0.1
30	1020.4	11.0	10.1	8.9	82	0.2
31	1021.0	10.6	9.4	7.8	87	19.3

Source:

Hong Kong Observatory – Daily Extract of Meteorological Observations

## FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



### Weather Conditions during noise monitoring

#### LC6a The Castle Bay

Date	Start Time	Weather	Wind Speed m/s	Wind Direction
03-Jan-18	14:00	Fine	0.6	E
09-Jan-18	09:15	Cloudy	2.7	NE
15-Jan-18	14:43	Fine	0.8	SE
20-Jan-18	09:48	Fine	0.2	NE
26-Jan-18	10:00	Fine	0.8	NE

#### LC9 Castle Peak Villas Block C

Date	Start Time	Weather	Wind Speed m/s	Wind Direction
03-Jan-18	14:40	Fine	0.2	E
09-Jan-18	10:27	Cloudy	1.5	NE
15-Jan-18	14:04	Fine	0.8	SE
20-Jan-18	09:07	Fine	0.8	NE
26-Jan-18	09:16	Fine	0.2	NE

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix M**

#### **Monthly Summary of Waste Flow Table**



**Sang Hing – Kuly Joint Venture**  
**Environmental Monthly Report for Contract No. DC/2014/01**  
**Castle Peak Road Trunk Sewer and Tuen Mun Village Sewage**

Name of Department: DSD

Contract No.: DC/2014/01

**Monthly Summary Waste Flow Table for 01/18 (MM/YY)**

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan 2018	0.350	0.350	0.020	-	2.300	-	-	-	-	-	0
Feb 2018											
Mar 2018											
Apr 2018											
May 2018											
Jun 2018											
Jul 2018											
Aug 2018											
Sept 2018											
Oct 2018											
Nov 2018											
Dec 2018											
<b>Total</b>	0.350	0.350	0.020	-	2.300	-	-	-	-	-	0

**Sang Hing – Kuly Joint Venture**  
**Environmental Monthly Report for Contract No. DC/2014/01**  
**Castle Peak Road Trunk Sewer and Tuen Mun Village Sewage**

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
27	10	8	1	1	0	2	1	1	1	2

Notes:

- (1) The performance targets are given in ETWB Technical Circular PS Clause 6(14).
- (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
- (4) \*The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m<sup>3</sup>. (ETWB Technical Circular PS Clause 5(4)(b) refers). [Delete Note (4) and the table above on the forecast, where inapplicable].

## **FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com

---



### **Appendix N**

#### **Proactive Environmental Protection Proforma**

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



Reporting Period	Construction Works	Anticipated Impacts	Recommended Mitigation Measures
29/02/2016 - 31/03/2016	Hoarding Erection	Dust, Noise and water quality impact.	<ul style="list-style-type: none"> <li>• Sufficient watering of the works site with active dust emitting activities.</li> <li>• Properly cover the stockpiles.</li> <li>• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation.</li> <li>• Regular maintenance of machines.</li> <li>• Use of acoustic barriers if necessary.</li> <li>• Provision of appropriate desilting/sedimentation devices provided on site for treatment before discharge.</li> <li>• Regular check and maintenance of desilting/sedimentation devices.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>
	Pre-Drilling		
	Earth Excavation		
	Plant Mobilization		
01/04/2016 - 30/04/2016	Soldier pile work	Noise and water quality impact	<ul style="list-style-type: none"> <li>• Shield the piling rig to avoid spreading of slurry during boring.</li> <li>• Regular maintenance of machines.</li> <li>• Use of acoustic barriers if necessary.</li> <li>• Provision of appropriate desilting/sedimentation devices provided on site for treatment before discharge.</li> <li>• Regular check and maintenance of desilting/sedimentation devices.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>
01/05/2016 - 31/05/2016			
01/06/2016 - 30/06/2016	Construction of lagging wall	Dust, Noise impact and waste management.	<ul style="list-style-type: none"> <li>• Water sprays shall be used during the delivery and handling of dusty materials.</li> <li>• Carry out good site practice to limit noise emission at source.</li> <li>• Avoid simultaneous noisy activities.</li> <li>• Surplus material should be sorted on site into C&amp;D waste and that suitable for public fill.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



Reporting Period	Construction Works	Anticipated Impacts	Recommended Mitigation Measures
01/07/2016 - 31/07/2016	Construction of Mini-pile	Dust, Noise and water quality impact.	<ul style="list-style-type: none"> <li>• Sufficient watering of the works site with active dust emitting activities.</li> <li>• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation.</li> <li>• Regular maintenance of machines.</li> <li>• Use of acoustic barriers if necessary.</li> <li>• Provision of appropriate desilting/sedimentation devices provided on site for treatment before discharge.</li> <li>• Regular check and maintenance of desilting/sedimentation devices.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>
01/08/2016 - 31/08/2016			
01/09/2016 - 30/09/2016			
01/10/2016 - 31/10/2016	Proof drill and Loading Test	Dust, Noise and water quality impact.	<ul style="list-style-type: none"> <li>• Sufficient watering of the works site with active dust emitting activities.</li> <li>• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation.</li> <li>• Regular maintenance of machines.</li> <li>• Use of acoustic barriers if necessary.</li> <li>• Provision of appropriate desilting/sedimentation devices provided on site for treatment before discharge.</li> <li>• Regular check and maintenance of desilting/sedimentation devices.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>
01/11/2016 - 30/11/2016	Construction of ELS		
01/12/2016 - 31/12/2016			

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



Reporting Period	Construction Works	Anticipated Impacts	Recommended Mitigation Measures
01/01/2017 - 31/01/2017	Excavation of ELS		<ul style="list-style-type: none"> <li>•Sufficient watering of the works site with active dust emitting activities.</li> <li>•Scheduling of noisy construction activities if necessary to avoid persistent noisy operation.</li> <li>• Regular maintenance of machines.</li> <li>• Use of acoustic barriers if necessary.</li> <li>• Provision of appropriate desilting/sedimentation devices provided on site for treatment before discharge.</li> <li>• Regular check and maintenance of desilting/sedimentation devices.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>
01/02/2017 - 28/02/2017			
01/03/2017 - 31/03/2017			
01/04/2017 - 31/05/2017	Construction of Wet Well Chamber	Dust, Noise and water quality impact.	<ul style="list-style-type: none"> <li>•Sufficient watering of the works site with active dust emitting activities.</li> <li>•Scheduling of noisy construction activities if necessary to avoid persistent noisy operation.</li> <li>• Regular maintenance of machines.</li> <li>• Use of acoustic barriers if necessary.</li> <li>• Provision of appropriate desilting/sedimentation devices provided on site for treatment before discharge.</li> <li>• Regular check and maintenance of desilting/sedimentation devices.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>

# FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,  
5 Lok Yi Street, Tai Lam,  
Tuen Mun, N.T.,  
Hong Kong.

Tel : +852 2450 8233  
Fax : +852 2450 6138  
E-mail : matlab@fugro.com  
Website : www.fugro.com



Reporting Period	Construction Works	Anticipated Impacts	Recommended Mitigation Measures
01/06/2017 - 30/11/2017	Construction of Pumping Station	Dust, Noise and water quality impact.	<ul style="list-style-type: none"> <li>• Sufficient watering of the works site with active dust emitting activities.</li> <li>• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation.</li> <li>• Regular maintenance of machines.</li> <li>• Use of acoustic barriers if necessary.</li> <li>• Provision of appropriate desilting/sedimentation devices provided on site for treatment before discharge.</li> <li>• Regular check and maintenance of desilting/sedimentation devices.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>
01/12/2017 - 28/02/2018	Construction of Pumping Station	Dust, Noise and water quality impact.	<ul style="list-style-type: none"> <li>• Sufficient watering of the works site with active dust emitting activities.</li> <li>• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation.</li> <li>• Regular maintenance of machines.</li> <li>• Use of acoustic barriers if necessary.</li> <li>• Provision of appropriate desilting/sedimentation devices provided on site for treatment before discharge.</li> <li>• Regular check and maintenance of desilting/sedimentation devices.</li> <li>• Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.</li> </ul>