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

Monthly EM&A Report for October 2016

November 2016

Leighton Contractors (Asia) Limited

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This Monthly EM&A Report for October 2016 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: 14 November 2016

Verified by:

Y.H. Hui
Independent Environmental Checker (IEC)
Ramboll Environ Hong Kong Limited

Date: 15 Nov 2016.

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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 1st 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 20 to 31 October 2016.

Exceedance of Action and Limit Levels

The summary of measured water quality is presented in **Section 2**. No exceedance of Action or Limit Levels for Water Quality were recorded in the reporting month.

Result of Ecological Monitoring

A total of six Little Grebes were seen but no breeding activities were observed in West Ash Lagoon. No other findings on the remaining portion of the Middle Ash Lagoon and 30m wide 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**. No any non-compliance according to ProPECC PN 1/99"Environmental Protection Department Practice Note For Professional Persons-Control of Radon Concentration in New Buildings" in the reporting month.

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 commissioned in the coming month include:

- Installation of site hoarding
- Site clearance
- Preparation works for decommissioning

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:

- Installation of site hoarding
- Site clearance
- Mobilisation

Installation of site hoarding

Site clearance

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 30m wide 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		809403	831561	

M2	Impact station for marine water quality monitoring	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 changes. Alternative station change 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. The water depth be 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

Monitoring Results

During the reporting period, the scheduled impact monitoring on 21 October 2016 was cancelled due to typhoon signal No. 8 hoisted. Other monitoring events were conducted as scheduled on 24, 26, 28 and 31 October 2016 at the seven water quality monitoring stations. The weather and sea conditions throughout the monitoring period are presented in **Appendix H**.

No exceedance of the Action and Limit Level was recorded in the reporting period. Water quality monitoring results and graphical presentations are provided in **Appendix H**.

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 target species Little Grebe (*Tachybaptus ruficollis*) within the West Ash Lagoon, the remaining portion of Middle Ash Lagoon, and the 30m wide 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 survey was conducted on 20 October 2016 from 0930 to 1130 in the designated areas including the West Ash Lagoon, the remaining portion of Middle Ash Lagoon, and the 30m wide channel at the northern edge of the PFA platform in the Middle Ash Lagoon.

In the West Ash Lagoon, the coverage of water in Wes Ash Lagoon was above 95%. For habitat condition, emergent vegetation (e.g. *Bidens alba, Neyraudia reynaudiana*) were found on the West Ash Lagoon. A total of six Little Grebes were seen but no breeding activities were observed.

The remaining portion of the Middle Ash Lagoon was also surveyed. For habitat condition, emergent and pioneer vegetation (e.g. *Bidens alba, Panicum maximum*) were found on the Middle Ash Lagoon. The coverage of water in Middle Ash Lagoon was approximately less than 5%. A swallow pond and small marsh habitat was retained at the eastern side of the Middle Ash Lagoon. No Little Grebes were seen, no breeding activity, nests and juveniles were noted.

The 30m wide 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.**

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 measurement was conducted from 20 October 2016 to 28 October 2016 at the three sampling locations, as summarised in **Table 6** and presented in **Appendix M**.

The concentration of radon was measured by Durridge RAD7 Electronic Radon Detector with an operating range from 0 Bq/m^3 to 750,000 Bq/m^3. The Certificate of Calibration is provided in **Appendix M**.

Table 6: Sampling Location and Period for Impact Measurement of Radon

Sampling Location ID	Description	Measurement Period
SP1	Indoor	26 October 2016 10:32 – 28 October 2016 10:32
SP2	Indoor	20 October 2016 11:00 – 22 October 2016 11:00
SP3	Indoor	24 October 2016 10:30 – 26 October 2016 10:30

4.3 Monitoring Result

The 48-hour average and the maximum radon concentrations measured at the three sampling locations are summarised in **Table 7**. 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/m^3 and individual measurement not exceeding 200 Bq/m^3 according to the Protocol.

Table 7: 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	11	34
SP2	Indoor	11	34
SP3	Indoor	8	34

5 Environmental Site Inspection and Audit

5.1 Site Inspection

The ET had carried out decommissioning phase weekly site inspections on 20 and 26 October 2016. 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 8**.

Table 8: Summary of Site Inspections and Recommendations

Inspection Date	Key Observations	ET Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
20 October 2016	Hoarding was not setup.	The contractor was reminded to commence the decommissioning works after the hoarding completed to prevent any adverse impact on ecology.	Setup for hoarding is in progress.	On-going
26 October 2016	Dust impact was observed in site clearance works.	The contractor was reminded to provide more water spraying for site clearance work to avoid dust impact.	At least 10 times watering on construction site was undertaken.	On-going
26 October 2016	Stockpile, construction material and PFA was observed outside site boundary.	The contractor was reminded to manage, covering all construction material, stockpile or PFA properly within site boundary.	No construction material, stockpile or PFA found out site boundary.	On-going

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 is summarised in **Table 8**.

Table 9: Status of Environmental Licenses and Permits

Statutory Reference	Description	Permit /Reference No.	Status
EIAO	Environmental Permit	FEP-01/497/2015	Vaild

APCO	Notification of Construction Work under APCO	404950	Valid
WPCO	Discharge License	N/A	Inspection of treatment facility and discharge points was conducted by EPD on 20 Sep 2016 and awaiting EPD's approval of discharge licence
WDO	Registration as Chemical Waste Producer	5213-431-L2919-01	Valid
WDO	Bill Account for Disposal	7025555	Valid

Legend: EIAO – Environmental Impact Assessment Ordinance; APCO – Air Pollution Control Ordinance; WPCO – Water Pollution Control Ordinance; WDO – Waste Disposal 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:

Dust Impact

- Sufficient watering in the construction site was recommended as a good practice for dust suppression.

Ecological Impact

- Setup 2.4m hoarding along the boundary of site area between Middle Ash Lagoon and West Ash Lagoons, and between the northern edge of the site area and the water channel north of the site area was recommended to minimize disturbance to the Little Grebe.

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

6.1 Record on Non-compliance of Action and Limit Levels

There was no breach of Action or Limit levels for Water Quality in the reporting period.

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

Not applicable.

6.5 Follow-up Actions Taken

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 continuation of site hoarding installation, site clearance and preparation works for decommissioning.

The key environmental issues for the Project in the coming reporting period 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 site surface runoffs and wastewater from activities on-site;
- Management of stockpiles;
- Sorting, recycling, storage and disposal of general refuse and construction waste; and
- Management of chemicals and avoidance of oil spillage on-site.

7.2 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.

No chemical waste was generated during the reporting period. Yet, it is noted that the Contractor has already registered with EPD as a chemical waste producer. A designated chemical waste storage area was prepared on-site. The Contractor was reminded that chemical waste containers should be properly handled and stored temporarily in designated chemical waste storage area on-site in accordance with the Code of Practise on the Packaging, Labelling and Storage of Chemical Wastes.

7.3 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 due to the Project was under way. Water quality parameters (including pH, DO, turbidity, SS and Metals) under monitoring have been checked against established Action and Limit levels.

No exceedance of the Action and Limit Level was recorded in the reporting period.

Six individuals of Little Grebe were found in West Ash Lagoon only but no breeding activities was observed.

No non-compliance of Radon was recorded in the reporting period.

8.2 Recommendations

With considerations on the decommissioning activities and environment, the following recommendations were provided:

Dust Impact

- All stockpiles should be covered by tarpaulin or kept wet by water spraying; and
- During the dry season, sufficient water spraying should be provided at haul road to reduce dust emission.

Ecological Impact

- Setup 2.4m hoarding along the boundary of site area between Middle Ash Lagoon and West Ash Lagoons, and between the northern edge of the site area and the water channel north of the site area was recommended to minimize disturbance to the Little Grebe.

Appendices

A. Project Organisation

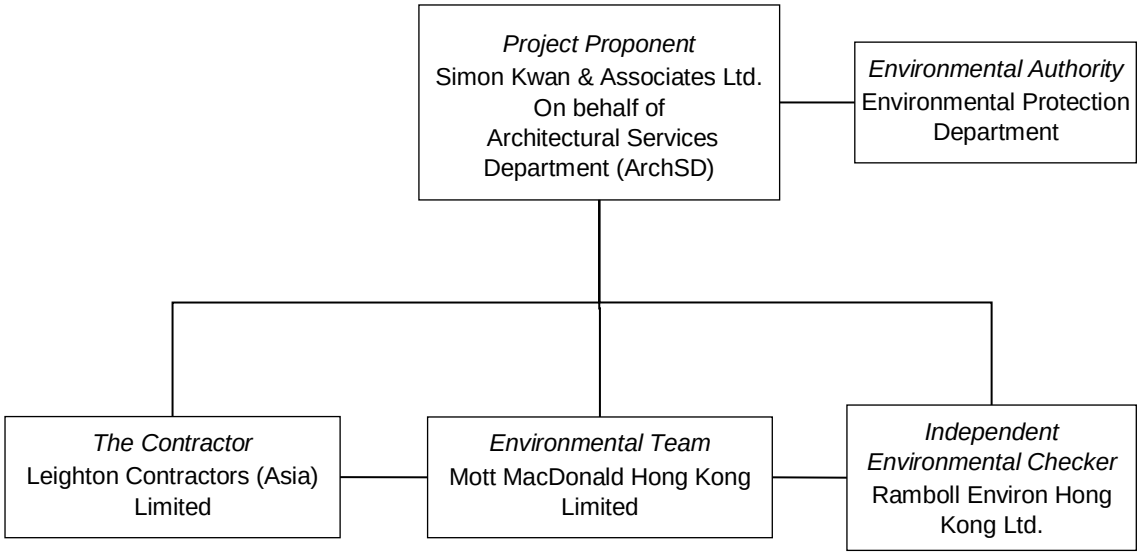

Table A.1: Contact information

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	3547 2133
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

B. Tentative Works Programme

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

Works Programme

Tasks	Oct-16				Nov-16				Dec-16				Jan-17			
	Week				Week				Week				Week			
	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 and surface outfall construction																
Decommissioning work on external access road and surface outfall construction																

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 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.

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	• 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.	• 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.	• Discuss with IEC on the proposed mitigation measures; and • Make agreement on the mitigation measures to be implemented	• 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	• 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.	• 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.	• 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.	• 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.
Limit level being exceeded by one sampling day	• Repeat in-situ measurement to confirm findings; • Identify source(s) of impact;	• Discuss with ET and Contractor on the mitigation measures	• Discuss with IEC, ET and Contractor on the proposed mitigation measures;	• Inform the Engineer and confirm notification of the non-compliance in writing;

	ET Leader	IEC	ER	Contractor
	• 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.	• Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and • Assess the effectiveness of the implemented 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.	• 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	• 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.	• 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.	• 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.	• 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

E. Monitoring Schedule

OCTOBER 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20 Site Inspection (am) ecological monitoring (am) radon monitoring	21 radon monitoring Stream water monitoring Marine water monitoring Ebb 15:44-19:14 Flood 10:25-13:55	22 radon monitoring
23	24 radon monitoring Stream water monitoring Marine water monitoring Ebb 06:04-09:34 Flood 14:17-17:47	25 radon monitoring	26 Site Inspection (am) radon monitoring Stream water monitoring Marine water monitoring Ebb 09:01-12:31 Flood 15:47-19:17	27 radon monitoring	28 radon monitoring Stream water monitoring Marine water monitoring Ebb 10:29-13:59 Flood 16:41-20:11	29
30	31 Stream water monitoring Marine water monitoring Ebb 12:15-15:45 Flood 06:24-09:54	Project: DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI, TUEN MUN Phase: IMPACT MONITORING Referene Tide: Tsim Bei Tsui				

Note: The originally scheduled stream and marine water monitoring on 21 October were cancelled due to typhoon signal No. 8 hoisted for the whole daytime.

NOVEMBER 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2 Stream water monitoring Marine water monitoring Ebb 13:22-16:52 Flood 07:45-11:15	3 Site Inspection (am)	4 Stream water monitoring Marine water monitoring Ebb 14:34-18:04 Flood 09:13-12:43	5
6	7 Stream water monitoring Marine water monitoring Ebb 17:52-21:22 Flood 12:16-15:46	8	9 Stream water monitoring Marine water monitoring Ebb 06:19-09:49 Flood 14:15-17:45	10 Site Inspection (am)	11 Stream water monitoring Marine water monitoring Ebb 08:53-12:23 Flood 15:33-19:03	12
13	14 Stream water monitoring Marine water monitoring Ebb 11:29-14:59 Flood 17:17-20:47	15	16 Stream water monitoring Marine water monitoring Ebb 13:05-16:35 Flood 07:32-11:02	17 Site Inspection (am) ecological monitoring (am)	18 Stream water monitoring Marine water monitoring Ebb 14:31-18:01 Flood 09:21-12:51	19
20	21 radon monitoring Stream water monitoring Marine water monitoring Ebb 18:04-21:34 Flood 12:25-15:55	22 radon monitoring	23 radon monitoring Stream water monitoring Marine water monitoring Ebb 06:47-10:17 Flood 14:22-17:52	24 radon monitoring Site Inspection (am)	25 radon monitoring Stream water monitoring Marine water monitoring Ebb 09:18-12:48 Flood 15:28-18:58	26
27	28 radon monitoring Stream water monitoring Marine water monitoring Ebb 11:21-14:51 Flood 16:46-20:16	29 radon monitoring	30 radon monitoring Stream water monitoring Marine water monitoring Ebb 12:29-15:59 Flood 07:09-10:39			

Project: DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI, TUEN MUN
Phase: IMPACT MONITORING
Referene Tide: Tsim Bei Tsui

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

Report of Equipment Performance Check/Calibration

Test Report No. : AF090104
Date of Issue : 27 Sep, 2016

PART A – CUSTOMER INFORMATION

Enovative Environmemtal 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 Professional Plus (Pro Plus) Multiparameter with sensor probe
Manufacturer	:	YSI (a xylem brand)
Serial Number	:	IOD 101566
Client's Reference Number	:	--
Date of Received	:	19 Sep, 2016
Date of Calibration	:	19 Sep, 2016
Date of Next Calibration[a]	:	19 Dec, 2016

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H^+ B
Dissolved Oxygen	APHA 21e 4500-O G
Conductivity at 25°C	APHA 21e 2510B
Salinity	APHA 21e 2520B
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]

pH at 25°C

Target (pH unit)	Displayed Reading[d] (pH Unit)	Tolerance[e](pH Unit)	Results
4.00	4.05	+0.05	Satisfactory
7.42	7.38	-0.04	Satisfactory
10.01	9.98	-0.03	Satisfactory

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

Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
33.0	33.3	+0.3	Satisfactory
26.0	25.8	-0.2	Satisfactory
12.0	11.6	-0.4	Satisfactory

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

~ CONTINUED ON NEXT PAGE ~

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

APPROVED SIGNATORY : _____
YIU Sok-fong, Marble
Laboratory Manager

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
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Report of Equipment Performance Check/Calibration

Test Report No. : AF090104
Date of Issue : 27 Sep, 2016

PART D – RESULT (Con't)

Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
8.54	8.62	+0.08	Satisfactory
5.30	5.24	-0.06	Satisfactory
3.40	3.35	-0.05	Satisfactory

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

Conductivity at 25°C

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)	Results
146.9	144.5	-1.6	Satisfactory
1412	1386	-1.8	Satisfactory
12890	12655	-1.8	Satisfactory

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

Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
0	0.00	--	Satisfactory
10	10.19	+1.9	Satisfactory
20	20.03	+0.2	Satisfactory
30	29.97	-0.1	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
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

Report of Equipment Performance Check/Calibration

Test Report No. : AF090105
Date of Issue : 27 Sep, 2016

PART A – CUSTOMER INFORMATION

Enovative Environmemtal 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 Protable Turbidimeter
Brand Name	:	HACH
Model Number	:	2100Q
Serial Number	:	13120C029845
Equipment Number	:	--
Date of Received	:	19 Sep, 2016
Date of Calibration	:	19 Sep, 2016
Date of Next Calibration[a]	:	19 Dec, 2016

PART C – CALIBRATION REQUESTED

Parameter	Reference Method
Turbidity	APHA 21e 2130 B

PART D – RESULT[bc]

Turbidity

Expected Reading (NTU)	Displayed Reading[d] (NTU)	Tolerance[e](%)	Results
0	0.00	--	Satisfactory
4	3.91	-2.2	Satisfactory
20	19.9	-0.5	Satisfactory
100	97.5	-2.5	Satisfactory
800	808	+1.0	Satisfactory

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

~ END OF REPORT ~

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

APPROVED SIGNATORY : _____
YIU Sok-fong, Marble
Laboratory Manager

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

ALS Environmental

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 Technichem 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, which ever 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:

% Recovery = (Observed Value/Spiked Value) x 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:

RPD = [(Results 1 - Result 2) / Average] x 100

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.

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 ½ 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.

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

ALS Environmental

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 *(BLK)*	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 *(DUP)*	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 *(MS)*	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 *(MSD)*	An split sample spiked as per the MS.	*Ditto*	*ditto*
Laboratory Control Sample *(LCS)*	A known, interference free matrix spiked with target analytes.	Laboratory preparation technique.	1 per QC lot of 20 samples
Duplicate Control Sample *(DCS)*	As per the SCS.	Preparation technique reproducibility (precision).	*Ditto*
Certified Reference Material (CRM)	A certified reference material containing target analytes with known concentrations and associated uncertainities and	Monitoring overall performance of each step during analysis, including sample preparation. For Inorganic analysis.	1 per QC Lot, per analytical method.
Surrogate Spike *(organic testing only)*	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 *(usually VOC testing)*	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.

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 *(organics only)*	√	√	√
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.

H. Water quality monitoring results and graphical presentations

Project Name: Decommissioning of West Portion of the midde 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	Value	Average	Value
24/10/2016	Fine	15:49	0.3	7.5	7.5	25.9	25.9	6.4	6.4	79%	6	6	3.3
		15:49	0.3	7.5		25.9		6.4		79%	6		
26/10/2016	Sunny	07:50	0.5	7.4	7.4	24.4	24.4	7.3	7.3	88%	6	6	4.8
		07:50	0.5	7.4		24.4		7.3		88%	6		
28/10/2016	Sunny	13:02	0.3	7.4	7.4	25.6	25.6	7.6	7.6	92%	21	21	5.4
		13:02	0.3	7.4		25.6		7.6		92%	21		
31/10/2016	Fine	10:49	0.3	7.5	7.5	22.9	22.9	8.3	8.3	96%	5	5	3.9
		10:49	0.3	7.5		22.9		8.3		96%	5		

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

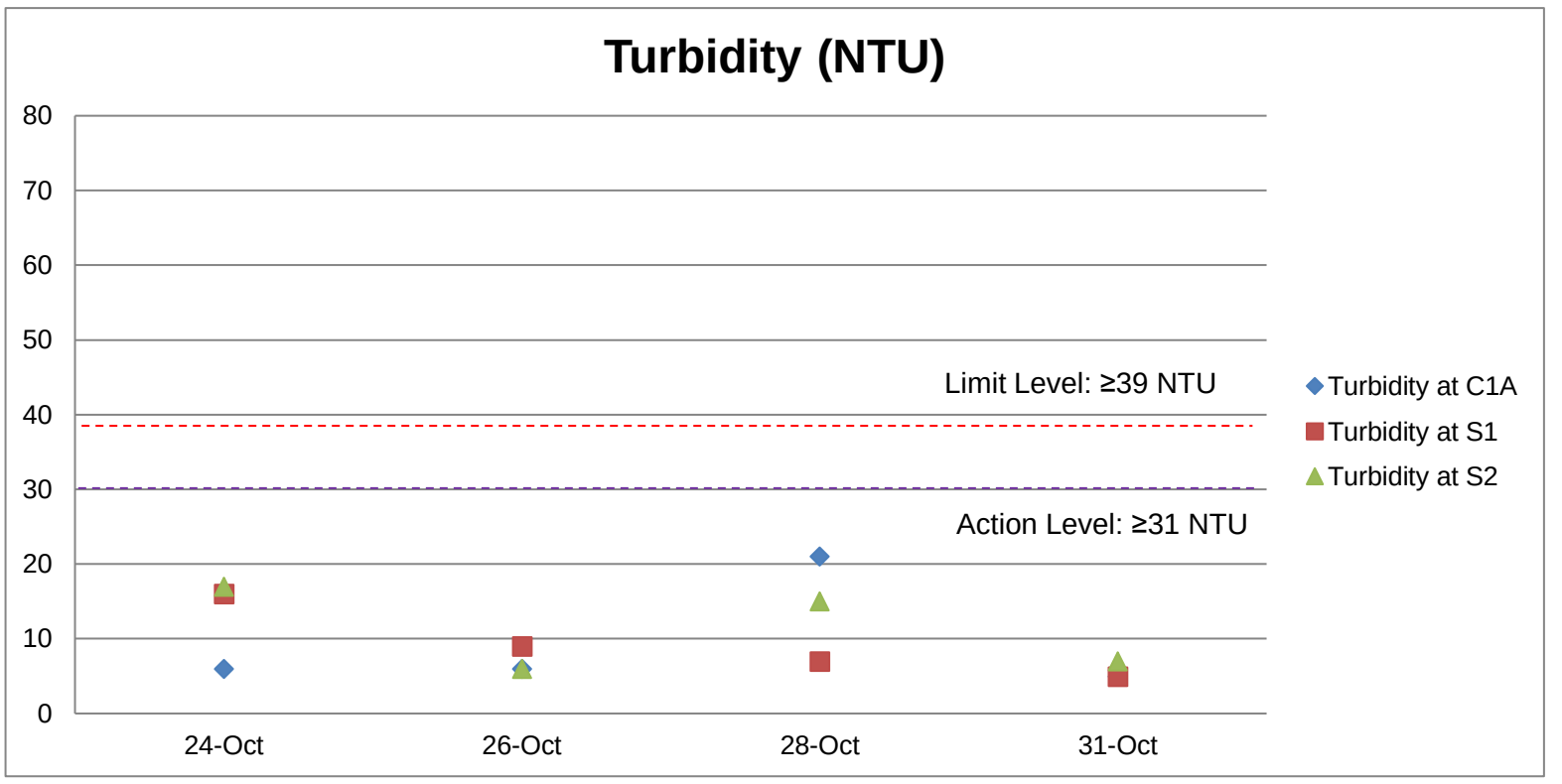
Monitoring Station: S1

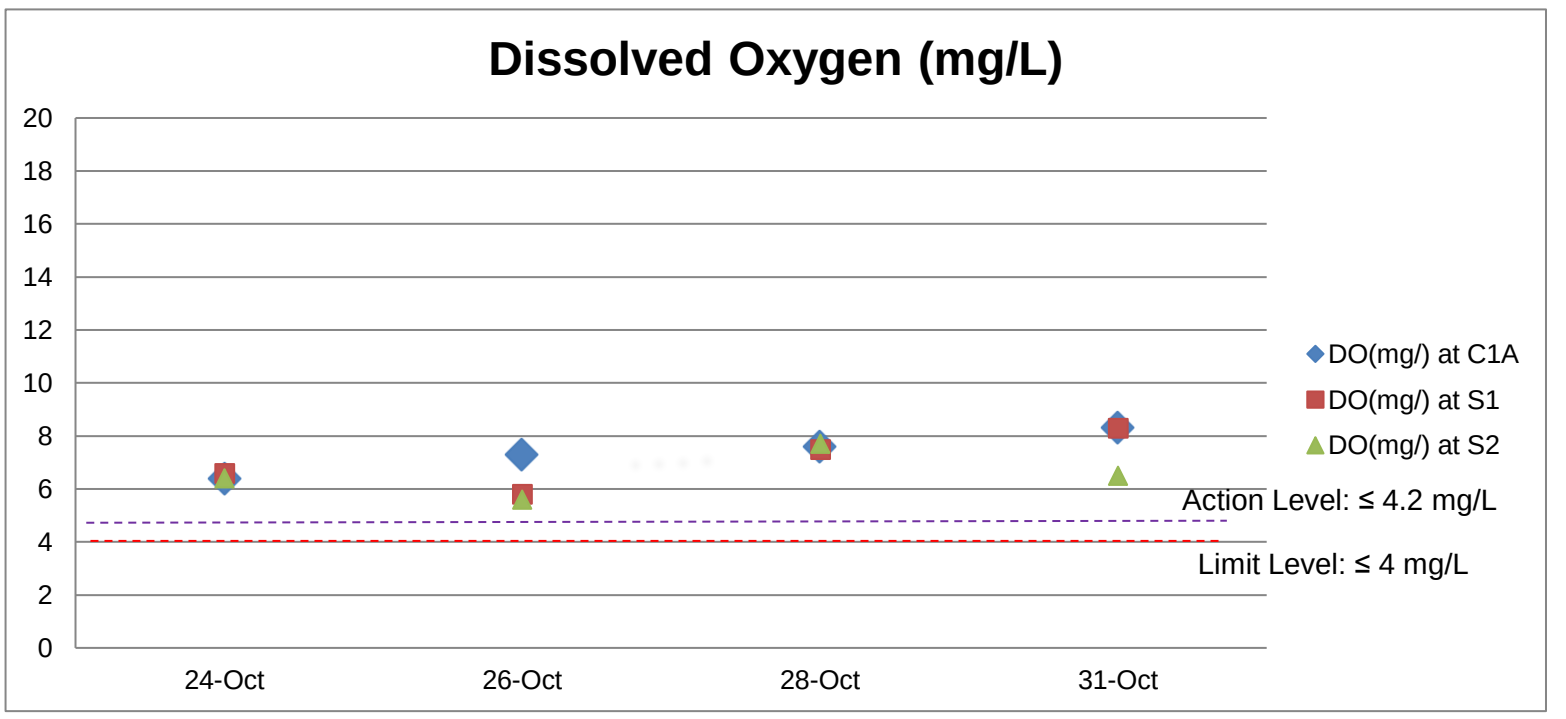
Date of Monitoring	Weather Condition	Time	Water Depth (m)	pH		Temperature (°C)		DO (mg/L)		DO Saturation, %	Turbidity (NTU)		SS (mg/L)
				Value	Average	Value	Average	Value	Average	Value	Value	Average	Value
24/10/2016	Fine	15:59	0.1	7.6	7.6	26.2	26.2	6.6	6.6	82%	16	16	34.7
		15:59	0.1	7.6		26.2		6.6		82%	16		
26/10/2016	Sunny	08:01	0.3	7.5	7.5	24.5	24.5	5.8	5.8	70%	9	9.0	15.9
		08:01	0.3	7.5		24.5		5.8		70%	9		
28/10/2016	Sunny	13:12	0.1	7.5	7.5	25.6	25.6	7.5	7.5	92%	7	7.0	11.1
		13:12	0.1	7.5		25.6		7.5		92%	7		
31/10/2016	Fine	10:59	0.6	7.4	7.4	23.5	23.5	8.3	8.3	98%	5	5.0	6.8
		10:59	0.6	7.4		23.5		8.3		98%	5		

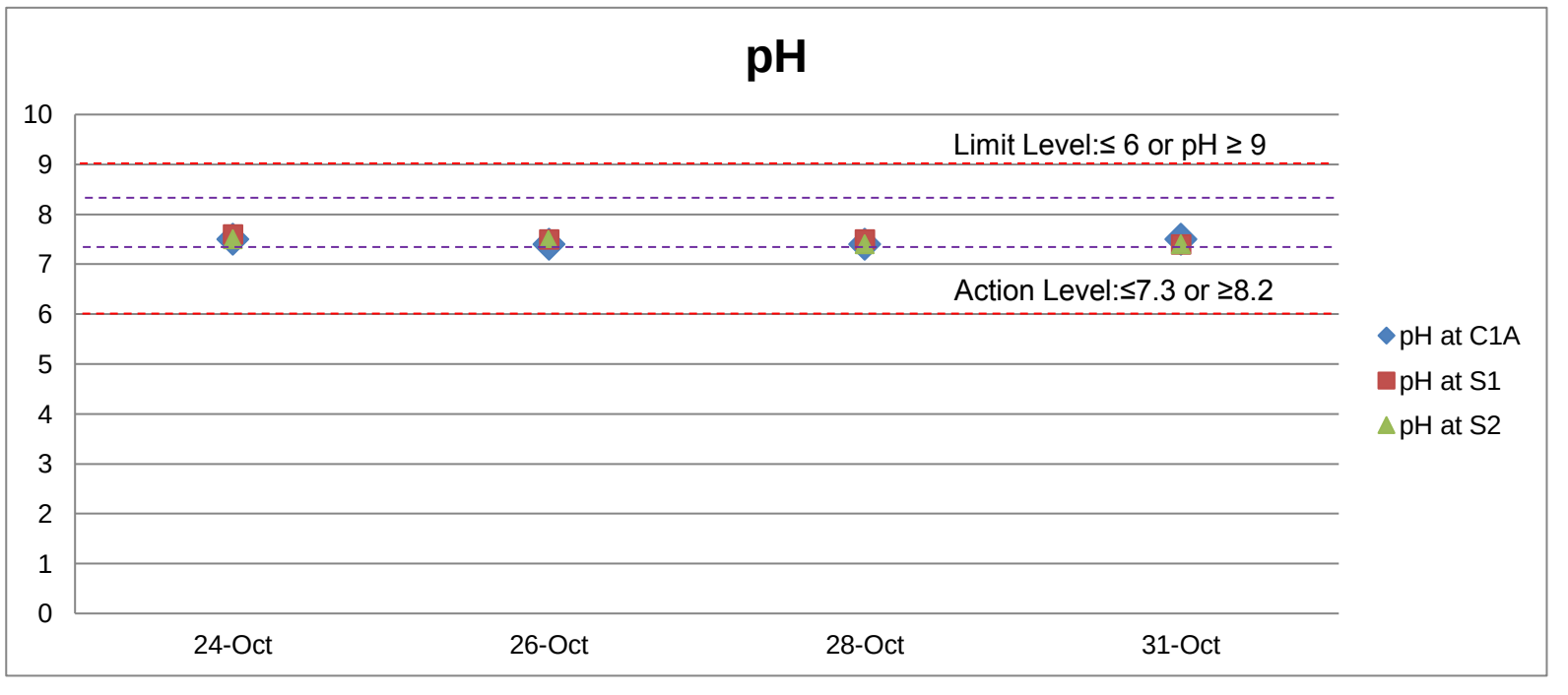
Project Name: Decommissioning of West Portion of the midde ash lagoon at Tsang Tsui, Tuen Mun

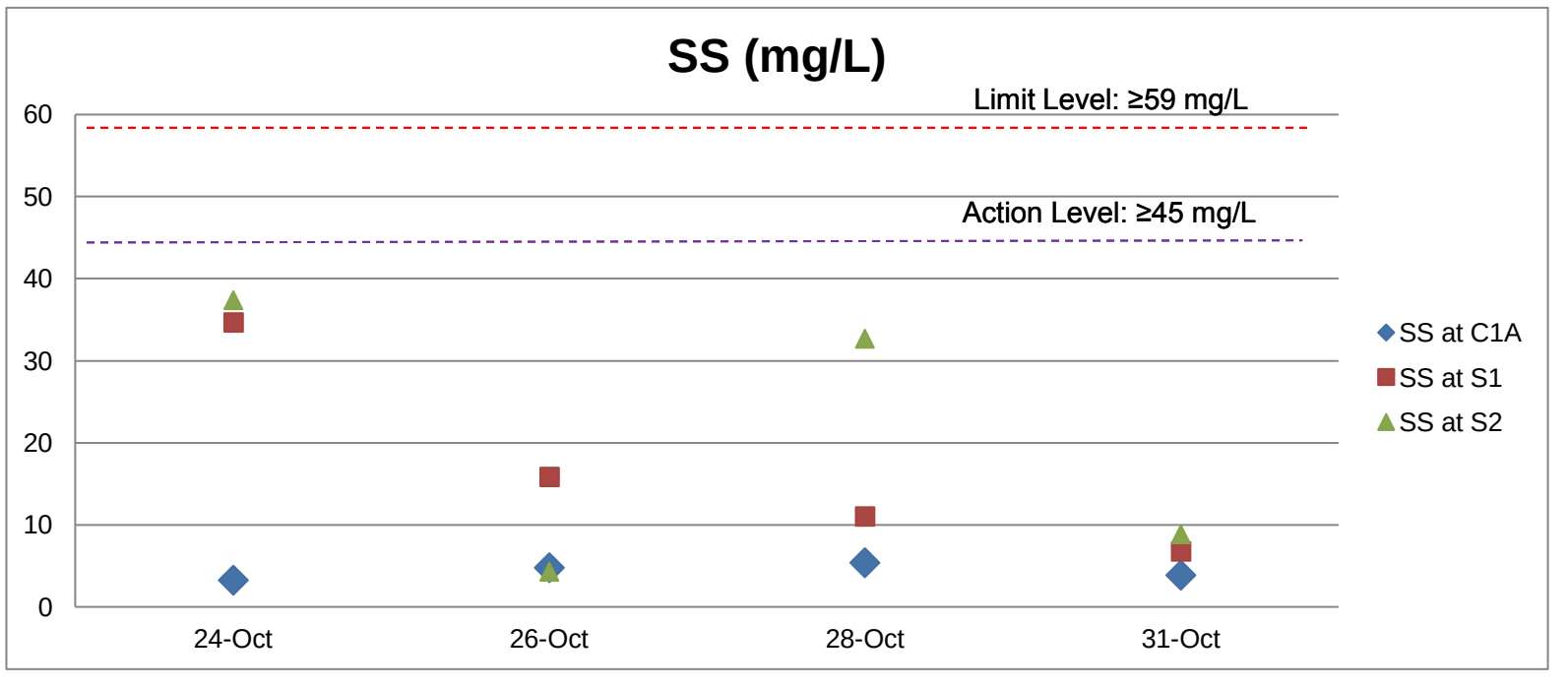
Monitoring Station: S2

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	Value	Average	Value
24/10/2016	Fine	16:10	0.1	7.5	7.5	26.3	26.3	6.4	6.4	80%	17	17.0	37.4
		16:11	0.1	7.5		26.3		6.4		80%	17		
26/10/2016	Sunny	08:11	0.6	7.5	7.5	24.8	24.8	5.6	5.6	68%	6	6.0	4.3
		08:11	0.6	7.5		24.8		5.6		68%	6		
28/10/2016	Sunny	13:22	0.2	7.4	7.4	25.9	25.9	7.7	7.7	94%	15	15.0	32.7
		13:22	0.2	7.4		25.9		7.7		94%	15		
31/10/2016	Fine	11:09	0.9	7.4	7.4	24	24.0	6.5	6.5	80%	7	7.0	8.9
		11:09	0.9	7.4		24		6.5		80%	7		


Turbidity (NTU)
80
70
60
50
40
30
20
10
0
Limit Level: ≥39 NTU
Action Level: ≥31 NTU
24-Oct
26-Oct
28-Oct
31-Oct
Turbidity at C1A
Turbidity at S1
Turbidity at S2


Dissolved Oxygen (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Action Level: ≤ 4.2 mg/L
Limit Level: ≤ 4 mg/L
24-Oct
26-Oct
28-Oct
31-Oct
DO(mg/) at C1A
DO(mg/) at S1
DO(mg/) at S2


pH
10
9
8
7
6
5
4
3
2
1
0
Limit Level:≤ 6 or pH ≥ 9
Action Level:≤7.3 or ≥8.2
24-Oct
26-Oct
28-Oct
31-Oct
pH at C1A
pH at S1
pH at S2


SS (mg/L)
60
50
40
30
20
10
0
Limit Level: ≥59 mg/L
Action Level: ≥45 mg/L
24-Oct
26-Oct
28-Oct
31-Oct
SS at C1A
SS at S1
SS at S2

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

Monitoring Station: C2 **Tide:** Mid-Ebb

Date of Monitoring	Weather Condition	Sea Condition	Time	Sampling Water Depth (m)		Water Depth (m)	Water Temperature (°C)		Cadmium (µg/L)	Chromium (µg/L)	Aluminium (µg/L)
							Value	Depth-averaged			
24/10/2016	Cloudy	Calm	07:30	Surface	1.0	6.4	24.9	24.6	<0.5	<1	<20
				Middle	3.2		24.6		<0.5	<1	<20
				Bottom	5.4		24.4		<0.5	<1	<20
26/10/2016	Sunny	Calm	10:30	Surface	1.0	6.2	25.1	24.8	<0.5	<1	<20
				Middle	3.1		24.8		<0.5	<1	<20
				Bottom	5.2		24.4		<0.5	<1	<20
28/10/2016	Sunny	Calm	11:35	Surface	1.0	6.2	25.8	25.3	<0.5	<1	<20
				Middle	3.1		25.2		<0.5	<1	<20
				Bottom	5.2		24.9		<0.5	<1	<20
31/10/2016	Sunny	Calm	14:15	Surface	1.0	6.3	26.4	25.1	<0.5	<1	<20
				Middle	3.1		24.8		<0.5	<1	<20
				Bottom	5.3		24.2		<0.5	<1	<20

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

Monitoring Station: C3 **Tide:** Mid-Ebb

Date of Monitoring	Weather Condition	Sea Condition	Time	Sampling Water Depth (m)		Water Depth (m)	Water Temperature (°C)		Cadmium (μg/L)	Chromium (μg/L)	Aluminium (μg/L)
							Value	Depth-averaged			
24/10/2016	Cloudy	Calm	08:15	Surface	1.0	4.3	26.2	25.5	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.3		24.8		<0.5	<1	<20
26/10/2016	Sunny	Calm	11:15	Surface	1.0	4.2	26.7	25.9	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.2		25.1		<0.5	<1	<20
28/10/2016	Sunny	Calm	12:20	Surface	1.0	4.2	26.7	26.0	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.2		25.3		<0.5	<1	<20
31/10/2016	Sunny	Calm	13:30	Surface	1.0	4.4	27.7	26.3	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.4		24.8		<0.5	<1	<20

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

Monitoring Station: M1 **Tide:** Mid-Ebb

Date of Monitoring	Weather Condition	Sea Condition	Time	Sampling Water Depth (m)		Water Depth (m)	Water Temperature (°C)		Cadmium (µg/L)	Chromium (µg/L)	Aluminium (µg/L)
							Value	Depth-averaged			
24/10/2016	Cloudy	Calm	07:45	Surface	1.0	6.2	26.1	25.5	<0.5	<1	<20
				Middle	3.1		25.5		<0.5	<1	<20
				Bottom	5.2		24.8		<0.5	<1	<20
26/10/2016	Sunny	Calm	10:45	Surface	1.0	6.5	26.6	25.9	<0.5	<1	<20
				Middle	3.2		25.9		<0.5	<1	<20
				Bottom	5.5		25.2		<0.5	<1	<20
28/10/2016	Sunny	Calm	11:50	Surface	1.0	6.4	26.9	25.9	<0.5	<1	<20
				Middle	3.2		25.8		<0.5	<1	<20
				Bottom	5.4		25.1		<0.5	<1	<20
31/10/2016	Sunny	Calm	14:00	Surface	1.0	6.5	27.5	26.0	<0.5	<1	<20
				Middle	3.2		25.4		<0.5	<1	<20
				Bottom	5.5		25.0		<0.5	<1	<20

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

Monitoring Station: M2 **Tide:** Mid-Ebb

Date of Monitoring	Weather Condition	Sea Condition	Time	Sampling Water Depth (m)		Water Depth (m)	Water Temperature (°C)		Cadmium (µg/L)	Chromium (µg/L)	Aluminium (µg/L)
							Value	Depth-averaged			
24/10/2016	Cloudy	Calm	08:00	Surface	1.0	4.3	26.2	25.6	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.3		24.9		<0.5	<1	<20
26/10/2016	Sunny	Calm	11:00	Surface	1.0	4.4	26.6	25.9	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.4		25.1		<0.5	<1	<20
28/10/2016	Sunny	Calm	12:05	Surface	1.0	4.2	26.9	26.1	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.2		25.2		<0.5	<1	<20
31/10/2016	Sunny	Calm	13:45	Surface	1.0	4.4	27.7	26.3	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.4		24.9		<0.5	<1	<20

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

Monitoring Station: C2 **Tide:** Mid-Flood

Date of Monitoring	Weather Condition	Sea Condition	Time	Sampling Water Depth (m)		Water Depth (m)	Water Temperature (°C)		Cadmium (µg/L)	Chromium (µg/L)	Aluminium (µg/L)
							Value	Depth-averaged			
24/10/2016	Cloudy	Calm	16:30	Surface	1.0	6.2	25.5	25.3	<0.5	<1	<20
				Middle	3.1		25.2		<0.5	<1	<20
				Bottom	5.2		25.1		<0.5	<1	<20
26/10/2016	Sunny	Calm	17:40	Surface	1.0	6.5	26.0	25.1	<0.5	<1	<20
				Middle	3.2		25.0		<0.5	<1	<20
				Bottom	5.5		24.4		<0.5	<1	<20
28/10/2016	Sunny	Calm	18:25	Surface	1.0	6.1	26.2	25.6	<0.5	<1	<20
				Middle	3.0		25.6		<0.5	<1	<20
				Bottom	5.1		25.0		<0.5	<1	<20
31/10/2016	Sunny	Calm	08:00	Surface	1.0	6.2	25.2	24.7	<0.5	<1	<20
				Middle	3.1		24.6		<0.5	<1	<20
				Bottom	5.2		24.2		<0.5	<1	<20

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

Monitoring Station: C3 **Tide:** Mid-Flood

Date of Monitoring	Weather Condition	Sea Condition	Time	Sampling Water Depth (m)		Water Depth (m)	Water Temperature (°C)		Cadmium (μg/L)	Chromium (μg/L)	Aluminium (μg/L)
							Value	Depth-averaged			
24/10/2016	Cloudy	Calm	15:45	Surface	1.0	4.1	26.4	25.9	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.1		25.4		<0.5	<1	<20
26/10/2016	Sunny	Calm	16:50	Surface	1.0	4.1	27.3	26.3	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.1		25.2		<0.5	<1	<20
28/10/2016	Sunny	Calm	17:40	Surface	1.0	4.3	27.3	26.3	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.3		25.2		<0.5	<1	<20
31/10/2016	Sunny	Calm	08:45	Surface	1.0	4.1	26.1	25.4	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.1		24.6		<0.5	<1	<20

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

Monitoring Station: M1 **Tide:** Mid-Flood

Date of Monitoring	Weather Condition	Sea Condition	Time	Sampling Water Depth (m)		Water Depth (m)	Water Temperature (°C)		Cadmium (µg/L)	Chromium (µg/L)	Aluminium (µg/L)
							Value	Depth-averaged			
24/10/2016	Cloudy	Calm	16:15	Surface	1.0	6.3	26.5	25.8	<0.5	<1	<20
				Middle	3.2		25.7		<0.5	<1	<20
				Bottom	5.3		25.2		<0.5	<1	<20
26/10/2016	Sunny	Calm	17:25	Surface	1.0	6.2	27.2	26.1	<0.5	<1	<20
				Middle	3.1		26.0		<0.5	<1	<20
				Bottom	5.2		25.2		<0.5	<1	<20
28/10/2016	Sunny	Calm	18:10	Surface	1.0	6.3	27.2	26.3	<0.5	<1	<20
				Middle	3.1		26.4		<0.5	<1	<20
				Bottom	5.3		25.4		<0.5	<1	<20
31/10/2016	Sunny	Calm	08:15	Surface	1.0	6.1	25.9	25.1	<0.5	<1	<20
				Middle	3.0		24.9		<0.5	<1	<20
				Bottom	5.1		24.4		<0.5	<1	<20

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

Monitoring Station: M2 **Tide:** Mid-Flood

Date of Monitoring	Weather Condition	Sea Condition	Time	Sampling Water Depth (m)		Water Depth (m)	Water Temperature (°C)		Cadmium (μg/L)	Chromium (μg/L)	Aluminium (μg/L)
							Value	Depth-averaged			
24/10/2016	Cloudy	Calm	16:00	Surface	1.0	4.0	26.5	25.9	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.0		25.3		<0.5	<1	<20
26/10/2016	Sunny	Calm	17:05	Surface	1.0	4.2	27.3	26.3	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.2		25.2		<0.5	<1	<20
28/10/2016	Sunny	Calm	17:55	Surface	1.0	4.1	27.0	26.2	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.1		25.3		<0.5	<1	<20
31/10/2016	Sunny	Calm	08:30	Surface	1.0	4.2	25.9	25.4	<0.5	<1	<20
				Middle	-		-		-	-	-
				Bottom	3.2		24.8		<0.5	<1	<20

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MOTT MACDONALD HONG KONG LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4		
Contact	: MS HEIDI YU	Contact	: Fung Lim Chee, Richard	Work Order	: HK1642244		
Address	: 20/F., AIA KOWLOON TOWER, LANDMARK EAST, 100 HOW MING STREET, KWUN TONG, KOWLOON HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong				
E-mail	: heidi.Yu@mottmac.com	E-mail	: Richard.Fung@alsglobal.com				
Telephone	: +852 2828 5933	Telephone	: +852 2610 1044				
Facsimile	: +852 2828 1823	Facsimile	: +852 2610 2021				
Project	: DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN	Quote number	: ----	Date received	: 24-OCT-2016		
Order number	: ----			Date of issue	: 02-NOV-2016		
C-O-C number	: ----			No. of samples	- Received	:	23
Site	: ----				- Analysed	:	23

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1642244 supersedes any previous reports with this reference. The testing period is from 24-OCT-2016 to 31-OCT-2016. 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 HK1642244 :

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.

Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

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

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

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	24-OCT-2016 07:30	HK1642244-004		<0.5	<1	<20		
C2 M EBB	24-OCT-2016 07:30	HK1642244-005		<0.5	<1	<20		
C2 B EBB	24-OCT-2016 07:30	HK1642244-006		<0.5	<1	<20		
C3 S EBB	24-OCT-2016 08:15	HK1642244-007		<0.5	<1	<20		
C3 B EBB	24-OCT-2016 08:15	HK1642244-009		<0.5	<1	<20		
M1 S EBB	24-OCT-2016 07:45	HK1642244-010		<0.5	<1	<20		
M1 M EBB	24-OCT-2016 07:45	HK1642244-011		<0.5	<1	<20		
M1 B EBB	24-OCT-2016 07:45	HK1642244-012		<0.5	<1	<20		
M2 S EBB	24-OCT-2016 08:00	HK1642244-013		<0.5	<1	<20		
M2 B EBB	24-OCT-2016 08:00	HK1642244-015		<0.5	<1	<20		
C2 S FLOOD	24-OCT-2016 16:30	HK1642244-016		<0.5	<1	<20		
C2 M FLOOD	24-OCT-2016 16:30	HK1642244-017		<0.5	<1	<20		
C2 B FLOOD	24-OCT-2016 16:30	HK1642244-018		<0.5	<1	<20		
C3 S FLOOD	24-OCT-2016 15:45	HK1642244-019		<0.5	<1	<20		
C3 B FLOOD	24-OCT-2016 15:45	HK1642244-021		<0.5	<1	<20		
M1 S FLOOD	24-OCT-2016 16:15	HK1642244-022		<0.5	<1	<20		
M1 M FLOOD	24-OCT-2016 16:15	HK1642244-023		<0.5	<1	<20		
M1 B FLOOD	24-OCT-2016 16:15	HK1642244-024		<0.5	<1	<20		
M2 S FLOOD	24-OCT-2016 16:00	HK1642244-025		<0.5	<1	<20		
M2 B FLOOD	24-OCT-2016 16:00	HK1642244-027		<0.5	<1	<20		

Sub-Matrix: **WATER**

Client sample ID	*Client sampling date / time*	*Laboratory sample ID*	*Compound*	**EA025: Suspended Solids (SS)**				
			LOR Unit	1.0 mg/L				
				EA/ED: Physical and Aggregate Properties				
C1 (STREAM WATER)	24-OCT-2016 15:49	HK1642244-001		**3.3**				
S1 (STREAM WATER)	24-OCT-2016 15:59	HK1642244-002		**34.7**				
S2 (STREAM WATER)	24-OCT-2016 16:10	HK1642244-003		**37.4**				

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4340709)								
HK1642244-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1.0	mg/L	3.3	3.6	7.9
EG: Metals and Major Cations - Filtered (QC Lot: 4339796)								
HK1642244-005	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
HK1642244-017	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: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4340709)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	110	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4339796)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	105	----	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	102	----	85	115	----	----

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

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4339796)										
HK1642244-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	93.8	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	103	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	106	----	80	120	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	:	**MOTT MACDONALD HONG KONG LIMITED**	*Laboratory*	:	**ALS Technichem (HK) Pty Ltd**	*Page*	: **1 of 5**
Contact	:	**MS HEIDI YU**	*Contact*	:	**Fung Lim Chee, Richard**	*Work Order*	: **HK1642240**
Address	:	**20/F., AIA KOWLOON TOWER, LANDMARK EAST, 100 HOW MING STREET, KWUN TONG, KOWLOON HONG KONG**	*Address*	:	**11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong**		
E-mail	:	**heidi.Yu@mottmac.com**	*E-mail*	:	**Richard.Fung@alsglobal.com**		
Telephone	:	**+852 2828 5933**	*Telephone*	:	**+852 2610 1044**		
Facsimile	:	**+852 2828 1823**	*Facsimile*	:	**+852 2610 2021**		
Project	:	**DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN**	*Quote number*	:	**----**	*Date received*	: **26-OCT-2016**
Order number	:	**----**				*Date of issue*	: **04-NOV-2016**
C-O-C number	:	**----**				*No. of samples*	- *Received* : **23**
Site	:	**----**					- *Analysed* : **23**

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1642240 supersedes any previous reports with this reference. The testing period is from 26-OCT-2016 to 04-NOV-2016. 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 HK1642240 :

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.

Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

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

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

Analytical Results

Sub-Matrix: **FRESH WATER**

Client sample ID	*Client sampling date / time*	*Laboratory sample ID*	*Compound*	**EA025: Suspended Solids (SS)**				
			LOR Unit	1.0 mg/L				
				EA/ED: Physical and Aggregate Properties				
S1 (STREAM WATER)	26-OCT-2016 08:01	HK1642240-002		**15.9**				
S2 (STREAM WATER)	26-OCT-2016 08:11	HK1642240-003		**4.3**				

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-OCT-2016 10:30	HK1642240-004		<0.5	<1	<20		
C2 M EBB	26-OCT-2016 10:30	HK1642240-005		<0.5	<1	<20		
C2 B EBB	26-OCT-2016 10:30	HK1642240-006		<0.5	<1	<20		
C3 S EBB	26-OCT-2016 11:15	HK1642240-007		<0.5	<1	<20		
C3 B EBB	26-OCT-2016 11:15	HK1642240-009		<0.5	<1	<20		
M1 S EBB	26-OCT-2016 10:45	HK1642240-010		<0.5	<1	<20		
M1 M EBB	26-OCT-2016 10:45	HK1642240-011		<0.5	<1	<20		
M1 B EBB	26-OCT-2016 10:45	HK1642240-012		<0.5	<1	<20		
M2 S EBB	26-OCT-2016 11:00	HK1642240-013		<0.5	<1	<20		
M2 B EBB	26-OCT-2016 11:00	HK1642240-015		<0.5	<1	<20		
C2 S FLOOD	26-OCT-2016 17:40	HK1642240-016		<0.5	<1	<20		
C2 M FLOOD	26-OCT-2016 17:40	HK1642240-017		<0.5	<1	<20		
C2 B FLOOD	26-OCT-2016 17:40	HK1642240-018		<0.5	<1	<20		
C3 S FLOOD	26-OCT-2016 16:50	HK1642240-019		<0.5	<1	<20		
C3 B FLOOD	26-OCT-2016 16:50	HK1642240-021		<0.5	<1	<20		
M1 S FLOOD	26-OCT-2016 17:25	HK1642240-022		<0.5	<1	<20		
M1 M FLOOD	26-OCT-2016 17:25	HK1642240-023		<0.5	<1	<20		
M1 B FLOOD	26-OCT-2016 17:25	HK1642240-024		<0.5	<1	<20		
M2 S FLOOD	26-OCT-2016 17:05	HK1642240-025		<0.5	<1	<20		
M2 B FLOOD	26-OCT-2016 17:05	HK1642240-027		<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)	26-OCT-2016 07:50	HK1642240-001		**4.8**				

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4343336)								
HK1642240-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1.0	mg/L	4.8	5.0	3.5
EG: Metals and Major Cations - Filtered (QC Lot: 4343231)								
HK1642240-005	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
HK1642240-017	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: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4343336)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	100	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4343231)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	90.2	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	92.0	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	101	----	85	115	----	----

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

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4343231)										
HK1642240-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	102	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	107	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	94.7	----	80	120	----	----

CERTIFICATE OF ANALYSIS

Client	:	**MOTT MACDONALD HONG KONG LIMITED**	*Laboratory*	:	**ALS Technichem (HK) Pty Ltd**	*Page*	: **1 of 5**
Contact	:	**MS HEIDI YU**	*Contact*	:	**Fung Lim Chee, Richard**	*Work Order*	: **HK1642747**
Address	:	**20/F., AIA KOWLOON TOWER, LANDMARK EAST, 100 HOW MING STREET, KWUN TONG, KOWLOON HONG KONG**	*Address*	:	**11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong**		
E-mail	:	**heidi.Yu@mottmac.com**	*E-mail*	:	**Richard.Fung@alsglobal.com**		
Telephone	:	**+852 2828 5933**	*Telephone*	:	**+852 2610 1044**		
Facsimile	:	**+852 2828 1823**	*Facsimile*	:	**+852 2610 2021**		
Project	:	**DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN**	*Quote number*	:	**----**	*Date received*	: **28-OCT-2016**
Order number	:	**----**				*Date of issue*	: **08-NOV-2016**
C-O-C number	:	**----**				*No. of samples*	- *Received* : **23**
Site	:	**----**					- *Analysed* : **23**

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1642747 supersedes any previous reports with this reference. The testing period is from 28-OCT-2016 to 08-NOV-2016. 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 HK1642747 :

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.

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

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

Analytical Results

Sub-Matrix: **FRESH WATER**

Client sample ID	*Client sampling date / time*	*Laboratory sample ID*	*Compound*	**EA025: Suspended Solids (SS)**				
			LOR Unit	1.0 mg/L				
				EA/ED: Physical and Aggregate Properties				
S1 (STREAM WATER)	28-OCT-2016 13:12	HK1642747-002		**11.1**				
S2 (STREAM WATER)	28-OCT-2016 13:22	HK1642747-003		**32.7**				

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-OCT-2016 11:35	HK1642747-004		<0.5	<1	<20		
C2 M EBB	28-OCT-2016 11:35	HK1642747-005		<0.5	<1	<20		
C2 B EBB	28-OCT-2016 11:35	HK1642747-006		<0.5	<1	<20		
C3 S EBB	28-OCT-2016 12:20	HK1642747-007		<0.5	<1	<20		
C3 B EBB	28-OCT-2016 12:20	HK1642747-009		<0.5	<1	<20		
M1 S EBB	28-OCT-2016 11:50	HK1642747-010		<0.5	<1	<20		
M1 M EBB	28-OCT-2016 11:50	HK1642747-011		<0.5	<1	<20		
M1 B EBB	28-OCT-2016 11:50	HK1642747-012		<0.5	<1	<20		
M2 S EBB	28-OCT-2016 12:05	HK1642747-013		<0.5	<1	<20		
M2 B EBB	28-OCT-2016 12:05	HK1642747-015		<0.5	<1	<20		
C2 S FLOOD	28-OCT-2016 18:25	HK1642747-016		<0.5	<1	<20		
C2 M FLOOD	28-OCT-2016 18:25	HK1642747-017		<0.5	<1	<20		
C2 B FLOOD	28-OCT-2016 18:25	HK1642747-018		<0.5	<1	<20		
C3 S FLOOD	28-OCT-2016 17:40	HK1642747-019		<0.5	<1	<20		
C3 B FLOOD	28-OCT-2016 17:40	HK1642747-021		<0.5	<1	<20		
M1 S FLOOD	28-OCT-2016 18:10	HK1642747-022		<0.5	<1	<20		
M1 M FLOOD	28-OCT-2016 18:10	HK1642747-023		<0.5	<1	<20		
M1 B FLOOD	28-OCT-2016 18:10	HK1642747-024		<0.5	<1	<20		
M2 S FLOOD	28-OCT-2016 17:55	HK1642747-025		<0.5	<1	<20		
M2 B FLOOD	28-OCT-2016 17:55	HK1642747-027		<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)	28-OCT-2016 13:02	HK1642747-001		**5.4**				

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4345576)								
HK1642747-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1.0	mg/L	5.4	5.3	2.3
EG: Metals and Major Cations - Filtered (QC Lot: 4345068)								
HK1642747-005	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
HK1642747-017	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: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4345576)											
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: 4345068)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	101	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	95.8	----	81	115	----	----
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	96.1	----	85	115	----	----

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

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4345068)										
HK1642747-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	106	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	96.4	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	82.7	----	80	120	----	----

CERTIFICATE OF ANALYSIS

Client	: MOTT MACDONALD HONG KONG LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 5		
Contact	: MS HEIDI YU	Contact	: Fung Lim Chee, Richard	Work Order	: HK1643264		
Address	: 20/F., AIA KOWLOON TOWER, LANDMARK EAST, 100 HOW MING STREET, KWUN TONG, KOWLOON HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong				
E-mail	: heidi.Yu@mottmac.com	E-mail	: Richard.Fung@alsglobal.com				
Telephone	: +852 2828 5933	Telephone	: +852 2610 1044				
Facsimile	: +852 2828 1823	Facsimile	: +852 2610 2021				
Project	: DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI TUEN MUN	Quote number	: ----	Date received	: 31-OCT-2016		
Order number	: ----			Date of issue	: 09-NOV-2016		
C-O-C number	: ----			No. of samples	- Received	:	23
Site	: ----				- Analysed	:	23

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1643264 supersedes any previous reports with this reference. The testing period is from 31-OCT-2016 to 09-NOV-2016. 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 HK1643264 :

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.

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

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

Analytical Results

Sub-Matrix: **FRESH 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				
S1 (STREAM WATER)	31-OCT-2016 10:59	HK1643264-002	**6.8**				
S2 (STREAM WATER)	31-OCT-2016 11:09	HK1643264-003	**8.9**				

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	31-OCT-2016 14:15	HK1643264-004		<0.5	<1	<20		
C2 M EBB	31-OCT-2016 14:15	HK1643264-005		<0.5	<1	<20		
C2 B EBB	31-OCT-2016 14:15	HK1643264-006		<0.5	<1	<20		
C3 S EBB	31-OCT-2016 13:30	HK1643264-007		<0.5	<1	<20		
C3 B EBB	31-OCT-2016 13:30	HK1643264-009		<0.5	<1	<20		
M1 S EBB	31-OCT-2016 14:00	HK1643264-010		<0.5	<1	<20		
M1 M EBB	31-OCT-2016 14:00	HK1643264-011		<0.5	<1	<20		
M1 B EBB	31-OCT-2016 14:00	HK1643264-012		<0.5	<1	<20		
M2 S EBB	31-OCT-2016 13:45	HK1643264-013		<0.5	<1	<20		
M2 B EBB	31-OCT-2016 13:45	HK1643264-015		<0.5	<1	<20		
C2 S FLOOD	31-OCT-2016 08:00	HK1643264-016		<0.5	<1	<20		
C2 M FLOOD	31-OCT-2016 08:00	HK1643264-017		<0.5	<1	<20		
C2 B FLOOD	31-OCT-2016 08:00	HK1643264-018		<0.5	<1	<20		
C3 S FLOOD	31-OCT-2016 08:45	HK1643264-019		<0.5	<1	<20		
C3 B FLOOD	31-OCT-2016 08:45	HK1643264-021		<0.5	<1	<20		
M1 S FLOOD	31-OCT-2016 08:15	HK1643264-022		<0.5	<1	<20		
M1 M FLOOD	31-OCT-2016 08:15	HK1643264-023		<0.5	<1	<20		
M1 B FLOOD	31-OCT-2016 08:15	HK1643264-024		<0.5	<1	<20		
M2 S FLOOD	31-OCT-2016 08:30	HK1643264-025		<0.5	<1	<20		
M2 B FLOOD	31-OCT-2016 08:30	HK1643264-027		<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)	31-OCT-2016 10:49	HK1643264-001	**3.9**					

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4345596)								
HK1643264-001	C1 (STREAM WATER)	EA025: Suspended Solids (SS)	----	1.0	mg/L	3.9	4.1	5.9
EG: Metals and Major Cations - Filtered (QC Lot: 4345074)								
HK1643264-005	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
HK1643264-017	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: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 4345596)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	97.5	----	85	115	----	----
EG: Metals and Major Cations - Filtered (QCLot: 4345074)											
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	94.2	----	78	116	----	----
EG029: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	95.5	----	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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QCLot: 4345074)										
HK1643264-004	C2 S EBB	EG029: Cadmium	7440-43-9	10 µg/L	98.5	----	80	120	----	----
		EG029: Chromium	7440-47-3	10 µg/L	100	----	80	120	----	----
		EG029: Aluminium	7429-90-5	10 µg/L	114	----	80	120	----	----

I. Waste Flow Table

Architectural Services Department	**Form No. D/OI.03/09.002**

Contract No. / ~~Works Order No.~~: - **SS D513**

Monthly Summary Waste Flow Table for 2016 [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	N/A	N/A	N/A	N/A	N/A
Feb	N/A	N/A	N/A	N/A	N/A
Mar	N/A	N/A	N/A	N/A	N/A
Apr	N/A	N/A	N/A	N/A	N/A
May	N/A	N/A	N/A	N/A	N/A
Jun	N/A	N/A	N/A	N/A	N/A
Sub-total	N/A	N/A	N/A	N/A	N/A
Jul	N/A	N/A	N/A	N/A	N/A
Aug	N/A	N/A	N/A	N/A	N/A
Sep	N/A	N/A	N/A	N/A	N/A
Oct	0	0	0	0	0
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	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Feb	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mar	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Apr	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
May	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jun	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sub-total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jul	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aug	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sep	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oct	0	0	0	0	0	0	0	0	0	0	0	0	0
Nov													
Dec													
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

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 m^3 by volume.

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.	P
	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	P
	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.	N/A
	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.	N/A
	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.	N/A
	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.	N/A
	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.	N/A
	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..	N/A
	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.	N/A
	Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.	N/A
	Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.	N/A
	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.	✓
	Implementation of a recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).	N/A
6.2.4	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.	✓
	Proper storage and site practices to reduce the potential for damage or contamination of construction materials.	N/A
6.2.6	C&D material and excavated materials should be reused on-site as fill material as far as possible.	N/A
	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.	N/A
6.2.7	Chemicals and chemical wastes should only be stored in suitable containers in purpose-built areas.	N/A
	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

* 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 30m water channel to shield the Little Grebe, if any, from the disturbance of human activities during decommissioning and construction phase.	P
	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	N/A
	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.	✓

Legend:

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

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 K1** 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

L. Representative photos of the ecological survey

	
General view of the West Ash Lagoon	Little Grebes in the West Ash Lagoon (Viewpoint A)
	
The latest status of the man-made water channel at the northern edge of the PFA platform in the Middle Ash Lagoon (Viewpoint B)	Wetland in the eastern part of the Middle Ash Lagoon (Viewpoint C)
	
General view of access road (Viewpoint D)	

809500 E
810000 E
810500 E
831500 N
831000 N

后海灣
(深圳灣)
DEEP BAY
(SHENZHEN WAN)

Viewpoint B
Viewpoint A
Viewpoint C
Viewpoint D

DECOMMISSIONING SITE AREA

EPD SLUDGE TREATMENT FACILITY

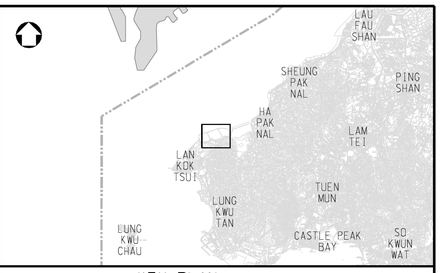
CLP WEST LAGOON

Dumping Area

Ash Lagoon

TSANG TSUI

0 50 100 150 200 m
1 : 2 000 SCALE BAR



KEY PLAN (1:150000)

LEGEND:

- SITE BOUNDARY
- LITTLE GREBE (INDICATIVE LOCATION)
- INDICATIVE WETLAND AREA

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 CONTRACTORS (ASIA) LIMITED

Project

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

Title

ECOLOGICAL BASELINE SURVEY

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

Drawing Number

Appendix E

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-RP002

ISSUE DATE: 2 November 2016

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

(PROJECT NO.: IPJ16-087)

Prepared by:

Tang Cheuk Hang
Quality Manager
WN / MT / NS / JL

Endorsed by:

Ng Yan Wa
Laboratory Manager
Approved IAQ Signatory

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/m^3 to 750,000 Bq/m^3 with a resolution of 1 Bq/m^3.

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	Container Office 6	26 October 2016 to 28 October 2016
SP2	Container Office 4	20 October 2016 to 22 October 2016
SP3	Container Office 3	24 October 2016 to 26 October 2016

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

Room 422, Leader Industrial Centre, 57-59 Au Pui Wan Street, Fo Tan, Shatin, N.T., Hong Kong
Tel: (852) 2668 3423 Fax: (852) 2668 6946
Homepage: http://www.aa-lab.com E-mail: inquiry@aa-lab.com

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 (Bq/m3)		Compliance of Clause 4
			(48 hour average)	Maximum	
SP1	Container Office 6	10:32 (26 Oct 2016) to 10:32 (28 Oct 2016)	11	34	Comply
SP2	Container Office 4	11:00 (20 Oct 2016) to 11:00 (22 Oct2016)	11	34	Comply
SP3	Container Office 3	10:30 (24 Oct 2016) to 10:30 (26 Oct 2016)	8	34	Comply

Table 5.1 Result summary for Radon measurement

-END-

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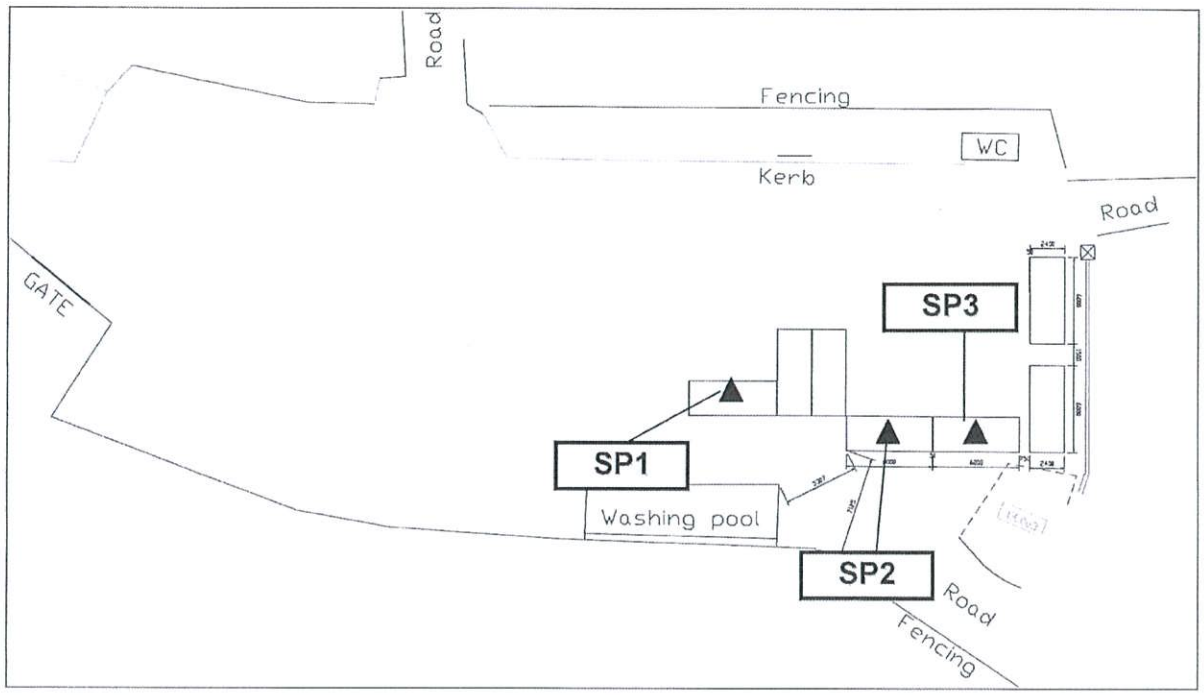
Appendix 1

Floor Layout Plan



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

▲ : Tested IAQ sampling locations

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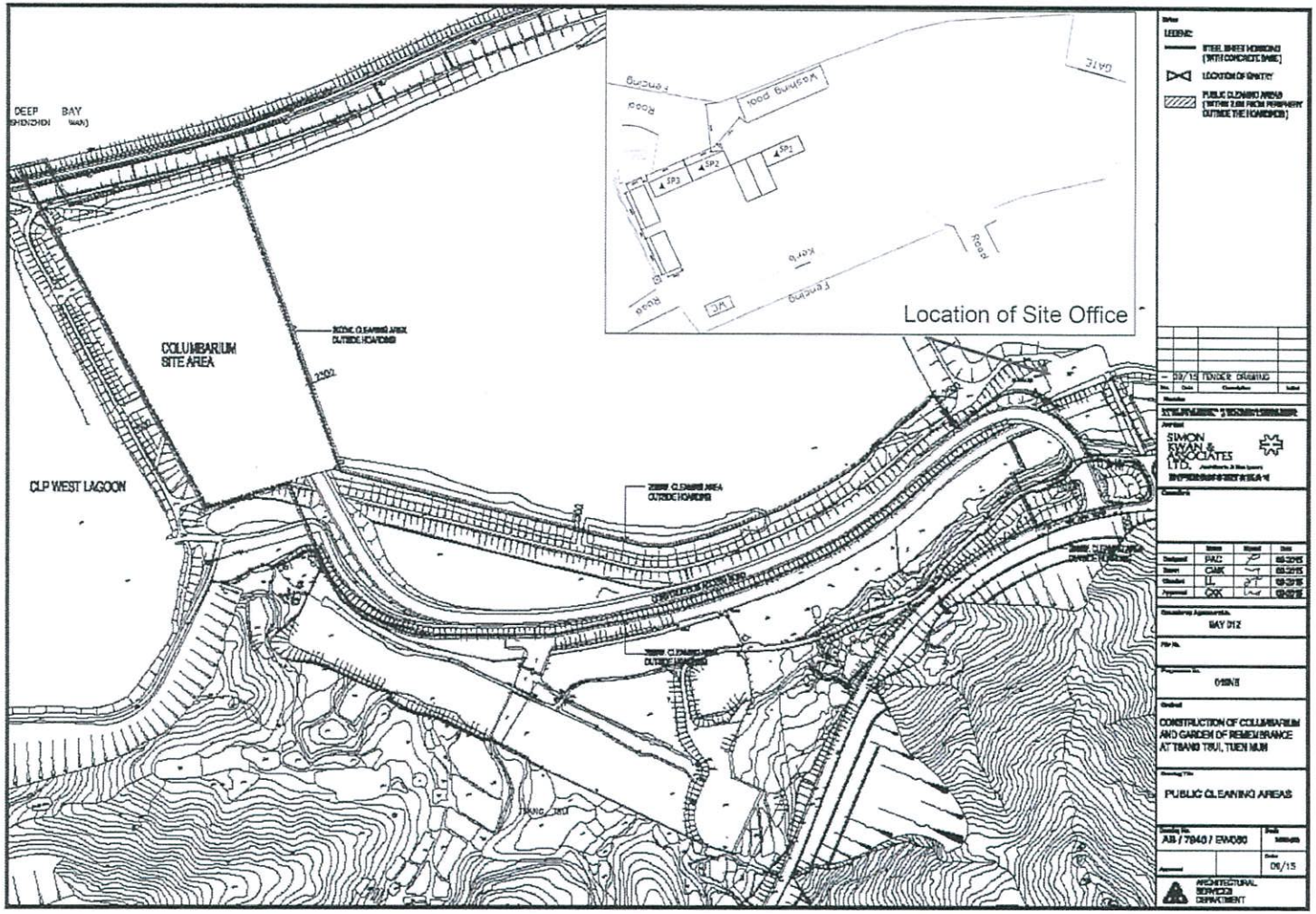

SSD513 Provision of Columbarium and Garden of Remembrance at Tsang Tsui, Tuen Mun

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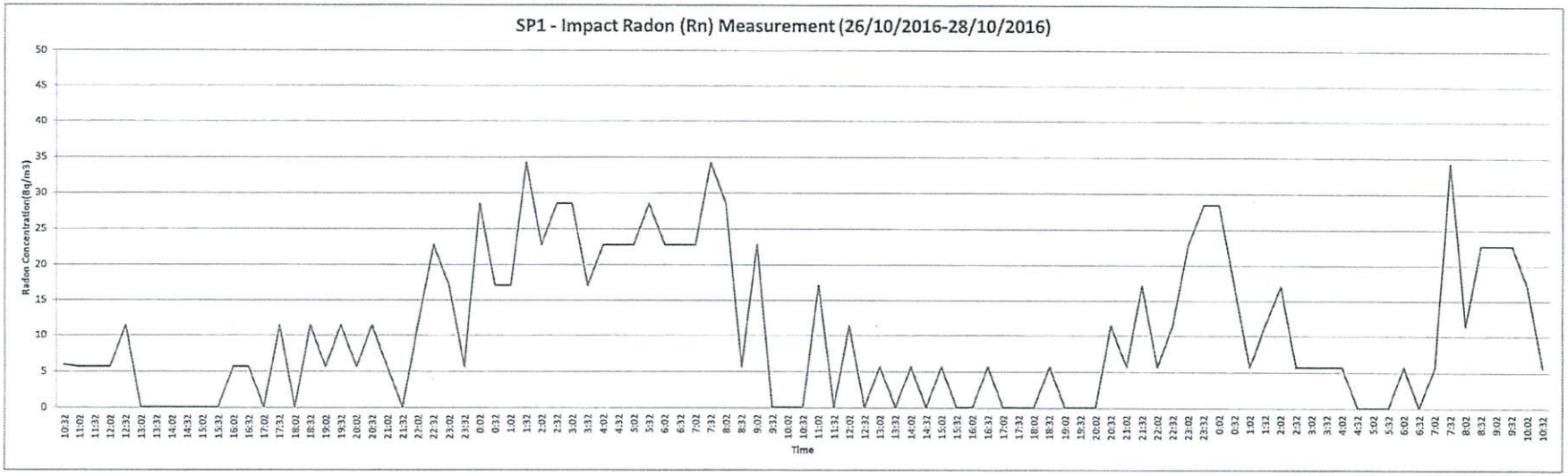
Appendix 3

Measurement Data Records



Minimum Value for sampling point	0
Maximum Value for sampling point	34
48 hour Average	11

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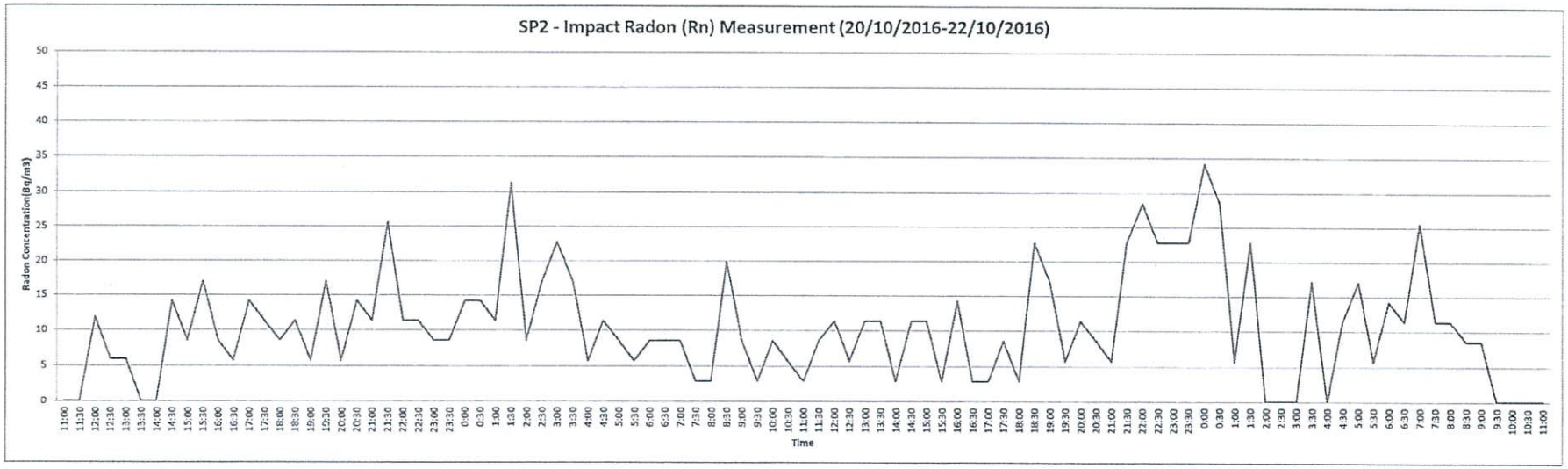

Minimum Value for sampling point	0
Maximum Value for sampling point	34
48 hour Average	11

Room 422, Leader Industrial Centre, 57-59 Au Pui Wan Street, Fo Tan, Shatin, N.T., Hong Kong
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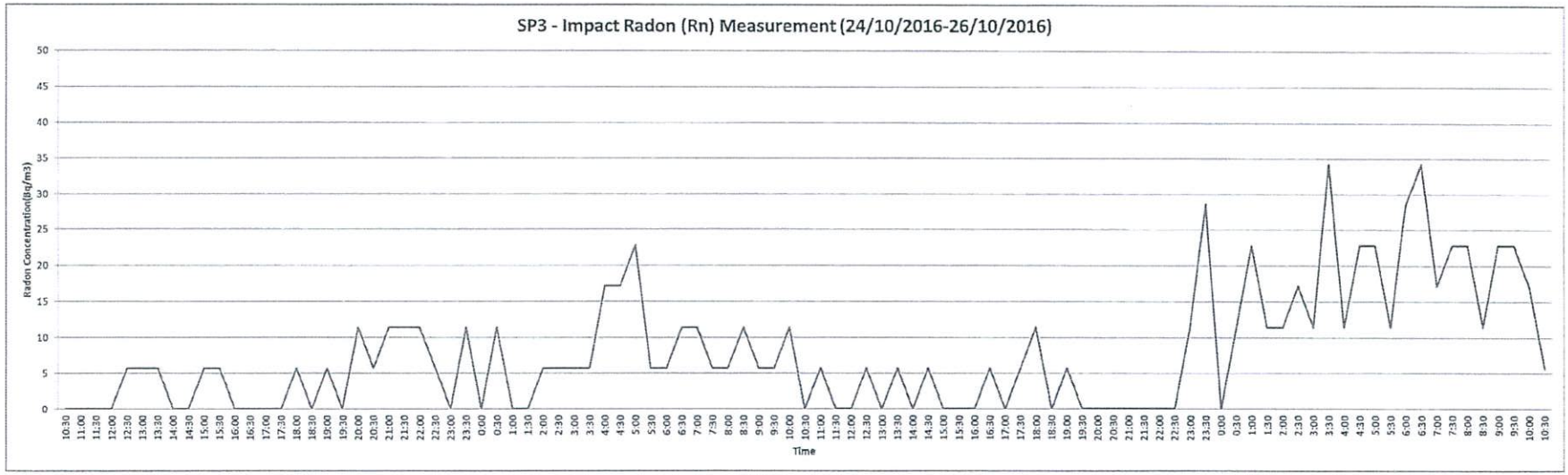


Minimum Value for sampling point	0
Maximum Value for sampling point	34
48 hour Average	8

Appendix 4

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:	January 7, 2016	*Date of Previous Calibration:*	*June 20, 2014*
Serial Number:	0564	*Previous Sensitivity, Normal mode:*	*0.461*
Model Number:	RAD7-711	*Previous Sensitivity, Sniff mode:*	*0.222*
Firmware Version:	3.1a 151208	*Previous Spill Factor:*	*0.018*
RADLINK Version:	0310		
Dates of Calibration Run:	January 4, 2016 to January 7, 2016		
Reference Unit Number(s):	504, 887, 961, 1277		
Mean Temperature:	20.0 °C		
Mean Radon Concentration:	64.1 pCi/L, 2370 Bq/m3		
Sensitivity, Normal Mode:	0.493 CPM/(pCi/L), 0.0133 CPM/(Bq/m3)		
Sensitivity, Sniff Mode:	0.239 CPM/(pCi/L), 0.00646 CPM/(Bq/m3)		
Spill Factor:	0.014		
Calibration Uncertainty:	2% 2-Sigma (See Notes 1, 2)		
Conversion Factor, Normal:	2.03 (pCi/L)/cpm, 75.1 (Bq/m3)/cpm		
Conversion Factor, Sniff:	4.18 (pCi/L)/cpm, 155 (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:	LM Albertelli Date: January 7, 2016

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

Room 422, Leader Industrial Centre, 57-59 Au Pui Wan Street, Fo Tan, Shatin, N.T., Hong Kong
Tel: (852) 2668 3423 Fax: (852) 2668 6946
Homepage: http://www.aa-lab.com E-mail: inquiry@aa-lab.com

Figure

809500 E

810000 E

810500 E

后海灣
(深圳灣)
DEEP BAY
(SHENZHEN WAN)

831500 N

SURFACE DRAINAGE OUTFALL SYSTEM

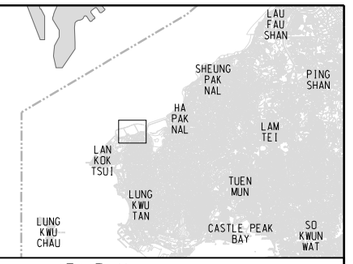
EPD SLUDGE TREATMENT FACILITY

CLP WEST LAGOON

831000 N

0 50 100 150 200 m

1 : 2 000 SCALE BAR



KEY PLAN (1:150000)

LEGEND:

- SITE BOUNDARY
- LOW ZONE
- SUBJECT SITE PFA PLATFORM (DECOMMISSIONING AREA)
- CONSTRUCTION ACCESS ROAD (SOUTH) UPGRADING OF EXISTING PAVED ACCESS ROAD
- CONSTRUCTION ACCESS ROAD (SOUTH) DECOMMISSIONING AREA
- CONSTRUCTION ACCESS ROAD (NORTH) DECOMMISSIONING AREA
- FENCE OFF AREA (NO DECOMMISSIONING)

Reference drawings

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

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Client

LEIGHTON CONTRACTORS (ASIA) LIMITED

Project

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

Title

LAYOUT PLAN

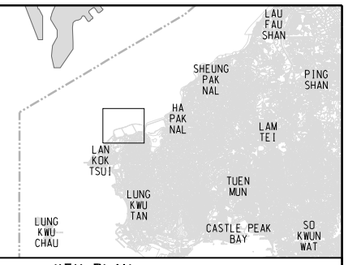
Designed	RH		Eng check	GC	
Drawn	MING		Coordination	HY	
Dwg check	RH		Approved	EC	
Scale at A1 1:2000		Status PRE		Rev P2	

Drawing Number

FIGURE 1

J:\375203\REPORT\ENV\EM&A\161109\FIG 1.dgn DATE: 09/11/2016 TIME: 14:38:37 USER: ylm42169

809000 E
809500 E
810000 E
810500 E
832000 N
831500 N
831000 N
C2
C3
C1A
M1
M2
S1
S2
DEEP BAY (SHENZHEN WAN)
CLP WEST LAGOON
DECOMMISSIONING SITE AREA
ASH LAGOON
EPD SLUDGE TREATMENT FACILITY
0 50 100 150 200 m
1 : 3 000 SCALE BAR



KEY PLAN (1:150000)

LEGEND:
- SITE BOUNDARY
- CONTROL STATION
- MONITORING STATION

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	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 LAGOON AT TSANG TSUI, TUEN MUN

Title: LOCATIONS OF BASELINE 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	Rev	P3

Drawing Number: FIGURE 2