



Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun

Monthly EM&A Report for April 2017

May 2017

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This Monthly EM&A Report for April 2017 has been reviewed and certified by the Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC) as having complied with the requirements as set out in the EM&A Manual in accordance with

Condition 3.3 of Environmental Permit No. FEP-01/497/2015.

Certified by:



Gary Chow
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date:

15 May 2017

Verified by:



Y.H. Hui
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Date:

15 May 2017

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Executive Summary

Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned by the Leighton Contractors (Asia) Limited, to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit (EM&A) for decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun.

This is the 7th Monthly EM&A report submitted under Condition 3.3 of the Environmental Permit (No. FEP-01/497/2015). This report summarises the findings on EM&A during the period from 1 April 2017 to 30 April 2017.

Result of Water Quality Monitoring and Exceedance of Action and Limit Levels

The summary of water quality monitoring results is presented in **Section 2**. No exceedances of Action or Limit Levels were recorded for stream water monitoring. For marine water quality monitoring, twelve incidents of Limit Level exceedance for cadmium were recorded in the reporting month. The incident of exceedance is under investigation.

Result of Ecological Monitoring

A total of twenty-one Little Grebes were recorded in West Ash Lagoon, among three juveniles were observed. Suspected hatching activity was observed. No other findings on the remaining portion of the Middle Ash Lagoon and man-made channel at the northern edge of the PFA platform. Detail of the result is presented in **Section 3**.

Result of Health Impact Monitoring

The summary of measured Radon is presented in **Section 4**. There was no incident of any non-compliance of radon concentration in the reporting month according to ProPECC PN 1/99“Environmental Protection Department Practice Note For Professional Persons-Control of Radon Concentration in New Buildings”.

Record of Complaints

There was no record of complaints received in the reporting month.

Record of Notification of Summons and Successful Prosecutions

There was no record of notification of summons and successful prosecution in the reporting month.

Reporting Changes

There are no reporting changes.

Future Key Issues

The major site works scheduled to be undertaken in the coming month (May 2017) include:

- Construction of drainage outfall system
- Completion of EM&A works

1 Introduction

1.1 Introduction

On 25 March 2015, the Environment Impact Assessment (EIA) Report and Environmental Monitoring and Audit (EM&A) Manual (Register No.: AEIAR-186/2015) for the “Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun” (the Project) was approved and an Environmental Permit (EP) (Permit No.: EP-497/2015) was issued to the Food and Environmental Hygiene Department for the Project. Leighton Contractors (Asia) Limited was commissioned as the contractor for the Project. On 1 August 2016, a Further EP (Permit No.: FEP-01/497/2015) was issued to Leighton Contractors (Asia) Limited to decommission the West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun as indicated in **Figure 1**.

Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned by Leighton Contractors (Asia) Limited to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit for the decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun.

1.2 Project Organization

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix A**.

1.3 Environmental Status in the reporting period

During the reporting month, works of the Project undertaken include:

- Construction of sand trap
- Minor site clearance work



The Works Programme of the Project is provided in **Appendix B**. The general layout plan of the Project site is shown in **Figure 1**.

1.4 Summary of EM&A Requirements

The EM&A programme requires environmental monitoring of water quality, health impact and ecology as specified in the approved EM&A Manual.

As the proposed WENT Landfill Extension is not in place during the Project works, landfill gas monitoring was not necessary to be undertaken in this reporting month.

A summary of impact EM&A requirements is presented in **Table 1** below:

Table 1: Summary of Impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies
Water Quality	Dissolved Oxygen (DO), pH, suspended solids (SS) and turbidity	C1A, S1, S2	Three days per week
	Metals (aluminium, chromium and cadmium)	C2, C3, M1, M2	Three days per week
Ecology	Little Grebe, habitat condition, coverage of water and any observable construction works.	West Ash Lagoon, the remaining portion of the Middle Ash Lagoon and the man-made water channel	Monthly
Health Impact	Indoor radon concentration	SP1, SP2, SP3	Monthly
Regular Site Inspection	To monitor the implementation of proper environmental protection and pollution control measures for the Project	Project site	Weekly

The Environmental Quality Performance Limits for water quality is shown in **Appendix C**.

The Event and Action Plan for water quality is shown in **Appendix D**.

2 Water Quality Monitoring

2.1 Monitoring Requirements

The Action and Limit Levels for water quality monitoring for the decommissioning phase of the Project are presented in **Table 2**.

Table 2: Action and Limit Levels for Water Quality

Parameters	Action Level	Limit Level
DO in mg/L	≤4.2 mg/L	≤ 4 mg/L
SS in mg/L	≥45 mg/L or 120% of control station's SS on the same day of measurement	≥59 mg/L or 130% of control station's SS on the same day of measurement
Turbidity in NTU	≥31 NTU or 120% of control station's turbidity on the same day of measurement	≥39 NTU or 130% of control station's turbidity on the same day of measurement
pH	≤7.3 or ≥8.2	pH ≤ 6 or pH ≥ 9
Cadmium in µg/L	0.5 µg/L	0.5 µg/L
Chromium in µg/L	1 µg/L	1 µg/L
Aluminium in µg/L	20 µg/L	20 µg/L

Note:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For metals, SS and turbidity, non-compliance of the water quality limit occurs when monitoring result is higher than the limits.

2.2 Monitoring Locations and Parameters

In accordance with the requirements in the EM&A Manual, water quality parameters including dissolved oxygen (DO), pH, turbidity, and suspended solids (SS) were monitored at three stream monitoring stations, whereas metals including aluminium, chromium, and cadmium at four marine monitoring stations during decommissioning works of the Project. Locations of the water quality monitoring stations are listed in **Table 3** and shown in **Figure 2**.

Table 3: Monitoring Locations and Parameters for Impact Water Quality Monitoring

Monitoring Station	Description	Coordinates		Parameters
		Easting	Northing	
Stream Water				
*C1A	Control station for stream water quality monitoring	809963	831011	DO, Turbidity, pH, SS
S1	Impact station for stream water quality monitoring	809996	831056	
S2		810159	831098	
Marine Water				
C2	Control station for marine water quality monitoring	808783	831904	Metals (aluminium, chromium, cadmium)
C3		810045	832206	
M1	Impact station for marine water quality monitoring	809403	831561	
M2		809772	831659	

Note: * Based on the provisions and requirements set out in Section 5.3.1 of the EM&A Manual, change in monitoring location was proposed for C1. Agreement from the IEC and approval from the EPD were sought for the change. Alternative monitoring station was mentioned in baseline monitoring report.

2.3 Monitoring Schedule

Impact water quality monitoring was scheduled to be conducted for three days per week after the commencement of decommissioning works. The interval between any two sets of monitoring was not less than 36 hours. The water quality monitoring schedule including date and time for the reporting period is provided in **Appendix E**.

2.4 Monitoring Frequency and Duration

Impact monitoring of stream water quality was conducted at the three monitoring stations (C1A, S1 and S2) for three days per week in the reporting period. Measurements and samples were taken at mid-depth layer.

Impact monitoring of marine water quality was undertaken at the four monitoring stations (C2, C3, M1 and M2) at mid-flood and mid-ebb tides for three days per week in the reporting period. Samples were taken at three water depths, namely 1m below water surface, mid-depth and 1m above seabed, except at where the water depth less than 6m, the mid-depth station was omitted. When the water depth is less than 3m, only mid-depth station will be monitored.

2.5 Monitoring Methodology

2.5.1 Monitoring Equipment

DO, pH and turbidity were measured in-situ whereas SS and metals were analysed in a laboratory. In-situ measurements at stream water monitoring stations including DO, temperature, pH and turbidity were measured by equipment listed in **Table 4**. Equipment used for determination of water depth at marine water monitoring stations is also listed in the table.

Table 4: Water Quality Monitoring Equipment

Equipment	Brand and Model	Measurement Range	Accuracy
Multifunctional Meter (measurement of DO, temperature & pH)	YSI Professional Plus (serial no. IOD101566)	DO: 0 – 20 mg/L and 0 – 200% saturation; Temperature: 0 – 45°C; pH: 0 – 14 (readable to 0.1pH)	DO: 0.2mg/L; Temperature: ±2°C; pH: ±0.2
Turbidimeter	HACH 2100Q (serial no. 13120C029845)	0 – 1000 NTU	±2 NTU or 15% whichever greater
Water depth detector	SonTek Hydrosurveyor	0.1 – 100 m	0.01 m

For location of monitoring site, a hand-held digital Global Positioning System (GPS) device (Garmin Etrex Legend HCx) with way point bearing indication was used during monitoring to ensure monitoring vessel was at the correct location before taking measurements.

For water sampling, a Van Dom Water Sampler which is comprised of a transparent PVC cylinder, with a capacity of not less than 2 litres, and can be effectively sealed with latex cups at both ends was used during monitoring. The sampler has a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.

Water samples for SS and metals analysis were stored in high density polythene bottles with no preservative added, packed with ice (cooled to 4°C without being frozen), and delivered to the laboratory for analysis.

2.5.2 Calibration of in-situ Instruments

All in-situ monitoring instrument were checked, calibrated, and certified by a laboratory accredited under HOKLAS before use. Responses of sensors and electrodes had been checked with certified standard solutions before each use. Standard buffer solutions of pH 7 and pH 10 had been used for calibration of the pH measurement instrument before and after use. Wet bulb calibrations for a DO meters had been carried out before measurement. Calibration was not conducted at each monitoring location as daily calibration is adequate for the type of multifunctional meter employed.

Calibration certificates of the monitoring equipment used in the impact monitoring are provided in **Appendix F**.

2.5.3 Laboratory Measurement / Analysis

Analysis of SS and heavy metals were carried out by a HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066). Sufficient water samples of not less than 2 litres were collected at all the monitoring stations for carrying out the laboratory SS and heavy metals determination. The SS and heavy metals determination works were started within 24 hours after collection of the water samples. Water samples were filtered prior to the analysis for heavy metals. Details of laboratory analytical methods applied are summarised in **Table 5**. The Quality Assurance/Quality Control (QA/QC) procedures for laboratory measurement / analysis of SS and metals are presented in **Appendix G**.

Table 5: Analytical Methods applied to Water Quality Samples

Determinant, unit	Analytical Method	Detection Limit
Suspended Solids, mg/L	APHA 2540D (Gravimetric)	1 mg/L
Cadmium, µg/L	USEPA 6020A (ICP-MS)	0.5 µg/L
Chromium, µg/L	USEPA 6020A (ICP-MS)	1 µg/L
Aluminium, µg/L	USEPA 6020A (ICP-MS)	20 µg/L

2.6 Monitoring Results

2.6.1 Summary of Monitoring Results

Monitoring of water quality were conducted as scheduled on 3, 5, 7, 10, 12, 14, 17, 19, 21, 24, 26, 28 April 2017 at the three stream water monitoring stations and four marine water quality monitoring stations. The weather and sea conditions throughout the monitoring period are presented in **Appendix H**.

The water quality monitoring results for DO, turbidity, pH and SS of stream water as well as chromium and aluminium in marine water were in compliance with their corresponding Action and Limit Levels. For cadmium in marine water, twelve incidents of Limit Level exceedance were recorded in the reporting month. Details of the exceedance are presented in **Section 2.6.2**.

The water quality monitoring results and graphical presentations are provided in **Appendix H**.

2.6.2 Summary of Findings for Investigation of Exceedance

Totally twelve Limit Level exceedances of testing results were recorded during the reporting month. The exceedance cases are under investigation by the ET for checking the site condition on the relevant monitoring day; comparing the relevant monitoring results with those of the control stations; and reviewing the Contractor's report on construction activities during the day

of monitoring. Summary of findings for exceedance investigation will be provided in the next monthly EM&A report. The case of exceedance under investigation is summarised as follows:

Exceedance recorded for Marine Water Quality Monitoring

5 April 2017

At mid-ebb tide, Limit Level exceedance of cadmium was recorded at impact station M1 and M2. It was noted that elevated level of Cadmium was also recorded at control station C2 and C3.

At mid-flood tide, Limit Level exceedance of cadmium was recorded at impact station M1 and M2. It was noted that elevated level of Cadmium was also recorded at control station C2 and C3.

7 April 2017

At mid-ebb tide, Limit Level exceedance of cadmium was recorded at impact station M1 and M2. It was noted that elevated level of Cadmium was also recorded at control station C2 and C3.

At mid-flood tide, Limit Level exceedance of cadmium was recorded at impact station M1 and M2. It was noted that elevated level of Cadmium was also recorded at control station C2 and C3.

28 April 2017

At mid-ebb tide, Limit Level exceedance of cadmium was recorded at impact station M1 and M2. It was noted that elevated level of Cadmium was also recorded at control station C2 and C3.

At mid-flood tide, Limit Level exceedance of cadmium was recorded at impact station M1 and M2. It was noted that elevated level of Cadmium was also recorded at control station C2 and C3.

Summary of findings for exceedance investigation for the last reporting month

Heavy metal resting results exceeding the corresponding Action or Limit Levels were recorded in the last reporting month. Findings of the investigation for exceedance cases are summarised below.

Findings for marine water Exceedances

Table 6 presents a summary of marine water compliance status at impact station during mid-ebb and mid-flood tides for the last reporting month.

Table 6: Summary of marine water Compliance Status at Impact Stations (March 2017)

Date	Mid-Ebb Tide				Mid-Flood Tide			
	Impact Station		Control Station		Impact Station		Control Station	
	M1	M2	C2	C3	M1	M2	C2	C3
01/03/2017								
03/03/2017	Cd				Cd	Al		
06/03/2017								
08/03/2017								
10/03/2017								
13/03/2017								
15/03/2017								

17/03/2017								
20/03/2017								
22/03/2017								
24/03/2017								
27/03/2017								
29/03/2017								
31/03/2017								
No. of LL Exceedances	1	-	-	-	1	1	-	-

Legend:

	No exceedance of Limit Level
Al	Exceedance of Aluminium
Cd	Exceedance of Cadmium

As shown in **Table 6**, exceedance of Limit Level at impact stations was observed on 3rd March 2017. After checking with the Contractor, decommissioning works involving soil filling were carried out at the access road and the breaking surface work to cut off power for the lamp post to install outfall pipe was carried out. These works and other site activities at the construction access road were considered not having potential of any PFA falling into the nearby seawater which might have tendency of leaching Cadmium and Aluminium from the lagoon PFA into the seawater. The limit level exceedance of the heavy metals were found unlikely due to site activities for the decommissioning project, therefore considered not related to the project.

Findings for stream water Exceedances

Apart from marine water, exceedance of SS Limit Level at impact station was recorded on 20th February 2017. Detail of the investigation has been report on Monthly report of March 2017. This investigation report has been closed on 19 April 2017. Due to site activities for the decommissioning project therefore considered not related to the project.

Conclusions

Actions have been taken according to the EM&A Manual to inform IEC, contractor and EPD immediately after the laboratory testing results were available and investigation has been undertaken. As the exceedances were not due to the decommissioning project, the monitoring frequency is considered not necessary to be increased.

Although the exceedances were considered not due to the project, the Contractor was reminded to continue implementation of the water quality mitigation measures and good site practices in accordance with the recommendations stated in the Implementation Schedule of the EM&A Manual as far as practicable.

The contractor was also reminded to provide preventive measure such as sand bag avoid any wastewater runoff.

3 Ecological Monitoring

3.1 Monitoring Methodology and Frequency

Monitoring was undertaken following the survey methodology in the EM&A Manual by qualified ecologist. A transect was followed for monitoring the target species Little Grebe (*Tachybaptus ruficollis*) within the West Ash Lagoon, the remaining portion of Middle Ash Lagoon, and the man-made channel at the northern edge of the PFA platform in the Middle Ash Lagoon for once per month. Number of Little Grebe in each of these areas was recorded separately. Attention was paid on any signs of breeding activities of Little Grebe. Signs of breeding activities should be recorded and location of nests should be mapped if any.

3.2 Monitoring Locations

Ecological monitoring locations during decommissioning phase and the survey transect are shown in **Appendix L**.

3.3 Monitoring Result

Ecological monitoring surveys were conducted on 28 April 2017 from 1000 to 1130 at the designated areas including the West Ash Lagoon, the remaining portion of Middle Ash Lagoon, and the channel at the northern edge of the PFA platform in the Middle Ash Lagoon.

In the West Ash Lagoon, the coverage of water was above 95%. For habitat condition, emergent vegetation (e.g. *Bidens alba* and *Neyraudia reynaudiana*) were found on the West Ash Lagoon. A total of twenty-one Little Grebes were found including three of recently fledged juveniles were recorded and a suspected hatching activity was also observed.

The remaining portion of the Middle Ash Lagoon was also surveyed. This portion was observed dry without any water coverage. No Little Grebes were seen whilst no breeding activities, nests or juveniles were noted. Emergent, pioneer and widely distributed vegetation (e.g. *Chenopodium ficifolium*, *Bidens alba* and *Panicum maximum*) were found on the Middle Ash Lagoon.

The man-made water channel was surveyed. It was in permanent dry condition, covered with rocks and grown with terrestrial vegetation. It is unlikely to be used by Little Grebe.

Representative photos of the ecological survey are provided in **Appendix L**.

3.4 Mitigation measures

According to EM&A Manual section 8.4.3, if the signs of breeding be observed the mitigation measures like hoarding, restricted to human access and prevent surface runoff should be provided by contractor to minimise impacts to breeding population in the West Ash Lagoon.

This mitigation measure has been completed since January 2017 to fulfil ET site inspection checklist. Representative photos of the mitigation measures are provided in **Appendix L**.

4 Health Impact Monitoring

4.1 Monitoring Requirements

In accordance with Section 3.2 of the EM&A Manual, indoor radon concentration has been measured monthly during the decommissioning phase.

Indoor radon concentration measurement has been performed in accordance with Appendix 2 of “Protocol of Radon Measurement for Non-residential Building” of EPD ProPECC Note PN 1/99 “Control of Radon Concentration in New Buildings”. The average indoor radon concentration during the measurement period should preferably be lower than the territory-wide mean concentration of 100 Bq/m³ and in any case, any individual measurement must not exceed 200 Bq/m³ according to the Protocol.

4.2 Monitoring Methodology

Acoustics and Air Testing Laboratory Company Limited was appointed to conduct the radon measurement. Radon monitoring was conducted at three indoor sampling locations at the site office for the decommissioning works. An indicative layout plan of the sampling locations is presented in **Appendix M**. The location of radon monitor was more than 0.9m from any corner, window, wall, partition or other vertical surface, and at a height of approximately 1.1m above the floor; whilst it was not directly under any air diffuser, or in front of any electric fan or heater, or under direct sunlight, or affected directly by the draft of exhaust fan/air conditioning unit, or obstructive to the traffic of users of the premises under normal or emergency situation, according to the Protocol.

The measurement of radon concentration was taken for 48 hours continuously for each sampling location. Impact measurements were conducted from 20 to 22 April and 24 to 28 April 2017 at the three sampling locations, as summarised in **Table 7** and presented in **Appendix M**.

The concentration of radon was measured by Durrige RAD7 Electronic Radon Detector with an operating range from 0 Bq/m³ to 750,000 Bq/m³. The Certificate of Calibration is provided in **Appendix M**.

Table 7: Sampling Location and Period for Impact Measurement of Radon

Sampling Location ID	Description	Measurement Period
SP1	Indoor	20 April 2017 10:44 – 22 April 2017 10:44
SP2	Indoor	24 April 2017 11:58 – 26 April 2017 11:58
SP3	Indoor	26 April 2017 12:29 – 28 April 2017 12:29

4.3 Monitoring Result

The 48-hour average and the maximum radon concentrations measured at the three sampling locations are summarised in **Table 8**. The radon concentration of the sampling locations during the measurement period were all complied with the criteria of average indoor radon concentration being lower than 100 Bq/m³ and individual measurement not exceeding 200 Bq/m³ according to the Protocol.

Table 8: Findings of Impact Measurement of Radon

Sampling Location ID	Description	Radon Concentration (Bq/m ³) (48-hour average)	Radon Concentration (Bq/m ³) (Maximum)
SP1	Indoor	3	39
SP2	Indoor	13	37
SP3	Indoor	17	61

5 Environmental Site Inspection and Audit

5.1 Site Inspection

The ET had carried out decommissioning phase weekly site inspections on 5, 12, 21 and 28 April 2017. All observations have been recorded in the site inspection checklist and passed to the Contractor together with the appropriate recommended mitigation measures where necessary. The key observations from site inspections and associated recommendations are summarized in **Table 9**.

Table 9: Summary of Site Inspections and Recommendations

Inspection Date	Key Observations	ET Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
20 October 2016	Part of the hoarding (access road) is still in progress.	The Contractor was reminded to hoarding should be sealed up to prevent any run-off. Also the hoarding at the access road should not less than 2.4m high from ground level as a mitigation measure to dust control.	Hoarding with partition has been setup according to EM&A Manual.	12 April 2017

5.2 Advice on the Solid and Liquid Waste Management Status

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. A sufficient number of receptacles were available for general refuse collection. The waste flow table is present in **Appendix I**.

5.3 Status of Environmental Licenses and Permits

The environmental permits, licenses, and/or notifications on environmental protection for this Project which were valid during the period are summarised in **Table 10**.

Table 10: Status of Environmental Licenses and Permits

Statutory Reference	Description	Permit /Reference No.	Received Date	Expiry Date	Status
EIAO	Environmental Permit	FEP-01/497/2015	6 August 2016	Surrender upon completion of decommissioning of the Project	Valid
APCO	Notification of Construction Work under APCO	404950	14 July 2016	For whole project	Valid
WPCO	Discharge License	WT00026587-2016	5 January 2017	31 January 2022	Valid
WDO	Registration as Chemical Waste Producer	5213-431-L2919-01	3 August 2016	For whole project	Valid

Statutory Reference	Description	Permit /Reference No.	Received Date	Expiry Date	Status
WDO	Bill Account for Disposal	7025555	15 August 2016	For whole project	Valid
NCO	Construction Noise Permit for the use of Powered Mechanical Equipment for the purpose of carrying out construction work other than percussive piling and/or the carrying out of prescribed construction work	GW-RW0670-16	27 November 2016	8 May 2017	Valid

Abbreviations: EIAO – Environmental Impact Assessment Ordinance; APCO – Air Pollution Control Ordinance; WPCO – Water Pollution Control Ordinance; WDO – Waste Disposal Ordinance; NCO – Noise Control Ordinance.

5.4 Recommended Mitigation Measures

The EM&A programme followed the recommended mitigation measures in the EM&A Manual. The EM&A requirements as well as the summary of implementation status of the environmental mitigation measures are provided in **Appendix J**. In particular, the following mitigation measures were brought to attention during the site inspections:

Water Quality

- Provide preventive measure for avoid any surface run-off.

6 Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions

6.1 Record on Non-compliance of Action and Limit Levels

In April 2017, a total of twelve Limit Level exceedances of Cadmium in marine water were recorded at monitoring station M1 and M2 for Water Quality.

Depth-averaged level of Cadmium was 0.87 µg/L and 1.00 µg/L at impact station M1 and M2 during mid-ebb tide on 5 April 2017 whilst the criteria of Action and Limit Levels are <0.5 µg/L.

Depth-averaged level of Cadmium was 1.43 µg/L and 1.60 µg/L at impact station M1 and M2 during mid-flood tide on 5 April 2017 whilst the criteria of Action and Limit Levels are <0.5 µg/L.

Depth-averaged level of Cadmium was 1.70 µg/L and 2.80 µg/L at impact station M1 and M2 during mid-ebb tide on 7 April 2017 whilst the criteria of Action and Limit Levels are <0.5 µg/L.

Depth-averaged level of Cadmium was 1.50 µg/L and 0.55 µg/L at impact station M1 and M2 during mid-flood tide on 7 April 2017 whilst the criteria of Action and Limit Levels are <0.5 µg/L.

Depth-averaged level of Cadmium was 1.00 µg/L and 1.20 µg/L at impact station M1 and M2 during mid-ebb tide on 28 April 2017 whilst the criteria of Action and Limit Levels are <0.5 µg/L.

Depth-averaged level of Cadmium was 0.73 µg/L and 1.05 µg/L at impact station M1 and M2 during mid-flood tide on 28 April 2017 whilst the criteria of Action and Limit Levels are <0.5 µg/L.

6.2 Record on Environmental Complaints Received

No environmental complaint was received during the reporting month. The cumulative statistics on complaints were provided in **Appendix K**.

6.3 Record on Notifications of Summons and Successful Prosecution

No notifications of summons or successful prosecution were received this month. The cumulative statistics on notifications of summons and successful prosecutions were provided in **Appendix K**.

6.4 Review of Reasons for and Implications of Non-compliance, Complaints, Summons and Prosecutions

Non-compliance

Investigation of the 20th February 2017 and 3rd March 2017 exceedances had been carried out to identify the cause of the water quality exceedance. The investigation findings are presented in Section 2.6.2. It was concluded that the exceedance was not due to the Project.

Complaints, Summons and Prosecutions

Not applicable.

6.5 Follow-up Actions Taken**Non-compliance**

As non-compliance has been recorded, the Event and Action Plan has been followed. It is considered that the exceedance was not related to the Project and therefore no specific mitigation measure was found necessary. Nevertheless, the Contractor was reminded to continue implementation of the water quality mitigation measures and site practices in accordance with the recommendations stated in the Implementation Schedule of the EM&A Manual as far as practicable.

Complaints, Summons and Prosecutions

Not applicable.

7 Future Key Issues and Other EM&A Issues

7.1 Site Activities and Key Environmental Issues for the Coming Reporting Period

The major site activities anticipated in the coming reporting period are expected to be associated with the construction of drainage outfall system works.

The key environmental issues are expected to be associated with the implementation of environmental protection and pollution control and these include:

- Generation of dust from the site works;
- Generation of wastewater from site activities and potential site surface runoffs (in case of occasional rainstorm);
- Management of stockpiles; and
- Management of generators.

Waste Management Status

As mentioned in Section 5, weekly site inspections were carried out by the ET to check and monitor the implementation of proper waste management practices.

The Contractor has implemented waste management practice on-site. Separate containers were provided for aluminium cans, plastic bottles and papers for recycling and enclosed bins for general refuse. No inert construction waste was generated yet in the reporting month.

Chemical waste was generated during the reporting period as asbestos pipes were removed. The Contractor has already registered with EPD as a chemical waste producer and a designated chemical waste storage area was prepared on-site. During weekly site inspections the handling and storage of chemical waste containers in the designated chemical waste storage area on-site were checked and in compliance with the Code of Practise on the Packaging, Labelling and Storage of Chemical Wastes.

7.2 Monitoring Schedule for the Coming Month

Impact monitoring for water quality, ecology and health impact in accordance with the approved EM&A Manual has commenced since 20 October 2016. The tentative monitoring schedule for the coming month is shown in the **Appendix E**.

8 Conclusions and Recommendations

8.1 Conclusions

The EM&A programme as recommended in the EM&A Manual has been undertaken in the reporting month since the decommissioning work commenced on 20 October 2016.

Monitoring of water quality, ecology and health impacts for the Project were conducted as scheduled in the reporting month. Water quality parameters (including pH, DO, turbidity, SS and metals) under monitoring have been checked against the established Action and Limit levels.

The investigation of the 20th February 2017 and 3rd March 2017 exceedances were completed and found that the exceedance was unlikely due to any project works or site activities and therefore not considered to be related to the project.

For ecological monitoring, total of twenty-one Little Grebes were found including three of recently fledged juveniles were recorded in the West Ash Lagoon with breeding activities (suspected hatching activity).

For health impact monitoring, no non-compliance of indoor radon concentration was recorded in the reporting month.

8.2 Recommendations

With considerations on the decommissioning activities and environment, the following reminder and recommendation was provided:

Water Quality

- Provide preventive measure for avoid any surface run-off.

Appendices

Appendix A. Project Organisation

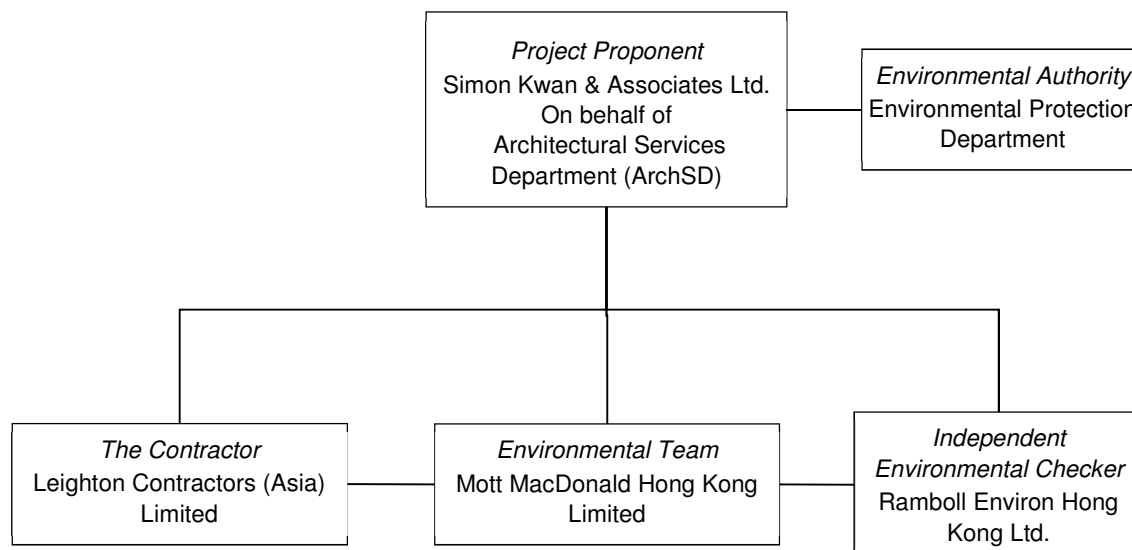


Table A.1: Contact information

Company / Department	Position	Name	Telephone / Mobile
Simon Kwan & Associates Ltd. on behalf of Architectural Services Department (ArchSD)	Architectural and lead consultant	Mr K.K. Chung	2882 2500
Ramboll Environ Hong Kong Ltd.	Independent Environmental Checker	Mr Y.H. Hui	3465 2850
Mott MacDonald Hong Kong Ltd.	Environmental Team Leader	Mr Gary Chow	2828 5874
Leighton Contractors (Asia) Limited	Project Manager	Mr Wing Chung AU	3973 1391
Leighton Contractors (Asia) Limited	Site Agent	Mr Josh Liu	9336 3997
Leighton Contractors (Asia) Limited	Environmental Officer	Mr Valentine Ho	3973 0357

Appendix B. Tentative Works Programme

EM&A Programme for Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun

Works Programme

Month and Week	Oct-16				Nov-16				Dec-16				Jan-17				Feb-17				Mar-17				Apr-17				May-17			
Tasks	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Decommissioning work mainly on Columbarium site (e.g. site hoarding works, site clearance)																																
Decommissioning work on Columbarium site and external access road; site hoarding at access road																																
Decommissioning work on external access road and surface outfall construction																																

Appendix C. Action and Limit Levels for Decommissioning Phase

Water Quality

Action and Limit Levels for Water Quality

Parameters	Action Level	Limit Level
DO in mg/L	≤ 4.2 mg/L	≤ 4 mg/L
SS in mg/L	≥ 45 mg/L or 120% of control station's SS on the same day of measurement	≥ 59 mg/L or 130% of control station's SS on the same day of measurement
Turbidity in NTU	≥ 31 NTU or 120% of control station's turbidity on the same day of measurement	≥ 39 NTU or 130% of control station's turbidity on the same day of measurement
pH	≤ 7.3 or ≥ 8.2	pH ≤ 6 or pH ≥ 9
Cadmium in $\mu\text{g/L}$	0.5 $\mu\text{g/L}$	0.5 $\mu\text{g/L}$
Chromium in $\mu\text{g/L}$	1 $\mu\text{g/L}$	1 $\mu\text{g/L}$
Aluminium in $\mu\text{g/L}$	20 $\mu\text{g/L}$	20 $\mu\text{g/L}$

Note:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For metals, SS and turbidity, non-compliance of the water quality limit occurs when monitoring result is higher than the limits.

Appendix D. Event and Action Plan for Water Quality

Water Quality

Event	Action			
	ET Leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	<ul style="list-style-type: none"> Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Inform IEC and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; and Repeat measurement on next day of exceedance. 	<ul style="list-style-type: none"> Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Discuss with IEC on the proposed mitigation measures; and Make agreement on the mitigation measures to be implemented 	<ul style="list-style-type: none"> Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and propose mitigation measures to IEC and ER; and Implement the agreed mitigation measures.
Action level being exceeded by more than one consecutive sampling days	<ul style="list-style-type: none"> Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Inform IEC and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; Ensure mitigation measures are implemented; Prepare to increase the monitoring frequency to daily; and Repeat measurement on next day of exceedance. 	<ul style="list-style-type: none"> Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented; and Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; and Implement the agreed mitigation measures.

	ET Leader	IEC	ER	Contractor
Limit level being exceeded by one sampling day	<ul style="list-style-type: none"> Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Inform IEC, contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented; and Increase the monitoring frequency to daily until no exceedance of Limit Level. 	<ul style="list-style-type: none"> Discuss with ET and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; and Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days; and Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling days	<ul style="list-style-type: none"> Repeat in-situ measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IEC, contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented; and Increase the monitoring frequency to daily until no exceedance of Limit Level. 	<ul style="list-style-type: none"> Discuss with ET and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures; and Consider and instruct, if necessary, the Contractor to slow down or stop all or part of the construction (decommissioning) activities until no exceedance of Limit Level. 	<ul style="list-style-type: none"> Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days; Implement the agreed mitigation measures; and As directed by the Engineer, to slow down or to stop all or part of the construction (decommissioning) activities

Appendix E. Monitoring Schedule

APRIL 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																	
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9	10 Stream water monitoring Marine water monitoring Ebb 11:41 - 15:11 Flood 05:39 - 09:09	11	12 Stream water monitoring Marine water monitoring Ebb 12:40 - 16:10 Flood 06:30 - 10:00	13	14 Stream water monitoring Marine water monitoring Ebb 01:32 - 05:02 Flood 07:13 - 10:43	15																																																	
16	17 Stream water monitoring Marine water monitoring Ebb 03:26 - 06:56 Flood 08:28 - 11:58	18	19 Stream water monitoring Marine water monitoring Ebb 05:38 - 08:47 Flood 09:56 - 13:26	20	21 Stream water monitoring Marine water monitoring Ebb 08:38 - 12:08 Flood 02:39 - 06:09	22																																																	
23	24 Stream water monitoring Marine water monitoring Ebb 10:42 - 14:12 Flood 04:33 - 08:03	25	26 Stream water monitoring Marine water monitoring Ebb 11:54 - 15:24 Flood 05:36 - 09:06	27	28 Stream water monitoring Marine water monitoring Ebb 13:13 - 16:43 Flood 06:39 - 10:09	29																																																	
30		Project: DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI, TUEN MUN Phase: IMPACT MONITORING Reference Tide: Tsim Bei Tsui			Notes: <table border="1"> <thead> <tr> <th colspan="7">May 2017</th> </tr> <tr> <th>S</th> <th>M</th> <th>T</th> <th>W</th> <th>Th</th> <th>F</th> <th>Sa</th> </tr> </thead> <tbody> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>7</td> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> <td>13</td> </tr> <tr> <td>14</td> <td>15</td> <td>16</td> <td>17</td> <td>18</td> <td>19</td> <td>20</td> </tr> <tr> <td>21</td> <td>22</td> <td>23</td> <td>24</td> <td>25</td> <td>26</td> <td>27</td> </tr> <tr> <td>28</td> <td>29</td> <td>30</td> <td>31</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		May 2017							S	M	T	W	Th	F	Sa		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			
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MAY 2017

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Appendix F. Calibration Certificates



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong

Email: info@qualityprotest.com; Website: www.qualityprotest.com

Tel: (852) 3956 8717; Fax: (852) 3956 3928

CALIBRATION REPORT

Report No. : AG030101
Date of Issue : March 17, 2017
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Rm 811, Hin Pui House,
Hin Keng Estate, Tai Wai
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment : YSI Pro Plus (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : IOD101566
Date of Received : Mar 16, 2017
Date of Calibration : Mar 16, 2017
Date of Next Calibration^(a) : Jun 16, 2017

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

<u>Parameter</u>	<u>Reference Method</u>
pH at 25°C	APHA 21e 4500-H ⁺ B
Dissolved Oxygen	APHA 21e 4500-O G
Conductivity at 25°C	APHA 21e 2510 B
Salinity	APHA 21e 2520 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.09	+0.09	Satisfactory
7.42	7.45	+0.03	Satisfactory
10.01	10.08	+0.07	Satisfactory

Tolerance of pH should be less than ± 0.10 (pH unit)

(2) Temperature

Reading of Ref. thermometer (oC)	Displayed Reading (oC)	Tolerance (oC)	Results
10.0	9.9	-0.1	Satisfactory
22.0	21.7	-0.3	Satisfactory
35.0	37.30	+2.3	Satisfactory


Tolerance limit of temperature should be less than ± 2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

- ^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
^(b) The results relate only to the calibrated equipment as received
^(c) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
^(e) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by QPT or quoted from relevant international standards.

APPROVED SIGNATORY :


FUNG Yuen-ching Aries
Laboratory Manager



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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CALIBRATION REPORT

Report No. : AG030101
Date of Issue : March 17, 2017
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PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.16	0.19	+0.03	Satisfactory
4.38	4.31	-0.07	Satisfactory
8.51	8.56	+0.05	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Expected Reading ($\mu\text{S}/\text{cm}$)	Displayed Reading ($\mu\text{S}/\text{cm}$)	Tolerance (%)	Results
146.9	149.8	+2.0	Satisfactory
1412	1431	+1.3	Satisfactory
12890	12286	-4.7	Satisfactory
58670	57728	-1.6	Satisfactory
111900	109852	-1.8	Satisfactory

Tolerance limit of conductivity should be less than ± 10.0 (%)

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.92	-0.8	Satisfactory
20	19.88	-0.6	Satisfactory
30	29.81	-0.6	Satisfactory

Tolerance limit of salinity should be less than ± 10.0 (%)

~ END OF REPORT ~



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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Email: info@qualityprotest.com; Website: www.qualityprotest.com

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CALIBRATION REPORT

Test Report No. : AG030103
Date of Issue : March 17, 2017
Page No. : 1 of 1

PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Rm 811, Hin Pui House,
Hin Keng Estate, Tai Wai
New Territories, Hong Kong
Attn: Mr. Thomas Wong

PART B – SAMPLE INFORMATION

Description of Samples : HACH 2100Q Portable Turbidimeter
Brand Name : HACH
Model Number : 2100Q
Serial Number : 13120C029845
Equipment Number : --
Date of Received : Mar 16, 2017
Date of Calibration : Mar 16, 2017
Date of Next Calibration^(a) : Jun 16, 2017

PART C – CALIBRATION REQUESTED

<u>Parameter</u>	<u>Reference Method</u>
Turbidity	APHA 21e 2130 B

PART D – RESULT^(bc)

Turbidity

Expected Reading (NTU)	Displayed Reading ^(d) (NTU)	Tolerance ^(e) (%)	Results
0	0	--	Satisfactory
4	4.03	+0.8	Satisfactory
20	20.4	+2.0	Satisfactory
100	104	+4.0	Satisfactory
800	790	-1.3	Satisfactory

Tolerance limit of turbidity should be less than ± 10.0 (%)

~ END OF REPORT ~

Remark(s)

^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.

^(b) The results relate only to the tested sample as received

^(c) the performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

^(d) "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

^(e) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.

APPROVED SIGNATORY :



FUNG Yuen-ching Aries
Laboratory Manager

Appendix G. Quality Assurance/Quality Control (QA/QC) procedures



QUALITY ASSURANCE & QUALITY CONTROL

ALS Hong Kong is staffed with qualified chemists who conduct analytical testing using well documented procedures based on the universally recognised methodologies of USEPA, APHA, ASTM.

All laboratory procedures are regulated by comprehensive QA / QC programmes established to monitor and control every aspect of the operation. A minimum of 10% of all samples analysed by ALS Technicians are part of the Quality Assurance protocol.

The laboratory is HOKLAS accredited (Reg. No. 066) for a large range of chemical and biological tests covering environmental and food analyses.

Our QA/QC procedures are designed to ensure reliable analytical results to our clients.

1. INSTRUMENT CALIBRATION

All equipment and instruments meet the requirements and specifications of the documented test procedures.

1.1 Daily Performance Checks

The performance checks are carried out once in every 24 hour operating period for most capital instruments, such as:

- Liquid Chromatography – Mass Spectrometry/Mass Spectrometry
- Gas Chromatography – Mass Selective Detector
- Gas Chromatography – Flame Ionization Detector
- Gas Chromatography – Electron Capture Detector
- Inductively Coupled Plasma – Mass Spectrometer
- Inductively Coupled Plasma – Atomic Emission Spectrometer
- Flow Injection Mercury Analyzer
- Automatic Discret Analyzer
- Flow Injection Analyzer
- Electronic Balance

Should the instrument fail the daily check repeatedly then the appropriate maintenance is undertaken to rectify the problem prior to sample analysis.

1.2 Calibration

A minimum 5 point calibration covering the working range of the samples to be analysed is run with each group of samples. Laboratory Blanks are run at a frequency of 1 in every 20 samples or 1 between each analytical lot of samples, whichever is the more frequent.

A mid-range calibration standard is analysed regularly during the operating period to ensure consistency.

1.3 Calibration Check

A calibration standard is analysed regularly during the operating period to ensure consistency.

2. QUALITY CONTROL (QC) SAMPLES

QC samples comprise those which monitor and control the laboratory performance namely Laboratory Control Sample (LCS), Duplicate Control Sample (DCS), Method Blanks and those which are used for data assessment and the evaluation of matrix effects by using Surrogates, Matrix Spike (MS), Matrix Spike Duplicate (MSD) and Sample Duplicates.

Field contamination is monitored by the analysis of Trip Blanks (VOCs) and Equipment Rinsate Samples.

The organics laboratory processes field samples in QC lots of 20 according to the analysis required. These 20 samples may consist of a number of sample batches independently submitted to the laboratory.

The inorganics laboratory lots samples in groups of 20 to 50 depending on the analyte to be determined. Quality control samples such as Laboratory Blanks and Quality Control Sample, and/or Certified Reference Materials (CRM) are run at a frequency of 1 in 20 per 'lot' of samples. Sample Duplicates and Matrix Spikes are run at a frequency of 1 in 20 or 1 per batch, whichever is more frequent.

2.1 Laboratory Control Sample (LCS) & Duplicate Control Sample (DCS) - (Organics only)

(a) Accuracy - the closeness of agreement between an observed value and a reference value.

The observed value is the average of the LCS and the DCS values. The reference value is the spike value. The accuracy is expressed as the % Recovery and is calculated as follows:

$$\% \text{ Recovery} = (\text{Observed Value} / \text{Spiked Value}) \times 100$$

(b) Precision - the agreement among a set of replicate results.

Precision is expressed as the Relative Percent Difference (RPD) between the LCS and DCS detected levels, against the average of these levels.

The RPD is calculated as follows:

$$\text{RPD} = [(\text{Results } 1 - \text{Result } 2) / \text{Average}] \times 100$$

November 2012

ALS Environmental



QUALITY ASSURANCE & QUALITY CONTROL

The accuracy and precision data are evaluated against laboratory established control limits. (If laboratory control limits have not been established for a particular method, control limits as specified in USEPA SW 846 may be utilised).

QC results falling outside the control limits are automatically flagged.

The acceptance criterion used is that 80 percent of the precision and accuracy values must fall within the control limits. If this criterion is not met, corrective action must be taken. This may include repeat sample analysis.

The RPD for soils should be within 25 percent, however, this may be dependent upon sample homogeneity.

2.2 Laboratory / Reagent Blank

For the laboratory blank to be acceptable, the concentration in the blank of any analyte of concern should not be higher than 1/2 of reporting limit (LOR) for that analyte.

Blank correction may be performed if the blank result is found to be greater than LOR and it is attributed to the analytical method and/or reagents involved.

2.3 Surrogates (Organics Only)

Surrogate results are reported as percent recovery. Since surrogate spike recoveries indicate the presence of sample specific interferences, USEPA documented recovery limits are used as a guidance only.

The surrogate standards are used for semivolatile and volatile analyses. The semivolatile analysis includes SVOC, pesticide and PCB tests. The volatile analysis includes VOC and BTEX.

2.4 Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

MS and MSD results are used for data assessment and evaluation of method precision and bias in a given matrix.

2.5 Sample Duplicate

The duplicate results are used for evaluation of laboratory precision in a given matrix.

The RPD values of the duplicates are used as the rejection or acceptance criteria.

Generally, water samples are repeated if the RPD is greater than 20 percent and there is sufficient sample for reanalysis.

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**QUALITY ASSURANCE & QUALITY CONTROL****TABLE 1: QC TERMS, DEFINITIONS, PURPOSE FOR MONITORING & FREQUENCY**

QC TERM	DEFINITION	TO MONITOR	FREQUENCY
Work Order	A set of samples received from a customer for analysis.	-	-
QC Lot	A set of 20 samples analysed under the same analytical conditions. A QC Lot may consist of samples from a number of work orders.	-	-
Analytical Lot	A group of samples prepared at the same time for a given analyte.	-	-
Control Limits	Upper and lower limits based on statistical analysis of laboratory historical performance data.	Laboratory precision and bias.	-
Laboratory Quality Control Samples			
Method Blank (<i>BLK</i>)	An analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation.	Contamination introduced in the laboratory.	1 per QC lot of 20 samples
Sample Duplicate (<i>DUP</i>)	An intra-laboratory split sample randomly selected from the sample batch.	Method precision in a given sample matrix.	1 per QC lot of 20 samples
Matrix Spike (<i>MS</i>)	A split sample spiked with the target analytes prior to sample preparation and analysis.	Method bias in a given sample matrix.	1 per QC lot of 20 samples
Matrix Spike Duplicate (<i>MSD</i>)	An split sample spiked as per the MS.	Ditto	Ditto
Laboratory Control Sample (<i>LCS</i>)	A known, interference free matrix spiked with target analytes.	Laboratory preparation technique.	1 per QC lot of 20 samples
Duplicate Control Sample (<i>DCS</i>)	As per the SCS.	Preparation technique reproducibility (precision).	Ditto
Certified Reference Material (<i>CRM</i>)	A certified reference material containing target analytes with known concentrations and associated uncertainties and	Monitoring overall performance of each step during analysis, including sample preparation. For Inorganic analysis.	1 per QC Lot, per analytical method.
Surrogate Spike (<i>organic testing only</i>)	Compounds similar in composition and behaviour to the target analytes but not commonly found in samples.	Matrix interference on a per sample basis.	Surrogates are added to all samples for selected organic analyses.
Filed Quality Control Samples			
Equipment Rinsate	A sample of reagent water used by client in field to rinse the sampling equipment between the decontamination and sampling steps	Equipment decontamination.	as directed by client.
Trip Blank (<i>usually VOC testing</i>)	A sample of analyte free media is taken from the laboratory to the sampling site and returned to the laboratory unopened.	Contamination from shipping and field handling. Most applicable to volatile analysis.	as directed by client.

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QUALITY ASSURANCE & QUALITY CONTROL

TABLE 2: LABORATORY QUALITY CONTROL SCHEDULES

ORGANICS –

QUALITY CONTROL ITEM	QCS2	QCS3	QCS4
Laboratory Blank	√	√	√
Batch Duplicate	√	√	√
Matrix Spike (MS)	•	√	√
Single Control Sample (SCS)	√	√	√
Duplicate Control Sample (DCS)	•	•	√
Surrogate (<i>organics only</i>)	√	√	√
Matrix Spike Duplicate (MSD)	•	•	√

INORGANICS -

QUALITY CONTROL ITEM	QCS2	QCS3	QCS4
Laboratory Blank	√	√	√
Batch Duplicate	√	√	√
Matrix Spike (MS)	√	√	√
Single Control Sample (SCS)	√	√	√
Duplicate Control Sample (DCS)	•	•	√
Matrix Spike Duplicate (MSD)	•	•	√

- √ Analysis performed in the schedule.
- Analysis not performed in the schedule.

Appendix H. Water quality monitoring results and graphical presentations

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: C1A

Date of Monitoring	Weather Condition	Time	Water Depth (m)	pH		Temperature (°C)		DO (mg/L)		DO Saturation, %		Turbidity (NTU)		SS (mg/L)
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value
03/04/2017	Sunny	09:50	0.2	7.4	7.4	18.8	18.8	9.5	9.5	102%	102%	8	8	18
				7.4		18.8		9.5		102%		8		
05/04/2017	Sunny	11:44	0.2	7.4	7.4	21.7	21.7	9.2	9.2	105%	105%	4	4	5
				7.4		21.7		9.2		105%		4		
07/04/2017	Fine	16:04	0.2	7.4	7.4	23.3	23.3	8.5	8.5	99%	99%	7	7	12
				7.4		23.3		8.5		99%		7		
10/04/2017	Fine	10:26	0.2	7.4	7.4	24.4	24.4	8.2	8.2	98%	98%	9	9	13
				7.4		24.4		8.2		98%		9		
12/04/2017	Rainy	14:55	0.2	7.5	7.5	21.0	21.0	9.0	9.0	101%	101%	9	9	19
				7.5		21.0		9.0		101%		9		
14/04/2017	Fine	11:24	0.2	7.4	7.4	21.0	21.0	8.8	8.8	99%	99%	7	7	10
				7.4		21.0		8.8		99%		7		
17/04/2017	Sunny	13:06	0.2	7.4	7.4	22.3	22.3	8.3	8.3	100%	100%	12	12	31
				7.4		22.3		8.3		100%		12		
19/04/2017	Sunny	15:01	0.2	7.4	7.4	26.1	26.1	7.9	7.9	97%	97%	12	12	36
				7.4		26.1		7.9		97%		12		
21/04/2017	Rainy	12:04	0.2	7.4	7.4	25.7	25.7	7.2	7.2	88%	88%	12	12	26
				7.4		25.7		7.2		88%		12		
24/04/2017	Rainy	14:52	0.2	7.5	7.5	21.4	21.4	8.2	8.2	94%	94%	16	16	37
				7.5		21.4		8.2		94%		16		
26/04/2017	Rainy	15:24	0.2	7.5	7.5	23.8	23.8	7.8	7.8	93%	93%	12	12	19
				7.5		23.8		7.8		93%		12		
28/04/2017	Rainy	14:11	0.2	7.4	7.4	24.8	24.8	7.7	7.7	91%	91%	6	6	5
				7.4		24.8		7.7		91%		6		

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

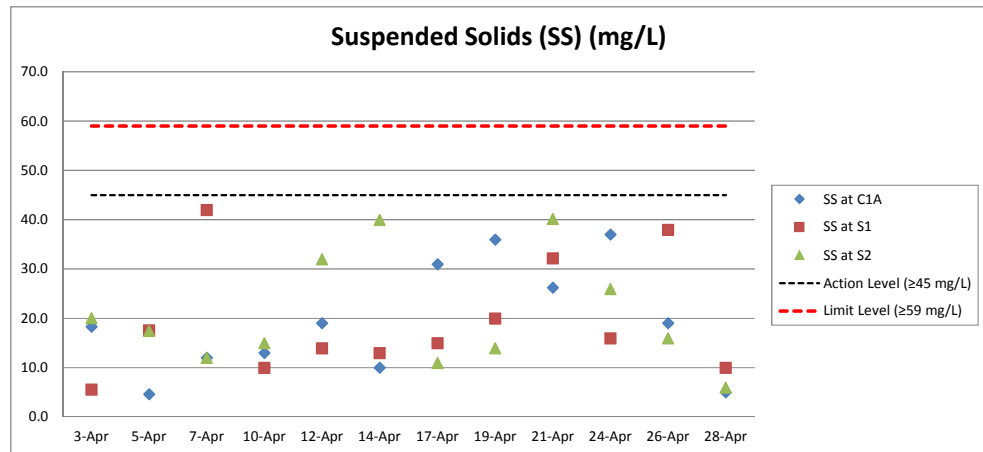
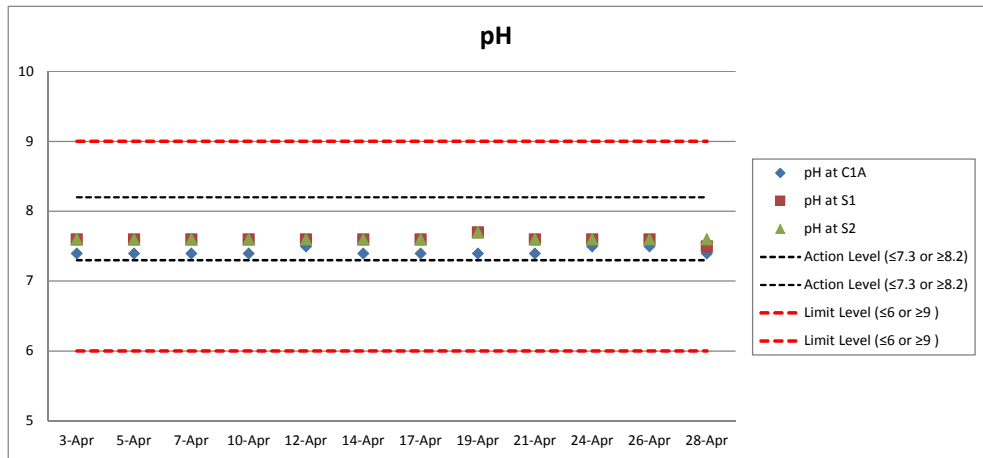
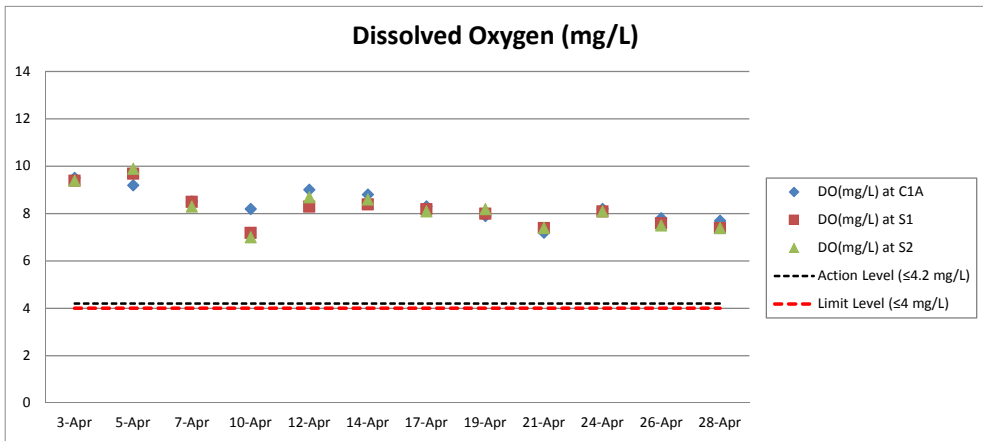
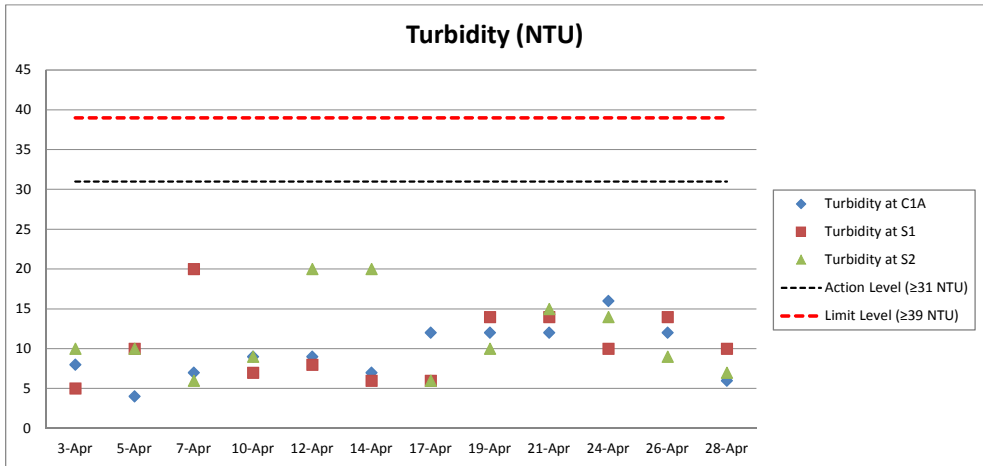
Monitoring Station: S1

Date of Monitoring	Weather Condition	Time	Water Depth (m)	pH		Temperature (°C)		DO (mg/L)		DO Saturation, %		Turbidity (NTU)		SS (mg/L)
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value
03/04/2017	Sunny	10:01	0.4	7.6	7.6	18.6	18.6	9.4	9.4	102%	102%	5	5	6
				7.6		18.6		9.4		102%		5		
05/04/2017	Sunny	11:54	0.4	7.6	7.6	22.6	22.6	9.7	9.7	113%	113%	10	10	18
				7.6		22.6		9.7		113%		10		
07/04/2017	Fine	16:14	0.3	7.6	7.6	25.7	25.7	8.5	8.5	102%	102%	20	20	42
				7.6		25.7		8.5		102%		20		
10/04/2017	Fine	10:36	0.4	7.6	7.6	24.7	24.7	7.2	7.2	93%	93%	7	7	10
				7.6		24.7		7.2		93%		7		
12/04/2017	Rainy	15:05	0.3	7.6	7.6	21.0	21.0	8.3	8.3	96%	96%	8	8	14
				7.6		21.0		8.3		96%		8		
14/04/2017	Fine	11:34	0.3	7.6	7.6	20.1	20.1	8.4	8.4	96%	96%	6	6	13
				7.6		20.1		8.4		96%		6		
17/04/2017	Sunny	13:16	0.3	7.6	7.6	22.1	22.1	8.2	8.2	97%	97%	6	6	15
				7.6		22.1		8.2		97%		6		
19/04/2017	Sunny	15:11	0.4	7.7	7.7	30.5	30.5	8.0	8.0	99%	99%	14	14	20
				7.7		30.5		8.0		99%		14		
21/04/2017	Rainy	12:14	0.3	7.6	7.6	26.6	26.6	7.4	7.4	93%	93%	14	14	32
				7.6		26.6		7.4		93%		14		
24/04/2017	Rainy	15:02	0.3	7.6	7.6	21.9	21.9	8.1	8.1	93%	93%	10	10	16
				7.6		21.9		8.1		93%		10		
26/04/2017	Rainy	15:34	0.3	7.6	7.6	24.4	24.4	7.6	7.6	88%	88%	14	14	38
				7.6		24.4		7.6		88%		14		
28/04/2017	Rainy	14:21	0.3	7.5	7.5	25.3	25.3	7.4	7.4	84%	84%	10	10	10
				7.5		25.3		7.4		84%		10		

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: S2

Date of Monitoring	Weather Condition	Time	Water Depth (m)	pH		Temperature (°C)		DO (mg/L)		DO Saturation, %		Turbidity (NTU)		SS (mg/L)
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value
03/04/2017	Sunny	10:11	0.6	7.6	7.6	18.9	18.9	9.4	9.4	104%	104%	10	10	20
				7.6		18.9		9.4		104%		10		
05/04/2017	Sunny	12:04	0.6	7.6	7.6	22.9	22.9	9.9	9.9	118%	118%	10	10	18
				7.6		22.9		9.9		118%		10		
07/04/2017	Fine	16:24	0.6	7.6	7.6	24.4	24.4	8.3	8.3	97%	97%	6	6	12
				7.6		24.4		8.3		97%		6		
10/04/2017	Fine	10:46	0.7	7.6	7.6	24.6	24.6	7.0	7.0	91%	91%	9	9	15
				7.6		24.6		7.0		91%		9		
12/04/2017	Rainy	15:15	0.6	7.6	7.6	17.4	17.4	8.7	8.7	95%	95%	20	20	32
				7.6		17.4		8.7		95%		20		
14/04/2017	Fine	11:44	0.6	7.6	7.6	19.5	19.5	8.6	8.6	98%	98%	20	20	40
				7.6		19.5		8.6		98%		20		
17/04/2017	Sunny	13:26	0.7	7.6	7.6	21.9	21.9	8.1	8.1	96%	96%	6	6	11
				7.6		21.9		8.1		96%		6		
19/04/2017	Sunny	15:21	0.7	7.7	7.7	30.5	30.5	8.2	8.2	103%	103%	10	10	14
				7.7		30.5		8.2		103%		10		
21/04/2017	Rainy	12:24	0.6	7.6	7.6	26.7	26.7	7.4	7.4	94%	94%	15	15	40
				7.6		26.7		7.4		94%		15		
24/04/2017	Rainy	15:12	0.6	7.6	7.6	22.3	22.3	8.1	8.1	90%	90%	14	14	26
				7.6		22.3		8.1		90%		14		
26/04/2017	Rainy	15:44	0.5	7.6	7.6	24.7	24.7	7.5	7.5	85%	85%	9	9	16
				7.6		24.7		7.5		85%		9		
28/04/2017	Rainy	14:31	0.6	7.6	7.6	25.6	25.6	7.4	7.4	83%	83%	7	7	6
				7.6		25.6		7.4		83%		7		



Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: C2 Tide: Mid-Ebb

Date of Monitoring	Weather Condition	Sea Condition	Time	Water Depth (m)	Sampling Depth (m)		Water Temperature (°C)		Cadmium (µg/L)		Chromium (µg/L)		Aluminium (µg/L)	
							Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged
03/04/2017	Cloudy	Moderate	10:20	6.4	Surface	1.0	20.5	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.2	20.3	<0.5	<0.5	<1	<1	<20		
					Bottom	5.4	20.2	<0.5	<0.5	<1	<1	<20		
05/04/2017	Cloudy	Calm	09:43	6.6	Surface	1.0	20.9	3.4	2.0	<1	<1	<20	<20	
					Middle	3.3	20.5	2	<1	<1	<20			
					Bottom	5.6	20.4	0.6	<1	<1	<20			
07/04/2017	Cloudy	Moderate	12:00	6.3	Surface	1.0	18.7	2.7	2.9	<1	<1	<20	<20	
					Middle	3.2	18.8	4.1	<1	<1	<20			
					Bottom	5.3	18.8	1.8	<1	<1	<20			
10/04/2017	Cloudy	Calm	13:47	6.4	Surface	1.0	22.2	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.2	22.2	<0.5	<0.5	<1	<1	<20		
					Bottom	5.4	22.1	<0.5	<0.5	<1	<1	<20		
12/04/2017	Cloudy	Calm	14:35	6.3	Surface	1.0	17.9	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.3	17.9	<0.5	<0.5	<1	<1	<20		
					Bottom	5.3	17.9	<0.5	<0.5	<1	<1	<20		
14/04/2017	Cloudy	Moderate	15:10	6.4	Surface	1.0	22.1	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.2	21.7	<0.5	<0.5	<1	<1	<20		
					Bottom	5.4	21.7	<0.5	<0.5	<1	<1	<20		
17/04/2017	Fine	Calm	05:10	6.5	Surface	1.0	22.3	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.2	22.6	<0.5	<0.5	<1	<1	<20		
					Bottom	5.5	22.4	<0.5	<0.5	<1	<1	<20		
19/04/2017	Fine	Calm	07:15	6.3	Surface	1.0	23.4	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.1	22.3	<0.5	<0.5	<1	<1	<20		
					Bottom	5.3	22.4	<0.5	<0.5	<1	<1	<20		
21/04/2017	Cloudy	Moderate	09:40	7.0	Surface	1.0	24.2	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.1	24.0	<0.5	<0.5	<1	<1	<20		
					Bottom	6.0	23.9	<0.5	<0.5	<1	<1	<20		
24/04/2017	Cloudy	Moderate	12:47	6.3	Surface	1.0	24.6	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.4	24.4	<0.5	<0.5	<1	<1	<20		
					Bottom	5.3	23.9	<0.5	<0.5	<1	<1	<20		
26/04/2017	Cloudy	Moderate	14:02	6.4	Surface	1.0	21.6	<0.5	<0.5	<1	<1	<20	<20	
					Middle	3.2	21.4	<0.5	<0.5	<1	<1	<20		
					Bottom	5.4	21.3	<0.5	<0.5	<1	<1	<20		
28/04/2017	Cloudy	Moderate	15:13	6.2	Surface	1.0	23.4	1.1	1.2	<1	<1	<20	<20	
					Middle	3.1	23.2	1.7	<1	<1	<20			
					Bottom	5.2	23.1	0.8	<1	<1	<20			

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: C3 Tide: Mid-Ebb

Date of Monitoring	Weather Condition	Sea Condition	Time	Water Depth (m)	Sampling Depth (m)		Water Temperature (°C)		Cadmium (µg/L)		Chromium (µg/L)		Aluminium (µg/L)	
							Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged
03/04/2017	Cloudy	Moderate	09:56	4.4	Surface	1.0	20.5		<0.5		<1		<20	
					Middle	-	-							
					Bottom	3.4	20.4		<0.5		<1		<20	
05/04/2017	Cloudy	Calm	09:20	4.5	Surface	1.0	20.3		1.3		<1		<20	
					Middle	-	-							
					Bottom	3.5	20.4		0.6		<1		<20	
07/04/2017	Cloudy	Moderate	11:45	4.3	Surface	1.0	19.4		<0.5		<1		<20	
					Middle	-	-							
					Bottom	3.3	19.4		1.8		<1		<20	
10/04/2017	Cloudy	Calm	13:15	4.5	Surface	1.0	22.1		<0.5		<1		<20	
					Middle	-	-							
					Bottom	3.5	22.0		<0.5		<1		<20	
12/04/2017	Cloudy	Calm	14:20	4.4	Surface	1.0	17.7		<0.5		<1		<20	
					Middle	-	-							
					Bottom	3.4	17.7		<0.5		<1		<20	
14/04/2017	Cloudy	Moderate	15:26	3.7	Surface	1.0	22.3		<0.5		<1		<20	
					Middle	-	-							
					Bottom	2.7	22.1		<0.5		<1		<20	
17/04/2017	Fine	Calm	05:40	4.5	Surface	1.0	22.4		<0.5		<1		<20	
					Middle	-	-							
					Bottom	3.5	22.6		<0.5		<1		<20	
19/04/2017	Fine	Calm	07:38	4.1	Surface	1.0	23.0		<0.5		<1		<20	
					Middle	-	-							
					Bottom	3.1	22.4		<0.5		<1		<20	
21/04/2017	Cloudy	Moderate	10:00	5.0	Surface	1.0	24.3		<0.5		<1		<20	
					Middle	-	-							
					Bottom	4.0	24.1		<0.5		<1		<20	
24/04/2017	Cloudy	Moderate	12:25	4.5	Surface	1.0	25.4		<0.5		<1		<20	
					Middle	-	-							
					Bottom	3.5	24.9		<0.5		<1		<20	
26/04/2017	Cloudy	Moderate	13:35	4.2	Surface	1.0	21.4		<0.5		<1		<20	
					Middle	-	-							
					Bottom	3.2	21.2		<0.5		<1		<20	
28/04/2017	Cloudy	Moderate	14:40	5.2	Surface	1.0	23.2		1.6		<1		<20	
					Middle	-	-							
					Bottom	4.2	23.1		0.9		<1		<20	

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: M1 Tide: Mid-Ebb

Date of Monitoring	Weather Condition	Sea Condition	Time	Water Depth (m)	Sampling Depth (m)		Water Temperature (°C)		Cadmium (µg/L)		Chromium (µg/L)		Aluminium (µg/L)	
							Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged
03/04/2017	Cloudy	Moderate	10:14	6.6	Surface	1.0	20.6	20.4	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.3	20.4	<0.5	<1		<20			
					Bottom	5.6	20.3	<0.5	<1		<20			
05/04/2017	Cloudy	Calm	09:34	6.6	Surface	1.0	20.5	20.5	1.1	0.7	<1	<1	<20	<20
					Middle	3.3	20.6	1	<1		<20			
					Bottom	5.6	20.4	<0.5	<1		<20			
07/04/2017	Cloudy	Moderate	11:55	6.2	Surface	1.0	19.2	19.2	<0.5	1.7	<1	<1	<20	<20
					Middle	3.4	19.2	3	<1		<20			
					Bottom	5.2	19.2	1.6	<1		<20			
10/04/2017	Cloudy	Calm	13:30	6.5	Surface	1.0	22.3	22.2	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.2	22.2	<0.5	<1		<20			
					Bottom	5.5	22.1	<0.5	<1		<20			
12/04/2017	Cloudy	Calm	14:30	6.3	Surface	1.0	17.6	17.7	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.3	17.7	<0.5	<1		<20			
					Bottom	5.3	17.8	<0.5	<1		<20			
14/04/2017	Cloudy	Moderate	15:14	6.2	Surface	1.0	22.0	21.8	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.1	21.8	<0.5	<1		<20			
					Bottom	5.2	21.6	<0.5	<1		<20			
17/04/2017	Fine	Calm	05:17	6.6	Surface	1.0	22.2	22.4	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.3	22.4	<0.5	<1		<20			
					Bottom	5.6	22.6	<0.5	<1		<20			
19/04/2017	Fine	Calm	07:22	6.2	Surface	1.0	22.7	22.5	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.1	22.5	<0.5	<1		<20			
					Bottom	5.2	22.4	<0.5	<1		<20			
21/04/2017	Cloudy	Moderate	09:50	7.2	Surface	1.0	24.4	24.1	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.1	24.2	<0.5	<1		<20			
					Bottom	6.2	23.8	<0.5	<1		<20			
24/04/2017	Cloudy	Moderate	12:41	6.2	Surface	1.0	25.3	25.1	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.2	25.1	<0.5	<1		<20			
					Bottom	5.2	24.9	<0.5	<1		<20			
26/04/2017	Cloudy	Moderate	13:54	6.7	Surface	1.0	21.5	21.3	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.4	21.3	<0.5	<1		<20			
					Bottom	5.7	21.2	<0.5	<1		<20			
28/04/2017	Cloudy	Moderate	15:00	6.4	Surface	1.0	23.3	23.2	1.1	1.0	<1	<1	<20	<20
					Middle	3.2	23.2	1.1	<1		<20			
					Bottom	5.4	23.1	0.8	<1		<20			

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: M2 Tide: Mid-Ebb

Date of Monitoring	Weather Condition	Sea Condition	Time	Water Depth (m)	Sampling Depth (m)		Water Temperature (°C)		Cadmium (µg/L)		Chromium (µg/L)		Aluminium (µg/L)	
							Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged
03/04/2017	Cloudy	Moderate	10:07	4.5	Surface	1.0	20.3	20.4	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.5	20.4		<0.5		<1		<20	
05/04/2017	Cloudy	Calm	09:26	4.4	Surface	1.0	20.5	20.4	1.5	1.0	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.4	20.3		<0.5		<1		<20	
07/04/2017	Cloudy	Moderate	11:50	6.3	Surface	1.0	19.1	19.1	2.4	2.8	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	5.3	19.1		3.2		<1		<20	
10/04/2017	Cloudy	Calm	13:26	4.5	Surface	1.0	22.3	22.2	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.5	22.1		<0.5		<1		<20	
12/04/2017	Cloudy	Calm	14:25	4.4	Surface	1.0	17.8	17.8	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.4	17.8		<0.5		<1		<20	
14/04/2017	Cloudy	Moderate	15:23	4.0	Surface	1.0	22.7	22.5	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.0	22.3		<0.5		<1		<20	
17/04/2017	Fine	Calm	05:26	4.5	Surface	1.0	22.4	22.5	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.5	22.5		<0.5		<1		<20	
19/04/2017	Fine	Calm	07:30	4.1	Surface	1.0	22.6	22.6	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.1	22.5		<0.5		<1		<20	
21/04/2017	Cloudy	Moderate	09:55	5.6	Surface	1.0	24.2	24.2	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	4.6	24.1		<0.5		<1		<20	
24/04/2017	Cloudy	Moderate	12:36	4.6	Surface	1.0	24.8	24.7	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.6	24.6		<0.5		<1		<20	
26/04/2017	Cloudy	Moderate	13:42	4.4	Surface	1.0	21.3	21.3	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.4	21.2		<0.5		<1		<20	
28/04/2017	Cloudy	Moderate	14:52	5.0	Surface	1.0	23.2	23.1	1.5	1.2	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	4.0	23.0		0.9		<1		<20	

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: C2 Tide: Mid-Flood

Date of Monitoring	Weather Condition	Sea Condition	Time	Water Depth (m)	Sampling Depth (m)		Water Temperature (°C)		Cadmium (µg/L)		Chromium (µg/L)		Aluminium (µg/L)	
							Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged
03/04/2017	Cloudy	Moderate	05:10	6.5	Surface	1.0	19.8	19.9	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.2	19.9		<0.5		<1		<20	
					Bottom	5.5	20.1		<0.5		<1		<20	
05/04/2017	Cloudy	Calm	03:50	6.4	Surface	1.0	20.2	20.2	1.6	1.6	<1	<1	<20	<20
					Middle	3.2	20.3		2.3		<1		<20	
					Bottom	5.4	20.1		1		<1		<20	
07/04/2017	Cloudy	Moderate	05:45	6.1	Surface	1.0	18.1	18.2	<0.5	1.6	<1	<1	<20	<20
					Middle	3.2	18.2		3.7		<1		<20	
					Bottom	5.1	18.2		0.6		<1		<20	
10/04/2017	Cloudy	Calm	07:20	6.5	Surface	1.0	22.4	22.1	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.3	22.0		<0.5		<1		<20	
					Bottom	5.5	21.9		<0.5		<1		<20	
12/04/2017	Cloudy	Calm	08:10	6.1	Surface	1.0	18.1	18.1	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.2	18.1		<0.5		<1		<20	
					Bottom	5.1	18.1		<0.5		<1		<20	
14/04/2017	Cloudy	Moderate	08:45	6.6	Surface	1.0	22.0	21.6	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.3	21.4		<0.5		<1		<20	
					Bottom	5.6	21.5		<0.5		<1		<20	
17/04/2017	Fine	Calm	10:38	6.6	Surface	1.0	23.2	23.1	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.3	23.1		<0.5		<1		<20	
					Bottom	5.6	22.9		<0.5		<1		<20	
19/04/2017	Fine	Calm	11:45	6.4	Surface	1.0	25.1	23.7	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.2	23.6		<0.5		<1		<20	
					Bottom	5.4	22.5		<0.5		<1		<20	
21/04/2017	Cloudy	Moderate	14:48	7.5	Surface	1.0	25.5	25.2	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.2	25.1		<0.5		<1		<20	
					Bottom	6.5	24.9		<0.5		<1		<20	
24/04/2017	Cloudy	Moderate	06:10	6.9	Surface	1.0	25.2	25.0	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.5	25.0		<0.5		<1		<20	
					Bottom	5.9	24.9		<0.5		<1		<20	
26/04/2017	Cloudy	Moderate	07:16	6.3	Surface	1.0	21.5	21.3	<0.5	<0.5	<1	<1	<20	<20
					Middle	3.2	21.3		<0.5		<1		<20	
					Bottom	5.3	21.2		<0.5		<1		<20	
28/04/2017	Cloudy	Moderate	08:20	6.4	Surface	1.0	22.5	22.3	0.9	0.63	<1	<1	<20	<20
					Middle	3.2	22.3		<0.5		<1		<20	
					Bottom	5.4	22.0		<0.5		<1		<20	

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: C3 Tide: Mid-Flood

Date of Monitoring	Weather Condition	Sea Condition	Time	Water Depth (m)	Sampling Depth (m)		Water Temperature (°C)		Cadmium (µg/L)		Chromium (µg/L)		Aluminium (µg/L)	
							Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged
03/04/2017	Cloudy	Moderate	05:34	4.5	Surface	1.0	20.2	20.2	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.5	20.1		<0.5		<1		<20	
05/04/2017	Cloudy	Calm	04:16	4.6	Surface	1.0	20.2	20.3	2.2	1.8	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.6	20.3		1.3		<1		<20	
07/04/2017	Cloudy	Moderate	06:00	4.0	Surface	1.0	17.9	17.9	1.8	1.2	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.0	17.8		<0.5		<1		<20	
10/04/2017	Cloudy	Calm	07:48	4.6	Surface	1.0	22.2	22.2	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.6	22.1		<0.5		<1		<20	
12/04/2017	Cloudy	Calm	08:25	4.2	Surface	1.0	18.3	18.3	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.2	18.3		<0.5		<1		<20	
14/04/2017	Cloudy	Moderate	09:05	3.8	Surface	1.0	21.9	21.8	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	2.8	21.7		<0.5		<1		<20	
17/04/2017	Fine	Calm	10:10	4.6	Surface	1.0	22.8	22.8	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.6	22.7		<0.5		<1		<20	
19/04/2017	Fine	Calm	11:28	4.3	Surface	1.0	25.0	23.6	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.3	22.2		<0.5		<1		<20	
21/04/2017	Cloudy	Moderate	14:25	5.5	Surface	1.0	25.4	25.4	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	4.5	25.3		<0.5		<1		<20	
24/04/2017	Cloudy	Moderate	06:31	4.4	Surface	1.0	25.3	25.2	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.4	25.1		<0.5		<1		<20	
26/04/2017	Cloudy	Moderate	07:38	4.4	Surface	1.0	21.0	21.2	<0.5	<0.5	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	3.4	21.4		<0.5		<1		<20	
28/04/2017	Cloudy	Moderate	08:45	5.1	Surface	1.0	22.1	22.1	1.6	1.1	<1	<1	<20	<20
					Middle	-	-		-		-			
					Bottom	4.1	22.0		0.6		<1		<20	

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: M1 Tide: Mid-Flood

Date of Monitoring	Weather Condition	Sea Condition	Time	Water Depth (m)	Sampling Depth (m)		Water Temperature (°C)		Cadmium (µg/L)		Chromium (µg/L)		Aluminium (µg/L)	
							Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged
03/04/2017	Cloudy	Moderate	05:18	6.4	Surface	1.0	19.8		<0.5		<1		<20	
					Middle	3.2	19.8	19.8	<0.5		<1		<20	
					Bottom	5.4	19.9		<0.5		<1		<20	
05/04/2017	Cloudy	Calm	03:58	6.3	Surface	1.0	20.3		1.7		<1		<20	
					Middle	3.2	20.2	20.3	1.2	1.4	<1	<1	<20	<20
					Bottom	5.3	20.3		1.4		<1		<20	
07/04/2017	Cloudy	Moderate	05:50	6.0	Surface	1.0	17.9		<0.5		<1		<20	
					Middle	3.2	17.9	17.9	3.3	1.5	<1	<1	<20	<20
					Bottom	5.0	17.9		0.7		<1		<20	
10/04/2017	Cloudy	Calm	07:28	6.4	Surface	1.0	22.3		<0.5		<1		<20	
					Middle	3.2	22.2	22.2	<0.5		<1		<20	
					Bottom	5.4	22.1		<0.5		<1		<20	
12/04/2017	Cloudy	Calm	08:15	6.2	Surface	1.0	18.6		<0.5		<1		<20	
					Middle	3.3	18.6	18.6	<0.5		<1		<20	
					Bottom	5.2	18.6		<0.5		<1		<20	
14/04/2017	Cloudy	Moderate	08:51	6.4	Surface	1.0	21.8		<0.5		<1		<20	
					Middle	3.2	21.4	21.5	<0.5		<1		<20	
					Bottom	5.4	21.2		<0.5		<1		<20	
17/04/2017	Fine	Calm	10:25	6.7	Surface	1.0	23.3		<0.5		<1		<20	
					Middle	3.4	23.2	23.2	<0.5		<1		<20	
					Bottom	5.7	23.2		<0.5		<1		<20	
19/04/2017	Fine	Calm	11:36	6.3	Surface	1.0	24.8		<0.5		<1		<20	
					Middle	3.1	23.1	23.5	<0.5		<1		<20	
					Bottom	5.3	22.6		<0.5		<1		<20	
21/04/2017	Cloudy	Moderate	14:38	7.0	Surface	1.0	25.1		<0.5		<1		<20	
					Middle	3.5	24.9	24.9	<0.5		<1		<20	
					Bottom	6.0	24.8		<0.5		<1		<20	
24/04/2017	Cloudy	Moderate	06:17	6.6	Surface	1.0	25.4		<0.5		<1		<20	
					Middle	3.4	25.2	25.1	<0.5		<1		<20	
					Bottom	5.6	24.8		<0.5		<1		<20	
26/04/2017	Cloudy	Moderate	07:22	6.6	Surface	1.0	21.2		<0.5		<1		<20	
					Middle	3.3	21.1	21.1	<0.5		<1		<20	
					Bottom	5.6	21.0		<0.5		<1		<20	
28/04/2017	Cloudy	Moderate	08:30	6.8	Surface	1.0	22.4		1.2		<1		<20	
					Middle	3.4	22.1	22.2	<0.5		<1		<20	
					Bottom	5.8	22.1		<0.5	0.73	<1	<1	<20	<20

Project Name: Decommissioning of West Portion of the middle ash lagoon at Tsang Tsui, Tuen Mun

Monitoring Station: M2 Tide: Mid-Flood

Date of Monitoring	Weather Condition	Sea Condition	Time	Water Depth (m)	Sampling Depth (m)		Water Temperature (°C)		Cadmium (µg/L)		Chromium (µg/L)		Aluminium (µg/L)	
							Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged	Value	Depth-averaged
03/04/2017	Cloudy	Moderate	05:26	4.4	Surface	1.0	19.9		<0.5		<1		<20	
					Middle	-	-	19.9		<1		<20		
					Bottom	3.4	19.8		<1		<20			
05/04/2017	Cloudy	Calm	04:07	4.4	Surface	1.0	20.5		1.8		<1		<20	
					Middle	-	-	20.3		<1		<20		
					Bottom	3.4	20.1		1.6		<1		<20	
07/04/2017	Cloudy	Moderate	05:55	4.2	Surface	1.0	18.1		<0.5		<1		<20	
					Middle	-	-	18.1		<1		<20		
					Bottom	3.2	18.1		0.6		<1		<20	
10/04/2017	Cloudy	Calm	07:36	4.4	Surface	1.0	22.3		<0.5		<1		<20	
					Middle	-	-	22.2		<1		<20		
					Bottom	3.4	22.0		<1		<20			
12/04/2017	Cloudy	Calm	08:20	4.2	Surface	1.0	17.8		<0.5		<1		<20	
					Middle	-	-	17.9		<1		<20		
					Bottom	3.2	17.9		<1		<20			
14/04/2017	Cloudy	Moderate	09:01	3.8	Surface	1.0	22.3		<0.5		<1		<20	
					Middle	-	-	22.2		<1		<20		
					Bottom	2.8	22.1		<1		<20			
17/04/2017	Fine	Calm	10:17	4.5	Surface	1.0	22.9		<0.5		<1		<20	
					Middle	-	-	22.9		<1		<20		
					Bottom	3.5	22.9		<1		<20			
19/04/2017	Fine	Calm	11:40	4.2	Surface	1.0	24.9		<0.5		<1		<20	
					Middle	-	-	23.7		<1		<20		
					Bottom	3.2	22.5		<1		<20			
21/04/2017	Cloudy	Moderate	14:32	5.5	Surface	1.0	25.3		<0.5		<1		<20	
					Middle	-	-	25.2		<1		<20		
					Bottom	4.5	25.1		<1		<20			
24/04/2017	Cloudy	Moderate	06:24	4.7	Surface	1.0	24.9		<0.5		<1		<20	
					Middle	-	-	24.9		<1		<20		
					Bottom	3.7	24.8		<1		<20			
26/04/2017	Cloudy	Moderate	07:30	4.5	Surface	1.0	21.3		<0.5		<1		<20	
					Middle	-	-	21.3		<1		<20		
					Bottom	3.5	21.2		<1		<20			
28/04/2017	Cloudy	Moderate	08:36	5.2	Surface	1.0	22.3		1.6		<1		<20	
					Middle	-	-	22.2		<1		<20		
					Bottom	4.2	22.0		1.05		<1		<20	



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Order number : ----
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Page : 1 of 5
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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Wong Wing, Kenneth	Manager - Metals	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1712629 supersedes any previous reports with this reference. Testing period is from 03-APR-2017 to 13-APR-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1712629 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

			Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
Client sample ID	Client sampling date / time	Laboratory sample ID		EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered		
C2 S EBB	03-APR-2017 10:20	HK1712629-004		<0.5	<1	<20		
C2 M EBB	03-APR-2017 10:20	HK1712629-005		<0.5	<1	<20		
C2 B EBB	03-APR-2017 10:20	HK1712629-006		<0.5	<1	<20		
C3 S EBB	03-APR-2017 09:56	HK1712629-007		<0.5	<1	<20		
C3 B EBB	03-APR-2017 09:56	HK1712629-009		<0.5	<1	<20		
M1 S EBB	03-APR-2017 10:14	HK1712629-010		<0.5	<1	<20		
M1 M EBB	03-APR-2017 10:14	HK1712629-011		<0.5	<1	<20		
M1 B EBB	03-APR-2017 10:14	HK1712629-012		<0.5	<1	<20		
M2 S EBB	03-APR-2017 10:07	HK1712629-013		<0.5	<1	<20		
M2 B EBB	03-APR-2017 10:07	HK1712629-015		<0.5	<1	<20		
C2 S FLOOD	03-APR-2017 05:10	HK1712629-016		<0.5	<1	<20		
C2 M FLOOD	03-APR-2017 05:10	HK1712629-017		<0.5	<1	<20		
C2 B FLOOD	03-APR-2017 05:10	HK1712629-018		<0.5	<1	<20		
C3 S FLOOD	03-APR-2017 05:34	HK1712629-019		<0.5	<1	<20		
C3 B FLOOD	03-APR-2017 05:34	HK1712629-021		<0.5	<1	<20		
M1 S FLOOD	03-APR-2017 05:18	HK1712629-022		<0.5	<1	<20		
M1 M FLOOD	03-APR-2017 05:18	HK1712629-023		<0.5	<1	<20		
M1 B FLOOD	03-APR-2017 05:18	HK1712629-024		<0.5	<1	<20		
M2 S FLOOD	03-APR-2017 05:26	HK1712629-025		<0.5	<1	<20		
M2 B FLOOD	03-APR-2017 05:26	HK1712629-027		<0.5	<1	<20		



Sub-Matrix: WATER

			Compound				
			LOR Unit				
Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
			EA025: Suspended Solids (SS)				
			1.0 mg/L				
C1 (STREAM WATER)	03-APR-2017 09:50	HK1712629-001	18.3				
S1 (STREAM WATER)	03-APR-2017 10:01	HK1712629-002	5.6				
S2 (STREAM WATER)	03-APR-2017 10:11	HK1712629-003	20.1				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4459346)								
HK1712629-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1.0	mg/L	18.3	19.3	5.6
EG: Metals and Major Cations - Filtered (QC Lot: 4458665)								
HK1712629-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1712629-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4459346)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	89.0	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4458665)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	88.5	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	106	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	94.1	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4458665)										
HK1712629-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	102	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	100	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	94.6	----	80	120	----	----



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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

Laboratory : ALS Technichem (HK) Pty Ltd
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Quote number : ----

Page : 1 of 5
Work Order : **HK1712763**
Amendment No. : 1

Date received : 05-APR-2017

Date of issue : 24-APR-2017

No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Wong Wing, Kenneth	Manager - Metals	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1712763_1 supersedes any previous reports with this reference. Testing period is from 05-APR-2017 to 18-APR-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1712763 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

			Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
Client sample ID	Client sampling date / time	Laboratory sample ID		EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered		
C2 S EBB	05-APR-2017 09:43	HK1712763-004		3.4	<1	<20		
C2 M EBB	05-APR-2017 09:43	HK1712763-005		2.0	<1	<20		
C2 B EBB	05-APR-2017 09:43	HK1712763-006		0.6	<1	<20		
C3 S EBB	05-APR-2017 09:20	HK1712763-007		1.3	<1	<20		
C3 B EBB	05-APR-2017 09:20	HK1712763-009		0.6	<1	<20		
M1 S EBB	05-APR-2017 09:34	HK1712763-010		1.1	<1	<20		
M1 M EBB	05-APR-2017 09:34	HK1712763-011		1.0	<1	<20		
M1 B EBB	05-APR-2017 09:34	HK1712763-012		<0.5	<1	<20		
M2 S EBB	05-APR-2017 09:26	HK1712763-013		1.5	<1	<20		
M2 B EBB	05-APR-2017 09:26	HK1712763-015		<0.5	<1	<20		
C2 S FLOOD	05-APR-2017 03:50	HK1712763-016		1.6	<1	<20		
C2 M FLOOD	05-APR-2017 03:50	HK1712763-017		2.3	<1	<20		
C2 B FLOOD	05-APR-2017 03:50	HK1712763-018		1.0	<1	<20		
C3 S FLOOD	05-APR-2017 04:16	HK1712763-019		2.2	<1	<20		
C3 B FLOOD	05-APR-2017 04:16	HK1712763-021		1.3	<1	<20		
M1 S FLOOD	05-APR-2017 03:58	HK1712763-022		1.7	<1	<20		
M1 M FLOOD	05-APR-2017 03:58	HK1712763-023		1.2	<1	<20		
M1 B FLOOD	05-APR-2017 03:58	HK1712763-024		1.4	<1	<20		
M2 S FLOOD	05-APR-2017 04:07	HK1712763-025		1.8	<1	<20		
M2 B FLOOD	05-APR-2017 04:07	HK1712763-027		1.4	<1	<20		



Sub-Matrix: WATER

			Compound				
			LOR Unit				
Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
			EA025: Suspended Solids (SS)				
			1.0 mg/L				
C1 (STREAM WATER)	05-APR-2017 11:44	HK1712763-001	4.6				
S1 (STREAM WATER)	05-APR-2017 11:54	HK1712763-002	17.6				
S2 (STREAM WATER)	05-APR-2017 12:04	HK1712763-003	17.5				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4461537)								
HK1712763-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1.0	mg/L	4.6	5.3	13.7
EG: Metals and Major Cations - Filtered (QC Lot: 4459683)								
HK1712763-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	2.0	2.1	5.8
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1712763-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	2.3	2.2	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4461537)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	108	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4459683)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	88.8	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	95.2	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	104	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4459683)										
HK1712763-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	83.9	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	84.9	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	100	----	80	120	----	----



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Order number : ----
C-O-C number : ----
Site : ----

Laboratory : ALS Technichem (HK) Pty Ltd
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Page : 1 of 5
Work Order : HK1713120

Date received : 07-APR-2017

Date of issue : 21-APR-2017

No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Wong Wing, Kenneth	Manager - Metals	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1713120 supersedes any previous reports with this reference. Testing period is from 07-APR-2017 to 20-APR-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1713120 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

			Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
Client sample ID	Client sampling date / time	Laboratory sample ID		EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered		
C2 S EBB	07-APR-2017 12:00	HK1713120-004		2.7	<1	<20		
C2 M EBB	07-APR-2017 12:00	HK1713120-005		4.1	<1	<20		
C2 B EBB	07-APR-2017 12:00	HK1713120-006		1.8	<1	<20		
C3 S EBB	07-APR-2017 11:45	HK1713120-007		<0.5	<1	<20		
C3 B EBB	07-APR-2017 11:45	HK1713120-009		1.8	<1	<20		
M1 S EBB	07-APR-2017 11:55	HK1713120-010		<0.5	<1	<20		
M1 M EBB	07-APR-2017 11:55	HK1713120-011		3.0	<1	<20		
M1 B EBB	07-APR-2017 11:55	HK1713120-012		1.6	<1	<20		
M2 S EBB	07-APR-2017 11:50	HK1713120-013		2.4	<1	<20		
M2 B EBB	07-APR-2017 11:50	HK1713120-015		3.2	<1	<20		
C2 S FLOOD	07-APR-2017 05:45	HK1713120-016		<0.5	<1	<20		
C2 M FLOOD	07-APR-2017 05:45	HK1713120-017		3.7	<1	<20		
C2 B FLOOD	07-APR-2017 05:45	HK1713120-018		0.6	<1	<20		
C3 S FLOOD	07-APR-2017 06:00	HK1713120-019		1.8	<1	<20		
C3 B FLOOD	07-APR-2017 06:00	HK1713120-021		<0.5	<1	<20		
M1 S FLOOD	07-APR-2017 05:50	HK1713120-022		<0.5	<1	<20		
M1 M FLOOD	07-APR-2017 05:50	HK1713120-023		3.3	<1	<20		
M1 B FLOOD	07-APR-2017 05:50	HK1713120-024		0.7	<1	<20		
M2 S FLOOD	07-APR-2017 05:55	HK1713120-025		<0.5	<1	<20		
M2 B FLOOD	07-APR-2017 05:55	HK1713120-027		0.6	<1	<20		



Sub-Matrix: WATER

			Compound				
			LOR Unit				
Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
			EA025: Suspended Solids (SS)				
			1 mg/L				
C1 (STREAM WATER)	07-APR-2017 16:04	HK1713120-001	12				
S1 (STREAM WATER)	07-APR-2017 16:14	HK1713120-002	42				
S2 (STREAM WATER)	07-APR-2017 16:24	HK1713120-003	12				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4462656)								
HK1713120-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	12	13	0.0
EG: Metals and Major Cations - Filtered (QC Lot: 4462213)								
HK1713120-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	4.1	4.1	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1713120-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	3.7	3.9	4.4
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4462656)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	112	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4462213)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	88.1	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	94.4	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	102	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4462213)										
HK1713120-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	98.0	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	107	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	111	----	80	120	----	----



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Order number : ----
C-O-C number : ----
Site : ----

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Page : 1 of 5
Work Order : **HK1713448**

Date received : 11-APR-2017

Date of issue : 25-APR-2017

No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong, Mike	Senior Chemist	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1713448 supersedes any previous reports with this reference. Testing period is from 11-APR-2017 to 25-APR-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1713448 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
			EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered			
C2 S EBB	10-APR-2017 13:47	HK1713448-004	<0.5	<1	<20			
C2 M EBB	10-APR-2017 13:47	HK1713448-005	<0.5	<1	<20			
C2 B EBB	10-APR-2017 13:47	HK1713448-006	<0.5	<1	<20			
C3 S EBB	10-APR-2017 13:15	HK1713448-007	<0.5	<1	<20			
C3 B EBB	10-APR-2017 13:15	HK1713448-009	<0.5	<1	<20			
M1 S EBB	10-APR-2017 13:38	HK1713448-010	<0.5	<1	<20			
M1 M EBB	10-APR-2017 13:38	HK1713448-011	<0.5	<1	<20			
M1 B EBB	10-APR-2017 13:38	HK1713448-012	<0.5	<1	<20			
M2 S EBB	10-APR-2017 13:26	HK1713448-013	<0.5	<1	<20			
M2 B EBB	10-APR-2017 13:26	HK1713448-015	<0.5	<1	<20			
C2 S FLOOD	10-APR-2017 07:20	HK1713448-016	<0.5	<1	<20			
C2 M FLOOD	10-APR-2017 07:20	HK1713448-017	<0.5	<1	<20			
C2 B FLOOD	10-APR-2017 07:20	HK1713448-018	<0.5	<1	<20			
C3 S FLOOD	10-APR-2017 07:48	HK1713448-019	<0.5	<1	<20			
C3 B FLOOD	10-APR-2017 07:48	HK1713448-021	<0.5	<1	<20			
M1 S FLOOD	10-APR-2017 07:28	HK1713448-022	<0.5	<1	<20			
M1 M FLOOD	10-APR-2017 07:28	HK1713448-023	<0.5	<1	<20			
M1 B FLOOD	10-APR-2017 07:28	HK1713448-024	<0.5	<1	<20			
M2 S FLOOD	10-APR-2017 07:36	HK1713448-025	<0.5	<1	<20			
M2 B FLOOD	10-APR-2017 07:36	HK1713448-027	<0.5	<1	<20			



Sub-Matrix: WATER

			Compound				
			LOR Unit				
Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
			EA025: Suspended Solids (SS)				
			1 mg/L				
C1 (STREAM WATER)	10-APR-2017 10:26	HK1713448-001	13				
S1 (STREAM WATER)	10-APR-2017 10:36	HK1713448-002	10				
S2 (STREAM WATER)	10-APR-2017 10:46	HK1713448-003	15				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4466630)								
HK1713448-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	13	12	9.6
EG: Metals and Major Cations - Filtered (QC Lot: 4466708)								
HK1713448-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1713448-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4466630)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	94.0	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4466708)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	87.7	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	105	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	104	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4466708)										
HK1713448-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	92.9	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	106	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	93.4	----	80	120	----	----



CERTIFICATE OF ANALYSIS

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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

Laboratory : ALS Technichem (HK) Pty Ltd
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Quote number : ----

Page : 1 of 5
Work Order : **HK1713979**
Date received : 12-APR-2017
Date of issue : 27-APR-2017
No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Lin Wai Yu, Iris	Senior Chemist - Inorganics	Inorganics
Wong Wing, Kenneth	Manager - Metals	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1713979 supersedes any previous reports with this reference. Testing period is from 12-APR-2017 to 26-APR-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1713979 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
			EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered			
C2 S EBB	12-APR-2017 14:35	HK1713979-004	<0.5	<1	<20			
C2 M EBB	12-APR-2017 14:35	HK1713979-005	<0.5	<1	<20			
C2 B EBB	12-APR-2017 14:35	HK1713979-006	<0.5	<1	<20			
C3 S EBB	12-APR-2017 14:20	HK1713979-007	<0.5	<1	<20			
C3 B EBB	12-APR-2017 14:20	HK1713979-009	<0.5	<1	<20			
M1 S EBB	12-APR-2017 14:30	HK1713979-010	<0.5	<1	<20			
M1 M EBB	12-APR-2017 14:30	HK1713979-011	<0.5	<1	<20			
M1 B EBB	12-APR-2017 14:30	HK1713979-012	<0.5	<1	<20			
M2 S EBB	12-APR-2017 14:25	HK1713979-013	<0.5	<1	<20			
M2 B EBB	12-APR-2017 14:25	HK1713979-015	<0.5	<1	<20			
C2 S FLOOD	12-APR-2017 08:10	HK1713979-016	<0.5	<1	<20			
C2 M FLOOD	12-APR-2017 08:10	HK1713979-017	<0.5	<1	<20			
C2 B FLOOD	12-APR-2017 08:10	HK1713979-018	<0.5	<1	<20			
C3 S FLOOD	12-APR-2017 08:25	HK1713979-019	<0.5	<1	<20			
C3 B FLOOD	12-APR-2017 08:25	HK1713979-021	<0.5	<1	<20			
M1 S FLOOD	12-APR-2017 08:15	HK1713979-022	<0.5	<1	<20			
M1 M FLOOD	12-APR-2017 08:15	HK1713979-023	<0.5	<1	<20			
M1 B FLOOD	12-APR-2017 08:15	HK1713979-024	<0.5	<1	<20			
M2 S FLOOD	12-APR-2017 08:20	HK1713979-025	<0.5	<1	<20			
M2 B FLOOD	12-APR-2017 08:20	HK1713979-027	<0.5	<1	<20			



Sub-Matrix: WATER

Compound

EA025: Suspended Solids (SS)

LOR Unit

1 mg/L

<i>Client sample ID</i>	<i>Client sampling date / time</i>	<i>Laboratory sample ID</i>	EA/ED: Physical and Aggregate Properties				
C1 (STREAM WATER)	12-APR-2017 14:55	HK1713979-001	19				
S1 (STREAM WATER)	12-APR-2017 15:05	HK1713979-002	14				
S2 (STREAM WATER)	12-APR-2017 15:15	HK1713979-003	32				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4468635)								
HK1713979-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	19	19	0.0
EG: Metals and Major Cations - Filtered (QC Lot: 4469613)								
HK1713979-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1713979-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4468635)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	103	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4469613)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	98.2	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	97.7	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	103	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4469613)										
HK1713979-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	94.1	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	100	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	97.9	----	80	120	----	----



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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

Laboratory : ALS Technichem (HK) Pty Ltd
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Quote number : ----

Page : 1 of 5
Work Order : **HK1714393**

Date received : 14-APR-2017

Date of issue : 27-APR-2017

No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Wong Wing, Kenneth	Manager - Metals	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1714393 supersedes any previous reports with this reference. Testing period is from 14-APR-2017 to 27-APR-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1714393 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

			Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
Client sample ID	Client sampling date / time	Laboratory sample ID		EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered		
C2 S EBB	14-APR-2017 15:10	HK1714393-004		<0.5	<1	<20		
C2 M EBB	14-APR-2017 15:10	HK1714393-005		<0.5	<1	<20		
C2 B EBB	14-APR-2017 15:10	HK1714393-006		<0.5	<1	<20		
C3 S EBB	14-APR-2017 15:26	HK1714393-007		<0.5	<1	<20		
C3 B EBB	14-APR-2017 15:26	HK1714393-009		<0.5	<1	<20		
M1 S EBB	14-APR-2017 15:14	HK1714393-010		<0.5	<1	<20		
M1 M EBB	14-APR-2017 15:14	HK1714393-011		<0.5	<1	<20		
M1 B EBB	14-APR-2017 15:14	HK1714393-012		<0.5	<1	<20		
M2 S EBB	14-APR-2017 15:23	HK1714393-013		<0.5	<1	<20		
M2 B EBB	14-APR-2017 15:23	HK1714393-015		<0.5	<1	<20		
C2 S FLOOD	14-APR-2017 08:45	HK1714393-016		<0.5	<1	<20		
C2 M FLOOD	14-APR-2017 08:45	HK1714393-017		<0.5	<1	<20		
C2 B FLOOD	14-APR-2017 08:45	HK1714393-018		<0.5	<1	<20		
C3 S FLOOD	14-APR-2017 09:05	HK1714393-019		<0.5	<1	<20		
C3 B FLOOD	14-APR-2017 09:05	HK1714393-021		<0.5	<1	<20		
M1 S FLOOD	14-APR-2017 08:51	HK1714393-022		<0.5	<1	<20		
M1 M FLOOD	14-APR-2017 08:51	HK1714393-023		<0.5	<1	<20		
M1 B FLOOD	14-APR-2017 08:51	HK1714393-024		<0.5	<1	<20		
M2 S FLOOD	14-APR-2017 09:01	HK1714393-025		<0.5	<1	<20		
M2 B FLOOD	14-APR-2017 09:01	HK1714393-027		<0.5	<1	<20		



Sub-Matrix: WATER

Compound

EA025: Suspended Solids (SS)

LOR Unit

1 mg/L

Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
C1 (STREAM WATER)	14-APR-2017 11:24	HK1714393-001	10				
S1 (STREAM WATER)	14-APR-2017 11:34	HK1714393-002	13				
S2 (STREAM WATER)	14-APR-2017 11:44	HK1714393-003	40				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4470824)								
HK1714393-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	10	11	0.0
EG: Metals and Major Cations - Filtered (QC Lot: 4470729)								
HK1714393-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1714393-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4470824)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	108	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4470729)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	95.6	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	108	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	102	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4470729)										
HK1714393-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	104	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	112	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	93.6	----	80	120	----	----



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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

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Page : 1 of 5
Work Order : HK1715292
Date received : 17-APR-2017
Date of issue : 27-APR-2017
No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Wong Wing, Kenneth	Manager - Metals	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1715292 supersedes any previous reports with this reference. Testing period is from 17-APR-2017 to 27-APR-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1715292 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

			Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
Client sample ID	Client sampling date / time	Laboratory sample ID		EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered		
C2 S EBB	17-APR-2017 05:10	HK1715292-004		<0.5	<1	<20		
C2 M EBB	17-APR-2017 05:10	HK1715292-005		<0.5	<1	<20		
C2 B EBB	17-APR-2017 05:10	HK1715292-006		<0.5	<1	<20		
C3 S EBB	17-APR-2017 05:40	HK1715292-007		<0.5	<1	<20		
C3 B EBB	17-APR-2017 05:40	HK1715292-009		<0.5	<1	<20		
M1 S EBB	17-APR-2017 05:17	HK1715292-010		<0.5	<1	<20		
M1 M EBB	17-APR-2017 05:17	HK1715292-011		<0.5	<1	<20		
M1 B EBB	17-APR-2017 05:17	HK1715292-012		<0.5	<1	<20		
M2 S EBB	17-APR-2017 05:26	HK1715292-013		<0.5	<1	<20		
M2 B EBB	17-APR-2017 05:26	HK1715292-015		<0.5	<1	<20		
C2 S FLOOD	17-APR-2017 10:38	HK1715292-016		<0.5	<1	<20		
C2 M FLOOD	17-APR-2017 10:38	HK1715292-017		<0.5	<1	<20		
C2 B FLOOD	17-APR-2017 10:38	HK1715292-018		<0.5	<1	<20		
C3 S FLOOD	17-APR-2017 10:10	HK1715292-019		<0.5	<1	<20		
C3 B FLOOD	17-APR-2017 10:10	HK1715292-021		<0.5	<1	<20		
M1 S FLOOD	17-APR-2017 10:25	HK1715292-022		<0.5	<1	<20		
M1 M FLOOD	17-APR-2017 10:25	HK1715292-023		<0.5	<1	<20		
M1 B FLOOD	17-APR-2017 10:25	HK1715292-024		<0.5	<1	<20		
M2 S FLOOD	17-APR-2017 10:17	HK1715292-025		<0.5	<1	<20		
M2 B FLOOD	17-APR-2017 10:17	HK1715292-027		<0.5	<1	<20		



Sub-Matrix: WATER

			Compound				
			LOR Unit				
Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
			EA025: Suspended Solids (SS)				
			1 mg/L				
C1 (STREAM WATER)	17-APR-2017 13:06	HK1715292-001	31				
S1 (STREAM WATER)	17-APR-2017 13:16	HK1715292-002	15				
S2 (STREAM WATER)	17-APR-2017 13:26	HK1715292-003	11				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4470827)								
HK1715292-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	31	33	7.4
EG: Metals and Major Cations - Filtered (QC Lot: 4470732)								
HK1715292-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1715292-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4470827)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	102	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4470732)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	93.9	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	98.2	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	97.3	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4470732)										
HK1715292-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	100	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	99.6	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	94.4	----	80	120	----	----



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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

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Quote number : ----

Page : 1 of 5
Work Order : **HK1715388**
Date received : 20-APR-2017
Date of issue : 04-MAY-2017
No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Leung Chak Cheong, Mike	Senior Chemist	Inorganics
Lin Wai Yu, Iris	Senior Chemist - Inorganics	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1715388 supersedes any previous reports with this reference. Testing period is from 20-APR-2017 to 04-MAY-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1715388 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
			EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered			
C2 S EBB	19-APR-2017 07:15	HK1715388-004	<0.5	<1	<20			
C2 M EBB	19-APR-2017 07:15	HK1715388-005	<0.5	<1	<20			
C2 B EBB	19-APR-2017 07:15	HK1715388-006	<0.5	<1	<20			
C3 S EBB	19-APR-2017 07:38	HK1715388-007	<0.5	<1	<20			
C3 B EBB	19-APR-2017 07:38	HK1715388-009	<0.5	<1	<20			
M1 S EBB	19-APR-2017 07:22	HK1715388-010	<0.5	<1	<20			
M1 M EBB	19-APR-2017 07:22	HK1715388-011	<0.5	<1	<20			
M1 B EBB	19-APR-2017 07:22	HK1715388-012	<0.5	<1	<20			
M2 S EBB	19-APR-2017 07:30	HK1715388-013	<0.5	<1	<20			
M2 B EBB	19-APR-2017 07:30	HK1715388-015	<0.5	<1	<20			
C2 S FLOOD	19-APR-2017 11:45	HK1715388-016	<0.5	<1	<20			
C2 M FLOOD	19-APR-2017 11:45	HK1715388-017	<0.5	<1	<20			
C2 B FLOOD	19-APR-2017 11:45	HK1715388-018	<0.5	<1	<20			
C3 S FLOOD	19-APR-2017 11:28	HK1715388-019	<0.5	<1	<20			
C3 B FLOOD	19-APR-2017 11:28	HK1715388-021	<0.5	<1	<20			
M1 S FLOOD	19-APR-2017 11:36	HK1715388-022	<0.5	<1	<20			
M1 M FLOOD	19-APR-2017 11:36	HK1715388-023	<0.5	<1	<20			
M1 B FLOOD	19-APR-2017 11:36	HK1715388-024	<0.5	<1	<20			
M2 S FLOOD	19-APR-2017 11:40	HK1715388-025	<0.5	<1	<20			
M2 B FLOOD	19-APR-2017 11:40	HK1715388-027	<0.5	<1	<20			



Sub-Matrix: WATER

Compound

EA025: Suspended Solids (SS)

LOR Unit

1 mg/L

Client sample ID

Client sampling date / time

Laboratory sample ID

EA/ED: Physical and Aggregate Properties

C1 (STREAM WATER)

19-APR-2017 15:01

HK1715388-001

36

S1 (STREAM WATER)

19-APR-2017 15:11

HK1715388-002

20

S2 (STREAM WATER)

19-APR-2017 15:21

HK1715388-003

14



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4468671)								
HK1715388-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	36	36	0.0
EG: Metals and Major Cations - Filtered (QC Lot: 4469649)								
HK1715388-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1715388-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4468671)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	104	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4469649)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	91.9	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	93.6	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	87.2	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4469649)										
HK1715388-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	95.6	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	88.8	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	93.1	----	80	120	----	----



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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

Laboratory : ALS Technichem (HK) Pty Ltd
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Page : 1 of 5
Work Order : **HK1716058**

Date received : 21-APR-2017

Date of issue : 08-MAY-2017

No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong, Mike	Senior Chemist	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1716058 supersedes any previous reports with this reference. Testing period is from 21-APR-2017 to 08-MAY-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1716058 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
			EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered			
C2 S EBB	21-APR-2017 09:40	HK1716058-004	<0.5	<1	<20			
C2 M EBB	21-APR-2017 09:40	HK1716058-005	<0.5	<1	<20			
C2 B EBB	21-APR-2017 09:40	HK1716058-006	<0.5	<1	<20			
C3 S EBB	21-APR-2017 10:00	HK1716058-007	<0.5	<1	<20			
C3 B EBB	21-APR-2017 10:00	HK1716058-009	<0.5	<1	<20			
M1 S EBB	21-APR-2017 09:50	HK1716058-010	<0.5	<1	<20			
M1 M EBB	21-APR-2017 09:50	HK1716058-011	<0.5	<1	<20			
M1 B EBB	21-APR-2017 09:50	HK1716058-012	<0.5	<1	<20			
M2 S EBB	21-APR-2017 09:55	HK1716058-013	<0.5	<1	<20			
M2 B EBB	21-APR-2017 09:55	HK1716058-015	<0.5	<1	<20			
C2 S FLOOD	21-APR-2017 14:48	HK1716058-016	<0.5	<1	<20			
C2 M FLOOD	21-APR-2017 14:48	HK1716058-017	<0.5	<1	<20			
C2 B FLOOD	21-APR-2017 14:48	HK1716058-018	<0.5	<1	<20			
C3 S FLOOD	21-APR-2017 14:25	HK1716058-019	<0.5	<1	<20			
C3 B FLOOD	21-APR-2017 14:25	HK1716058-021	<0.5	<1	<20			
M1 S FLOOD	21-APR-2017 14:38	HK1716058-022	<0.5	<1	<20			
M1 M FLOOD	21-APR-2017 14:38	HK1716058-023	<0.5	<1	<20			
M1 B FLOOD	21-APR-2017 14:38	HK1716058-024	<0.5	<1	<20			
M2 S FLOOD	21-APR-2017 14:32	HK1716058-025	<0.5	<1	<20			
M2 B FLOOD	21-APR-2017 14:32	HK1716058-027	<0.5	<1	<20			



Sub-Matrix: WATER

Compound

EA025: Suspended Solids (SS)

LOR Unit

1.0 mg/L

Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
C1 (STREAM WATER)	21-APR-2017 12:04	HK1716058-001	26.2				
S1 (STREAM WATER)	21-APR-2017 12:14	HK1716058-002	32.2				
S2 (STREAM WATER)	21-APR-2017 12:24	HK1716058-003	40.2				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4472735)								
HK1716058-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1.0	mg/L	26.2	28.4	8.1
EG: Metals and Major Cations - Filtered (QC Lot: 4473568)								
HK1716058-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1716058-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4472735)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	90.5	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4473568)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	90.9	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	87.9	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	102	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4473568)										
HK1716058-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	90.8	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	86.3	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	96.0	----	80	120	----	----



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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

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Quote number : ----

Page : 1 of 5
Work Order : **HK1716563**

Date received : 25-APR-2017

Date of issue : 09-MAY-2017

No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong, Mike	Senior Chemist	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1716563 supersedes any previous reports with this reference. Testing period is from 25-APR-2017 to 09-MAY-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1716563 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

			Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
Client sample ID	Client sampling date / time	Laboratory sample ID		EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered		
C2 S EBB	24-APR-2017 12:47	HK1716563-004		<0.5	<1	<20		
C2 M EBB	24-APR-2017 12:47	HK1716563-005		<0.5	<1	<20		
C2 B EBB	24-APR-2017 12:47	HK1716563-006		<0.5	<1	<20		
C3 S EBB	24-APR-2017 12:25	HK1716563-007		<0.5	<1	<20		
C3 B EBB	24-APR-2017 12:25	HK1716563-009		<0.5	<1	<20		
M1 S EBB	24-APR-2017 12:41	HK1716563-010		<0.5	<1	<20		
M1 M EBB	24-APR-2017 12:41	HK1716563-011		<0.5	<1	<20		
M1 B EBB	24-APR-2017 12:41	HK1716563-012		<0.5	<1	<20		
M2 S EBB	24-APR-2017 12:36	HK1716563-013		<0.5	<1	<20		
M2 B EBB	24-APR-2017 12:36	HK1716563-015		<0.5	<1	<20		
C2 S FLOOD	24-APR-2017 06:10	HK1716563-016		<0.5	<1	<20		
C2 M FLOOD	24-APR-2017 06:10	HK1716563-017		<0.5	<1	<20		
C2 B FLOOD	24-APR-2017 06:10	HK1716563-018		<0.5	<1	<20		
C3 S FLOOD	24-APR-2017 06:31	HK1716563-019		<0.5	<1	<20		
C3 B FLOOD	24-APR-2017 06:31	HK1716563-021		<0.5	<1	<20		
M1 S FLOOD	24-APR-2017 06:17	HK1716563-022		<0.5	<1	<20		
M1 M FLOOD	24-APR-2017 06:17	HK1716563-023		<0.5	<1	<20		
M1 B FLOOD	24-APR-2017 06:17	HK1716563-024		<0.5	<1	<20		
M2 S FLOOD	24-APR-2017 06:24	HK1716563-025		<0.5	<1	<20		
M2 B FLOOD	24-APR-2017 06:24	HK1716563-027		<0.5	<1	<20		



Sub-Matrix: WATER

Compound

EA025: Suspended Solids (SS)

LOR Unit

1 mg/L

Client sample ID

Client sampling date /
time

Laboratory sample
ID

EA/ED: Physical and
Aggregate Properties

C1 (STREAM WATER)

[24-APR-2017]

HK1716563-001

37

S1 (STREAM WATER)

[24-APR-2017]

HK1716563-002

16

S2 (STREAM WATER)

[24-APR-2017]

HK1716563-003

26



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4472734)								
HK1716563-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	37	36	0.0
EG: Metals and Major Cations - Filtered (QC Lot: 4473569)								
HK1716563-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1716563-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4472734)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	108	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4473569)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	84.5	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	102	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	99.6	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4473569)										
HK1716563-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	84.0	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	92.5	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	103	----	80	120	----	----



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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

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Quote number : ----

Page : 1 of 5
Work Order : **HK1717018**

Date received : 27-APR-2017

Date of issue : 10-MAY-2017

No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong, Mike	Senior Chemist	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1717018 supersedes any previous reports with this reference. Testing period is from 27-APR-2017 to 10-MAY-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1717018 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

			Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
Client sample ID	Client sampling date / time	Laboratory sample ID		EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered		
C2 S EBB	26-APR-2017 14:02	HK1717018-004		<0.5	<1	<20		
C2 M EBB	26-APR-2017 14:02	HK1717018-005		<0.5	<1	<20		
C2 B EBB	26-APR-2017 14:02	HK1717018-006		<0.5	<1	<20		
C3 S EBB	26-APR-2017 13:35	HK1717018-007		<0.5	<1	<20		
C3 B EBB	26-APR-2017 13:35	HK1717018-009		<0.5	<1	<20		
M1 S EBB	26-APR-2017 13:54	HK1717018-010		<0.5	<1	<20		
M1 M EBB	26-APR-2017 13:54	HK1717018-011		<0.5	<1	<20		
M1 B EBB	26-APR-2017 13:54	HK1717018-012		<0.5	<1	<20		
M2 S EBB	26-APR-2017 13:42	HK1717018-013		<0.5	<1	<20		
M2 B EBB	26-APR-2017 13:42	HK1717018-015		<0.5	<1	<20		
C2 S FLOOD	26-APR-2017 07:16	HK1717018-016		<0.5	<1	<20		
C2 M FLOOD	26-APR-2017 07:16	HK1717018-017		<0.5	<1	<20		
C2 B FLOOD	26-APR-2017 07:16	HK1717018-018		<0.5	<1	<20		
C3 S FLOOD	26-APR-2017 07:38	HK1717018-019		<0.5	<1	<20		
C3 B FLOOD	26-APR-2017 07:38	HK1717018-021		<0.5	<1	<20		
M1 S FLOOD	26-APR-2017 07:22	HK1717018-022		<0.5	<1	<20		
M1 M FLOOD	26-APR-2017 07:22	HK1717018-023		<0.5	<1	<20		
M1 B FLOOD	26-APR-2017 07:22	HK1717018-024		<0.5	<1	<20		
M2 S FLOOD	26-APR-2017 07:30	HK1717018-025		<0.5	<1	<20		
M2 B FLOOD	26-APR-2017 07:30	HK1717018-027		<0.5	<1	<20		



Sub-Matrix: WATER

Compound

EA025: Suspended Solids (SS)

LOR Unit

1 mg/L

Client sample ID

Client sampling date / time

Laboratory sample ID

EA/ED: Physical and Aggregate Properties

C1 (STREAM WATER)

26-APR-2017 15:24

HK1717018-001

19

S1 (STREAM WATER)

26-APR-2017 15:34

HK1717018-002

38

S2 (STREAM WATER)

26-APR-2017 15:44

HK1717018-003

16



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4474492)								
HK1717018-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	19	22	13.2
EG: Metals and Major Cations - Filtered (QC Lot: 4474768)								
HK1717018-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1717018-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4474492)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	85.0	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4474768)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	88.6	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	101	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	96.6	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4474768)										
HK1717018-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	88.3	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	84.7	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	95.2	----	80	120	----	----



CERTIFICATE OF ANALYSIS

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Project : DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN
Order number : ----
C-O-C number : ----
Site : ----

Laboratory : ALS Technichem (HK) Pty Ltd
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Quote number : ----

Page : 1 of 5
Work Order : **HK1717409**

Date received : 28-APR-2017

Date of issue : 12-MAY-2017

No. of samples - Received : 23
- Analysed : 23

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Leung Chak Cheong, Mike	Senior Chemist	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1717409 supersedes any previous reports with this reference. Testing period is from 28-APR-2017 to 12-MAY-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1717409 :

Sample(s) were collected by ALS Technichem (HK) staff.

ALS Technichem (HK) Pty Ltd is HOKLAS accredited for the testing provided in this report. The sampling activity involved is not covered by the laboratory HOKLAS accreditation.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: MARINE WATER

			Compound	EG029: Cadmium	EG029: Chromium	EG029: Aluminium		
			LOR Unit	0.5 µg/L	1 µg/L	20 µg/L		
Client sample ID	Client sampling date / time	Laboratory sample ID		EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered	EG: Metals and Major Cations - Filtered		
C2 S EBB	28-APR-2017 15:13	HK1717409-004		1.1	<1	<20		
C2 M EBB	28-APR-2017 15:13	HK1717409-005		1.7	<1	<20		
C2 B EBB	28-APR-2017 15:13	HK1717409-006		0.8	<1	<20		
C3 S EBB	28-APR-2017 14:40	HK1717409-007		1.6	<1	<20		
C3 B EBB	28-APR-2017 14:40	HK1717409-009		0.9	<1	<20		
M1 S EBB	28-APR-2017 15:00	HK1717409-010		1.1	<1	<20		
M1 M EBB	28-APR-2017 15:00	HK1717409-011		1.1	<1	<20		
M1 B EBB	28-APR-2017 15:00	HK1717409-012		0.8	<1	<20		
M2 S EBB	28-APR-2017 14:52	HK1717409-013		1.5	<1	<20		
M2 B EBB	28-APR-2017 14:52	HK1717409-015		0.9	<1	<20		
C2 S FLOOD	28-APR-2017 08:20	HK1717409-016		0.9	<1	<20		
C2 M FLOOD	28-APR-2017 08:20	HK1717409-017		<0.5	<1	<20		
C2 B FLOOD	28-APR-2017 08:20	HK1717409-018		<0.5	<1	<20		
C3 S FLOOD	28-APR-2017 08:45	HK1717409-019		1.6	<1	<20		
C3 B FLOOD	28-APR-2017 08:45	HK1717409-021		0.6	<1	<20		
M1 S FLOOD	28-APR-2017 08:30	HK1717409-022		1.2	<1	<20		
M1 M FLOOD	28-APR-2017 08:30	HK1717409-023		<0.5	<1	<20		
M1 B FLOOD	28-APR-2017 08:30	HK1717409-024		<0.5	<1	<20		
M2 S FLOOD	28-APR-2017 08:36	HK1717409-025		1.6	<1	<20		
M2 B FLOOD	28-APR-2017 08:36	HK1717409-027		<0.5	<1	<20		



Sub-Matrix: WATER

			Compound				
			EA025: Suspended Solids (SS)				
			LOR Unit	1 mg/L			
Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties				
C1 (STREAM WATER)	28-APR-2017 14:11	HK1717409-001	5				
S1 (STREAM WATER)	28-APR-2017 14:21	HK1717409-002	10				
S2 (STREAM WATER)	28-APR-2017 14:31	HK1717409-003	6				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4476807)								
HK1717409-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1	mg/L	5	6	0.0
EG: Metals and Major Cations - Filtered (QC Lot: 4476938)								
HK1717409-005	C2 M EBB	EG029: Cadmium	7440-43-9	0.5	µg/L	1.7	1.8	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0
HK1717409-017	C2 M FLOOD	EG029: Cadmium	7440-43-9	0.5	µg/L	<0.5	<0.5	0.0
		EG029: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG029: Aluminium	7429-90-5	20	µg/L	<20	<20	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4476807)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	100	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4476938)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	104	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	93.6	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	100	----	85	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4476938)										
HK1717409-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	114	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	82.0	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	102	----	80	120	----	----

Appendix I. Waste Flow Table

Contract No. / ~~Works Order No.:~~ - SS D513**Monthly Summary Waste Flow Table for 2017** [year]

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

Month	Actual Quantities of Inert Construction Waste Generated Monthly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete (see Note 4)	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)
Jan	0	0	0	0	0
Feb	0	0	0	0	0
Mar	0	0	0	0	0
Apr	0	0	0	0	0
May					
Jun					
Sub-total	0	0	0	0	0
Jul					
Aug					
Sep					
Oct					
Nov					
Dec					
Total	0	0	0	0	0

Month	Actual Quantities of Non-inert Construction Waste Generated Monthly												
	Timber		Metals		Paper/ cardboard packaging		Plastics (see Note 3)		Chemical Waste		Other Recyclable Materials (pls. specify)		General Refuse disposed of at Landfill
	(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m ³)
	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated
Jan	0.018	0.000	1.900	1.900	0.000	0.000	0.000	0.000	9.502	0.000	0.000	0.000	0.033
Feb	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
Mar	0.012	0.000	35.510	35.510	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026
Apr	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
May													
Jun													
Sub-total	0.057	0.000	37.410	37.410	0.000	0.000	0.000	0.000	9.502	0.000	0.000	0.000	0.099
Jul													
Aug													
Sep													
Oct													
Nov													
Dec													
Total	0.057	0.000	37.410	37.410	0.000	0.000	0.000	0.000	9.502	0.000	0.000	0.000	0.099

Description of mode and details of recycling if any for the month e.g. XX kg of used timber was sent to YY site for transformation into fertilizers					
Timber	Metals	Paper/cardboard packing	Plastics (see Note 3)	Chemical Waste	Others
Nil	Nil	Nil	Nil	Nil	Nil

- Notes:
- (1) The performance targets are given in the Particular Specification on Environmental Management Plan.
 - (2) The waste flow table shall also include construction wastes 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) Broken concrete for recycling into aggregates.
 - (5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m³ by volume.

Appendix J. Environmental Mitigation Measures – Implementation Status

Table J.1: Air Quality – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*2.3.2	Dust Suppression by watering of construction area at least 10 times per day.	✓
	The access roads provide covering of 50% of open area with impervious materials or concrete paving.	N/A
	Limited working period to 180 days.	✓
	Provision pavement to construction access road with concrete paving and provide wheel washing facility at entrance and exit.	✓
	Skip hoist for material transport enclosed by impervious sheeting	N/A
	Vehicles washing facilities provided at every vehicle exit point.	✓
	The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point paved with concrete, bituminous materials or hardcore or similar.	✓
	Any hoarding (not less than 2.4, high from ground level) provided along the entire length except for a site entrance or exit where a site boundary adjoining a road, streets or other areas accessible to the public	✓
	Every main haul road should be paved with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet	✓
	The portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit kept clear of dusty materials.	✓
	Every stock of more than 20 bags of cement or dry PFA covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.	✓
	All dusty materials sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.	✓
	Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.	✓
	The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle?	N/A
	Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods.	N/A
	Imposition of speed controls for vehicles on unpaved site roads. Ten kilometres per hour is the recommended limit.	✓
	The routing of vehicles and positioning of construction plant at the maximum possible distance from ASRs.	N/A
	Instigation of an environmental auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	✓
Regulated machines with valid Non-road Mobile Machinery (NRMM) labels	✓	

Table J.2: Health Impact – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
* 3.3.1	Dust Suppression by watering of construction area at least 10 times per day.	N/A
* 3.3.1	Provide covering of 50% of open area with impervious materials or concrete paving.	N/A
* 3.3.1	Limited working period to 180 days.	N/A
* 3.3.1	Provision pavement to construction access road with concrete paving and provide wheel washing facility at entrance and exit.	✓
* 3.3.1	Signage and training provided to inform the Contractor and respective personnel on-site to avoid ingestion of chemical/contaminants through the consumption of PFA soil and leachate water from nearby water streams.	N/A
* 3.3.1	Shower facilities to workers to wash away any PFA attached to skin surfaces.	✓
* 3.3.1	Provision of soil covers on top of ash lagoon.	N/A
* 3.3.1	Sufficient ventilation through introduction of forced and natural ventilation to the interior of the site office.	✓

Table J.3: Noise Impact – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
* Appendix 10.1	Only well-maintained plant should be operated on-site and plants should be serviced regularly during the construction period.	✓
* Appendix 10.1	Mobile plant, if any, should be sited as far from NSRs as possible.	✓
* Appendix 10.1	Plant known to emit noise strongly in one direction, where possible, orientated to direct noise away from the NSRs.	✓
* Appendix 10.1	Use of site hoarding as a noise barrier to screen noise at low level NSRs.	N/A
* Appendix 10.1	Machines and plant in intermittent use shut down between work periods or throttled down to a minimum	✓
* Appendix 10.1	Material stockpiles and other structures effectively utilised, where practicable, to screen noise from on-site construction activities.	N/A

Table J.4: Water Quality– Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*5.10.2, Appendix 10.1	At the start of the site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction.	✓
	Boundaries of earthworks should be surrounded by dykes or embankments for flood protection, as necessary.	N/A
	Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt from runoff to meet the requirements of the TM-DSS. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction	N/A
	Slope Stabilization works and construction of surface drainage outfall shall be carried out during dry season to minimize surface and storm water runoff	N/A

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
	discharge into the water channel Silt fences shall be erected to prevent contaminated surface runoff from entering the water channel.	
	Silt surface runoff and construction site drainage should be discharged into storm drains via silt removal facilities.	N/A
	During rainstorm, exposed slope/soil surfaces should be covered by tarpaulin or other means, as far as practicable. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC PN 1/94.	N/A
	All exposed PFA/earth areas covered immediately after the earthworks have been completed.	N/A
	Earthwork final surfaces should be well compacted and subsequent permanent work or surface protection is immediately performed.	N/A
	Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms.	✓
	All vehicles should be cleaned before leaving the works area to ensure no earth, mud and debris is deposited on roads. An adequately designed and sited wheel washing bay should be provided at every exit. The wheel washing facility should be designed to minimize the intake of surface water (rainwater). Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process.	✓
	Construction solid waste should be collected, handled and disposed of properly to avoid entering into the nearby watercourses and public drainage system. Rubbish and litter from construction sites should also be collected to prevent spreading of rubbish and litter from the site area. It is recommended to clean the construction sites on a regular basis.	✓
	The discharge quality must meet the requirements specified in the discharge license. All the run-off and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS.	N/A
	Contractor must register as a chemical waste producer of chemical wastes that would be produced from construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	✓
	Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas which appropriately equipped to control these discharges.	✓
	Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be sited on sealed areas in order to prevent spillage of fuels and solvents to the nearby watercourses. All waste oils and fuels should be collected in designated tanks prior to disposal.	✓
	Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.	✓
	Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.	✓
	Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	✓
	Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor would be responsible for appropriate disposal and maintenance of these facilities.	✓
	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	N/A

Table J5: Waste Management and Land Contamination – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*6.2.2, Appendix 10.1	Obtain the necessary waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354) and Waste Disposal (Chemical Waste) (General) Regulation.	✓
	Nomination of an approved person to be responsible for good site practice, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site.	N/A
	Use of a waste haulier licensed to collect specific category of waste.	N/A
	A trip-ticket system should be included as one of the contractual requirements and implemented by the Environmental Team to monitor the disposal of solid wastes at landfills, and to control fly tipping.	N/A
	Training of site personnel in proper waste management and chemical waste handling procedures.	N/A
	Separation of chemical wastes for special handling and appropriate treatment at a licensed facility.	✓
	Routine cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	N/A
	Provision of sufficient waste disposal points and regular collection for disposal.	✓
	Adoption of appropriate measures to minimize windblown litter and dust during transportation of waste, such as covering trucks or transporting wastes in enclosed containers.	✓
6.2.4	Implementation of a recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).	N/A
	Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	✓
	Encourage collection of aluminium cans, plastics bottles and packaging material (e.g. carton boxes) and office paper by individual collectors. Separate labelled bins should be provided to help segregate this waste from other general refuse generated by the work force.	✓
	Any unused chemicals or those with remaining functional capacity should be reused as far as practicable.	N/A
	Use of reusable non-timber formwork to reduce the amount of C&D materials.	N/A
	Maximizing the use of reusable steel formwork to reduce the amount of C&D material	N/A
	Prior to disposal of construction waste, wood, steel and other metals should be separated for re-use and/or recycling to minimize the quantity of waste to be disposed of to landfill.	✓
6.2.6	Proper storage and site practices to reduce the potential for damage or contamination of construction materials.	N/A
	C&D material and excavated materials should be reused on-site as fill material as far as possible.	N/A
6.2.7	Open stockpiles of construction materials (e.g. aggregates sand and fill material) and excavated material on sites shall be covered with tarpaulin or similar fabric during rainstorms.	✓
	Chemicals and chemical wastes should only be stored in suitable containers in purpose-built areas.	N/A
6.2.7	The storage of chemical wastes should comply with the requirements of the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	N/A
	Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed.	N/A
	Have a capacity of less than 450 L unless the specifications have been approved by the EPD.	N/A

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
	Displaying a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.	N/A
	Be clearly labelled and used solely for the storage of chemical waste.	✓
	Be enclosed on at least 3 sides..	✓
	Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area whichever is the greatest.	✓
	Have adequate ventilation.	✓
	Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary).	✓
	Be arranged so that incompatible materials are appropriately separated.	✓
6.2.10	All recyclable materials (separated from the general waste) should be stored on-site in appropriate containers with cover prior to collection by a local recycler.	✓
	Residual, non-recyclable, general waste should be stored in appropriate containers to avoid odour. Regular collection should be arranged by an approved waste collector in purpose-built vehicles that minimise environmental impacts during transportation.	✓

Table J.6: Ecology – Recommended Mitigation Measures

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
*8.2.1, Appendix 10.1/^2.8(a)	Hoarding of not less than 2.4m high should be set up as a precautionary measure along the boundary of the works areas between the Middle and the West Ash Lagoon and between the northern edge of the ash platform and the water channel to shield the Little Grebe, if any, from the disturbance of human activities during decommissioning and construction phase.	✓
	The hoarded area should be inspected weekly for any damage by illegal access and to evaluate the effectiveness of the measures. Damage sighted should be reported to the site manager and damaged hoarding should be repaired by the Contractor as soon as possible.	✓
	Silt fences shall be erected and permanent fencing shall be erected along the top of the embankment as a physical barrier to minimize the human disturbance to the Little Grebes	N/A
	Vegetation shall be used as slope stabilization strategy during both design and construction stages. Vegetation such as trees, shrubs and groundcovers shall be planted along the embankment to reduce the slope's susceptibility to surface erosion and slump falls and act as sight and sound barriers to avoid human contact with the ecological activities at the water channel.	N/A
	Any construction works at water channel shall only be conducted within the non-breeding season (i.e. November to March of the following year) to minimize any disturbance to nesting activities of Little Grebes. Scheduling of work items should be implemented during design stage.	N/A
*8.2.4	Regular checking should be undertaken to ensure that the work site boundaries are not exceeded and that no damage occurs to surrounding areas.	✓
	Implementation of mitigation measures specified in ProPECC PN 1/94 to control site runoff and drainage at all work sites during construction.	N/A
	Implementation of noise control measures at all construction sites to reduce impacts of construction noise to wildlife habitats adjacent works areas.	N/A
	Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby waterbodies by rain.	N/A
	Coverage of filled slopes and materials with tarpaulin sheet.	✓

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
	Construction effluent, site run-off and sewage should be properly collected and/or treated. Wastewater from a construction site should be managed with the following approach in descending order	✓
	Placement of sand bags at fencing near the watercourse.	N/A
	Proper locations for discharge outlets of wastewater treatment facilities well away from the aquatic habitats should be identified.	✓
	Supervisory staff should be assigned to station on site to closely supervise and monitor the works.	✓

Table J.7: Other

* EM&A / ^ EP ref:	Recommended measures	Implementation Status
	A copy of the Environmental Permit displayed conspicuously at all vehicular site entrances/exits for public information at all times.	✓

Indication of Implementation Status:

- ✓ Implemented
- × Not implemented
- P Partially implemented
- N/A Not applicable




Appendix K. Cumulative statistics on complaints, notifications of summons and successful prosecutions

Cumulative statistics for complaints, notifications of summons and successful prosecutions for the Project account for period starting from the date of commencement of decommissioning (i.e. 20 October 2016) to the end of the reporting month and are summarized in the **Table K.1** below.

Table K.1: Statistics for complaints, notifications of summons and successful prosecutions

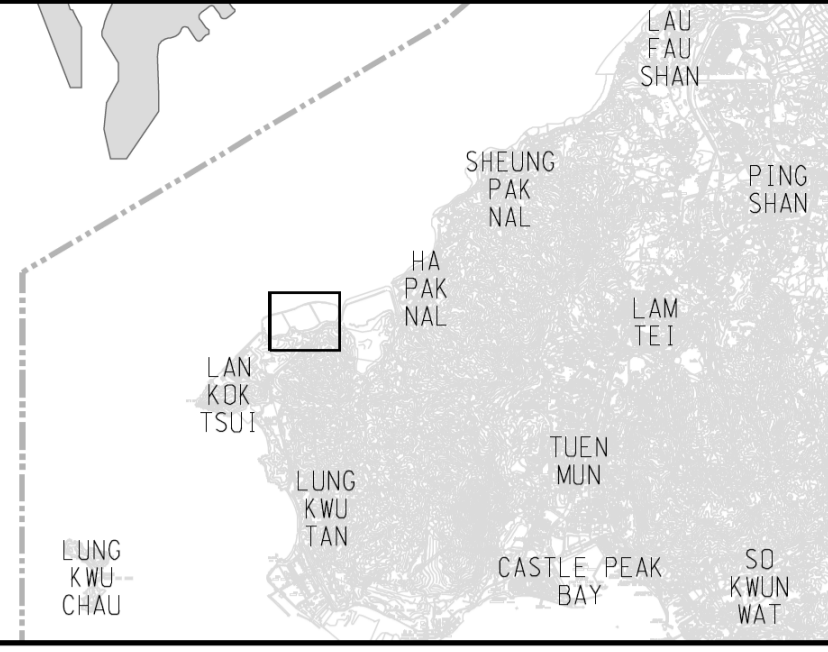
Reporting Period	Cumulative Statistics		
	Complaints	Notifications of summons	Successful prosecutions
This reporting month	0	0	0

Appendix L. Representative photos of the ecological survey

	
<p>General view of the West Ash Lagoon (Viewpoint A)</p>	<p>Little Grebe in the West Ash Lagoon (Viewpoint B)</p>
	
<p>Little Grebe (juvenile) in the West Ash Lagoon</p>	<p>Suspected hatching activity in the West Ash Lagoon</p>
	
<p>Mitigation measure – Hoarding since January 2017 (Viewpoint C)</p>	<p>Mitigation measure – Seal up the bottom of hoarding to prevent any surface run-off along the water channel since January 2017 (Viewpoint D)</p>

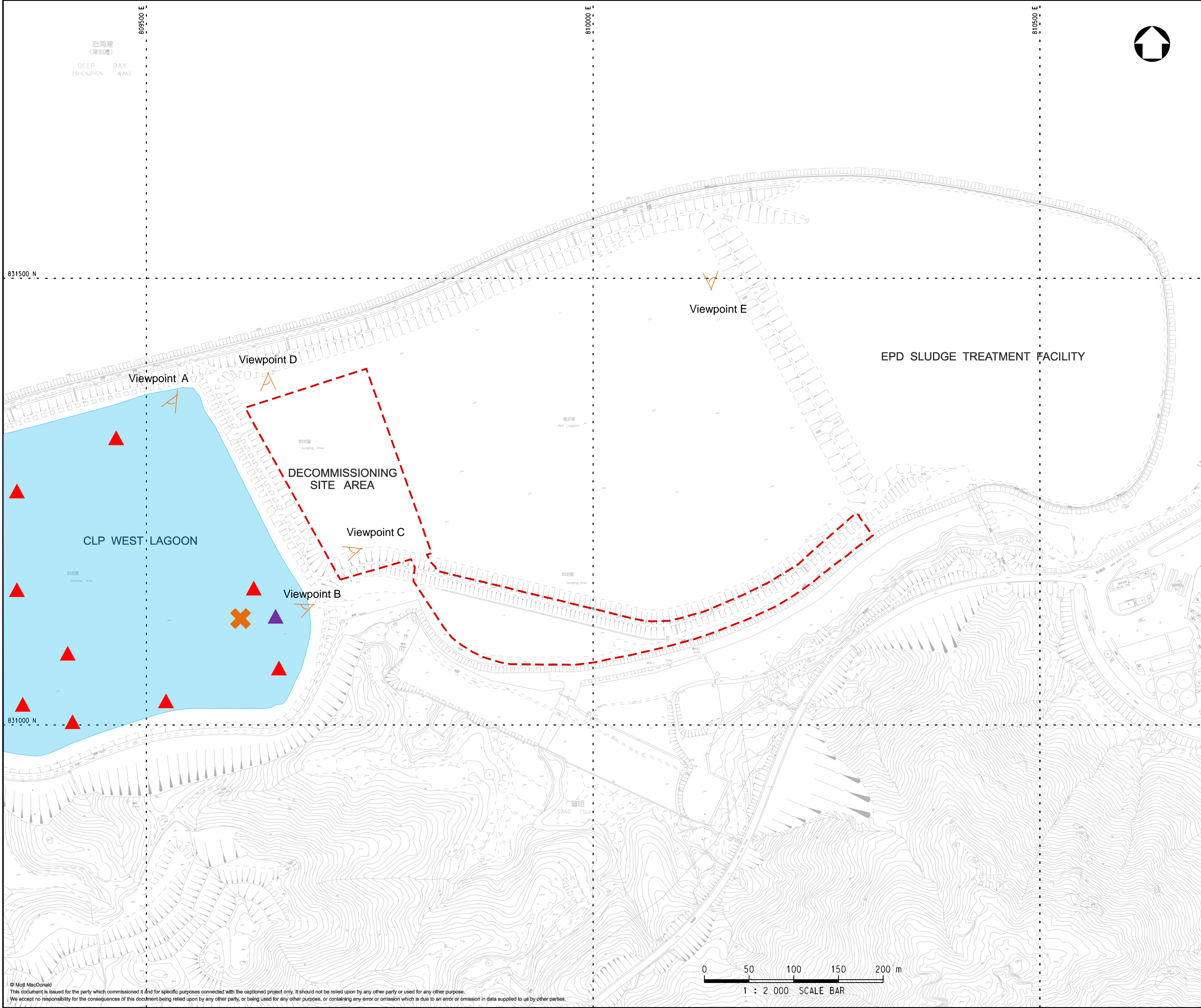
	
<p>The eastern part of the Middle Ash Lagoon (Viewpoint E)</p>	

后海湾
(深圳湾)
DEEP BAY
(SHENZHEN WAN)



KEY PLAN (1:150000)

- LEGEND:**
- SITE BOUNDARY
 - ▲ LITTLE GREBE (INDICATIVE LOCATION)
 - ▲ LITTLE GREBE JUVENILE (INDICATIVE LOCATION)
 - INDICATIVE WETLAND AREA
 - ✕ SUSPECTED HATCHING ACTIVITY INDICATIVE LOCATION



Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	NOV 16	MING	FIRST ISSUE	RH	EC

MOTT MACDONALD

20/F AIA Kowloon Tower
Landmark East
100 How Ming Street
Kwun Tong, Kowloon
Hong Kong
T +852 2828 5757
F +852 2827 1823
W mottmac.com

Client

LEIGHTON
禮頓

LEIGHTON CONTRACTORS (ASIA) LIMITED

Project

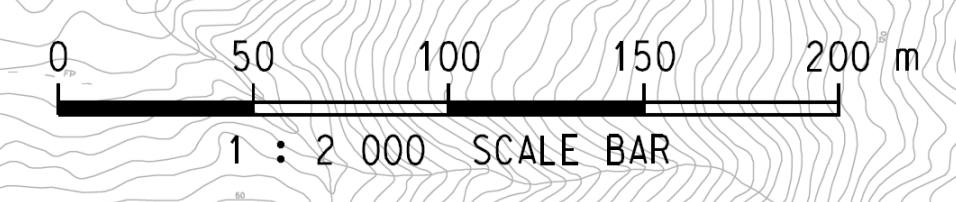
DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI, TUEN MUN

Title

ECOLOGICAL MONITORING SURVEY

Designed	RH	Eng check	GC
Drawn	MING	Coordination	HY
Dwg check	RH	Approved	EC
Scale at A1	1:2000	Status	PRE
Drawing Number		Rev	P1

Appendix L



Appendix M. Radon Monitoring Result

REPORT TO: ALS Technichem (HK) Pty Limited

ADDRESS: 11/F Chung Shun Knitting Centre,
1-3 Wing Yip Street
Kwai Chung, NT, Hong Kong

ATTN.: Mr. Ivan Leung

REPORT NO.: IPJ16-087-RP008

ISSUE DATE: 4 May 2017

**Impact Radon (Rn) Measurement (April)
for
SSD513 Provision of Columbarium and Garden of
Remembrance at Tsang Tsui, Tuen Mun**

(PROJECT NO.: IPJ16-087)

Prepared by:



Chan Ka Wai
Technician
WN / MT / NS / JL

Endorsed by:



Ng Yan Wa
Laboratory Manager
Approved IAQ Signatory

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1. Introduction

- 1.1 Acoustics and Air Testing Laboratory Company Limited, (A+A)*L, was appointed by ALS Technichem (HK) Pty Limited to conduct a Radon (Rn) measurement.
- 1.2 Three (3) sampling locations were selected by the client at SSD513 Provision of Columbarium and Garden of Remembrance at Tsang Tsui, Tuen Mun.
- 1.3 The measurements of Radon concentration were taken for 48 hours per sampling points.

2. Methodology

2.1 Radon (Rn)

The levels of radon were measured by an electronic radon monitor that complies with the device performance test described in the US Environmental Protection Agency (USEPA) National Radon Proficiency Program Handbook (EPA 402-R-95-013, July 1996), or equivalent. The operating range of the DurrIDGE RAD7 Electronic Radon Detector is from 0 Bq/m³ to 750,000 Bq/m³ with a resolution of 1 Bq/m³.

3. Details of Measurement

3.1 Location

SSD513 Provision of Columbarium and Garden of Remembrance at Tsang Tsui, Tuen Mun

3.2 Test Date and Sampling Location:

Sampling ID	Sampling Location	Sampling Date
SP1	1/F Site Office	20 April 2017 to 22 April 2017
SP2	G/F Site Office	24 April 2017 to 26 April 2017
SP3	G/F CGR Meeting Room	26 April 2017 to 28 April 2017

3.3 Instrumentation

Parameter	Model	Detection Limit
Radon (Rn)	DurrIDGE, RAD 7	0 – 750,000 Bq/m ³

Table 3.1 Details of the IAQ Sampling Instrument

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4. Indoor Radon Standard

- 4.1 According to ProPECC PN 1/99 "Environmental Protection Department Practice Note For Professional Persons - Control of Radon Concentration in New Buildings", the standard is established to act as the benchmark for evaluating and assessing indoor radon quality. The corresponding limits are listed as follows:

Parameter	Unit	Mean Concentration	Individual measurement
Radon (Rn)	Bq/m ³	<100	<200

Table 4.1 Environmental Protection Department Practice Note For Professional Persons - Control of Radon Concentration in New Buildings

5. Measurement Results

- 5.1 The average measurement results for Leighton Site Office in Tsang Tsui, Tuen Mun are summarized in the Table 5.1. The measurement points marked on the layout plan are given in Appendix 1.

Sample ID	Sampling Location	Sampling Date and Time	Radon		Compliance of Clause 4
			(Bq/m ³)		
			(48 hour average)	Maximum	
SP1	1/F Site Office	10:44 (20 Apr 2017) to 10:44 (22 Apr 2017)	3	39	Comply
SP2	G/F Site Office	11:58 (24 Apr 2017) to 11:58 (26 Apr 2017)	13	37	Comply
SP3	G/F CGR Meeting Room	12:29 (26 Apr 2017) to 12:29 (28 Apr 2017)	17	61	Comply

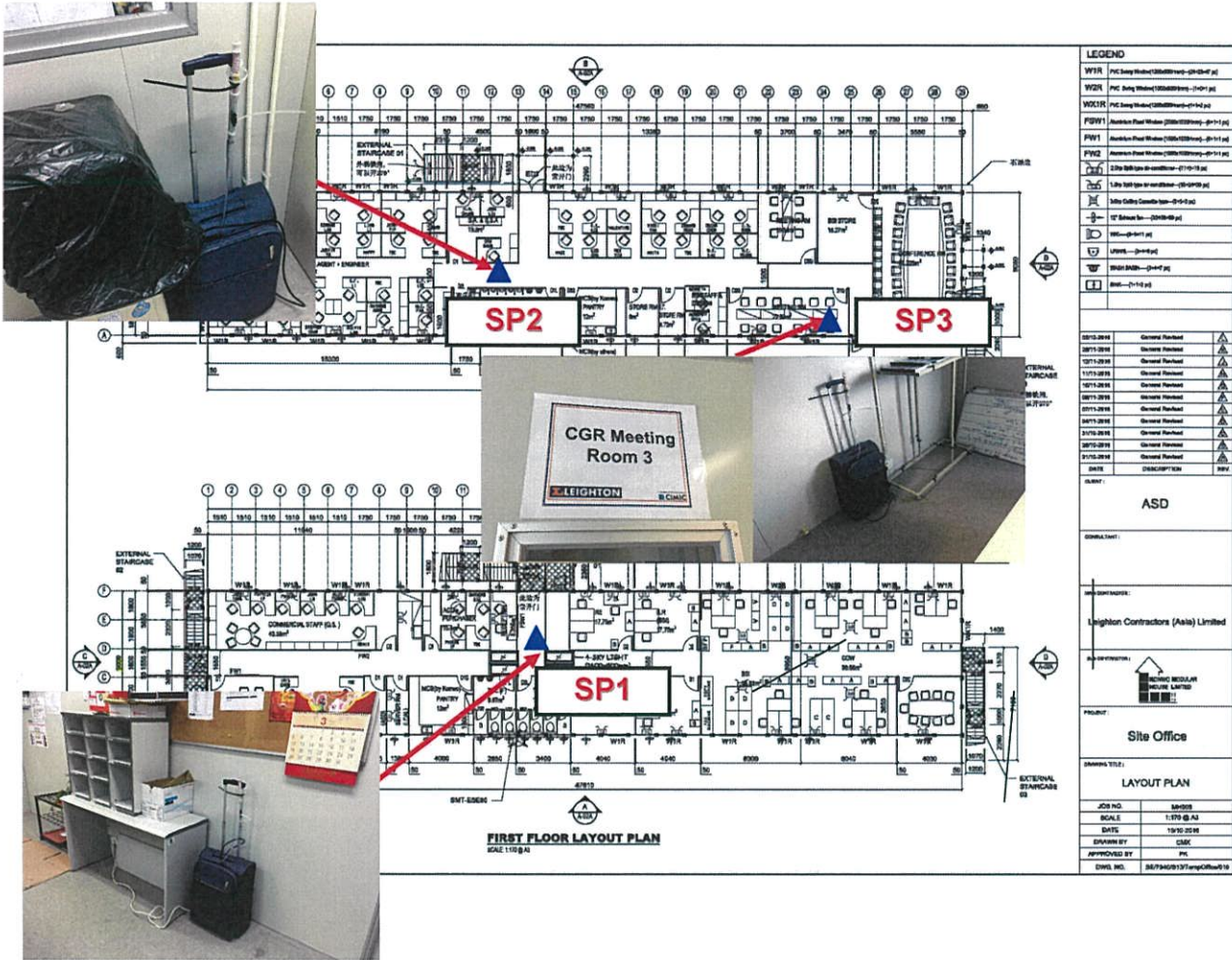
Table 5.1 Result summary for Radon measurement

-END-

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Appendix 1

Floor Layout Plan

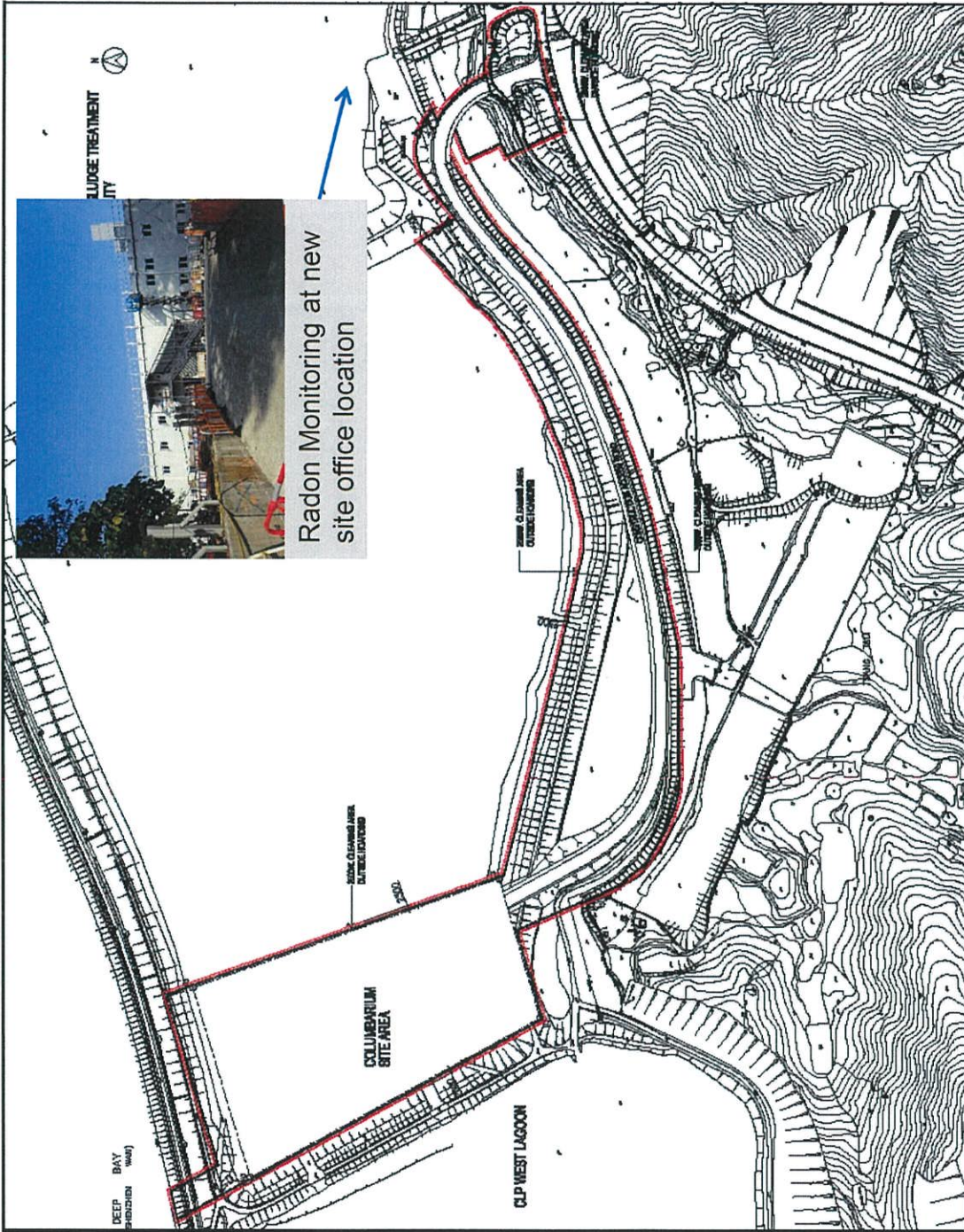


SSD513 Provision of Columbarium and Garden of Remembrance at Tsang Tsui, Tuen Mun

▲ : Tested IAQ sampling locations

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SSD513 Provision of Columbarium and Garden of Remembrance at Tsang Tsui, Tuen Mun

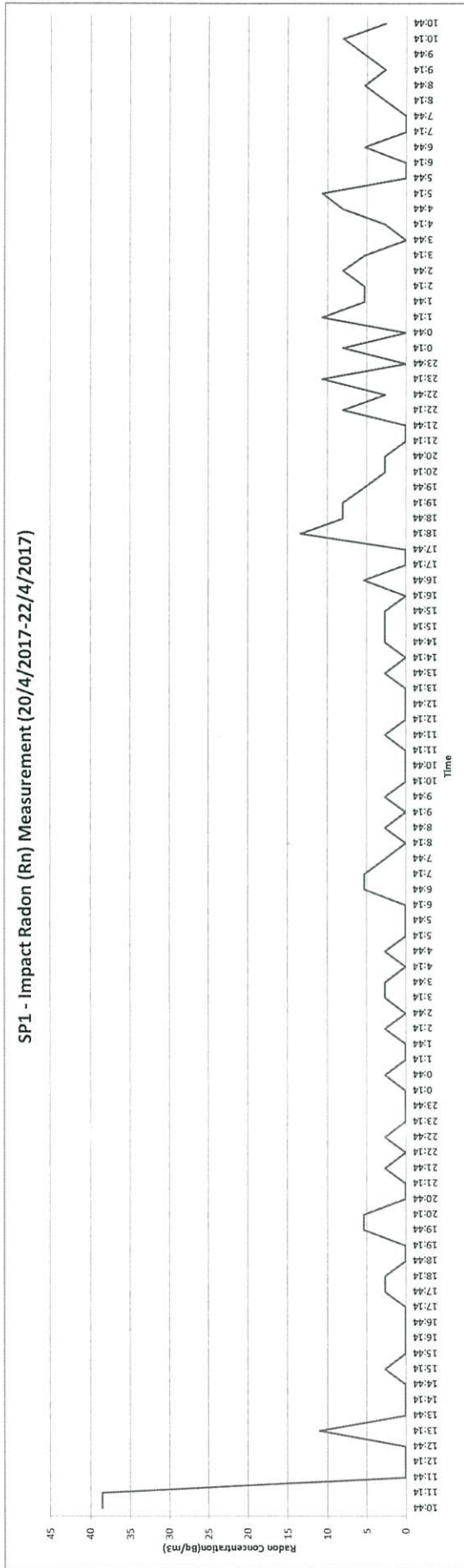
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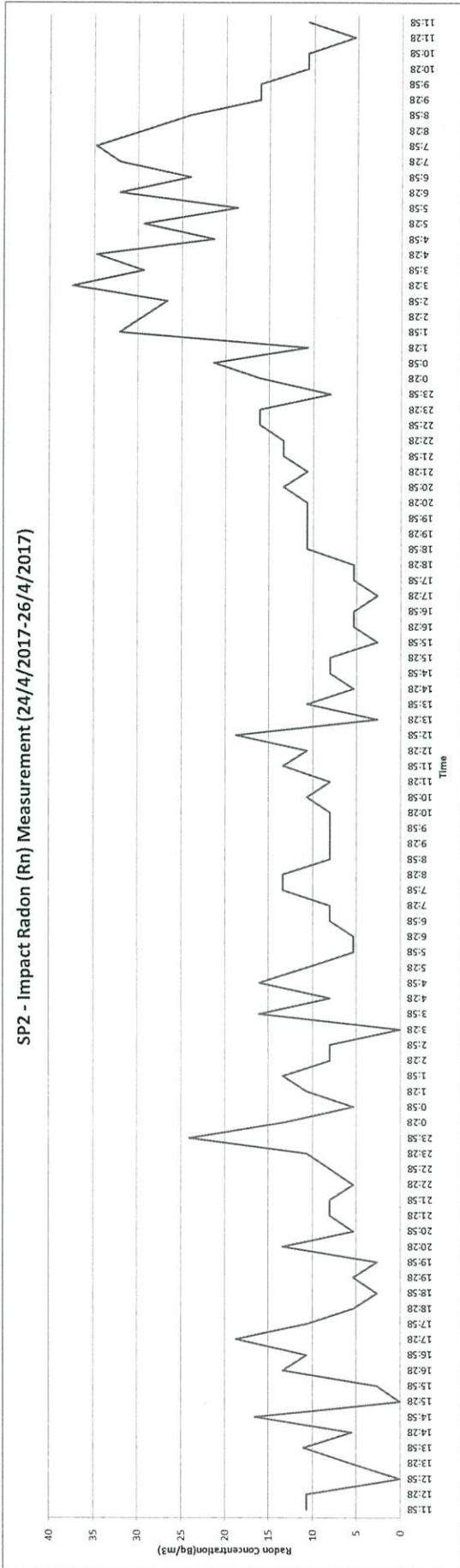
Appendix 2

Measurement Data Records



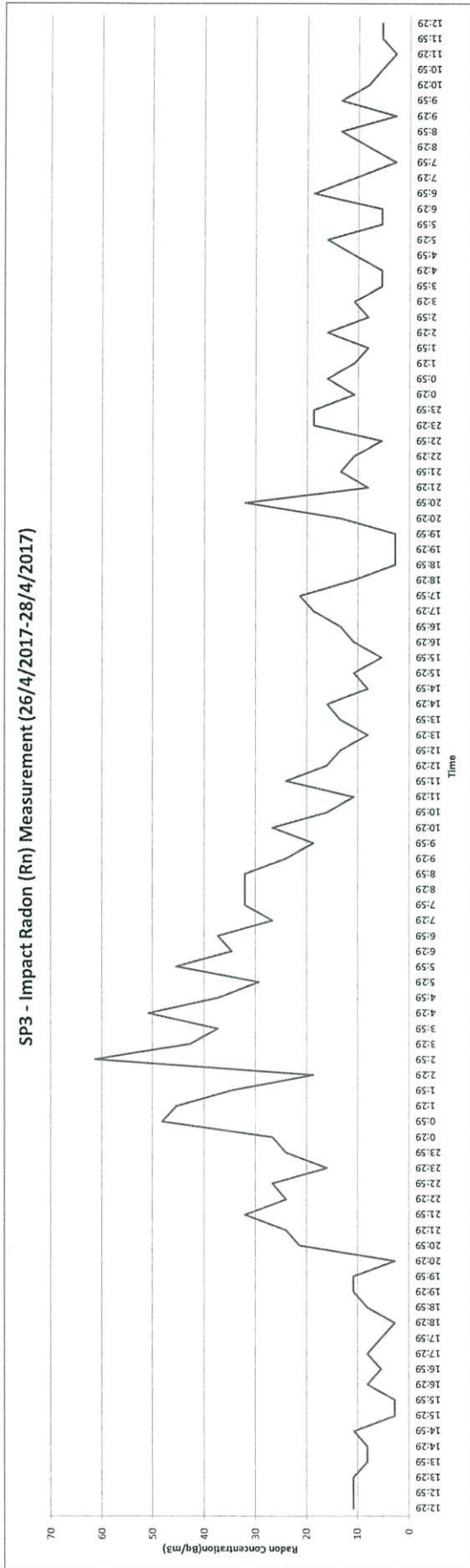
Minimum Value for sampling point	0
Maximum Value for sampling point	39
48 hour Average	3

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Minimum Value for sampling point	0
Maximum Value for sampling point	37
48 hour Average	13

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Minimum Value for sampling point	0
Maximum Value for sampling point	61
48 hour Average	17

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Appendix 3

Equipment Calibration Certificate
DurrIDGE RAD7 Professional Radon Monitor



DurrIDGE Company
524 Boston Road, Billerica, MA 01821
Tel: (978) 667-9556, Fax: (978) 667-9557
www.durrIDGE.com

Certificate of Calibration

RAD7 PROFESSIONAL RADON DETECTOR (NRSB Device Code - 31810 CR)

Calibration Date: April 7, 2016 Date of Previous Calibration:
Serial Number: 4210 Previous Sensitivity, Normal mode:
Model Number: RAD7-716 Previous Sensitivity, Sniff mode:
Firmware Version: 3.1a 151208 Previous Spill Factor:
RADLINK Version: 0311
Dates of Calibration Run: April 4, 2016 to April 7, 2016
Reference Unit Number(s): 504, 887, 961, 1277
Mean Temperature: 21.5 °C
Mean Radon Concentration: 64.2 pCi/L, 2370 Bq/m3
Sensitivity, Normal Mode: 0.468 CPM/(pCi/L), 0.0126 CPM/(Bq/m3)
Sensitivity, Sniff Mode: 0.224 CPM/(pCi/L), 0.00605 CPM/(Bq/m3)
Spill Factor: 0.017
Calibration Uncertainty: 2% 2-Sigma (See Notes 1, 2)
Conversion Factor, Normal: 2.14 (pCi/L)/cpm, 79.1 (Bq/m3)/cpm
Conversion Factor, Sniff: 4.46 (pCi/L)/cpm, 165 (Bq/m3)/cpm

Note 1) Based on counting statistics of the reference and this unit.
Note 2) No account has been made for the calibration uncertainty of the reference unit relative to an absolute standard, which we estimate to be within +/- 5%.

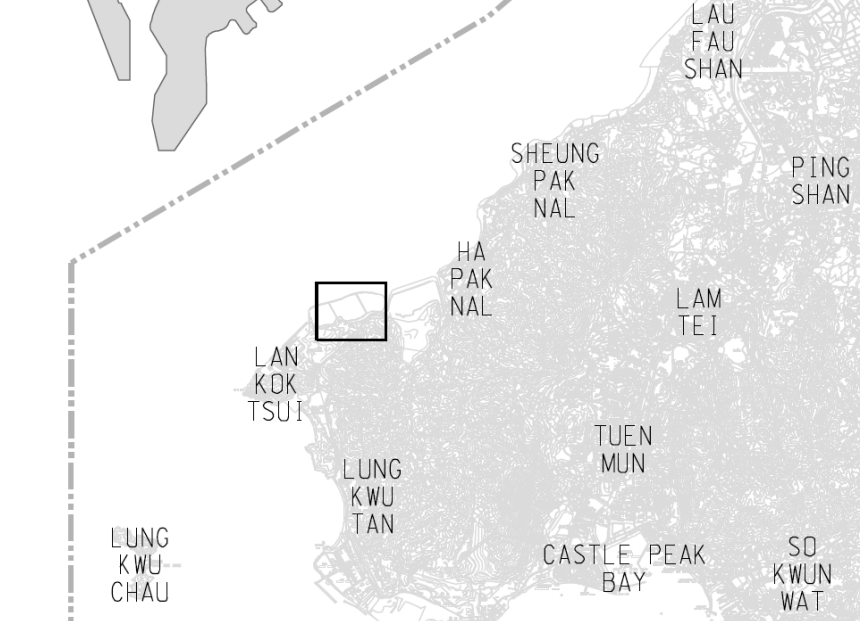
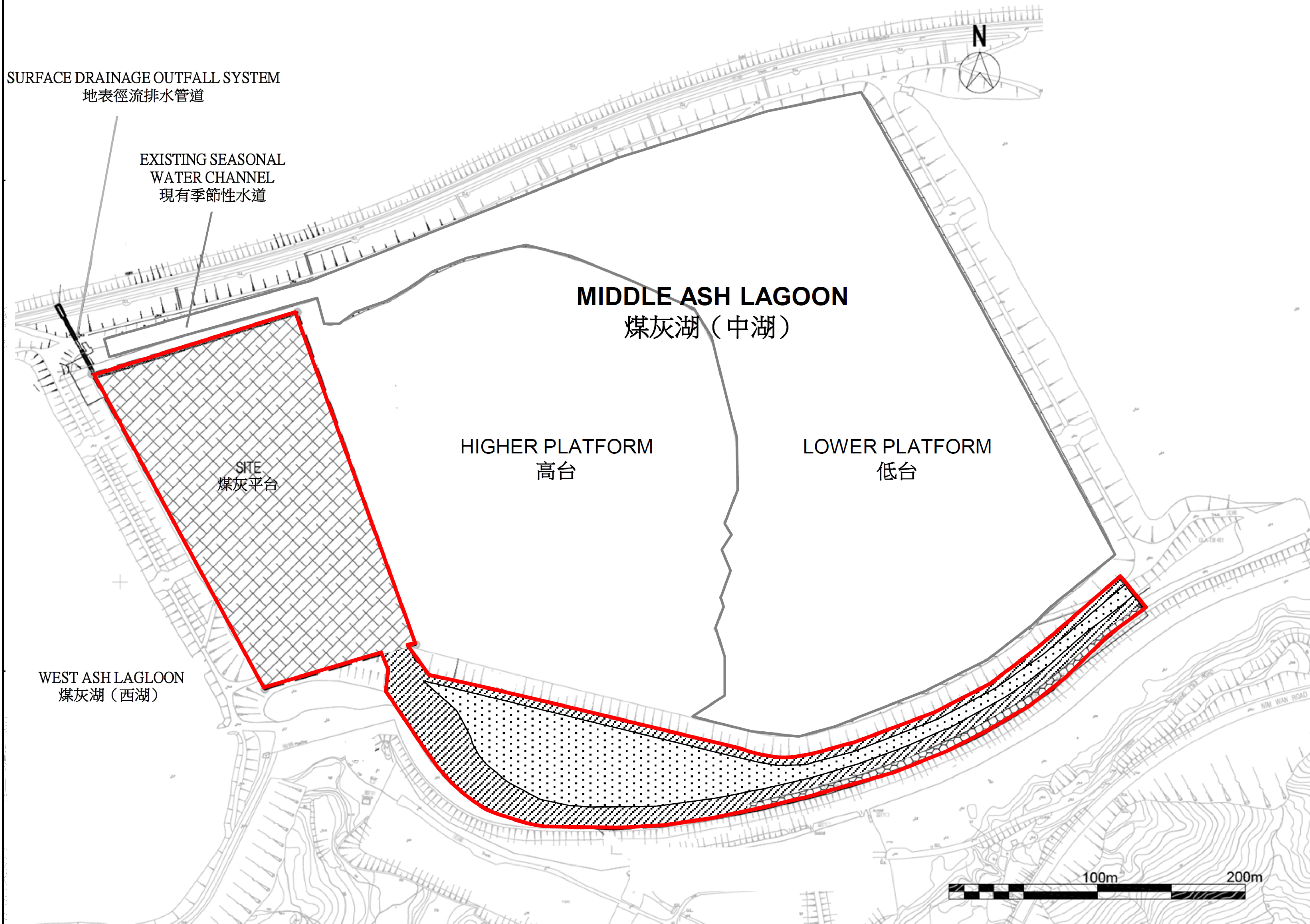
NRSB Accredited Radon Chamber Certificate Number: NRSB TRC0003

NRSB Certification Number: 14SS023
Calibration Technician: Linda M. Albertelli
Signature: [Signature] Date: April 7, 2016

It is recommended that this unit be calibrated again on or before: April 7, 2017

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Figure



Legend 圖例

	Site boundary	項目邊界
	PFA platform to be decommissioned	須解除運煤灰斗
	Construction access roads over PFA to be decommissioned	須解除運作的在煤灰上的施工通道
	Construction access road over existing road to be upgraded	以提升現有道路方式建造的施工通道
	Non-works area outside of decommissioning area	解除運作地區之外的非施工地方

Reference drawings

P2	NOV 16	MING	GENERAL REVISION	RH	EC
P1	SEP 16	MING	FIRST ISSUE	RH	EC
Rev	Date	Drawn	Description	Ch'kd	App'd

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LEIGHTON 禮頓

LEIGHTON CONTRACTORS (ASIA) LIMITED

Project

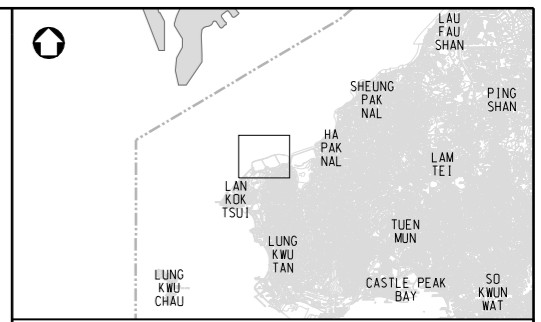
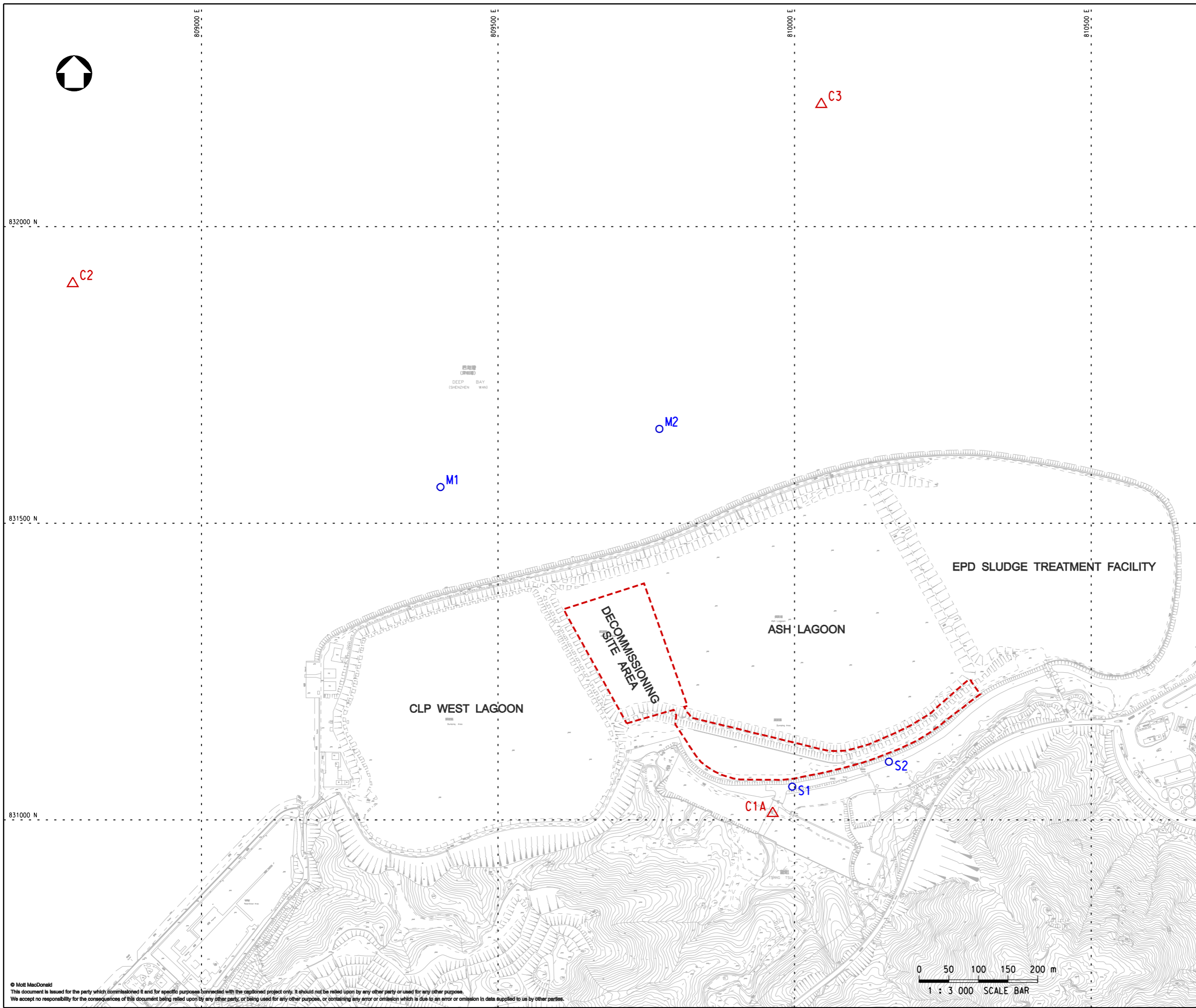
DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI, TUEN MUN

Title

LAYOUT PLAN

Designed	RH	Eng check	GC
Drawn	MING	Coordination	HY
Dwg check	RH	Approved	EC
Scale at A1	Status	Rev	
1:2000	PRE	P2	

Drawing Number **FIGURE 1**



LEGEND:

- SITE BOUNDARY
- △ CONTROL STATION
- MONITORING STATION

Reference drawings

Rev	Date	Drawn	Description	Ch'kd	App'd
P3	NOV 16	MING	GENERAL REVISION	RH	EC
P2	SEP 16	MING	GENERAL REVISION	HY	EC
P1	SEP 16	MING	FIRST ISSUE	RH	EC

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Project

DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAAGOON AT TSANG TSUI, TUEN MUN

Title

LOCATIONS OF WATER QUALITY MONITORING STATIONS

Designed	RH	Eng check	GC
Drawn	MING	Coordination	HY
Dwg check	RH	Approved	EC
Scale at A1	1:3000	Status	PRE
Drawing Number	FIGURE 2		P3