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HIGHWAYS DEPARTMENT

Work Order



Analytical Results Sub-Matrix: WATER TLB/VC3 TLB/VC1 Sample ID Surface Surface 26-Sep-2022 11:00 26-Sep-2022 14:00 Sampling date / time HK2238012-001 HK2238012-002 CAS Number LOR Unit Compound EA/ED: Physical and Aggregate Properties EA002: pH Value — 0.1 pH Unit 7.7 7.6 ED/EK: Inorganic Nonmetallic Parameters EK055K: Ammonia as N 7664-41-7 0.01 12.5 9.62 mg/L 14797-65-0 0.01 EK057A: Nitrite as N mg/L < 0.01 < 0.01 14797-55-8 0.01 0.19 EK058A: Nitrate as N 0.05 mg/L — 0.1 mg/L— 0.01 mg/L EK061P: Total Kjeldahl Nitrogen as N 14.9 14.1 EK067P: Total Phosphorus as P 0.34 0.42 EK071K: Reactive Phosphorus as P 14265-44-2 0.01 < 0.01 < 0.01 mg/L EG: Metals and Major Cations - Filtered EG029: Arsenic 7440-38-2 1 μg/L 7440-43-9 0.2 EG029: Cadmium <0.2 < 0.2 μg/L EG029: Chromium 7440-47-3 1.0 μg/L <1.0 <1.0 EG029: Copper 7440-50-8 1.0 1.1 2.1 μg/L EG029: Lead 7439-92-1 1.0 μg/L <1.0 <1.0 7440-02-0 1.0 1.7 3.3 EG029: Nickel μg/L EG029: Silver 7440-22-4 1.0 μg/L <1.0 <1.0 7440-66-6 1 μg/L EG029: Zinc 2 EG038: Mercury 7439-97-6 0.05 μg/L <0.05 < 0.05 -EP-065: PCB Single Congeners EP065: PCB 8 34883-43-7 0.01 μg/L < 0.01 < 0.01 EP065: PCB 18 37680-65-2 0.01 <0.01 <0.01 μg/L EP065: PCB 28 7012-37-5 0.01 μg/L <0.01 < 0.01 41464-39-5 0.01 <0.01 EP065: PCB 44 < 0.01 µg/L

Page Number Client HIGHWAYS DEPARTMENT 35693-99-3 0.01

32598-10-0 0.01

32598-13-3 0.01

37680-73-2 0.01

32598-14-4 0.01

μg/L

μg/L

μg/L

μg/L

< 0.01

<0.01

< 0.01

<0.01

< 0.01

< 0.01

<0.01

< 0.01

< 0.01

EP065: PCB 52

EP065: PCB 66

FP065: PCB 77

EP065: PCB 101

EP065: PCB 105



k Order HK2238012			-		T			
Sub-Matrix: WATER			Sample ID	TLB/VC3	TLB/VC1			
				Surface	Surface			
		Samplir	ng date / time	26-Sep-2022 11:00	26-Sep-2022 14:00			_
Compound C	CAS Number	LOR	Unit	HK2238012-001	HK2238012-002			
EP-065: PCB Single Congeners - Continued								
EP065: PCB 118	31508-00-6	0.01	μg/L	<0.01	<0.01	_	-	
EP065: PCB 126	57465-28-8	0.01	μg/L	<0.01	<0.01			
EP065: PCB 128	38380-07-3	0.01	μg/L	<0.01	<0.01	_		
EP065: PCB 138	35065-28-2	0.01	μg/L	<0.01	<0.01		_	
EP065: PCB 153	35065-27-1	0.01	μg/L	<0.01	<0.01	_	_	
EP065: PCB 169	32774-16-6	0.01	μg/L	<0.01	<0.01			
EP065: PCB 170	35065-30-6	0.01	μg/L	<0.01	<0.01		No.	
EP065: PCB 180	35065-29-3	0.01	μg/L	<0.01	<0.01		_	
EP065: PCB 187	52663-68-0	0.01	μg/L	<0.01	<0.01			5 111 1 1
EP065: Total Polychlorinated biphenyls	_	0.18	μg/L	<0.18	<0.18			(
EP-067A: Organochlorine Pesticides (OC)								
EP067: alpha-BHC	319-84-6	0.10	μg/L	<0.10	<0.10			:-
EP067: beta-BHC	319-85-7	0.10	µg/L	<0.10	<0.10	_	_	
EP067: delta-BHC	319-86-8	0.10	μg/L	<0.10	<0.10			
EP067: gamma-BHC	58-89-9	0.10	μg/L	<0.10	<0.10			
EP067: Heptachlor	76-44-8	0.10	μg/L	<0.10	<0.10			
EP067: Aldrin	309-00-2	0.100	μg/L	<0.100	<0.100			
EP067: Heptachlor epoxide	1024-57-3	0.10	μg/L	<0.10	<0.10		_	
EP067: Endosulfan 1	959-98-8	0.10	μg/L	<0.10	<0.10			
EP067: 4.4'-DDE	72-55-9	0.100	μg/L	<0.100	<0.100		-	
EP067: 4.4`-DDD	72-54-8	0.100	μg/L	<0.100	<0.100			
EP067: Endosulfan sulfate	1031-07-8	0.10	μg/L	<0.10	<0.10	_		
EP067: 4.4`-DDT	50-29-3	0.100	μg/L	<0.100	<0.100	_	-	
EP-076HK: Polycyclic Aromatic Hydrocarbons (PA	Hs)							
EP076HK: Naphthalene	91-20-3	0.1	μg/L	<0.1	<0.1	_		
EP076HK: Acenaphthylene	208-96-8	0.2	μg/L	<0.2	<0.2			
EP076HK: Acenaphthene	83-32-9	0.2	μg/L	<0.2	<0.2			
EP076HK: Fluorene	86-73-7	0.2	μg/L	<0.2	<0.2			
EP076HK: Phenanthrene	85-01-8	0.1	μg/L	<0.1	<0.1			
EP076HK: Anthracene	120-12-7	0.2	μg/L	<0.2	<0.2			

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Sub-Matrix: WATER			Sample ID	TLB/VC3	TLB/VC1	_		
				Surface	Surface			
		Sampli	ng date / time	26-Sep-2022 11:00	26-Sep-2022 14:00			_
Compound	CAS Number	LOR	Unit	HK2238012-001	HK2238012-002			
EP-076HK: Polycyclic Aromatic Hydrocarbo	ons (PAHs) - Continu	ıed						
EP076HK: Fluoranthene	206-44-0	0.2	μg/L	<0.2	<0.2	-		
EP076HK: Pyrene	129-00-0	0.1	μg/L	<0.1	<0.1			
EP076HK: Benz(a)anthracene	56-55-3	0.2	μg/L	<0.2	<0.2	-		-
EP076HK: Chrysene	218-01-9	0.2	μg/L	<0.2	<0.2			
EP076HK: Benzo(b)fluoranthene	205-99-2	0.2	μg/L	<0.2	<0.2		_	
EP076HK: Benzo(k)fluoranthene	207-08-9	0.2	μg/L	<0.2	<0.2			
EP076HK: Benzo(a)pyrene	50-32-8	0.2	μg/L	<0.2	<0.2	_	_	
EP076HK: Indeno(1.2.3.cd)pyrene	193-39-5	0.2	μg/L	<0.2	<0.2			
EP076HK: Dibenz(a.h)anthracene	53-70-3	0.2	μg/L	<0.2	<0.2	_	_	
EP076HK: Benzo(g.h.i)perylene	191-24-2	0.2	μg/L	<0.2	<0.2	_	_	
EP076HK: Low M.W. PAHs	_	2.2	μg/L	<2,2	<2.2	_	_	
EP076HK: High M.W. PAHs	1—1	6.8	μg/L	<6.8	<6.8	_	_	
EP-390: Triorganotins								
EP390: Tributyltin	56573-85-4	0.015	μg TBT /L	<0.015	<0.015		_	
EP-076S: Polycyclic Aromatics Hydrocarbor	ns (PAHs) Surrogate	s						
EP076HK: Phenol-d6	13127-88-3	0.1	%	64.3	68.6		_	
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	65.4	76.7			
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	104	104		_	
EP-065S: PCB Congeners and Organochlor	rine Pesticides Surro	gate						
EP065: Decachlorobiphenyl	2051-24-3	0.01	%	78.1	80.7			
EP-067S: Pesticide Surrogate								
EP067: Tetrachlorometaxylene	877-09-8	0.1	%	98.2	67.4			
EP067: Dibutylchlorendate	1770-80-5	0.1	%	112	85.2			

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Work Order HK2238012

Laboratory Duplicate (DUP) Report

Matrix: WATER					Labo	ratory Duplicate (DUP)	Report	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and A	ggregate Properties (QC Lot: 463	36935)						
HK2240393-001	Anonymous	EA002: pH Value	_	0.1	pH Unit	4.5	4.5	0.0
HK2238012-001	TLB/VC3 Surface	EA002: pH Value	_	0.1	pH Unit	7.7	7.7	0.0
ED/EK: Inorganic Nonm	netallic Parameters (QC Lot: 463	8499)	1.0					
HK2238315-003	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.02	0.0
ED/EK: Inorganic Nonm	netallic Parameters (QC Lot: 463	8500)						
HK2238315-003	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.13	0.0
ED/EK: Inorganic Nonm	netallic Parameters (QC Lot: 463	8916)	10.00 m					~
HK2238315-003	Anonymous	EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.05	0.0
ED/EK: Inorganic Nonm	netallic Parameters (QC Lot: 464	5910)						
HK2238319-004	Anonymous	EK067P: Total Phosphorus as P		0.01	mg/L	0.04	0.04	0.0
EG: Metals and Major C	Cations - Filtered (QC Lot: 46300	10)						
HK2238011-002	Anonymous	EG038: Mercury	7439-97-6	0.05	μg/L	<0.05	<0.05	0.0
EG: Metals and Major C	Cations - Filtered (QC Lot: 46302	02)						
HK2238011-002	Anonymous	EG029: Cadmium	7440-43-9	0.1	μg/L	<0.2	<0.2	0.0
		EG029: Silver	7440-22-4	0.1	μg/L	<1.0	<1.0	0.0
		EG029: Chromium	7440-47-3	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Copper	7440-50-8	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Lead	7439-92-1	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Nickel	7440-02-0	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Arsenic	7440-38-2	1	μg/L	3	3	0.0
		EG029: Zinc	7440-66-6	1	μg/L	<1	<1	0.0
EP-390: Triorganotins	(QC Lot: 4651339)	•	'					

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

Matrix: WATER	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Re						S) Report	
				Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)		
Method: Compound CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit	

56573-85-4 0.0122 µg TBT /L <0.015 <0.015 0.0





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Matrix: WATER			Method Blank (MB)) Report		Laboratory Contr	ol Spike (LCS) and Labo	oratory Control S	pike Duplicate (DCS) Report	
					Spike Concentration	Spike Re	covery (%)	Recove	ery Limits(%)	RP	D (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Contro Limit
ED/EK: Inorganic Nonmetallic Parameters (C	QC Lot: 4638499)										
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.9		93.5	104		_
ED/EK: Inorganic Nonmetallic Parameters (C	QC Lot: 4638500)										
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.0		91.0	108		
ED/EK: Inorganic Nonmetallic Parameters (C	QC Lot: 4638916)										
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.05 mg/L	103		78.8	120		
				<0.01	0.4 mg/L	101		96.3	108		
ED/EK: Inorganic Nonmetallic Parameters (C	QC Lot: 4645910)										
EK067P: Total Phosphorus as P		0.01	mg/L	<0.01	0.5 mg/L	98.7		94.9	102		
EG: Metals and Major Cations - Filtered (QC	Lot: 4630010)										
EG038: Mercury	7439-97-6	0.05	μg/L	<0.05	0 . 05 μg/L	102		85.0	115		_
EG: Metals and Major Cations - Filtered (QC	Lot: 4630202)										
EG029: Arsenic	7440-38-2	1	μg/L	<1	10 μg/L	107		85.0	115		
EG029: Cadmium	7440-43-9	0.1	μg/L	<0.1	10 μg/L	106		85.0	115		_
EG029: Chromium	7440-47-3	0.2	μg/L	<0.2	10 μg/L	109		85.0	115		_
EG029: Copper	7440-50-8	0.2	μg/L	<0.2	10 μg/L	107		85.0	115		_
EG029: Lead	7439-92-1	0.2	μg/L	<0.2	10 μg/L	105		85.0	115	-	_
EG029: Nickel	7440-02-0	0.2	μg/L	<0.2	10 μg/L	99.7		85.0	115		
EG029: Silver	7440 - 22 - 4	0.1	μg/L	<0.1	10 μg/L	106		85.0	115		_
EG029: Zinc	7440-66-6	1	μg/L	<1	10 μg/L	103		85.0	115	_	_
EP-065: PCB Single Congeners (QC Lot: 46	48472)										
PCB 8	34883-43-7	0.01	μg/L	<0.01	0.1 µg/L	82.9		39.0	100		-
PCB 18	37680-65-2	0.01	μg/L	<0.01	0.1 μg/L	95.3		41.0	97.0		-
PCB 28	7012-37-5	0.01	μg/L	<0.01	0.1 μg/L	97.6		49.0	103		
PCB 44	41464-39-5	0.01	μg/L	<0.01	0.1 μg/L	78.8		47.0	115		
PCB 52	35693-99-3	0.01	μg/L	<0.01	0.1 μg/L	85.3		47.0	110		
PCB 66	32598-10-0	0.01	μg/L	<0.01	0.1 μg/L	61.3		47.0	127		
PCB 77	32598-13-3	0.01	μg/L	<0.01	0.1 μg/L	101		58.0	118		
PCB 101	37680-73-2	0.01	μg/L	<0.01	0.1 μg/L	102	-	62.0	113		
PCB 105	32598-14-4	0.01	μg/L	<0.01	0.1 μg/L	97.6		60.0	121		



Matrix: WATER			Method Blank (MB) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Red	covery (%)	Recove	ry Limits(%)	RP	D (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Contro. Limit
EP-065: PCB Single Congeners (QC Lot:	4648472) - Continued										
PCB 118	31508-00-6	0.01	μg/L	<0.01	0.1 μg/L	98.3		62.0	116		_
PCB 126	57465-28-8	0.01	μg/L	<0.01	0.1 μg/L	101		58.0	119		-
PCB 128	38380-07-3	0.01	μg/L	<0.01	0.1 μg/L	99.1		55.0	132	_	
PCB 138	35065-28-2	0.01	μg/L	<0.01	0.1 μg/L	98.1		60.0	122		_
PCB 153	35065-27-1	0.01	μg/L	<0.01	0.1 μg/L	97.9		62.0	121	_	_
PCB 169	32774-16-6	0.01	μg/L	<0.01	0.1 μg/L	100		59.0	122	_	
PCB 170	35065-30-6	0.01	μg/L	<0.01	0.1 µg/L	99.7		59.0	125	_	
PCB 180	35065-29-3	0.01	μg/L	<0.01	0.1 μg/L	99.6		56.0	127	_	_
PCB 187	52663-68-0	0.01	μg/L	<0.01	0.1 μg/L	98.4		55.0	125	_	_
Total Polychlorinated biphenyls		0.18	μg/L	<0.18	_	_				_	
EP-067A: Organochlorine Pesticides (OC)	(QC Lot: 4648473)										
alpha-BHC	319-84-6	0.05	μg/L	<0.05	0.1 μg/L	68.4		50.0	120	_	_
beta-BHC	319-85-7	0.05	μg/L	<0.05	0.1 μg/L	74.6		50.0	130	_	_
delta-BHC	319-86-8	0.05	μg/L	<0.05	0.1 μg/L	104		35.0	120	_	
gamma - BHC	58-89-9	0.05	μg/L	<0.05	0.1 μg/L	63.0		50.0	130	_	
Heptachlor	76-44-8	0.05	μg/L	<0.05	0.1 μg/L	57.2		21.0	120	_	
Aldrin	309-00-2	0.05	μg/L	<0.050	0.1 μg/L	59.0		35.0	120	-	
Heptachlor epoxide	1024-57-3	0.05	μg/L	<0.05	0.1 μg/L	79.1		29.0	120	_	
Endosulfan 1	959-98-8	0.05	μg/L	<0.05	0.1 μg/L	85.4		32.0	120	_	_
4.4`-DDE	72-55-9	0.0025	μg/L	<0.0025	0.1 μg/L	71.1		36.0	120	-	_
4.4`-DDD	72-54-8	0.0025	μg/L	<0.0025	0.1 μg/L	63.2		38.0	120	-	_
Endosulfan sulfate	1031-07-8	0.05	μg/L	<0.05	0.1 μg/L	62.8		37.0	120	_	_
4.4`-DDT	50-29-3	0.005	μg/L	<0.005	0.1 μg/L	63.1		27.0	120	_	_
EP-076HK: Polycydic Aromatic Hydrocarbo	ons (PAHs) (QC Lot: 4648	8471)									
Naphthalene	91-20-3	0.1	μg/L	<0.1	0.5 μg/L	92.4		73.0	113	_	_
Acenaphthylene	208-96-8	0.1	μg/L	<0.1	0.5 µg/L	93.5		74.0	115	_	_
Acenaphthene	83-32-9	0.1	μg/L	<0.1	0.5 μg/L	93.4		77.0	113	_	_
Fluorene	86-73-7	0.1	μg/L	<0.1	0.5 μg/L	90.6		72.0	114	_	_
Phenanthrene	85-01-8	0.1	μg/L	<0.1	0.5 μg/L	89.5		70.0	112		

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Matrix: WATER			Method Blank (MB	?) Report		Laboratory Contro	ol Spike (LCS) and Labor	atory Control S	pike Duplicate (DCS) Report	
					Spike Concentration	Spike Red	covery (%)	Recove	ery Limits(%)	RP	(%) סי
Method: Compound	CAS Number	LOR	Unit	Result	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbo	P-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4648471) - Continued										
Anthracene	120-12-7	0.1	μg/L	<0.1	0.5 μg/L	94.0		78.0	115	_	_
Fluoranthene	206-44-0	0.1	μg/L	<0.1	0.5 μg/L	94.6		72.0	118		-
Pyrene	129-00-0	0.1	μg/L	<0.1	0.5 μg/L	93.5	_	72.0	117		
Benz(a)anthracene	56-55-3	0.1	μg/L	<0.1	0.5 μg/L	85.5		69.0	118		
Chrysene	218-01-9	0.1	μg/L	<0.1	0.5 μg/L	94.1		69.0	120		
Benzo(b)fluoranthene	205-99-2	0.1	μg/L	<0.1	0.5 μg/L	86.9		64.0	119	_	_
Benzo(k)fluoranthene	207-08-9	0.1	μg/L	<0.1	0.5 μg/L	96.6		64.0	120		_
Benzo(a)pyrene	50-32-8	0.1	μg/L	<0.1	0.5 μg/L	90.0	_	61.0	120		_
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	μg/L	<0.1	0.5 μg/L	70.9		48.0	108	_	
Dibenz(a.h)anthracene	53-70-3	0.1	μg/L	<0.1	0.5 μg/L	81.8		44.0	111	-	-
Benzo(g.h.i)perylene	191-24-2	0.1	μg/L	<0.1	0.5 μg/L	78.6		44.0	114	-	-
Low M.W. PAHs		2.2	μg/L	<2.2	_	_				-	_
High M.W. PAHs		6.8	μg/L	<6.8	_	_				_	_
EP-390: Triorganotins (QC Lot: 4651339)											
Tributyltin	56573-85-4	0.0122	μg TBT /L	<0.012	0.0122 μg TBT /L	83.7		70.0	130		



	; (IVIS) ariu IVIALITA SP	pike Duplicate (MSD) Report								
Matrix: WATER					Matrix Spi	ike (MS) and Matr	ix Spike Duplic	ate (MSD) Re	port	
				Spike	Spike Recovery (%)		Recovery	Limits (%)	RPD (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Contr Limi
ED/EK: Inorgan	ic Nonmetallic Parameters (QC Lot: 4638499)								
HK2238315-003	Anonymous	EK071K: Reactive Phosphorus as P	14265-44- 2	0.5 mg/L	103		75.0	125		
ED/EK: Inorgani	ic Nonmetallic Parameters (QC Lot: 4638500)	·			'				
HK2238315 - 003	Anonymous	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	98.0		75.0	125		
ED/EK: Inorgan	ic Nonmetallic Parameters (QC Lot: 4638916)								
HK2238315 - 003	Anonymous	EK057A: Nitrite as N	14797-65- 0	0.25 mg/L	103		75.0	125	-	
ED/EK: Inorgan	ic Nonmetallic Parameters (QC Lot: 4645910)								
HK2238319-004	Anonymous	EK067P: Total Phosphorus as P		0.5 mg/L	96.2		75.0	125	-	
EG: Metals and	Major Cations - Filtered (QC	C Lot: 4630010)								
HK2238011 - 001	Anonymous	EG038: Mercury	7439-97-6	0.05 μg/L	99.0		75.0	125	-	
EG: Metale and	Major Cations - Filtered (QC	C Lot: 4630202)								
LG. Wetais and	Anonymous	EG029: Arsenic	7440-38-2	10 μg/L	104		75.0	120	-	
		EG029: Cadmium	7440-43-9	10 μg/L	102		75.0	125	_	
HK2238011-001			7440 47 0	10 μg/L	105		75.0	125		
		EG029: Chromium	7440-47-3	10 Pg/E			75.0	125	-	
		EG029: Chromium EG029: Copper	7440-47-3 7440-50-8	10 μg/L	98.0					
					98.0 97.6		75.0	125		
		EG029: Copper	7440-50-8	10 μg/L			75.0 75.0	125 125	_	
		EG029: Copper EG029: Lead	7440-50-8 7439-92-1	10 μg/L 10 μg/L	97.6					
		EG029: Copper EG029: Lead EG029: Nickel	7440-50-8 7439-92-1 7440-02-0	10 μg/L 10 μg/L 10 μg/L	97.6 101		75.0	125	_	
HK2238011-001	unotins (QC Lot: 4651339)	EG029: Copper EG029: Lead EG029: Nickel EG029: Silver	7440-50-8 7439-92-1 7440-02-0 7440-22-4	10 µg/L 10 µg/L 10 µg/L 10 µg/L	97.6 101 103		75.0 75.0	125 120		

Surrogate Control Limits

Sub-Matrix: WATER		Recovery	Limits (%)
Compound	CAS Number	Low	High

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Client : HIGHWAYS DEPARTMENT
Work Order HK2239012



Sub-Matrix: WATER		Recovery	Limits (%)
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydroc	arbons (PAHs) Surrogates		
Phenol-d6	13127-88-3	50	130
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-065S: PCB Congeners and Organo	ochlorine Pesticides Surrogate		
Decachlorobiphenyl	2051-24-3	50	130
EP-067S: Pesticide Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchlorendate	1770-80-5	50	130

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS : HIGHWAYS DEPARTMENT : ALS Technichem (HK) Pty Ltd : 1 of 11 : HK2238011 EDWARD LEE : Richard Fung Work Order Contact Contact RM 10-01 TO 10-03, PENINSULA TOWER 538 CASTLE PEAK ROAD, Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Address KOWLOON, HONG KONG Yip Street, Kwai Chung, N.T., Hong Kong Kwai Tsing Hong Kong Edward.Lee@arup.com : richard.fung@alsglobal.com E-mail E-mail : +852 2610 1044 Telephone Telephone : +852 2610 2021 Facsimile : ROUTE 11 (SECTION BETWEEN YUEN LONG AND NORTH LANTAU) AND OTHER MAJOR ROAD PROJECTS - GROUND Date Samples Received : 26-Sep-2022 INVESTIGATION : HY/2022/09/LAB/ENV/01 : HKE/1667/2022_V3 : 26-Oct-2022 Quote Issue Date number No. of samples received : 2 C-O-C number : ---: ENVIRONMENTAL TESTING FOR MARINE SEDIMENTS AND WATER AT TSING LUNG TAU

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

Signatories Position Authorised results for

Managing Director

Fung Lim Chee, Richard Managing Director

Inorganics, Kwai Tsing

Organics_ENV, Kwai

Kirland Jony.

Managing Director Metals ENV, Kwai Tsing

Fung Lim Chee, Richard

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Managing Director Metals_ENV, Kwai Tsing

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Client : HIGHWAYS DEPARTMENT
Work Order HK2229011



General Comments

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Client

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HIGHWAYS DEPARTMENT

This report supersedes any previous report(s) with the same work order number. All pages of this report have been checked and approved for release. When sampling time information is

not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Testing period is from 26-Sep-2022 to 25-Oct-2022.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK2238011

Sediment sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition at 16:25 on 26 September, 2022. The result(s) related only to the item(s) tested.

Seawater sample(TLB/VC1) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition at 15:45 on 27 September, 2022. The result(s) related only to the item(s) tested. Seawater sample(TLB/VC3) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition at 15:50 on 28 September, 2022. The result(s) related only to the item(s) tested.

Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.

Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified.

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

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

EK061P - Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

EA002 - Calibration range of pH value is 4.0 - 10.0. Results exceeding this range is for reference only.

EA002 - pH value is reported as at 25°C.

TBT result(s) (Method: EP390) is/are reported on as received basis.



ork Order HK2238011								
Analytical Results								
Sub-Matrix: ELUTRIATE			Sample ID	TLB/VC3	TLB/VC1			
		Campli	na data (tima	Surface 26-Sep-2022 11:00	Surface 26-Sep-2022 14:00			
			ng date / time					_
Compound	CAS Number	LOR	Unit	HK2238011-001	HK2238011-002			
EA/ED: Physical and Aggregate Properties						ı		
EA002: pH Value		0.1	pH Unit	7.6	7.9		_	
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	1.56	1.39		_	
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.04			
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.16	0.13	-	_	
EK061P: Total Kjeldahl Nitrogen as N	_	0.1	mg/L	2.4	2.3			
EK067P: Total Phosphorus as P	-	0.01	mg/L	0.14	0.13			
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.05	0.02		_	
EG: Metals and Major Cations - Filtered								
EG029: Arsenic	7440-38-2	1	μg/L	2	3	_	_	_
EG029: Cadmium	7440-43-9	0.2	μg/L	<0.2	<0.2	_	_	
EG029: Chromium	7440-47-3	1.0	μg/L	<1.0	<1.0	_	-	
EG029: Copper	7440-50-8	1.0	μg/L	2.2	<1.0	_	_	
EG029: Lead	7439-92-1	1.0	μg/L	<1.0	<1.0	_	-	
EG029: Nickel	7440-02-0	1.0	μg/L	1.5	<1.0	_		
EG029: Silver	7440-22-4	1.0	μg/L	<1.0	<1.0	_	_	
EG029: Zinc	7440-66-6	1	μg/L	<1	<1	_	_	
EG038: Mercury	7439-97-6	0.05	μg/L	<0.05	<0.05	_	_	
EP-065: PCB Single Congeners								
EP065: PCB 8	34883-43-7	0.01	μg/L	<0.01	<0.01		_	
EP065: PCB 18	37680-65-2	0.01	μg/L	<0.01	<0.01	_	_	y === .
EP065: PCB 28	7012-37-5	0.01	μg/L	<0.01	<0.01			
EP065: PCB 44	41464-39-5	0.01	μg/L	<0.01	<0.01			
EP065: PCB 52	35693-99-3	0.01	μg/L	<0.01	<0.01			
EP065: PCB 66	32598-10-0	0.01	μg/L	<0.01	<0.01			
EP065: PCB 77	32598-13-3	0.01	μg/L	<0.01	<0.01		_	
EP065: PCB 101	37680-73-2	0.01	μg/L	<0.01	<0.01			
EP065: PCB 105	32598-14-4	0.01	μg/L	<0.01	<0.01	_	_	
			F-3					

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HK2238011



Sub-Matrix: ELUTRIATE			Sample ID	TLB/VC3 Surface	TLB/VC1 Surface	-	-	
		Samplii	ng date / time	26-Sep-2022 11:00	26-Sep-2022 14:00			a
Compound	CAS Number	LOR	Unit	HK2238011-001	HK2238011-002		-	Nonemakan aka
EP-065: PCB Single Congeners - Continued								
EP065: PCB 118	31508-00-6	0.01	μg/L	<0.01	<0.01			-
EP065: PCB 126	57465-28-8	0.01	μg/L	<0.01	<0.01			
EP065: PCB 128	38380-07-3	0.01	μg/L	<0.01	<0.01			
EP065: PCB 138	35065-28-2	0.01	μg/L	<0.01	<0.01			
EP065: PCB 153	35065-27-1	0.01	μg/L	<0.01	<0.01		_	
EP065: PCB 169	32774-16-6	0.01	μg/L	<0.01	<0.01			
EP065: PCB 170	35065-30-6	0.01	μg/L	<0.01	<0.01			
EP065: PCB 180	35065-29-3	0.01	μg/L	<0.01	<0.01			
EP065: PCB 187	52663-68-0	0.01	μg/L	<0.01	<0.01			
EP065: Total Polychlorinated biphenyls	_	0.18	μg/L	<0.18	<0.18			
EP-067A: Organochlorine Pesticides (OC)								
EP067: alpha-BHC	319-84-6	0.10	μg/L	<0.10	<0.10			
EP067: beta-BHC	319-85-7	0.10	μg/L	<0.10	<0.10			
EP067: delta-BHC	319-86-8	0.10	μg/L	<0.10	<0.10			
EP067: gamma-BHC	58-89-9	0.10	μg/L	<0.10	<0.10	_	_	
EP067: Heptachlor	76-44-8	0.10	μg/L	<0.10	<0.10			
EP067: Aldrin	309-00-2	0.100	μg/L	<0.100	<0.100			
EP067: Heptachlor epoxide	1024-57-3	0.10	μg/L	<0.10	<0.10	_		
EP067: Endosulfan 1	959-98-8	0.10	μg/L	<0.10	<0.10			
EP067: 4.4`-DDE	72-55-9	0.100	μg/L	<0.100	<0.100			
EP067: 4.4`-DDD	72-54-8	0.100	μg/L	<0.100	<0.100			
EP067: Endosulfan sulfate	1031-07-8	0.10	μg/L	<0.10	<0.10		_	
EP067: 4.4`-DDT	50-29-3	0.100	μg/L	<0.100	<0.100			
EP-076HK: Polycyclic Aromatic Hydrocarbons (F	PAHs)							
EP076HK: Naphthalene	91-20-3	0.1	μg/L	<0.1	<0.1	_	_	
EP076HK: Acenaphthylene	208-96-8	0.2	μg/L	<0.2	<0.2			
EP076HK: Acenaphthene	83-32-9	0.2	μg/L	<0.2	<0.2			
EP076HK: Fluorene	86-73-7	0.2	μg/L	<0.2	<0.2	_	_	_
EP076HK: Phenanthrene	85-01-8	0.1	μg/L	<0.1	<0.1	_	_	
EP076HK: Anthracene	120-12-7	0.2	μg/L	<0.2	<0.2			

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HIGHWAYS DEPARTMENT



rk Order HK2238011								
Sub-Matrix: ELUTRIATE			Sample ID	TLB/VC3	TLB/VC1		Managem	
				Surface	Surface			
		Sampli	ng date / time	26-Sep-2022 11:00	26-Sep-2022 14:00			_
Compound	CAS Number	LOR	Unit	HK2238011-001	HK2238011-002			
EP-076HK: Polycyclic Aromatic Hydrocarb	ons (PAHs) - Continu	ıed						
EP076HK: Fluoranthene	206-44-0	0.2	μg/L	<0.2	<0.2			
EP076HK: Pyrene	129-00-0	0.1	μg/L	<0.1	<0.1			
EP076HK: Benz(a)anthracene	56-55-3	0.2	μg/L	<0.2	<0.2			
EP076HK: Chrysene	218-01-9	0.2	μg/L	<0.2	<0.2			
EP076HK: Benzo(b)fluoranthene	205-99-2	0.2	μg/L	<0.2	<0.2		-	
EP076HK: Benzo(k)fluoranthene	207-08-9	0.2	μg/L	<0.2	<0.2			
EP076HK: Benzo(a)pyrene	50-32-8	0.2	μg/L	<0.2	<0.2			
EP076HK: Indeno(1.2.3.cd)pyrene	193-39-5	0.2	μg/L	<0.2	<0.2			
EP076HK: Dibenz(a.h)anthracene	53-70-3	0.2	μg/L	<0.2	<0.2			
EP076HK: Benzo(g.h.i)perylene	191-24-2	0.2	μg/L	<0.2	<0.2			
EP076HK: Low M.W. PAHs	_	2.2	μg/L	<2.2	<2.2			
EP076HK: High M.W. PAHs	_	6.8	μg/L	<6.8	<6.8			
EP-390: Triorganotins								
EP390: Tributyltin	56573-85-4	0.015	μg TBT /L	<0.015	<0.015	_	_	
EP-076S: Polycyclic Aromatics Hydrocarbo	ns (PAHs) Surrogate	s						
EP076HK: Phenol-d6	13127-88-3	0.1	%	63.5	60.5		_	
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	76.4	74.9			
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	110	108			****
EP-065S: PCB Congeners and Organochlo	rine Pesticides Surro	gate						
EP065: Decachlorobiphenyl	2051-24-3	0.01	%	88.1	80.7		_	
EP-067S: Pesticide Surrogate								
EP067: Tetrachlorometaxylene	877-09-8	0.1	%	69.1	59.0			
EP067: Dibutylchlorendate	1770-80-5	0.1	%	102	100			

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HK2238011



Laboratory Duplicate (DUP) Report

Matrix: WATER					Labo	ratory Duplicate (DUP)	Report	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and A	gregate Properties (QC Lot: 4	636935)						
HK2240393-001	Anonymous	EA002: pH Value	_	0.1	pH Unit	4.5	4.5	0.0
HK2238012-001	Anonymous	EA002: pH Value	_	0.1	pH Unit	7.7	7.7	0.0
ED/EK: Inorganic Nonm	etallic Parameters (QC Lot: 46	638499)						
HK2238315-003	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.02	0.0
ED/EK: Inorganic Nonm	etallic Parameters (QC Lot: 46	638500)						
HK2238315-003	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.13	0.0
ED/EK: Inorganic Nonm	etallic Parameters (QC Lot: 46	638916)						
HK2238315-003	Anonymous	EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.05	0.0
ED/EK: Inorganic Nonm	etallic Parameters (QC Lot: 46	645910)			5			
HK2238319-004	Anonymous	EK067P: Total Phosphorus as P	_	0.01	mg/L	0.04	0.04	0.0
EG: Metals and Major C	ations - Filtered (QC Lot: 4630	0010)						
HK2238011-002	TLB/VC1 Surface	EG038: Mercury	7439-97-6	0.05	μg/L	<0.05	<0.05	0.0
EG: Metals and Major C	ations - Filtered (QC Lot: 4630	0202)						
HK2238011-002	TLB/VC1 Surface	EG029: Cadmium	7440-43-9	0.1	μg/L	<0.2	<0.2	0.0
		EG029: Silver	7440-22-4	0.1	μg/L	<1.0	<1.0	0.0
		EG029: Chromium	7440-47-3	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Copper	7440-50-8	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Lead	7439-92-1	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Nickel	7440-02-0	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Arsenic	7440-38-2	1	μg/L	3	3	0.0
		EG029: Zinc	7440-66-6	1	μg/L	<1	<1	0.0
EP-390: Triorganotins	(QC Lot: 4651339)							
HK2240016-001	Anonymous	Tributyltin	56573-85-4	0.0122	μg TBT /L	<0.015	<0.015	0.0

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike Concentration	Spike Red	covery (%)	Recove	ry Limits(%)	RPL	0 (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control	
											Limit	

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Matrix: WATER			Method Blank (MB) Report		Laboratory Contr	ol Spike (LCS) and Lab	oratory Control S	pike Duplicate (D	OCS) Report	
					Spike Concentration	Spike Re	covery (%)	Recove	ry Limits(%)	RPI	D (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (C	C Lot: 4638499)				•					-	
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.9	1	93.5	104		
ED/EK: Inorganic Nonmetallic Parameters (C	C Lot: 4638500)										
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.0		91.0	108	_	
ED/EK: Inorganic Nonmetallic Parameters (C	C Lot: 4638916)							'			
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.05 mg/L	103		78.8	120	_	
			-	<0.01	0.4 mg/L	101		96.3	108	_	_
ED/EK: Inorganic Nonmetallic Parameters (C	C Lot: 4645910)							'	'		
EK067P: Total Phosphorus as P		0.01	mg/L	<0.01	0.5 mg/L	98.7		94.9	102		
EG: Metals and Major Cations - Filtered (QC	Lot: 4630010)										
EG038: Mercury	7439-97-6	0.05	μg/L	<0.05	0.05 μg/L	102		85.0	115	_	_
EG: Metals and Major Cations - Filtered (QC	Lot: 4630202)										
EG029: Arsenic	7440-38-2	1	μg/L	<1	10 μg/L	107		85.0	115		
EG029: Cadmium	7440-43-9	0.1	μg/L	<0.1	10 μg/L	106		85.0	115	_	
EG029: Chromium	7440-47-3	0.2	μg/L	<0.2	10 μg/L	109		85.0	115	_	
EG029: Copper	7440-50-8	0.2	μg/L	<0.2	10 μg/L	107		85.0	115	_	
EG029: Lead	7439-92-1	0.2	μg/L	<0.2	10 μg/L	105		85.0	115	_	
EG029: Nickel	7440-02-0	0.2	μg/L	<0.2	10 μg/L	99.7		85.0	115	_	_
EG029: Silver	7440-22-4	0.1	μg/L	<0.1	10 μg/L	106		85.0	115	_	_
EG029: Zinc	7440-66-6	1	μg/L	<1	10 μg/L	103		85.0	115	_	_
EP-065: PCB Single Congeners (QC Lot: 46-	48472)										
PCB 8	34883-43-7	0.01	μg/L	<0.01	0.1 μg/L	82.9		39.0	100	_	-
PCB 18	37680-65-2	0.01	μg/L	<0.01	0.1 μg/L	95.3		41.0	97.0	_	_
PCB 28	7012-37-5	0.01	μg/L	<0.01	0.1 μg/L	97.6		49.0	103		
PCB 44	41464-39-5	0.01	μg/L	<0.01	0.1 μg/L	78.8		47.0	115	-	
PCB 52	35693-99-3	0.01	μg/L	<0.01	0.1 μg/L	85.3		47.0	110	-	
PCB 66	32598-10-0	0.01	μg/L	<0.01	0.1 μg/L	61.3		47.0	127	_	
PCB 77	32598-13-3	0.01	μg/L	<0.01	0.1 μg/L	101		58.0	118	_	_
PCB 101	37680-73-2	0.01	μg/L	<0.01	0.1 μg/L	102		62.0	113	_	_
PCB 105	32598-14-4	0.01	μg/L	<0.01	0.1 µg/L	97.6		60.0	121		



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Matrix: WATER			Method Blank (MB) Report		Laboratory Contr	ol Spike (LCS) and Labor	atory Control S	pike Duplicate ((DCS) Report	
					Spike Concentration	Spike Re	covery (%)	Recove	ery Limits(%)	RP	D (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-065: PCB Single Congeners (QC Lot: 40	648472) - Continued										
PCB 118	31508-00-6	0.01	μg/L	<0.01	0.1 μg/L	98.3		62.0	116	-	-
PCB 126	57465-28-8	0.01	μg/L	<0.01	0.1 μg/L	101		58.0	119		
PCB 128	38380-07-3	0.01	μg/L	<0.01	0.1 μg/L	99.1		55.0	132	_	
PCB 138	35065-28-2	0.01	μg/L	<0.01	0.1 μg/L	98.1		60.0	122		
PCB 153	35065-27-1	0.01	μg/L	<0.01	0.1 μg/L	97.9		62.0	121	-	
PCB 169	32774-16-6	0.01	μg/L	<0.01	0.1 μg/L	100		59.0	122		
PCB 170	35065-30-6	0.01	μg/L	<0.01	0.1 μg/L	99.7		59.0	125	-	-
PCB 180	35065-29-3	0.01	μg/L	<0.01	0.1 μg/L	99.6		56.0	127		
PCB 187	52663-68-0	0.01	μg/L	<0.01	0.1 μg/L	98.4		55.0	125	-	_
Total Polychlorinated biphenyls		0.18	μg/L	<0.18	_	_				_	_
EP-067A: Organochlorine Pesticides (OC) (QC Lot: 4648473)										
alpha=BHC	319-84-6	0.05	μg/L	<0.05	0.1 μg/L	68.4		50.0	120	_	_
beta-BHC	319-85-7	0.05	μg/L	<0.05	0.1 μg/L	74.6		50.0	130	_	-
delta-BHC	319-86-8	0.05	μg/L	<0.05	0.1 μg/L	104		35.0	120	_	_
gamma-BHC	58-89-9	0.05	μg/L	<0.05	0.1 μg/L	63.0		50.0	130	_	_
Heptachlor	76-44-8	0.05	μg/L	<0.05	0.1 μg/L	57.2		21.0	120	_	
Aldrin	309-00-2	0.05	μg/L	<0.050	0.1 μg/L	59.0		35.0	120	_	-
Heptachlor epoxide	1024-57-3	0.05	μg/L	<0.05	0.1 μg/L	79.1		29.0	120	_	_
Endosulfan 1	959-98-8	0.05	μg/L	<0.05	0.1 μg/L	85.4		32.0	120	_	_
4.4`-DDE	72-55-9	0.0025	μg/L	<0.0025	0.1 μg/L	71.1		36.0	120	_	_
4.4`-DDD	72-54-8	0.0025	μg/L	<0.0025	0.1 μg/L	63.2		38.0	120		
Endosulfan sulfate	1031-07-8	0.05	μg/L	<0.05	0.1 μg/L	62.8		37.0	120	_	_
4.4`-DDT	50-29-3	0.005	μg/L	<0.005	0.1 μg/L	63.1		27.0	120	_	
EP-076HK: Polycyclic Aromatic Hydrocarbor	ns (PAHs) (QC Lot: 464	8471)									
Naphthalene	91-20-3	0.1	μg/L	<0.1	0.5 μg/L	92.4		73.0	113	_	_
Acenaphthylene	208-96-8	0.1	μg/L	<0.1	0.5 μg/L	93.5		74.0	115	_	_
Acenaphthene	83-32-9	0.1	μg/L	<0.1	0.5 μg/L	93.4		77.0	113	_	
Fluorene	86-73-7	0.1	μg/L	<0.1	0.5 μg/L	90.6		72.0	114	-	-
Phenanthrene	85-01-8	0.1	μg/L	<0.1	0.5 µg/L	89.5		70.0	112	_	-

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Page Number Client Work Order



Matrix: WATER			Method Blank (ME	3) Report		Laboratory Contro	ol Spike (LCS) and Labora	tory Control S	pike Duplicate	(DCS) Report	
					Spike Concentration	Spike Re	covery (%)	Recove	ery Limits(%)	RF	D (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocar	rbons (PAHs) (QC Lot: 464	8471) - Cor	ntinued		•			•			
Anthracene	120-12-7	0.1	μg/L	<0.1	0.5 μg/L	94.0		78.0	115		
Fluoranthene	206-44-0	0.1	μg/L	<0.1	0.5 μg/L	94.6		72.0	118		
Pyrene	129-00-0	0.1	μg/L	<0.1	0.5 μg/L	93.5		72.0	117		
Benz(a)anthracene	56-55-3	0.1	μg/L	<0.1	0.5 μg/L	85.5		69.0	118	_	_
Chrysene	218-01-9	0.1	μg/L	<0.1	0.5 μg/L	94.1		69.0	120		
Benzo(b)fluoranthene	205-99-2	0.1	μg/L	<0.1	0.5 µg/L	86.9		64.0	119	_	_
Benzo(k)fluoranthene	207-08-9	0.1	μg/L	<0.1	0.5 µg/L	96.6		64.0	120		
Benzo(a)pyrene	50-32-8	0.1	μg/L	<0.1	0.5 μg/L	90.0		61.0	120	_	_
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	μg/L	<0.1	0.5 μg/L	70.9		48.0	108	_	_
Dibenz(a.h)anthracene	53-70-3	0.1	μg/L	<0.1	0.5 μg/L	81.8		44.0	111		
Benzo(g.h.i)perylene	191-24-2	0.1	μg/L	<0.1	0.5 μg/L	78.6		44.0	114	_	_
Low M.W. PAHs		2.2	μg/L	<2.2	_	_					
High M.W. PAHs		6.8	μg/L	<6.8	_	_				_	
EP-390: Triorganotins (QC Lot: 4651339	9)										
Tributyltin	56573-85-4	0.0122	μg TBT /L	<0.012	0.0122 μg	83.7		70.0	130		
					TBT /L						

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HK2238011



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

Matrix: WATER					Matrix Sp	ike (MS) and Matr	ix Spike Duplic	ate (MSD) Re	eport	
				Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPL	0 (%)
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Contro Limit
ED/EK: Inorganio	c Nonmetallic Parameters (QC Lot: 463	88499)								
HK2238315-003	Anonymous	EK071K: Reactive Phosphorus as P	14265 - 44 - 2	0.5 mg/L	103		75.0	125		
ED/EK: Inorganic	c Nonmetallic Parameters (QC Lot: 463	18500)	2							
HK2238315-003	· · · · · · · · · · · · · · · · · · ·	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	98.0		75.0	125		
ED/EK: Inorganio	c Nonmetallic Parameters (QC Lot: 463	8916)	·		'					
HK2238315-003		EK057A: Nitrite as N	14797 - 65 -	0.25 mg/L	103		75.0	125		
ED/EK: Inorganio	c Nonmetallic Parameters (QC Lot: 464	5910)	-							
HK2238319 - 004	Anonymous	EK067P: Total Phosphorus as P		0.5 mg/L	96.2		75.0	125		
EG: Metals and I	Major Cations - Filtered (QC Lot: 46300	010)								
HK2238011-001	TLB/VC3 Surface	EG038: Mercury	7439-97-6	0.05 μg/L	99.0		75.0	125		
EG: Metals and I	Major Cations - Filtered (QC Lot: 46302	202)								
HK2238011-001	TLB/VC3 Surface	EG029: Arsenic	7440-38-2	10 μg/L	104		75.0	120		
		EG029: Cadmium	7440-43-9	10 μg/L	102		75.0	125		
		EG029: Chromium	7440-47-3	10 μg/L	105		75.0	125	-	
		EG029: Copper	7440-50-8	10 μg/L	98.0		75.0	125		
		EG029: Lead	7439-92-1	10 μg/L	97.6		75.0	125		
		EG029: Nickel	7440-02-0	10 μg/L	101		75.0	125		
		EG029: Silver	7440-22-4	10 μg/L	103		75.0	120	-	
		EG029: Zinc	7440-66-6	10 μg/L	106		75.0	125		
EP-390: Triorgar	notins (QC Lot: 4651339)									
HK2240016-001	Anonymous	Tributyltin	56573-85-	0.0122 μg	103		70.0	130	_	
			4	TBT /L						

Surrogate Control Limits

S	ub-Matrix: ELUTRIATE		Recovery	Limits (%)	
	Compound	CAS Number	Low	High	

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Sub-Matrix: ELUTRIATE		Recovery Limits (%)			
Compound	CAS Number	Low	High		
EP-076S: Polycyclic Aromatics Hydro	ocarbons (PAHs) Surrogates				
Phenol-d6	13127-88-3	50	130		
2-Fluorobiphenyl	321-60-8	50	130		
4-Terphenyl-d14	1718-51-0	50	130		
EP-065S: PCB Congeners and Orga	nochlorine Pesticides Surrogate				
Decachlorobiphenyl	2051-24-3	50	130		
EP-067S: Pesticide Surrogate					
Tetrachlorometaxylene	877-09-8	50	130		
Dibutylchlorendate	1770-80-5	50	130		



ALS Technichem (HK) Pty Ltd



Date Samples Received : 27-Sep-2022

: 26-Oct-2022

ALS Laboratory Group

CERTIFICATE OF ANALYSIS

HIGHWAYS DEPARTMENT : ALS Technichem (HK) Pty Ltd : 1 of 11 Laboratory Page : HK2238315 : EDWARD LEE : Richard Fung Work Order : RM 10-01 TO 10-03, PENINSULA TOWER 538 CASTLE PEAK ROAD, Address

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Facsimile : ROUTE 11 (SECTION BETWEEN YUEN LONG AND NORTH LANTAU) AND OTHER MAJOR ROAD PROJECTS - GROUND

INVESTIGATION

Order number : HY/2022/09/LAB/ENV/01

number

C-O-C number : ----No. of samples received : ENVIRONMENTAL TESTING FOR MARINE SEDIMENTS AND WATER AT TSING LUNG TAU No. of samples analysed : 3

This document has been signed by those names that appear on this report and are the authorised signatories. This report may not be reproduced except with prior written approval from

> Position Authorised results for

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Fung Lim Chee, Richard Metals_ENV, Kwai Tsing Managing Director Kirland Fray.

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Page Number HIGHWAYS DEPARTMENT Work Order HK2238315



General Comments

the testing laboratory.

This report supersedes any previous report(s) with the same work order number. All pages of this report have been checked and approved for release. When sampling time information is

not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Testing period is from 27-Sep-2022 to 25-Oct-2022

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK2238315

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.

Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified.

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

EK061P - Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

EA002 - Calibration range of pH value is 4.0 - 10.0. Results exceeding this range is for reference only.

TBT result(s) (Method: EP390) is/are reported on as received basis.

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HIGHWAYS DEPARTMENT Work Order



Analytical Results

			1					
Sub-Matrix: ELUTRIATE			Sample ID	TLB/VC1	TLB/VC1	TLB/VC1		
				0.00-0.45,	1.00-1.45,	Seawater blank		
				0.50-0.95	1.50-1.95			
		Sampli	ng date / time	27-Sep-2022 11:30	27-Sep-2022 12:10	27-Sep-2022 14:30		_
Compound	CAS Number	LOR	Unit	HK2238315-001	HK2238315-002	HK2238315-003		
EA/ED: Physical and Aggregate Properties					-			
EA002: pH Value	-	0.1	pH Unit	8.3	8.2	7.9		
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.25	0.17	0.13		
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.04	0.04		
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.18	0.16	0.16	_	
EK061P: Total Kjeldahl Nitrogen as N	_	0.1	mg/L	0.6	0.6	0.5		_
EK067P: Total Phosphorus as P	a <u>—</u> .	0.01	mg/L	0.08	0.09	0.06		
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.04	0.02	0.02	_	
EG: Metals and Major Cations - Filtered								
EG029: Arsenic	7440-38-2	1	μg/L	15	6	2	_	
EG029: Cadmium	7440-43-9	0.2	μg/L	<0.2	<0.2	<0.2	_	
EG029: Chromium	7440-47-3	1.0	μg/L	<1.0	<1.0	<1.0	_	
EG029: Copper	7440-50-8	1.0	μg/L	<1.0	<1.0	5.1		×
EG029: Lead	7439-92-1	1.0	μg/L	1.0	<1.0	<1.0		
EG029: Nickel	7440-02-0	1.0	μg/L	1.3	<1.0	<1.0	_	
EG029: Silver	7440-22-4	1.0	μg/L	<1.0	<1.0	<1.0	_	_
EG029: Zinc	7440-66-6	1	μg/L	131	69	35		
EG038: Mercury	7439-97-6	0.05	μg/L	<0.05	<0.05	<0.05	_	
EP-065: PCB Single Congeners								
EP065: PCB 8	34883-43-7	0.01	μg/L	<0.01	<0.01	<0.01		
EP065: PCB 18	37680-65-2	0.01	μg/L	<0.01	<0.01	<0.01		
EP065: PCB 28	7012-37-5	0.01	μg/L	<0.01	<0.01	<0.01		
EP065: PCB 44	41464-39-5	0.01	μg/L	<0.01	<0.01	<0.01	_	_
EP065: PCB 52	35693-99-3	0.01	μg/L	<0.01	<0.01	<0.01		0
EP065: PCB 66	32598-10-0	0.01	μg/L	<0.01	<0.01	<0.01	_	_
EP065: PCB 77	32598-13-3	0.01	μg/L	<0.01	<0.01	<0.01	_	
EP065: PCB 101	37680-73-2	0.01	μg/L	<0.01	<0.01	<0.01	_	

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Sub-Matrix: ELUTRIATE			Sample ID	TLB/VC1 0.00-0.45, 0.50-0.95	TLB/VC1 1.00-1.45, 1.50-1.95	TLB/VC1 Seawater blank		
		Samplii	ng date / time	27-Sep-2022 11:30	27-Sep-2022 12:10	27-Sep-2022 14:30		_
Compound	CAS Number	LOR	Unit	HK2238315-001	HK2238315-002	HK2238315-003		
P-065: PCB Sinale Congeners - Contin	nued							
EP065: PCB 105	32598-14-4	0.01	μg/L	<0.01	<0.01	<0.01	_	
EP065: PCB 118	31508-00-6	0.01	μg/L	<0.01	<0.01	<0.01	_	
EP065: PCB 126	57465-28-8	0.01	μg/L	<0.01	<0.01	<0.01		
EP065: PCB 128	38380-07-3	0.01	μg/L	<0.01	<0.01	<0.01	_	_
EP065: PCB 138	35065-28-2	0.01	μg/L	<0.01	<0.01	<0.01	_	
EP065: PCB 153	35065-27-1	0.01	μg/L	<0.01	<0.01	<0.01		
EP065: PCB 169	32774-16-6	0.01	μg/L	<0.01	<0.01	<0.01	_	
EP065: PCB 170	35065-30-6	0.01	μg/L	<0.01	<0.01	<0.01	-	
EP065: PCB 180	35065-29-3	0.01	μg/L	<0.01	<0.01	<0.01	-	
EP065: PCB 187	52663-68-0	0.01	μg/L	<0.01	<0.01	<0.01		
EP065: Total Polychlorinated biphenyls	s —	0.18	μg/L	<0.18	<0.18	<0.18		
P-067A: Organochlorine Pesticides (OC	C)							*-
EP067: alpha-BHC	319-84-6	0.10	μg/L	<0.10	<0.10	<0.10		
EP067: beta-BHC	319-85-7	0.10	μg/L	<0.10	<0.10	<0.10	_	
EP067: delta-BHC	319-86-8	0.10	μg/L	<0.10	<0.10	<0.10	_	
EP067: gamma-BHC	58-89-9	0.10	μg/L	<0.10	<0.10	<0.10		
EP067: Heptachlor	76-44-8	0.10	μg/L	<0.10	<0.10	<0.10		-
EP067: Aldrin	309-00-2	0.100	μg/L	<0.100	<0.100	<0.100	_	
EP067: Heptachlor epoxide	1024-57-3	0.10	μg/L	<0.10	<0.10	<0.10		
EP067: Endosulfan 1	959-98-8	0.10	μg/L	<0.10	<0.10	<0.10		
EP067: 4.4`-DDE	72-55-9	0.100	μg/L	<0.100	<0.100	<0.100		
EP067: 4.4`-DDD	72-54-8	0.100	μg/L	<0.100	<0.100	<0.100	_	
EP067: Endosulfan sulfate	1031-07-8	0.10	μg/L	<0.10	<0.10	<0.10		
EP067: 4.4`-DDT	50-29-3	0.100	μg/L	<0.100	<0.100	<0.100	_	
P-076HK: Polycyclic Aromatic Hydrocar	rbons (PAHs)							•
EP076HK: Naphthalene	91-20-3	0.1	μg/L	<0.1	<0.1	<0.1		
EP076HK: Acenaphthylene	208-96-8	0.2	μg/L	<0.2	<0.2	<0.2		
EP076HK: Acenaphthene	83-32-9	0.2	μg/L	<0.2	<0.2	<0.2	_	
EP076HK: Fluorene	86-73-7	0.2	μg/L	<0.2	<0.2	<0.2		

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			Sample ID	TLB/VC1 0.00-0.45, 0.50-0.95	TLB/VC1 1.00-1.45, 1.50-1.95	TLB/VC1 Seawater blank		
		Samplin	ng date / time	27-Sep-2022 11:30	27-Sep-2022 12:10	27-Sep-2022 14:30		_
Compound	CAS Number	LOR	Unit	HK2238315-001	HK2238315-002	HK2238315-003		
EP-076HK: Polycyclic Aromatic Hydrocarbons (F		ed						
EP076HK: Phenanthrene	85-01-8	0.1	μg/L	<0.1	<0.1	<0.1		
EP076HK: Anthracene	120-12-7	0.2	μg/L	<0.2	<0.2	<0.2	_	
EP076HK: Fluoranthene	206-44-0	0.2	μg/L	<0.2	<0.2	<0.2		
EP076HK: Pyrene	129-00-0	0.1	μg/L	<0.1	<0.1	<0.1	_	
EP076HK: Benz(a)anthracene	56-55-3	0.2	μg/L	<0.2	<0.2	<0.2		
EP076HK: Chrysene	218-01-9	0.2	μg/L	<0.2	<0.2	<0.2		
EP076HK: Benzo(b)fluoranthene	205-99-2	0.2	μg/L	<0.2	<0.2	<0.2		
EP076HK: Benzo(k)fluoranthene	207-08-9	0.2	μg/L	<0.2	<0.2	<0.2	_	_
EP076HK: Benzo(a)pyrene	50-32-8	0.2	μg/L	<0.2	<0.2	<0.2	_	
EP076HK: Indeno(1.2.3.cd)pyrene	193-39-5	0.2	μg/L	<0.2	<0.2	<0.2	_	·
EP076HK: Dibenz(a.h)anthracene	53-70-3	0.2	μg/L	<0.2	<0.2	<0.2	_	\
EP076HK: Benzo(g.h.i)perylene	191-24-2	0.2	μg/L	<0.2	<0.2	<0.2	-	
EP076HK: Low M.W. PAHs		2.2	μg/L	<2.2	<2.2	<2.2	_	
EP076HK: High M.W. PAHs	_	6.8	μg/L	<6.8	<6.8	<6.8	_	
EP-390: Triorganotins								
EP390: Tributyltin	56573-85-4	0.015	μg TBT /L	<0.015	<0.015	<0.015	_	_
EP-076S: Polycyclic Aromatics Hydrocarbons (P/	AHs) Surrogates	s						
EP076HK: Phenol-d6	13127-88-3	0.1	%	83.6	88.5	59.3	_	
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	93.4	99.6	65.8	_	
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	118	119	116	_	
EP-065S: PCB Congeners and Organochlorine P	esticides Surro	gate						
EP065: Decachlorobiphenyl	2051-24-3	0.01	%	88.9	88.4	91.8	_	
EP-067S: Pesticide Surrogate								
EP067: Tetrachlorometaxylene	877-09-8	0.1	%	77.7	91.0	65.0	_	
EP067: Dibutylchlorendate	1770-80-5	0.1	%	108	105	113	_	

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Matrix: WATER					Labo	ratory Duplicate (DUP)	Report	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Ag	ggregate Properties (QC Lot: 4636	6935)						
HK2240393-001	Anonymous	EA002: pH Value	-	0.1	pH Unit	4.5	4.5	0.0
HK2238012-001	Anonymous	EA002: pH Value	_	0.1	pH Unit	7.7	7.7	0.0
ED/EK: Inorganic Nonm	netallic Parameters (QC Lot: 4638	499)						
HK2238315-003	TLB/VC1 Seawater blank	EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.02	0.0
ED/EK: Inorganic Nonm	netallic Parameters (QC Lot: 4638	500)						
HK2238315-003	TLB/VC1 Seawater blank	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.13	0.0
ED/EK: Inorganic Nonm	netallic Parameters (QC Lot: 4638	916)	W.,					
HK2238315-003	TLB/VC1 Seawater blank	EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.05	0.0
ED/EK: Inorganic Nonm	netallic Parameters (QC Lot: 4645	910)						
HK2238319-004	Anonymous	EK067P: Total Phosphorus as P	_	0.01	mg/L	0.04	0.04	0.0
EG: Metals and Major C	Cations - Filtered (QC Lot: 463001	0)						
HK2238011-002	Anonymous	EG038: Mercury	7439-97-6	0.05	μg/L	<0.05	<0.05	0.0
EG: Metals and Major C	Cations - Filtered (QC Lot: 463020	2)						
HK2238011-002	Anonymous	EG029: Cadmium	7440-43-9	0.1	μg/L	<0.2	<0.2	0.0
		EG029: Silver	7440-22-4	0.1	μg/L	<1.0	<1.0	0.0
		EG029: Chromium	7440-47-3	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Copper	7440-50-8	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Lead	7439-92-1	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Nickel	7440-02-0	0.2	μg/L	<1.0	<1.0	0.0
		EG029: Arsenic	7440-38-2	1	μg/L	3	3	0.0
		EG029: Zinc	7440-66-6	1	µg/L	<1	<1	0.0
EP-390: Triorganotins	(QC Lot: 4651339)	·		,		. '	'	
HK2240016-001	Anonymous	TributyItin	56573-85-4	0.0122	μg TBT /L	<0.015	<0.015	0.0

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

Matrix: WATER			Method Blank (ME	3) Report		Laboratory Contro	ol Spike (LCS) and Labora	tory Control S	pike Duplicate (DCS) Report	
					Spike Concentration	Spike Red	covery (%)	Recove	ery Limits(%)	RPI	D (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control
											Limit

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Matrix: WATER			Method Blank (ME	3) Report		Laboratory Contr	rol Spike (LCS) and Labo	oratory Control S	Spike Duplicate (DCS) Report	
					Spike Concentration	Spike Re	covery (%)	Recove	ery Limits(%)	RP	D (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (Qu	C Lot: 4638499)										
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.9		93.5	104	-	-
ED/EK: Inorganic Nonmetallic Parameters (Q0	C Lot: 4638500)										
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.0		91.0	108	_	_
ED/EK: Inorganic Nonmetallic Parameters (Q0	C Lot: 4638916)										
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.05 mg/L	103		78.8	120	_	_
				<0.01	0.4 mg/L	101		96.3	108		
ED/EK: Inorganic Nonmetallic Parameters (Q0	C Lot: 4645910)				'						
EK067P: Total Phosphorus as P		0.01	mg/L	<0.01	0.5 mg/L	98.7		94.9	102		
EG: Metals and Major Cations - Filtered (QC L	_ot: 4630010)										
EG038: Mercury	7439-97-6	0.05	μg/L	<0.05	0.05 μg/L	102		85.0	115	_	
EG: Metals and Major Cations - Filtered (QC L	_ot: 4630202)								<u>'</u>		
EG029: Arsenic	7440-38-2	1	μg/L	<1	10 μg/L	107		85.0	115		
EG029: Cadmium	7440-43-9	0.1	μg/L	<0.1	10 μg/L	106		85.0	115	_	
EG029: Chromium	7440-47-3	0.2	μg/L	<0.2	10 μg/L	109		85.0	115	_	
EG029: Copper	7440-50-8	0.2	μg/L	<0.2	10 μg/L	107		85.0	115	_	_
EG029: Lead	7439-92-1	0.2	μg/L	<0.2	10 μg/L	105		85.0	115	_	
EG029: Nickel	7440-02-0	0.2	μg/L	<0.2	10 μg/L	99.7		85.0	115	_	_
EG029: Silver	7440-22-4	0.1	μg/L	<0.1	10 μg/L	106		85.0	115	-	-
EG029: Zinc	7440-66-6	1	μg/L	<1	10 μg/L	103		85.0	115		
EP-065: PCB Single Congeners (QC Lot: 464	8472)										
PCB 8	34883-43-7	0.01	μg/L	<0.01	0.1 μg/L	82.9		39.0	100	_	
PCB 18	37680-65-2	0.01	μg/L	<0.01	0.1 μg/L	95.3		41.0	97.0	-	
PCB 28	7012-37-5	0.01	μg/L	<0.01	0.1 μg/L	97.6		49.0	103	-	
PCB 44	41464-39-5	0.01	μg/L	<0.01	0.1 μg/L	78.8		47.0	115	-	-
PCB 52	35693-99-3	0.01	μg/L	<0.01	0.1 μg/L	85.3		47.0	110	-	-
PCB 66	32598-10-0	0.01	μg/L	<0.01	0.1 μg/L	61.3		47.0	127	_	-
PCB 77	32598-13-3	0.01	μg/L	<0.01	0.1 μg/L	101		58.0	118	_	_
PCB 101	37680-73-2	0.01	μg/L	<0.01	0.1 μg/L	102	_	62.0	113	_	-
PCB 105	32598-14-4	0.01	μg/L	<0.01	0.1 μg/L	97.6		60.0	121	-	

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Matrix: WATER			Method Blank (ME	B) Report		Laboratory Contr	rol Spike (LCS) and Lab	oratory Control S	pike Duplicate (D	OCS) Report	
					Spike Concentration	Spike Re	covery (%)	Recove	ry Limits(%)	RPI	D (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-065: PCB Single Congeners (QC Lot	: 4648472) - Continued							<u>''</u>			
PCB 118	31508-00-6	0.01	μg/L	<0.01	0.1 μg/L	98.3		62.0	116		
PCB 126	57465-28-8	0.01	μg/L	<0.01	0.1 μg/L	101		58.0	119		
PCB 128	38380-07-3	0.01	μg/L	<0.01	0.1 μg/L	99.1		55.0	132	_	
PCB 138	35065-28-2	0.01	μg/L	<0.01	0.1 μg/L	98.1		60.0	122		_
PCB 153	35065-27-1	0.01	μg/L	<0.01	0.1 μg/L	97.9		62.0	121	_	_
PCB 169	32774-16-6	0.01	μg/L	<0.01	0.1 μg/L	100		59.0	122		
PCB 170	35065-30-6	0.01	μg/L	<0.01	0.1 μg/L	99.7		59.0	125	_	_
PCB 180	35065-29-3	0.01	μg/L	<0.01	0.1 μg/L	99.6		56.0	127	_	_
PCB 187	52663-68-0	0.01	μg/L	<0.01	0.1 μg/L	98.4		55.0	125	_	_
Total Polychlorinated biphenyls		0.18	μg/L	<0.18	_	_				_	_
P-067A: Organochlorine Pesticides (OC	(QC Lot: 4648473)								'		
alpha-BHC	319-84-6	0.05	μg/L	<0.05	0.1 μg/L	68.4		50.0	120	_	_
beta-BHC	319-85-7	0.05	μg/L	<0.05	0.1 μg/L	74.6		50.0	130	_	
delta-BHC	319-86-8	0.05	μg/L	<0.05	0.1 μg/L	104		35.0	120	_	
gamma-BHC	58-89-9	0.05	μg/L	<0.05	0.1 μg/L	63.0		50.0	130	_	
- Heptachlor	76-44-8	0.05	μg/L	<0.05	0.1 μg/L	57.2		21.0	120	_	_
Aldrin	309-00-2	0.05	μg/L	<0.050	0.1 μg/L	59.0		35.0	120	_	_
Heptachlor epoxide	1024-57-3	0.05	μg/L	<0.05	0.1 μg/L	79.1		29.0	120	_	_
Endosulfan 1	959-98-8	0.05	μg/L	<0.05	0.1 μg/L	85.4		32.0	120		
4.4`-DDE	72-55-9	0.0025	μg/L	<0.0025	0.1 μg/L	71.1		36.0	120	_	
4.4`-DDD	72-54-8	0.0025	μg/L	<0.0025	0.1 μg/L	63.2		38.0	120	_	
Endosulfan sulfate	1031-07-8	0.05	μg/L	<0.05	0.1 µg/L	62.8		37.0	120	_	_
4.4`-DDT	50-29-3	0.005	μg/L	<0.005	0.1 μg/L	63.1		27.0	120	_	_
EP-076HK: Polycyclic Aromatic Hydrocar	bons (PAHs) (QC Lot: 464	8471)	•						<u>'</u>		
Naphthalene	91-20-3	0.1	μg/L	<0.1	0.5 μg/L	92.4		73.0	113	_	_
Acenaphthylene	208-96-8	0.1	μg/L	<0.1	0.5 μg/L	93.5		74.0	115	_	_
Acenaphthene	83-32-9	0.1	μg/L	<0.1	0.5 μg/L	93.4		77.0	113	_	_
Fluorene	86-73-7	0.1	μg/L	<0.1	0.5 μg/L	90.6		72.0	114		_
Phenanthrene	85-01-8	0.1	μg/L	<0.1	0.5 μg/L	89.5		70.0	112		



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HIGHWAYS DEPARTMENT Work Order HK2238315



Matrix: WATER			Method Blank (ME	3) Report		Laboratory Contr	ol Spike (LCS) and Labor	atory Control S	pike Duplicate ((DCS) Report	
					Spike Concentration	Spike Re	covery (%)	Recove	ry Limits(%)	RP	7 (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydroca	rbons (PAHs) (QC Lot: 464	8471) - Cor	ntinued								
Anthracene	120-12-7	0.1	μg/L	<0.1	0.5 μg/L	94.0		78.0	115	_	_
Fluoranthene	206-44-0	0.1	μg/L	<0.1	0.5 µg/L	94.6		72.0	118		
Pyrene	129-00-0	0.1	μg/L	<0.1	0.5 µg/L	93.5		72.0	117		
Benz(a)anthracene	56-55-3	0.1	μg/L	<0.1	0.5 μg/L	85.5		69.0	118		
Chrysene	218-01-9	0.1	μg/L	<0.1	0.5 μg/L	94.1		69.0	120		-
Benzo(b)fluoranthene	205-99-2	0.1	μg/L	<0.1	0.5 μg/L	86.9		64.0	119	_	
Benzo(k)fluoranthene	207-08-9	0.1	μg/L	<0.1	0.5 µg/L	96.6		64.0	120	_	_
Benzo(a)pyrene	50-32-8	0.1	μg/L	<0.1	0.5 μg/L	90.0		61.0	120	_	_
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	μg/L	<0.1	0.5 μg/L	70.9		48.0	108		
Dibenz(a.h)anthracene	53-70-3	0.1	μg/L	<0.1	0.5 μg/L	81.8		44.0	111	-	
Benzo(g.h.i)perylene	191-24-2	0.1	μg/L	<0.1	0.5 μg/L	78.6		44.0	114	_	_
Low M.W. PAHs		2.2	μg/L	<2.2	_	_				-	_
High M.W. PAHs		6.8	μg/L	<6.8	_	_					
EP-390: Triorganotins (QC Lot: 465133	9)										
Tributyltin	56573-85-4	0.0122	μg TBT /L	<0.012	0.0122 μg TBT /L	83.7		70.0	130		

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HK2238315



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report Matrix: WATER Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report Recovery Limits (%) Laboratory Sample ID Method: Compound CAS Number MSD High Value Control sample ID Limit ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4638499) HK2238315-003 TLB/VC1 Seawater blank EK071K: Reactive Phosphorus as P 14265-44- 0.5 mg/L 103 75.0 125 ---ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4638500) HK2238315-003 TLB/VC1 Seawater blank EK055K: Ammonia as N 7664-41-7 0.5 mg/L 98.0 75.0 125 ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4638916) 14797-65- 0.25 mg/L HK2238315-003 TLB/VC1 Seawater blank EK057A: Nitrite as N 103 75.0 125 --ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4645910) -- 0.5 mg/L EK067P: Total Phosphorus as P **--** 75.0 125 **-- --**HK2238319-004 Anonymous 96.2 EG: Metals and Major Cations - Filtered (QC Lot: 4630010) 7439-97-6 0.05 μg/L 99.0 -- 75.0 125 -- --HK2238011-001 Anonymous EG038: Mercury EG: Metals and Major Cations - Filtered (QC Lot: 4630202) HK2238011-001 Anonymous 104 120 EG029: Arsenic 7440-38-2 10 μg/L 75.0 ------EG029: Cadmium 7440-43-9 10 μg/L 102 75.0 125 EG029: Chromium 7440-47-3 105 75.0 125 10 μg/L --------EG029: Copper 7440-50-8 10 μg/L 98.0 75.0 125 _ EG029: Lead 7439-92-1 10 μg/L 97.6 75.0 125 EG029: Nickel 7440-02-0 101 75.0 125 -----10 μg/L --EG029: Silver 7440-22-4 10 μg/L 103 75.0 120 EG029: Zinc 75.0 125 7440-66-6 10 μg/L 106 EP-390: Triorganotins (QC Lot: 4651339) HK2240016-001 Anonymous Tributyltin 56573-85- 0.0122 μg 70.0

Surrogate Control Limits

ub-Matrix: ELUTRIATE		Recovery	Limits (%)
Compound	CAS Number	Low	High

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HIGHWAYS DEPARTMENT Work Order HK2238315



Sub-Matrix: ELUTRIATE		Recovery	y Limits (%)
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydro	ocarbons (PAHs) Surrogates		
Phenol-d6	13127-88-3	50	130
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-065S: PCB Congeners and Organ	nochlorine Pesticides Surrogate		
Decachlorobiphenyl	2051-24-3	50	130
EP-067S: Pesticide Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchlorendate	1770-80-5	50	130

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group analytical Chemistry & Testing Services



CERTIFICATE OF ANALYSIS

: HK2300346 : 1 of 9 Work Order Page 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong : ALS Technichem (HK) Pty Ltd : richard.fung@alsglobal.com Kwai Tsing Hong Kong : +852 2610 1044 : +852 2610 2021 EDWARD LEE
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: 18-Jan-2023 Issue Date : HKE/1667/2022_V3 Quote : HY/2022/09/WQM/01

: ROUTE 11 (SECTION BETWEEN YUEN LONG AND NORTH LANTAU) AND OTHER MAJOR ROAD PROJECTS - GROUND

INVESTIGATION

Project

: 04-Jan-2023

Date Samples Received

4 4

No. of samples analysed No. of samples received : WATER QUALITY MONITORING AT 3 LOCATIONS C-O-C number

This document has been signed by those names that appear on this report and are the authorised signatories This report may not be reproduced except with prior written approval from the testing laboratory.

Metals_ENV, Kwai Tsing Microbiology_ENV, Kwai Inorganics, Kwai Tsing Laboratory Manager Managing Director Managing Director Fung Lim Chee, Richard Fung Lim Chee, Richard Ng Sin Kou, May

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Page Number

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General Comments

This report supersedes any previous report(s) with the same work order number. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Testing period is from 04-Jan-2023 to 18-Jan-2023.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK2300346

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested

nation (Project name, Sample ID, Sampling date/time, etc.) is provided by client. Result(s) of sample(s) is/are reported on as recei Microbiological sample(s) was/ were collected in 250mL sterile plastic bottles containing sodium thiosulfate. Sample(s) arrived at the laboratory at 15:30.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

rence of Total Nitrogen and Total Oxidizable Niti

EK061P - Total Kjeldahl Nitrogen is the diffe

EK061P - The accredited LOR of Total Kjeldahl Nitrogen is 0.1mg/L. Results reported below 0.1mg/L and the decimal value of the results were for reference only. EK062P - The accredited LOR of Total Nitrogen is 0.1mg/L. Results reported below LOR and with decimal value are for reference only.

EK071K - The accredited LOR of Reactive Phosphorus is 0.01mg/L. Results reported below LOR and with decimal value of the results

EK085 - The accredited LOR of Total Sulphide is 0.1mg/L. Results reported below LOR and with decimal value are for reference only.

EP020 - The accredited LOR of Oil and Grease is 2mg/L. Results reported below LOR and with decimal value are for reference only.

EP030 - The accredited LOR of Biochemical Oxygen Demand is 2mg/L. Results reported below LOR and with decimal value are for reference only.

nple(s) digested by in-house method E-3005 prior to the determination of total metals. The in-house method is developed based on USEPA method 3005 EA025 - The accredited LOR of Total Suspended Solids is 0.5mg/L. Results below this LOR are for reference only.



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ALS.

Results
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Analytical Results			•					
Sub-Matrix: MARINE WATER			Sample ID	R11-R3	-	-	-	-
		Samplir	Sampling date / time	04-Jan-2023				-
Compound	CAS Number	10R	Unit	HK2300346-003				
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	-	0.5	mg/L	4.5		-	-	-
ED/EK: Inorganic Nonmetallic Parameters								
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.340	-	-		-
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.469				
EK061P: Total Kjeldahl Nitrogen as N	-	0.05	mg/L	0.80		-		
EK067P: Total Phosphorus as P	!	0.01	mg/L	0.10				
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.036				
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05			-	-
EP: Aggregate Organics								
EP005: Total Organic Carbon	-	_	mg/L	8		-	-	-
EP020: Oil & Grease		0.5	mg/L	<0.5			-	1
EP026: Chemical Oxygen Demand	-	2	mg/L	26		-	-	
EP030: Biochemical Oxygen Demand	-	0.1	mg/L	3.5		-	-	-
EG: Metals and Major Cations - Total								
EG029: Cadmium	7440-43-9	0.1	hg/L	<0.1	-	I	-	-
EG029: Chromium	7440-47-3	1	µg/L	\				
EG029: Copper	7440-50-8	1	hg/L	1				
EG029: Lead	7439-92-1	_	hg/L	>	-	-	-	1
EG029: Zinc	7440-66-6	10	hg/L	<10			-	-
EG029: Aluminium	7429-90-5	10	hg/L	40		-	-	-
EM: Microbiological Testing								
EM019: Escherichia coli	-	_	CFU/100mL	1600		-	-	-
EM022: Faecal Coliforms		1	CFU/100mL	4600				

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Sub-Matrix:

Sub-Matrix: WATER			Sample ID	R11-R1	R11-R2	R11-R1 (replicate)	-	I	
		Samplir,	Sampling date / time	04-Jan-2023	04-Jan-2023	04-Jan-2023			
Compound	CAS Number	10R	Unit	HK2300346-001	HK2300346-002	HK2300346-004			
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)		0.5	mg/L	67.5	24.2	48.6			
ED/EK: Inorganic Nonmetallic Parameters									
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.085	0.039	0.065	-		
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.128	0.216	0.128			
EK061P: Total Kjeldahl Nitrogen as N		0.05	mg/L	0.17	0.07	0.19			
EK067P: Total Phosphorus as P		0.01	mg/L	0.03	0.02	0.03			
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.016	0.013	0.019			
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05	<0.05	<0.05	****		
EG: Metals and Major Cations									
EG020: Cadmium	7440-43-9	0.1	µg/L	<0.1	0.4	<0.1			
EG020: Chromium	7440-47-3	1.0	µg/L	<1.0	1.3	<1.0			
EG020: Copper	7440-50-8	1.0	µg/L	1.8	4.2	1.9			
EG020: Lead	7439-92-1	1.0	µg/L	5.3	6.0	4.2			
EG020: Zinc	7440-66-6	10	hg/L	75	58	23			
EG020: Aluminium	7429-90-5	10	µg/L	808	1040	692			
EP: Aggregate Organics									
EP005: Total Organic Carbon		1	mg/L	4	4	5			
EP020: Oil & Grease		0.5	mg/L	<0.5	<0.5	<0.5			
EP026: Chemical Oxygen Demand		2	mg/L	20	14	21			
EP030: Biochemical Oxygen Demand		0.1	mg/L	1.6	0.7	1.6			
EM: Microbiological Testing									
EM019: Escherichia coli	-	-	CFU/100mL	31	53	1000	-	1	
EM022: Faecal Coliforms		1	CFU/100mL	69	110	2000			
									1





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Laboratory Duplicate (DUP) Report

Matrix: WATER					Labora	Laboratory Duplicate (DUP) Report	Report	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	10R	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggr	EA/ED: Physical and Aggregate Properties (QC Lot: 4801852)	352)						
HK2251751-001	Anonymons	EA025: Suspended Solids (SS)		0.5	mg/L	<1.0	<1.0	0.0
ED/EK: Inorganic Nonmet	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803703)	03)						
HK2300347-002	Anonymons	EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.010	0.012	20.0
ED/EK: Inorganic Nonmet	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803796)	96)						
HK2251735-001	Anonymons	EK067P: Total Phosphorus as P	1	0.01	mg/L	2.21	2.24	1.5
ED/EK: Inorganic Nonmet	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803798)	86)						
HK2300377-001	Anonymous	EK067P: Total Phosphorus as P	-	0.01	mg/L	0.13	0.11	14.3
ED/EK: Inorganic Nonmet	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813686)	98)						
HK2300346-001	R11-R1	EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.085	0.085	0.0
EG: Metals and Major Cations (QC Lot: 4802003)	tions (QC Lot: 4802003)							
HK2300346-002	R11-R2	EG020: Zinc	7440-66-6	-	hg/L	58	65	12.3
EP: Aggregate Organics (QC Lot: 4807548)	(QC Lot: 4807548)							
HK2251788-006	Anonymous	EP005: Total Organic Carbon	-	~	mg/L	۲ ۲	۲- ۲-	0.0
EP: Aggregate Organics (QC Lot: 4809424)	(QC Lot: 4809424)							
HK2300232-001	Anonymons	EP026: Chemical Oxygen Demand	I	2	mg/L	908	815	1.2
EP: Aggregate Organics (QC Lot: 4813583)	(QC Lot: 4813583)							
HK2251357-010	Anonymons	EP026: Chemical Oxygen Demand	1	2	mg/L	80	80	0.0
EG: Metals and Major Cat	EG: Metals and Major Cations - Total (QC Lot: 4802003)		•					
HK2300346-002	R11-R2	EG020: Cadmium	7440-43-9	0.1	µg/L	0.4	0.5	0.0
		EG020: Chromium	7440-47-3	0.1	µg/L	1.3	1.5	13.2
		EG020: Lead	7439-92-1	0.1	µg/L	6.0	9.9	8.8
		EG020: Copper	7440-50-8	0.2	hg/L	4.2	4.8	11.6
		EG020: Aluminium	7429-90-5	5	hg/L	1040	1000	3.3

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

Matrix: WATER		Method Blank (MB) Report	Report		Laboratory Contro	aboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	tory Control Sp	ke Duplicate (L	CS) Report	
				Spike Concentration	Spike Rec	Spike Recovery (%)	Rесоvел	Recovery Limits(%)	RPD (%)	(%)
Method: Compound CAS Number LOR	r 20R	Unit	Result		<i>S</i> 27	SDG	мот	High	Value	Control
										Limit

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Matrix: WATER		Method Blank (MB) Report) Report		Laboratory Contr	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	ratory Control St	pike Duplicate (DCS) Report		
				Spike	Spike Re	Spike Recovery (%)	Recove	Recovery Limits(%)	RPD (%)	(%)	
Method: Compound	er LOR	Unit	Result		<i>S</i> 27	DCS	мо7	High	Value	Control Limit	
EA/ED: Physical and Aggregate Properties (QC Lot: 4801852)											
EA025: Suspended Solids (SS)	- 0.5	mg/L	<0.5	10 mg/L	108	-	85.1	117	i	-	
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803703)											
EK071K: Reactive Phosphorus as P 14265-44-2	2 0.001	mg/L	<0.001	0.5 mg/L	2.66	1	85.0	115	1		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803796)											
EK067P: Total Phosphorus as P	- 0.01	mg/L	<0.01	0.5 mg/L	95.3		94.9	102	-	1	
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803798)											
EK067P: Total Phosphorus as P	- 0.01	mg/L	<0.01	0.5 mg/L	7.76		94.9	102	-	1	
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4809929)											
0 10 00 00 to thinking 0 10 00 00 00 00 00 00 00 00 00 00 00 0	200) = es	10.01								

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Matrix: WATER		Method Blank (MB) Report	Report		Laboratory Control	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	ratory Control Sp.	ike Duplicate (D	CS) Report	
				Spike Concentration	Spike Recovery (%)	vөгу (%)	Rесоvел	Recovery Limits(%)	RPL	RPD (%)
Method: Compound CAS Number	r 70R	Unit	Result		<i>\$</i> 27	DCS	тот	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4801852)										
EA025: Suspended Solids (SS)	. 0.5	mg/L	<0.5	10 mg/L	108	1	85.1	117	-	ı
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803703)										
EK071K: Reactive Phosphorus as P 14265-44-2	0.001	mg/L	<0.001	0.5 mg/L	7.66	1	85.0	115		1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803796)										
EK067P: Total Phosphorus as P	. 0.01	mg/L	<0.01	0.5 mg/L	95.3		94.9	102		-
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803798)										
EK067P: Total Phosphorus as P	. 0.01	mg/L	<0.01	0.5 mg/L	7.76	!	94.9	102	-	-
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4809929)										
EK085: Sulphide as S2- 18496-25-8	0.05	mg/L	<0.05	-	-	-		-	-	1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813686)										
EK055A: Ammonia as N 7664-41-7	0.005	mg/L	<0.005	0.05 mg/L	103		85.0	110	-	
EG: Metals and Major Cations (QC Lot: 4802003)										
EG020: Zinc 7440-66-6	-	µg/L	٧	5 µg/L	111	!	88.7	115	-	-
EP: Aggregate Organics (QC Lot: 4801260)									, 112	
EP030: Biochemical Oxygen Demand	-	mg/L	!	198 mg/L	100	!	81.0	115		-
EP: Aggregate Organics (QC Lot: 4807548)										
EP005: Total Organic Carbon	-	mg/L	٨	5 mg/L	108	-	83.4	124	-	
				100 mg/L	107		87.8	119	-	
EP: Aggregate Organics (QC Lot: 4809424)										
EP026: Chemical Oxygen Demand		mg/L	1	20 mg/L	101	I	88.4	109		1
			1	200 mg/L	98.3	1	91.0	109	1	I
EP: Aggregate Organics (QC Lot: 4813583)										
EP026: Chemical Oxygen Demand	-	mg/L	1	20 mg/L	101	1	88.4	109	1	1
			1	200 mg/L	9.66	1	91.0	109	1	I
EP: Aggregate Organics (QC Lot: 4818889)										
EP020: Oil & Grease	-	mg/L	<0.1	20 mg/L	91.5	!	79.0	105		!
EG: Metals and Major Cations - Total (QC Lot: 4801995)										
EG029: Cadmium 7440-43-9	0.1	hg/L	<0.1	10 µg/L	96.5	-	85.0	115	-	-



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Matrix: WATER		Method Blank (MB) Report) Report		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	ike Duplicate (I	DCS) Report	
				Spike	Spike Recovery (%)	(%)	Recover	Recovery Limits(%)	RPD (%)	(%)
Method: Compound CAS Number	ıber LOR	Unit	Result		<i>S</i> 27	SOO	тот	High	Value	Control Limit
EG: Metals and Major Cations - Total (QC Lot: 4801995) - Continued	ntinued									
EG029: Chromium 7440-47-3	17-3	µg/L	۲>	10 µg/L	94.0		85.0	115	-	1
EG029: Copper 7440-50-8	1 1	µg/L	۲	10 µg/L	95.6		85.0	115		
EG029: Lead 7439-92-1	1-1	µg/L	^	10 µg/L	98.2		85.0	115		
EG029: Zinc 7440-66-6	9-99	µg/L	<10	10 µg/L	95.0		85.0	115		
EG029: Aluminium 7429-90-5	90-5 10	µg/L	<10	10 µg/L	87.3		85.0	115		
EG: Metals and Major Cations - Total (QC Lot: 4802003)										
EG020: Cadmium 7440-43-9	13-9 0.1	µg/L	<0.1	5 µg/L	97.7		85.0	115		
EG020: Chromium 7440-47-3	17-3 0.1	µg/L	<0.1	5 µg/L	108		85.3	114	-	
EG020: Copper 7440-50-8	50-8 0.2	µg/L	<0.2	5 µg/L	94.5		86.3	115		1
EG020: Lead 7439-92-1	12-1	µg/L	<0.1	5 µg/L	92.3		85.0	115		
EG020: Aluminium 7429-90-5	90-5	µg/L	<5	5 µg/L	97.4		85.0	115		1



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

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Matrix: WATER

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

				Spike	Spike Rec	Spike Recovery (%)	Recovery Limits (%)	imits (%)	RPD (%)	(%)
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	WS	MSD	мо7	High	Value	Control Limit
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803703)	703)								
HK2300347-002 Anonymous	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-	0.5 mg/L	94.2	1	75.0	125		
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803796)	796)								
HK2251735-001	Anonymous	EK067P: Total Phosphorus as P	-	5 mg/L	98.6	-	75.0	125		1
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4803798)	798)								
HK2300377-001 Anonymous	Anonymous	EK067P: Total Phosphorus as P	-	0.5 mg/L	96.9		75.0	125	-	1
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813686)	386)								
HK2300346-001	R11-R1	EK055A: Ammonia as N	7664-41-7	0.5 mg/L	104	-	75.0	125		1
EG: Metals and M	EG: Metals and Major Cations (QC Lot: 4802003)									
HK2300346-001 R11-R1	R11-R1	EG020: Zinc	7440-66-6	5 µg/L	# Not Determined	1	75.0	125		-
ED: Addredate Or	FP: Angregate Organics (OC Lot: 4807548)									
HK2251788-006 Anonymous	Anonymous	EP005: Total Organic Carbon		5 mg/L	102	1	75.0	125	1	i
EP: Aggregate Or	EP: Aggregate Organics (QC Lot: 4809424)									
HK2301024-014 Anonymous	Anonymous	EP026: Chemical Oxygen Demand	-	400 mg/L	101	-	75.0	125	-	-
EP: Aggregate Or	EP: Aggregate Organics (QC Lot: 4813583)									
HK2251357-009 Anonymous	Anonymous	EP026: Chemical Oxygen Demand		20 mg/L	105		75.0	125	-	
EG: Metals and M	EG: Metals and Major Cations - Total (QC Lot: 4801995)									
HK2300346-003	R11-R3	EG029: Cadmium	7440-43-9	10 µg/L	98.5		75.0	125	-	-
		EG029: Chromium	7440-47-3	10 µg/L	92.6		75.0	120	1	
		EG029: Copper	7440-50-8	10 µg/L	97.1		75.0	125	1	-
		EG029: Lead	7439-92-1	10 µg/L	95.8		75.0	125	1	-
		EG029: Zinc	7440-66-6	10 µg/L	9.06		75.0	125	1	-
		EG029: Aluminium	7429-90-5	10 µg/L	87.4		75.0	125	!	1
EG: Metals and M	EG: Metals and Major Cations - Total (QC Lot: 4802003)									
HK2300346-001 R11-R1	R11-R1	EG020: Cadmium	7440-43-9	5 µg/L	101	-	75.0	125	1	ł
		EG020: Chromium	7440-47-3	5 µg/L	109		75.0	125	1	-



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Matrix: WATER

				Spike	Spike Recovery (%)	элөгу (%)	Recovery Limits (%)	imits (%)	RPD (%)	(%)
Laboratory	Sample ID	Method: Compound CAN	CAS Number	Concentration	MS	MSD	тот	High	Value	Control
sample ID										Limit
EG: Metals and	EG: Metals and Major Cations - Total (QC Lot: 4802003) - Continued	- Continued								
HK2300346-001 R11-R1	R11-R1	EG020: Copper	7440-50-8 5 µg/L	5 µg/L	100.0		75.0	125		ļ
		EG020: Lead	7439-92-1	5 µg/L	85.7		75.0	125		
		EG020: Aluminium	7429-90-5	5 µg/L	# Not		75.0	125	-	
					Determined					

(%)		Limit		1	1		
port RPD (%)	Value				-		
ate (MSD) Re	High		L	¢71	125	125	
Spike Duplicate (MSI Recovery Limits (%)	пот		1	75.0	75.0	75.0	
Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report Spike Recovery (%) Recovery Limits (%)	ПSD						
Matrix Spil Spike Re	MS			0.001	85.7	# Not	termined

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group analytical Chemistry & Testing Services





No. of samples analysed No. of samples received This document has been signed by those names that appear on this report and are the auth This report may not be reproduced except with prior written approval from : WATER QUALITY MONITORING AT 3 LOCATIONS C-O-C number

: 20-Jan-2023

Issue Date

: HKE/1667/2022_V3

Quote

: HY/2022/09/WQM/01 INVESTIGATION

4 4

Metals_ENV, Kwai Tsing Inorganics, Kwai Tsing Managing Director Managing Director Fung Lim Chee, Richard Fung Lim Chee, Richard Kidand from the testing laboratory.

ALS Technichem (HK) Pty Ltd Part of the ALS Laboratory Group

Microbiology_ENV, Kwai

Laboratory Manager

Ng Sin Kou, May

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong K. Tei: +852 2610 1044 Fax: +852 2610 2021 www.alsglobal.com

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General Comments

This report supersedes any previous report(s) with the same work order number. All pages of this report have been checked and approved for release. When sampling time information is ratory for pro ed by the labo ent. In these instar without a time con not provided by the client, sampling dates are shown

Testing period is from 06-Jan-2023 to 20-Jan-2023.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK2300994

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.

Result(s) of sample(s) is/are reported on as re

Microbiological sample(s) was/ were collected in 250mL sterile plastic bottles containing sodium thiosulfate. Sample(s) arrived at the laboratory at 15:05.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

EP026 - Due to high chloride content, sample #3 was diluted prior to Chemical Oxygen Demand analysis, LOR has been adjusted accordingly. EP005 - Due to matrix interference, sample #3 was diluted prior to Total Organic Carbon analysis, LOR has been adjusted accordingly.

EK061P - The accredited LOR of Total Kjeldahl Nitrogen is 0.1mg/L. Results reported below 0.1mg/L and the decimal value of the results were for reference only. EK062P - The accredited LOR of Total Nitrogen is 0.1mg/L. Results reported below LOR and with decimal value are for reference only.

EK061P - Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen

EK071K - The accredited LOR of Reactive Phosphorus is 0.01mg/L. Results reported below LOR and with decimal value of the results are for reference only.

EK085 - The accredited LOR of Total Sulphide is 0.1mg/L. Results reported below LOR and with decimal value are for reference only.

EP030 - The accredited LOR of Biochemical Oxygen Demand is 2mg/L. Results reported below LOR and with decimal value are for reference only.
Water sample(s) digested by in-house method E-3005 prior to the determination of total metals. The in-house method is developed based on USEPA method 3005. EP020 - The accredited LOR of Oil and Grease is 2mg/L. Results reported below LOR and with decimal value are for reference only.

EA025 - The accredited LOR of Total Suspended Solids is 0.5mg/L. Results below this LOR are for reference only.



Page Number Client Work Order

ge Number : 3 ent : H nrk Order : H	: 3 of 9 : HIGHWAYS DEPARTMENT HK2300994								AAA AAR
Analytical Results	ılts								
Sub-Matrix: MARINE WATER	WATER			Sample ID	R11-R3			-	
			Samplin	Sampling date / time	06-Jan-2023				
Compound		CAS Number	LOR	Unit	HK2300994-003				
EA/ED: Physical and	EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	Solids (SS)	-	0.5	mg/L	8.0				
ED/EK: Inorganic Nonmetallic Parameters	metallic Parameters								
EK055A: Ammonia as N	as N	7664-41-7	0.005	mg/L	0.145				
EK058A: Nitrate as N	z	14797-55-8	0.005	mg/L	0.202	-	1	1	l
EK061P: Total Kjeldahl Nitrogen as N	dahl Nitrogen as N	1	0.05	mg/L	0.59		-	-	-
EK067P: Total Phosphorus as P	sphorus as P		0.01	mg/L	0.09				
EK071K: Reactive Phosphorus as P	Phosphorus as P	14265-44-2	0.001	mg/L	0.051				
EK085: Sulphide as S2-	; S2-	18496-25-8	0.05	mg/L	<0.05				
EP: Aggregate Organics	ics								
EP005: Total Organic Carbon	nic Carbon	-	_	mg/L	<5				
EP020: Oil & Grease	ė	-	0.5	mg/L	0.7				
EP026: Chemical Oxygen Demand	xygen Demand		2	mg/L	<20				
EP030: Biochemical Oxygen Demand	I Oxygen Demand		0.1	mg/L	1.4			-	-
EG: Metals and Major Cations - Total	· Cations - Total								
EG029: Cadmium		7440-43-9	0.1	hg/L	<0.1				
EG029: Chromium		7440-47-3	1	hg/L	2				
EG029: Copper		7440-50-8	1	hg/L	2				
EG029: Lead		7439-92-1	7	hg/L	<1		-	-	-
EG029: Zinc		7440-66-6	10	hg/L	272				
EG029: Aluminium		7429-90-5	10	hg/L	89				-
EM: Microbiological Testing	esting								
EM019: Escherichia coli	ı coli	1	_	CFU/100mL	180				
EM022: Faecal Coliforms	iforms	-	7	CFU/100mL	490		1		



Page Number : 4 of 9 Client : HIGHWAYS DEPARTMENT Work Order HK2300994								
Sub-Matrix: WATER			Sample ID	R11-R1	R11-R2	R11-R2 (replicate)		-
		Samplin	Sampling date / time	06-Jan-2023	06-Jan-2023	06-Jan-2023		-
Compound	CAS Number	10R	Unit	HK2300994-001	HK2300994-002	HK2300994-004		
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	-	0.5	mg/L	126	19.8	29.3		-
ED/EK: Inorganic Nonmetallic Parameters								
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.216	0.050	0:030	1	I
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.129	0.157	0.166	1	I
EK061P: Total Kjeldahl Nitrogen as N		0.05	mg/L	0.85	0.26	0.31		
EK067P: Total Phosphorus as P		0.01	mg/L	0.43	80:0	0.09		
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.026	0.016	0.014		l
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05	<0.05	<0.05		
EG: Metals and Major Cations								
EG020: Cadmium	7440-43-9	0.1	hg/L	0.1	0.2	<0.1		
EG020: Chromium	7440-47-3	1.0	hg/L	<1.0	<1.0	<1.0		
EG020: Copper	7440-50-8	1.0	hg/L	2.6	3.4	2.8		
EG020: Lead	7439-92-1	1.0	hg/L	8.3	4.2	2.9		
EG020: Zinc	7440-66-6	10	hg/L	30	29	89		
EG020: Aluminium	7429-90-5	10	hg/L	1060	614	415	-	
EP: Aggregate Organics								
EP005: Total Organic Carbon		1	mg/L	6	4	9		
EP020: Oil & Grease		0.5	mg/L	0.6	0.7	0.8		
EP026: Chemical Oxygen Demand		2	mg/L	29	10	6		
EP030: Biochemical Oxygen Demand		0.1	mg/L	2.3	1.0	1.0		-
EM: Microbiological Testing								
EM019: Escherichia coli		_	CFU/100mL	NOT DETECTED	10	8		
EM022: Faecal Coliforms	-	_	CFU/100mL	NOT DETECTED	14	20		l



Page Number Client Work Order

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Laboratory Duplicate (DUP) Report

RPD (%) 0.0 8.5 9.0 0.0 0.0 0.0 0.0 0.085 62.6 3.32 <10 2.5 <5 22 aboratory Duplicate (DUP) Report 0.026 0.085 63.0 3.33 <10 2.8 <5 22 mg/L mg/L hg/L mg/L mg/L mg/L mg/L mg/L Unit 0.005 0.001 0.01 10R 0.5 0.5 7 14265-44-2 7664-41-7 7440-66-6 EK071K: Reactive Phosphorus as P EK067P: Total Phosphorus as P EA/ED: Physical and Aggregate Properties (QC Lot: 4807453)
HK2300992-001 Anonymous EA025: Suspended Solids (SS) EA025: Suspended Solids (SS) EP026: Chemical Oxygen Den EP005: Total Organic Carbon ionia as N Method: Compound EG020: Zinc HK2300994-001 | R11-R1 | ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4808526) ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4804923) EG: Metals and Major Cations (QC Lot: 4805848) EP: Aggregate Organics (QC Lot: 4821183)
 EP: Aggregate Organics
 (QC Lot: 4822778)

 HK2301222-002
 Anonymous
 EP: Aggregate Organics (QC Lot: 4820255)
HK2300994-003
R11-R3 Anonymous HK2300992-002 HK2300992-002 HK2300592-001 HK2301017-004 trix: WATER

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

0.0 0.0 0.0 11.0

<1.0

<0.1

<0.1 <1.0

2.4

2.7

hg/L hg/L hg/L hg/L

0.2

7440-47-3 7439-92-1 7440-50-8 7429-90-5

EG020: Chromium EG020: Lead EG020: Copper

0.1

7440-43-9

0.0

138

137

mg/L

0.0

7

21

mg/L

7

EP026: Chemical Oxygen Demand

EP005: Total Organic Carbon

EG020: Cadmium

EG: Metals and Major Cations - Total (QC Lot: HK2300992-002

 EP: Aggregate Organics
 (QC Lot: 4823931)

 HK2301062-002
 Anonymous

Matrix: WATER			Method Blank (MB) Report	Report		Laboratory Contro.	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	tory Control Sp	ike Duplicate (CS) Report	
					Spike	Spike Recovery (%)	оиегу (%)	Recover	Recovery Limits(%)	RPD (%)	(%)
Method: Compound	CAS Number LOR	10R	Unit	Result		SO7	SOO	мо7	High	Value	Control
											Limit



	-	(ALS)

Matrix: WATER		Method Blank (MB) Report	Report		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	ike Duplicate (E	CS) Report	
				Spike Concentration	Spike Recovery (%)	оvегу (%)	Recover	Recovery Limits(%)	RPD (%)	(%)
Method: Compound CAS Number	907 Ja	Unit	Result		<i>S</i> 277	SOO	тот	High	Value	Control
EA/ED: Physical and Aggregate Properties (QC Lot: 4807453)								-		
EA025: Suspended Solids (SS)	0.5	mg/L	<0.5	10 mg/L	104	-	85.1	117	-	-
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4804923)										
EK071K: Reactive Phosphorus as P 14265-44-2	.2 0.001	mg/L	<0.001	0.5 mg/L	98.8		85.0	115		-
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4808526)										
EK067P: Total Phosphorus as P	0.01	mg/L	<0.01	0.5 mg/L	97.3		94.9	102		1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4809929)										
EK085: Sulphide as S2-	.8 0.05	mg/L	<0.05		-	-	-	-	-	1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813686)										
EK055A: Ammonia as N 7664-41-7	.7 0.005	mg/L	<0.005	0.05 mg/L	103	-	85.0	110	-	-
EG: Metals and Major Cations (QC Lot: 4805848)										
EG020: Zinc 7440-66-6	9.	hg/L	۲>	5 µg/L	112		88.7	115	-	-
EP: Aggregate Organics (QC Lot: 4804799)										
EP030: Biochemical Oxygen Demand		mg/L		198 mg/L	87.0	-	81.0	115	-	1
EP: Aggregate Organics (QC Lot: 4820255)										
EP005: Total Organic Carbon	-	mg/L		5 mg/L	94.2		83.4	124	-	1
			₹	100 mg/L	98.9		87.8	119		-
EP: Aggregate Organics (QC Lot: 4821183)										
EP026: Chemical Oxygen Demand	-	mg/L		20 mg/L	105		88.4	109	ļ	1
			1	200 mg/L	100	1	91.0	109	1	1
EP: Aggregate Organics (QC Lot: 4822028)										
EP020: Oil & Grease	-	mg/L	<0.1	20 mg/L	98.0	-	79.0	105	-	1
EP: Aggregate Organics (QC Lot: 4822778)										
EP026: Chemical Oxygen Demand	-	mg/L	1	20 mg/L	100		88.4	109	1	I
			1	200 mg/L	100	1	91.0	109	-	
EP: Aggregate Organics (QC Lot: 4823931)										
EP005: Total Organic Carbon	-	mg/L	٨	5 mg/L	8.76		83.4	124	-	;
			₹	100 mg/L	102		87.8	119	1	-
EG: Metals and Maior Cations - Total (QC Lot: 4805848)										

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(S)
P

ork Order HK2300994											
Matrix: WATER		Method Blank (MB) Report	3) Report		Laboratory Cont	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	ratory Control Sp	oike Duplicate (L	DCS) Report		
				Spike	Spike Re	Spike Recovery (%)	Recove	Recovery Limits(%)	RPI	RPD (%)	
Method: Compound CAS Number	nber LOR	Unit	Result		<i>S</i> 27	SOO	мо7	High	Value	Control	
EG: Metals and Major Cations - Total (QC Lot: 4805848) - Continued	ntinued										
EG020: Cadmium 7440-43-9	13-9 0.1	hg/L	<0.1	5 µg/L	108	-	85.0	115	-	1	
EG020: Chromium 7440-47-3	17-3 0.1	hg/L	<0.1	5 µg/L	107	1	85.3	114	-	1	
EG020: Copper 7440-50-8	50-8 0.2	hg/L	<0.2	5 µg/L	8.76		86.3	115	1		
EG020: Lead 7439-92-1	92-1 0.1	hg/L	<0.1	5 µg/L	106		85.0	115	1		
EG020: Aluminium 7429-90-5	90-5	µg/L	<5	5 µg/L	94.9		85.0	115			
EG: Metals and Major Cations - Total (QC Lot: 4805849)											
EG029: Cadmium 7440-43-9	13-9 0.1	hg/L	<0.1	10 µg/L	100		85.0	115	-		
EG029: Chromium 7440-47-3	17-3	hg/L	٧	10 µg/L	93.2		85.0	115	1		
EG029: Copper 7440-50-8	50-8	µg/L	^	10 µg/L	9.66		85.0	115			
EG029: Lead 7439-92-1	1 1	hg/L	٨	10 µg/L	99.1		85.0	115			
EG029: Zinc 7440-66-6	36-6 10	µg/L	<10	10 µg/L	97.0		85.0	115			
EG029: Aluminium 7429-90-5	90-5 10	µg/L	<10	10 µg/L	89.1	1	85.0	115		1	



: 8 of 9 : HIGHWAYS DEPARTMENT HK2300994

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

•			L							
Matrix: WATER					Matrix Spik	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report	Spike Duplica.	ite (MSD) Rep	oort	
				Spike	Spike Rec	Spike Recovery (%)	Recovery Limits (%)	imits (%)	RPD (%)	(%)
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	пот	High	Value	Control Limit
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4804923)	923)								
HK2300994-001 R11-R1	R11-R1	EK071K: Reactive Phosphorus as P	14265-44-	0.5 mg/L	9.66		75.0	125		-
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4808526)	526)								
HK2300592-001 Anonymous	Anonymous	EK067P: Total Phosphorus as P		5 mg/L	2.66		75.0	125	-	1
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813686)	(989)								
HK2300346-001 Anonymous	Anonymous	EK055A: Ammonia as N	7664-41-7	0.5 mg/L	104	1	75.0	125	-	-
EG: Metals and №	EG: Metals and Major Cations (QC Lot: 4805848)									
HK2300992-001 Anonymous	Anonymous	EG020: Zinc	7440-66-6	5 µg/L	# Not Determined		75.0	125	-	-
EP: Aggregate O	EP: Aggregate Organics (QC Lot: 4820255)									
HK2300994-003 R11-R3	R11-R3	EP005: Total Organic Carbon		25 mg/L	84.2		75.0	125	-	-
EP: Aggregate O	EP: Aggregate Organics (QC Lot: 4821183)									
HK2300992-001 Anonymous	Anonymous	EP026: Chemical Oxygen Demand		20 mg/L	0.66		75.0	125		
EP: Aggregate O	EP: Aggregate Organics (QC Lot: 4822778)									
HK2301222-001	Anonymous	EP026: Chemical Oxygen Demand		20 mg/L	98.5		75.0	125		
EP: Aggregate O	EP: Aggregate Organics (QC Lot: 4823931)									
HK2301062-002 Anonymous	Anonymous	EP005: Total Organic Carbon	-	25 mg/L	# Not Determined		75.0	125		1
EG: Metals and N	EG: Metals and Major Cations - Total (QC Lot: 4805848)									
HK2300992-001 Anonymous	Anonymous	EG020: Cadmium	7440-43-9	5 µg/L	104	-	75.0	125	-	1
		EG020: Chromium	7440-47-3	5 µg/L	99.4		75.0	125	-	-
		EG020: Copper	7440-50-8	5 µg/L	111	-	75.0	125		1
		EG020: Lead	7439-92-1	5 µg/L	107	-	75.0	125		-
		EG020: Aluminium	7429-90-5	5 µg/L	# Not		75.0	125		1
					Determined					
EG: Metals and N	EG: Metals and Major Cations - Total (QC Lot: 4805849)									
HK2300994-003 R11-R3	R11-R3	EG029: Cadmium	7440-43-9	10 µg/L	98.6		75.0	125	-	

. 9 of 9 . HIGHWAYS DEPARTMENT HK2300994 Page Number Client Work Order

Matrix: WATER					Matrix Spik	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report	Spike Duplica	te (MSD) Re	port	
				Spike	Spike Rec	Spike Recovery (%)	Recovery Limits (%)	imits (%)	RPD (%)	(%)
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	пот	High	Value	Control
sample ID										Limit
EG: Metals and M	EG: Metals and Major Cations - Total (QC Lot: 4805849) - Continued	- Continued								
HK2300994-003 R11-R3		EG029: Chromium	7440-47-3	10 µg/L	80.8	-	75.0	120		-
		EG029: Copper	7440-50-8	10 µg/L	98.0	-	75.0	125	-	
		EG029: Lead	7439-92-1	10 µg/L	97.7		75.0	125		-
		EG029: Zinc	7440-66-6	10 µg/L	# Not	-	75.0	125	-	-
					Determined					
		EG029: Aluminium	7429-90-5	10 µg/L	# Not	-	75.0	125	-	-
					Determined					



ALS Technichem (HK) Pty Ltd



ALS Laboratory Group analytical Chemistry & Testing Services



: HK2301241 : 1 of 9 Work Order 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong : ALS Technichem (HK) Pty Ltd EDWARD LEE
Contact
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Facsimile

E-mail

Project

: 26-Jan-2023 4 No. of samples received Issue Date : HKE/1667/2022_V3 Quote HY/2022/09/WQM/01 INVESTIGATION C-O-C number

: 09-Jan-2023

Date Samples Received

4

No. of samples analysed

This document has been signed by those names that appear on this report and are the authorised signatories This report may not be reproduced except with prior written approval from the testing laboratory.

: WATER QUALITY MONITORING AT 3 LOCATIONS

Metals_ENV, Kwai Tsing Microbiology_ENV, Kwai Inorganics, Kwai Tsing Laboratory Manager Managing Director Managing Director Fung Lim Chee, Richard Fung Lim Chee, Richard Ng Sin Kou, May

ALS Technichem (HK) Pty Ltd Part of the ALS Laboratory Group 11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong K Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsglobal.com

> : 2 of 9 : HIGHWAYS DEPARTMENT HK2301241 Page Number Work Order

General Comments

This report supersedes any previous report(s) with the same work order number. All pages of this report have been checked and approved for release. When sampling time information is

not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 09-Jan-2023 to 26-Jan-2023. Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK2301241

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested

nation (Project name, Sample ID, Sampling date/time, etc.) is provided by client. Result(s) of sample(s) is/are reported on as re Microbiological sample(s) was/ were collected in 250mL sterile plastic bottles containing sodium thiosulfate. Sample(s) arrived at the laboratory at 15:40. NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

analysis, LOR has been adji EP005 - Due to matrix interference, samples #3,4 were diluted prior to Total Organic Carbon, LOR has been cal Oxygen De EP026 - Due to high chloride content, samples #3-4 were diluted prior to Che

EK061P - Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitroger

EK061P - The accredited LOR of Total Kjeldahl Nitrogen is 0.1mg/L. Results reported below 0.1mg/L and the decimal value of the results were for reference only.

EK062P - The accredited LOR of Total Nitrogen is 0.1mg/L. Results reported below LOR and with decimal value are for reference only. EK071K - The accredited LOR of Reactive Phosphorus is 0.01mg/L. Results reported below LOR and with decimal value of the results

nal value are for reference only. EK085 - The accredited LOR of Total Sulphide is 0.1mg/L. Results reported below LOR and with deci

EP020 - The accredited LOR of Oil and Grease is 2mg/L. Results reported below LOR and with decimal value are for reference only.

Water sample(s) digested by in-house method E-3005 prior to the determination of total metals. The in-house method is developed based on USEPA method 3005. EP030 - The accredited LOR of Biochemical Oxygen Demand is 2mg/L. Results reported below LOR and with decimal value are for reference only. EA025 - The accredited LOR of Total Suspended Solids is 0.5mg/L. Results below this LOR are for reference only



Page Number : 3 of 9
Client : HIGHWAYS DEPARTMENT
Work Order HK2301241

Analytical Results

Analylical Results								
Sub-Matrix: MARINE WATER			Sample ID	R11-R3	R11-R3 (replicate)	1	-	1
		Samplir	Sampling date / time	09-Jan-2023	09-Jan-2023			-
Compound	CAS Number	LOR	Unit	HK2301241-003	HK2301241-004			
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)		0.5	mg/L	6.8	5.3			
ED/EK: Inorganic Nonmetallic Parameters								
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.146	0.144			
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.259	0.253			
EK061P: Total Kjeldahl Nitrogen as N		0.05	mg/L	0.45	0.51			
EK067P: Total Phosphorus as P		0.01	mg/L	0.12	0.13			
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.083	0.083			
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05	<0.05			
EP: Aggregate Organics								
EP005: Total Organic Carbon		1	mg/L	<5	<5			*****
EP020: Oil & Grease	!	0.5	mg/L	<0.5	<0.5	-	-	
EP026: Chemical Oxygen Demand	-	2	mg/L	<20	<20	-	-	-
EP030: Biochemical Oxygen Demand	!	0.1	mg/L	0.7	8.0	-	-	
EG: Metals and Major Cations - Total								
EG029: Cadmium	7440-43-9	0.1	hg/L	<0.1	<0.1		-	I
EG029: Chromium	7440-47-3	_	hg/L	>	^	-		ļ
EG029: Copper	7440-50-8	_	hg/L	3	2	!	-	
EG029: Lead	7439-92-1	_	hg/L	\	\ \	-	-	
EG029: Zinc	7440-66-6	10	hg/L	16	94	-	-	
EG029: Aluminium	7429-90-5	10	hg/L	83	84		-	
EM: Microbiological Testing								
EM019: Escherichia coli	-	_	CFU/100mL	53	78	-	-	-
EM022: Faecal Coliforms	-	_	CFU/100mL	100	140	1	1	I

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Sub-Matrix: WATER			Sample ID	R11-R1	R11-R2			
		Samplin	Sampling date / time	09-Jan-2023	09-Jan-2023			
Compound	CAS Number	LOR	Unit	HK2301241-001	HK2301241-002			
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)		0.5	mg/L	87.8	12.4			
ED/EK: Inorganic Nonmetallic Parameters								
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.188	0.099	-	-	1
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.173	0.230			-
EK061P: Total Kjeldahl Nitrogen as N	-	0.05	mg/L	0.71	0.26	1	1	
EK067P: Total Phosphorus as P	-	0.01	mg/L	0.32	0.06	1	-	ı
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.021	0.015			
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05	<0.05			
EG: Metals and Major Cations								
EG020: Cadmium	7440-43-9	0.1	hg/L	0.2	0.2	-		-
EG020: Chromium	7440-47-3	1.0	hg/L	1.1	<1.0			
EG020: Copper	7440-50-8	1.0	hg/L	2.6	2.8			
EG020: Lead	7439-92-1	1.0	µg/L	12.5	1.7		-	
EG020: Zinc	7440-66-6	10	µg/L	91	34	I	1	1
EG020: Aluminium	7429-90-5	10	hg/L	1630	245			
EP: Aggregate Organics								
EP005: Total Organic Carbon		1	mg/L	5	4	-		
EP020: Oil & Grease		0.5	mg/L	<0.5	<0.5			
EP026: Chemical Oxygen Demand	-	2	mg/L	38	6	I	1	-
EP030: Biochemical Oxygen Demand	1	0.1	mg/L	1.9	0.8	1	1	
EM: Microbiological Testing								
EM019: Escherichia coli		-	CFU/100mL	34	16			
EM022: Faecal Coliforms	1	_	CFU/100mL	57	20	1	1	1





Laboratory Duplicate (DUP) Report

Motric: MATED					Carodo I	(a) (a) of colland and	70000	
Matrix: WAIER			+		Labora	<u> Laboratory Duplicate (DUP) кероп</u>	кероп	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	10R	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggr	EA/ED: Physical and Aggregate Properties (QC Lot: 4807453)	53)						
HK2300992-001	Anonymons	EA025: Suspended Solids (SS)	-	0.5	mg/L	2.8	2.5	8.5
HK2301017-004	Anonymons	EA025: Suspended Solids (SS)	1	0.5	mg/L	63.0	62.6	9.0
ED/EK: Inorganic Nonmet	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4808528)	28)						
HK2301155-001	Anonymons	EK067P: Total Phosphorus as P	1	0.01	mg/L	2.60	2.55	2.0
ED/EK: Inorganic Nonmet	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4809575)	75)						
HK2301222-001	Anonymons	EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.008	0.008	0.0
ED/EK: Inorganic Nonmet	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813686)	36)						
HK2300346-001	Anonymous	EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.085	0.085	0.0
ED/EK: Inorganic Nonmet	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813687)	(2)						
HK2301759-001	Anonymons	EK055A: Ammonia as N	7664-41-7	0.005	mg/L	34.2	33.7	1.6
EG: Metals and Major Cations (QC Lot: 4807557)	tions (QC Lot: 4807557)							
HK2301222-002	Anonymons	EG020: Zinc	7440-66-6	~	µg/L	75	20	6.4
EP: Aggregate Organics (QC Lot: 4822778)	(QC Lot: 4822778)							
HK2301222-002	Anonymons	EP026: Chemical Oxygen Demand	I	2	mg/L	21	21	0.0
EP: Aggregate Organics (QC Lot: 4823932)	(QC Lot: 4823932)							
HK2302278-005	Anonymons	EP005: Total Organic Carbon	1	_	mg/L	∀	<u>۲</u>	0.0
EG: Metals and Major Cat	EG: Metals and Major Cations - Total (QC Lot: 4807557)							
HK2301222-002	Anonymons	EG020: Cadmium	7440-43-9	0.1	µg/L	<0.1	<0.1	0.0
		EG020: Chromium	7440-47-3	0.1	µg/L	<1.0	<1.0	0.0
		EG020: Lead	7439-92-1	0.1	µg/L	<1.0	<1.0	0.0
		EG020: Copper	7440-50-8	0.2	µg/L	3.1	2.9	5.7
		EG020: Aluminium	7429-90-5	2	µg/L	27	26	4.3
EG: Metals and Major Cat	EG: Metals and Major Cations - Total (QC Lot: 4807558)							
HK2301241-004	R11-R3 (replicate)	EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	<0.1	0.0
		EG029: Chromium	7440-47-3	_	µg/L	۲ ۲	۲ ۲	0.0
		EG029: Copper	7440-50-8	_	µg/L	2	2	0:0
		EG029: Lead	7439-92-1	_	µg/L	^	<u>^</u>	0.0
		EG029: Zinc	7440-66-6	10	µg/L	94	94	0.0
		EG029: Aluminium	7429-90-5	10	µg/L	84	62	9.9

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

Matrix: WATER		Method Blank (MB) Report	l) Report		Laboratory Contr	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	ike Duplicate (L	CS) Report	
				Spike Concentration	Spike Rec	Spike Recovery (%)	Rесоvел	Recovery Limits(%)	RPI	RPD (%)
Method: Compound CAS Number	nber LOR	Unit	Result		<i>S</i> 27	SOO	мо7	High	Value	Control
										Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4807453)										
EA025: Suspended Solids (SS)		mg/L	<0.5	10 mg/L	104		85.1	117		-
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4808528)										
EK067P: Total Phosphorus as P		mg/L	<0.01	0.5 mg/L	98.8		94.9	102		1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4809575)										
EK071K: Reactive Phosphorus as P	14-2 0.001	mg/L	<0.001	0.5 mg/L	96.3		85.0	115	1	ı
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4809929)										
EK085: Sulphide as S2-	25-8 0.05	mg/L	<0.05		i		-	-		1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813686)										
EK055A: Ammonia as N 7664-41-7	41-7 0.005	mg/L	<0.005	0.05 mg/L	103		85.0	110		1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813687)										
EK055A: Ammonia as N 7664-41-7	41-7 0.005	mg/L	<0.005	0.05 mg/L	108		85.0	110	-	1
EG: Metals and Major Cations (QC Lot: 4807557)										
EG020: Zinc 7440-66-6	36-6 1	µg/L	۲	5 µg/L	112	-	88.7	115		1
EP: Aggregate Organics (QC Lot: 4806586)										
EP030: Biochemical Oxygen Demand	-	mg/L		198 mg/L	87.3		81.0	115		1
EP: Aggregate Organics (QC Lot: 4822778)										
EP026: Chemical Oxygen Demand		mg/L		20 mg/L	100	-	88.4	109	1	I
	\parallel			200 mg/L	100	-	91.0	109	-	ı
EP: Aggregate Organics (QC Lot: 4823932)										
EP005: Total Organic Carbon	-	mg/L	<u>\</u>	5 mg/L	98.9	1	83.4	124	-	1
			₹	100 mg/L	6.66	1	87.8	119		1
EP: Aggregate Organics (QC Lot: 4824841)										
EP020: Oil & Grease	-	mg/L	<0.1	20 mg/L	6.06	!	79.0	105	-	-
EG: Metals and Major Cations - Total (QC Lot: 4807557)										
EG020: Cadmium 7440-43-9	43-9 0.1	µg/L	<0.1	5 µg/L	103	-	85.0	115		1
EG020: Chromium 7440-47-3	47-3 0.1	µg/L	<0.1	5 µg/L	107	-	85.3	114	-	1
EG020: Copper 7440-50-8	50-8 0.2	µg/L	<0.2	5 µg/L	105	1	86.3	115	1	1



Page Number Client Work Order

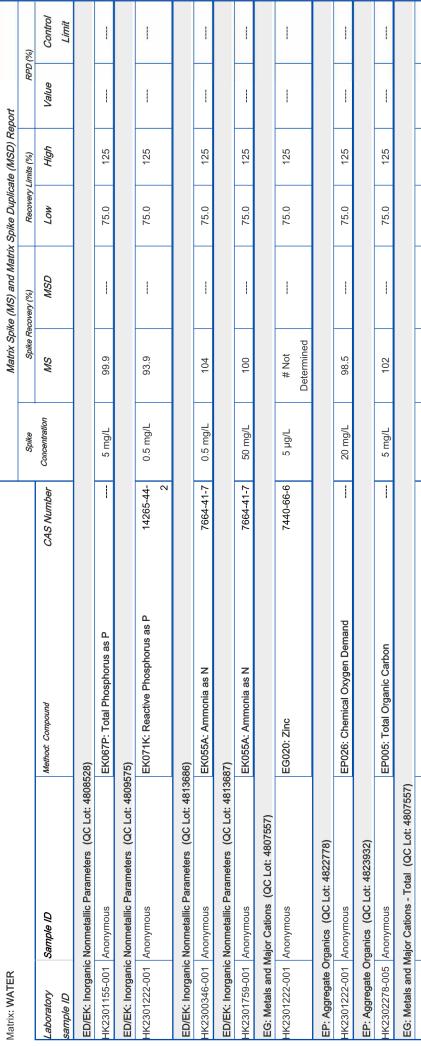
<	V

Matrix: WATER		M	Method Blank (MB) Report	eport		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	nike Duplicate (L	CS) Report	
					Spike	Spike Recovery (%)	очегу (%)	Recover	Recovery Limits(%)	RPL	RPD (%)
Method: Compound CAS N	CAS Number LOR	æ	Unit	Result		<i>S</i> 27	SOO	мо7	High	Value	Control
											Limit
EG: Metals and Major Cations - Total (QC Lot: 4807557) - Continued	ontinued										
EG020: Lead 743	7439-92-1	1	hg/L	<0.1	5 µg/L	108		85.0	115	-	
EG020: Aluminium 742	7429-90-5		hg/L	<5	5 µg/L	112		85.0	115	1	
EG: Metals and Major Cations - Total (QC Lot: 4807558)										8 1.5	
EG029: Cadmium 744	7440-43-9 0.1	_	hg/L	<0.1	10 µg/L	97.2	-	85.0	115	-	
EG029: Chromium 744	7440-47-3		hg/L	<u>۸</u>	10 µg/L	99.4		85.0	115		
EG029: Copper 744	7440-50-8		µg/L	^	10 µg/L	102		85.0	115		
EG029: Lead 743	7439-92-1		hg/L	۲	10 µg/L	100		85.0	115	-	
EG029: Zinc 744	7440-66-6	0	hg/L	<10	10 µg/L	114	-	85.0	115	-	
EG029: Aluminium	7429-90-5	0	hg/L	<10	10 µg/L	89.9		85.0	115	-	

8 of 9 HIGHWAYS DEPARTMENT HK2301241 Page Number Client Work Order

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

Matrix: WATER



125 120 125 125

75.0 75.0 75.0 75.0

97.1

10 µg/L 10 µg/L 10 µg/L 10 µg/L

7440-43-9 7440-47-3 7440-50-8 7439-92-1

EG029: Chromium EG029: Copper EG029: Lead

EG029: Cadmium

EG: Metals and Major Cations - Total (QC Lot: 4807558)

HK2301241-003 R11-R3

108

125 125 125 125 125

75.0 75.0 75.0 75.0

95.8 106 # Not

5 µg/L 5 µg/L 5 µg/L

7440-50-8 7439-92-1

103 97.3

5 µg/L 5 µg/L

7440-43-9 7440-47-3

EG020: Cadmium EG020: Chromium

IK2301222-001

EG020: Copper EG020: Lead EG020: Aluminium





: 9 of 9 : HIGHWAYS DEPARTMENT HK2301241 Page Number Client Work Order

Matrix: WATER					Matrix Spike	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report	Spike Duplica	te (MSD) Rep	oort	
				Spike	Spike Recovery (%)	overy (%)	Recovery Limits (%)	imits (%)	RPD (%)	(%)
Laboratory	Sample ID	Method: Compound CAS	CAS Number	Concentration	MS	MSD	пот	High	Value	Control
sample ID										Limit
EG: Metals and	EG: Metals and Major Cations - Total (QC Lot: 4807558) - Continued	- Continued								
HK2301241-003 R11-R3	R11-R3	EG029: Zinc 7	7440-66-6 10 µg/L	10 µg/L	113		75.0	125	-	-
		EG029: Aluminium	7429-90-5 10 µg/L	10 µg/L	# Not	-	75.0	125	-	-
					Determined					



ALS Technichem (HK) Pty Ltd

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: HIGHWAYS DEPARTMENT	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact Address	: EDWARD LEE : RM 10-01 TO 10-03, PENINSULA TOWER 538 CASTLE PEAK ROAD, Address	Contact	: Richard Fung : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing	Work Order	: HK2301763
	KOWLOON, HONG KONG		Yip Street, Kwai Chung, N.T., Hong Kong		
	HONG KONG		Kwai Tsing Hong Kong		
E-mail	: Edward.Lee@arup.com	E-mail	: richard.fung@alsglobal.com		
Telephone	1	Telephone	: +852 2610 1044		
Facsimile	!::	Facsimile	: +852 2610 2021		
Project	: ROUTE 11 (SECTION BETWEEN YUEN LONG AND NORTH LANTAU) AND OTHER MAJOR ROAD PROJECTS - GROUND	AND OTHER	MAJOR ROAD PROJECTS - GROUND	Date Samples Received	: 11-Jan-2023

This document has been signed by those names that appear on this report and are the auth : WATER QUALITY MONITORING AT 3 LOCATIONS C-O-C number

: 30-Jan-2023

Issue Date

: HKE/1667/2022_V3

Quote

: HY/2022/09/WQM/01 INVESTIGATION

4 4

No. of samples analysed No. of samples received

Inorganics, Kwai Tsing Managing Director Fung Lim Chee, Richard Kidand Jamy This report may not be reproduced except with prior written approval from the testing laboratory.

Metals_ENV, Kwai Tsing Microbiology_ENV, Kwai Laboratory Manager Managing Director Fung Lim Chee, Richard Ng Sin Kou, May

ALS Technichem (HK) Pty Ltd Part of the ALS Laboratory Group 11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Ko Tei: +852 2610 1044 Fax: +852 2610 2021 www.alsglobal.com

: 2 of 9 : HIGHWAYS DEPARTMENT HK2301763 Page Number Client Work Order

General Comments

This report supersedes any previous report(s) with the same work order number. All pages of this report have been checked and approved for release. When sampling time information is ices, the time ent. In these instar without a time con not provided by the client, sampling dates are showr

maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Testing period is from 11-Jan-2023 to 30-Jan-2023.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database

ratory for proc

ed by the labo

Specific Comments for Work Order: HK2301763

Microbiological sample(s) was/ were collected in 250mL sterile plastic bottles containing sodium thiosulfate. Sample(s) arrived at the laboratory at 15:35. Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client. Result(s) of sample(s) is/are reported on as re

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

EP026 - Due to high chloride content, sample #3 was diluted prior to Chemical Oxygen Demand analysis, LOR has been adjusted accordingly. EP005 - Due to matrix interference, sample #3 was diluted prior to Total Organic Carbon analysis, LOR has been adjusted accordingly.

EK061P - Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitroge

EK061P - The accredited LOR of Total Kjeldahl Nitrogen is 0.1mg/L. Results reported below 0.1mg/L and the decimal value of the results were for reference only. EK062P - The accredited LOR of Total Nitrogen is 0.1mg/L. Results reported below LOR and with decimal value are for reference only.

EK071K - The accredited LOR of Reactive Phosphorus is 0.01mg/L. Results reported below LOR and with decimal value of the results are for reference only.

EK085 - The accredited LOR of Total Sulphide is 0.1mg/L. Results reported below LOR and with decimal value are for reference only.

EP030 - The accredited LOR of Biochemical Oxygen Demand is 2mg/L. Results reported below LOR and with decimal value are for reference only.
Water sample(s) digested by in-house method E-3005 prior to the determination of total metals. The in-house method is developed based on USEPA method 3005. EP020 - The accredited LOR of Oil and Grease is 2mg/L. Results reported below LOR and with decimal value are for reference only.

EA025 - The accredited LOR of Total Suspended Solids is 0.5mg/L. Results below this LOR are for reference only.



Page Number : 3 of 9 Client : HIGHWAYS DEPARTMENT Work Order HK2301763	5							
Analytical Results			,					
Sub-Matrix: MARINE WATER			Sample ID	R11-R3				
		Samplin	Sampling date / time	11-Jan-2023				
Compound	CAS Number	10R	Unit	HK2301763-003				
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)		0.5	mg/L	4.5				
ED/EK: Inorganic Nonmetallic Parameters								
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.168				
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.389				
EK061P: Total Kjeldahl Nitrogen as N	-	0.05	mg/L	0.38			-	
EK067P: Total Phosphorus as P	-	0.01	mg/L	0.10	-	-	-	
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.069		-		
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05				
EP: Aggregate Organics								
EP005: Total Organic Carbon		_	mg/L	<5				
EP020: Oil & Grease	-	0.5	mg/L	<0.5			-	
EP026: Chemical Oxygen Demand	-	2	mg/L	<20	-		-	
EP030: Biochemical Oxygen Demand		0.1	mg/L	1.0	-		1	
EG: Metals and Major Cations - Total								
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1				
EG029: Chromium	7440-47-3	_	hg/L	>				
EG029: Copper	7440-50-8	_	hg/L	1	-		-	
EG029: Lead	7439-92-1	_	hg/L	₹				
EG029: Zinc	7440-66-6	10	hg/L	273			-	
EG029: Aluminium	7429-90-5	10	hg/L	51			-	
EM: Microbiological Testing								
EM019: Escherichia coli		_	CFU/100mL	80	-	-	1	
EM022: Faecal Coliforms	-	_	CFU/100mL	98	-			



Page Number : 4 of 9
Client : HIGHWAYS DEPARTMENT
Work Order HK2301763

ate)				****		****	****		****				****	****							****	****	****			
R11-R1 (replicate)	11-Jan-2023	HK2301763-004		9.89		0.014	0.219	0.62	0.28	0.021	<0.05		0.2	1.1	4.4	11.8	50	1170		9	<0.5	22	1.5		920	
R11-R2	11-Jan-2023	HK2301763-002		4.1		0.051	0.556	0.27	0.04	0.026	<0.05		<0.1	<1.0	3.2	1.4	38	103		5	<0.5	10	0.8		290	
R11-R1	11-Jan-2023	HK2301763-001		50.6		0.017	0.228	0.47	0.21	0.024	<0.05		<0.1	<1.0	2.3	5.7	26	595		7	<0.5	21	1.5		570	
Sample ID	Sampling date / time	Uniť		mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		hg/L	hg/L	hg/L	hg/L	hg/L	hg/L		mg/L	mg/L	mg/L	mg/L		CFU/100mL	
	Samplin	10R		0.5		0.005	0.005	0.05	0.01	0.001	0.05		0.1	1.0	1.0	1.0	10	10		_	0.5	2	0.1		-	
		CAS Number				7664-41-7	14797-55-8			14265-44-2	18496-25-8		7440-43-9	7440-47-3	7440-50-8	7439-92-1	7440-66-6	7429-90-5								
Sub-Matrix: WATER		Compound	EA/ED: Physical and Aggregate Properties	EA025: Suspended Solids (SS)	ED/EK: Inorganic Nonmetallic Parameters	EK055A: Ammonia as N	EK058A: Nitrate as N	EK061P: Total Kjeldahl Nitrogen as N	EK067P: Total Phosphorus as P	EK071K: Reactive Phosphorus as P	EK085: Sulphide as S2-	EG: Metals and Major Cations	EG020: Cadmium	EG020: Chromium	EG020: Copper	EG020: Lead	EG020: Zinc	EG020: Aluminium	EP: Aggregate Organics	EP005: Total Organic Carbon	EP020: Oil & Grease	EP026: Chemical Oxygen Demand	EP030: Biochemical Oxygen Demand	EM: Microbiological Testing	EM019: Escherichia coli	



Page Number : 5 of 9
Client : HIGHWAYS DEPARTMENT
Work Order HK2301763

Laboratory Duplicate (DUP) Report

Matrix: WATER					Labora	Laboratory Duplicate (DUP) Report	Report	
Laboratory	Sample ID	Method: Compound	CAS Number	10K	Unit	Original Result	Duplicate	RPD (%)
sample ID							Result	
EA/ED: Physical and Aggr	EA/ED: Physical and Aggregate Properties (QC Lot: 4813457)	(57)						
HK2301763-001	R11-R1	EA025: Suspended Solids (SS)		0.5	mg/L	50.6	51.0	0.7
ED/EK: Inorganic Nonmeta	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4812110)	(0)						
HK2301763-001	R11-R1	EK067P: Total Phosphorus as P	1	0.01	mg/L	0.21	0.22	0.0
ED/EK: Inorganic Nonmeta	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813682)	32)						
HK2301759-001	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.008	0.008	0.0
ED/EK: Inorganic Nonmeta	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813687)	37)						
HK2301759-001	Anonymous	EK055A: Ammonia as N	7664-41-7	0.005	mg/L	34.2	33.7	1.6
EG: Metals and Major Cations (QC Lot: 4811489)	ions (QC Lot: 4811489)							
HK2301759-002	Anonymous	EG020: Zinc	7440-66-6	—	hg/L	12	11	0.0
EP: Aggregate Organics (QC Lot: 4822778)	(QC Lot: 4822778)							
HK2301222-002	Anonymous	EP026: Chemical Oxygen Demand		2	mg/L	21	21	0.0
EP: Aggregate Organics (QC Lot: 4825270)	(QC Lot: 4825270)							
HK2301763-003	R11-R3	EP005: Total Organic Carbon	1	—	mg/L	<5	<5	0.0
EG: Metals and Major Cati	EG: Metals and Major Cations - Total (QC Lot: 4811489)							
HK2301759-002	Anonymous	EG020: Cadmium	7440-43-9	0.1	µg/L	<0.1	<0.1	0.0
		EG020: Chromium	7440-47-3	0.1	µg/L	<1.0	<1.0	0.0
		EG020: Lead	7439-92-1	0.1	hg/L	<1.0	<1.0	0.0
		EG020: Copper	7440-50-8	0.2	hg/L	2.2	2.2	0.0
		EG020: Aluminium	7429-90-5	2	hg/L	38	32	17.6

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

Matrix: WATER		Method Blank (MB) Report	l) Report		Laboratory Contr	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	ike Duplicate (DCS) Report	
				Spike Concentration	Spike Re	Spike Recovery (%)	Recover	Recovery Limits(%)	RPL	RPD (%)
Method: Compound CAS Number	ber LOR	Unit	Result		<i>\$27</i>	SOO	пот	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4813457)										
EA025: Suspended Solids (SS)		mg/L	<0.5	10 mg/L	101		85.1	117	-	
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4812110)										
EK067P: Total Phosphorus as P	0.01	mg/L	<0.01	0.5 mg/L	96.3	-	94.9	102	-	



<	-	į

Matrix: WATER			Method Blank (MB)	Report		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	ike Duplicate (L	CS) Report	
					Spike Concentration	Spike Recovery (%)	оvегу (%)	Recover	Recovery Limits(%)	RPL	RPD (%)
Method: Compound	CAS Number	70K	Unit	Result		<i>S</i> 277	SOO	мо7	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813682)	813682)										
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.5 mg/L	101	1	85.0	115		-
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813687)	813687)										
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.05 mg/L	108	-	85.0	110	1	ı
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4819423)	819423)										
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05	1	1	1	-			ļ
EG: Metals and Major Cations (QC Lot: 4811489)											
EG020: Zinc	7440-66-6	_	hg/L	۲	5 µg/L	97.9		88.7	115	-	1
EP: Aggregate Organics (QC Lot: 4810285)											
EP030: Biochemical Oxygen Demand		-	mg/L	-	198 mg/L	105	-	81.0	115		1
EP: Aggregate Organics (QC Lot: 4822778)											
EP026: Chemical Oxygen Demand	1	1	mg/L		20 mg/L	100	1	88.4	109	1	I
				1	200 mg/L	100	1	91.0	109		1
EP: Aggregate Organics (QC Lot: 4825270)											
EP005: Total Organic Carbon	-	-	mg/L	٧	5 mg/L	93.2	1	83.4	124	-	1
				₹	100 mg/L	113	I	87.8	119	1	1
EP: Aggregate Organics (QC Lot: 4826412)											
EP020: Oil & Grease		-	mg/L	<0.1	20 mg/L	93.4	!	79.0	105	1	I
EG: Metals and Major Cations - Total (QC Lot: 4811489)	89)										
EG020: Cadmium	7440-43-9	0.1	hg/L	<0.1	5 µg/L	98.8	1	85.0	115		l
EG020: Chromium	7440-47-3	0.1	µg/L	<0.1	5 µg/L	96.0		85.3	114	-	
EG020: Copper	7440-50-8	0.2	µg/L	<0.2	5 µg/L	97.4	-	86.3	115	-	1
EG020: Lead	7439-92-1	0.1	µg/L	<0.1	5 µg/L	92.6		85.0	115	-	
EG020: Aluminium	7429-90-5	2	µg/L	<5	5 µg/L	103		85.0	115	-	
EG: Metals and Major Cations - Total (QC Lot: 4811490)	90)										
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	10 µg/L	99.4	-	85.0	115	-	-
EG029: Chromium	7440-47-3	_	µg/L	۲	10 µg/L	103		85.0	115		
EG029: Copper	7440-50-8	-	µg/L	۲	10 µg/L	109	1	85.0	115	-	-
EG029: Lead	7439-92-1	_	µg/L	۲	10 µg/L	101	!	85.0	115	-	-
EG029: Zinc	7440-66-6	10	hg/L	<10	10 µg/L	113	-	85.0	115	1	I

Page Number Client Work Order

. 7 of 9 . HIGHWAYS DEPARTMENT HK2301763

Matrix: WATER			Method Blank (MB) Report	Report		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	tory Control Sp	ike Duplicate (L	OCS) Report	
					Spike Concentration	Spike Rec	Spike Recovery (%)	Rесоvег	Recovery Limits(%)	RPD (%)	(%)
Method: Compound	CAS Number LOR	HO7	Unit	Result		<i>\$37</i>	SOO	мо7	High	Value	Control
											Limit
EG: Metals and Major Cations - Total (QC Lot: 4811490) - Continued	0) - Continue	75									
EG029: Aluminium	7429-90-5	10	µg/L	<10	10 µg/L	88.0		85.0	115		





: 8 of 9 : HIGHWAYS DEPARTMENT HK2301763

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

							:		,	
Matrix: WATER					Matrix Spil	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report	k Spike Duplica	ate (MSD) Re	port	
				Spike	Spike Re	Spike Recovery (%)	Recovery Limits (%)	Limits (%)	RPD (%)	(%)
Laboratory S. sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	тот	High	Value	Control Limit
ED/EK: Inorganic N	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4812110)	10)								
HK2301763-001 R11-R1	(11-R1	EK067P: Total Phosphorus as P		0.5 mg/L	98.1	-	75.0	125	-	-
ED/EK: Inorganic N	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813682)	882)								
HK2301759-001 Anonymous	nonymous	EK071K: Reactive Phosphorus as P	14265-44-	0.5 mg/L	102		75.0	125	1	1
ED/EK: Inorganic N	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4813687)	887)	1							
HK2301759-001 Anonymous	nonymous	EK055A: Ammonia as N	7664-41-7	50 mg/L	100	1	75.0	125		-
EG: Metals and Ma	EG: Metals and Major Cations (QC Lot: 4811489)									
HK2301759-001 Anonymous	nonymous	EG020: Zinc	7440-66-6	5 µg/L	75.5		75.0	125	-	1
EP: Aggregate Org	EP: Aggregate Organics (QC Lot: 4822778)									
HK2301222-001 Anonymous	nonymous	EP026: Chemical Oxygen Demand		20 mg/L	98.5		75.0	125		-
EP: Aggregate Org	EP: Aggregate Organics (QC Lot: 4825270)									
HK2301763-003 R	R11-R3	EP005: Total Organic Carbon		25 mg/L	99.3	1	75.0	125		!
EG: Metals and Ma	EG: Metals and Major Cations - Total (QC Lot: 4811489)									
HK2301759-001 Anonymous	nonymous	EG020: Cadmium	7440-43-9	5 µg/L	97.4		75.0	125		
		EG020: Chromium	7440-47-3	5 µg/L	94.5	-	75.0	125	-	1
		EG020: Copper	7440-50-8	5 µg/L	105		75.0	125	-	1
		EG020: Lead	7439-92-1	5 µg/L	94.3		75.0	125	1	1
		EG020: Aluminium	7429-90-5	5 µg/L	# Not	1	75.0	125		-
					Determined					
EG: Metals and Ma	EG: Metals and Major Cations - Total (QC Lot: 4811490)									
HK2301763-003 R11-R3	111-R3	EG029: Cadmium	7440-43-9	10 µg/L	9.96		75.0	125		
		EG029: Chromium	7440-47-3	10 µg/L	106		75.0	120		
		EG029: Copper	7440-50-8	10 µg/L	121		75.0	125	-	-
		EG029: Lead	7439-92-1	10 µg/L	104		75.0	125		1
		EG029: Zinc	7440-66-6	10 µg/L	# Not		75.0	125		-
					Determined					
		EG029: Aluminium	7429-90-5	10 µg/L	# Not		75.0	125		
					Determined					

: 9 of 9 : HIGHWAYS DEPARTMENT HK2301763 Page Number Client Work Order

Matrix: WATER

RPD (%)	Control	Limit	
RP	Value		
Recovery Limits (%)	High		
Recovery	мо7		
Spike Recovery (%)	<i>USW</i>		
Spike Re	NNS		
Spike	Concentration		
	CAS Number		

Method: Compound

 Laboratory
 Sample ID
 Method: Comp

 sample ID
 EG: Metals and Major Cations - Total (QC Lot: 4811490) - Continued

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



ALS Technichem (HK) Pty Ltd

ALS Laboratory Group analytical Chemistry & Testing Services



CERTIFICATE OF ANALYSIS

: HK2302189 : 1 of 9 Work Order 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong : ALS Technichem (HK) Pty Ltd : richard.fung@alsglobal.com Kwai Tsing Hong Kong : +852 2610 1044 : +852 2610 2021 EDWARD LEE
Contact
RM 10-01 TO 10-03, PENINSULA TOWER 538 CASTLE PEAK ROAD, Address HIGHWAYS DEPARTMENT KOWLOON, HONG KONG Edward.Lee@arup.com EDWARD LEE HONG KONG Facsimile Contact Address E-mail Client

: 01-Feb-2023 4 4 No. of samples received Issue Date : HKE/1667/2022_V3 Quote : WATER QUALITY MONITORING AT 3 LOCATIONS HY/2022/09/WQM/01 C-O-C number

No. of samples analysed

: 13-Jan-2023

Date Samples Received

: ROUTE 11 (SECTION BETWEEN YUEN LONG AND NORTH LANTAU) AND OTHER MAJOR ROAD PROJECTS - GROUND

INVESTIGATION

Project

This document has been signed by those names that appear on this report and are the authorised signatories This report may not be reproduced except with prior written approval from the testing laboratory.

Metals_ENV, Kwai Tsing Microbiology_ENV, Kwai Inorganics, Kwai Tsing Laboratory Manager Managing Director Managing Director Fung Lim Chee, Richard Fung Lim Chee, Richard Ng Sin Kou, May

ALS Technichem (HK) Pty Ltd Part of the ALS Laboratory Group 11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong K Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsglobal.com

> : 2 of 9 : HIGHWAYS DEPARTMENT HK2302189 Page Number Work Order

General Comments

This report supersedes any previous report(s) with the same work order number. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Testing period is from 13-Jan-2023 to 01-Feb-2023.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK2302189

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested

nation (Project name, Sample ID, Sampling date/time, etc.) is provided by client. Result(s) of sample(s) is/are reported on as re Microbiological sample(s) was/ were collected in 250mL sterile plastic bottles containing sodium thiosulfate. Sample(s) arrived at the laboratory at 15:35. NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

alysis, LOR has been EP005 - Due to matrix interference, sample #3 was diluted prior to Total Organic Carbon analysis, LOR has been EP026 - Due to high chloride content, sample #3 was diluted prior to Chemical Oxygen Der

EK061P - Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitroger

EK062P - The accredited LOR of Total Nitrogen is 0.1mg/L. Results reported below LOR and with decimal value are for reference only. EK071K - The accredited LOR of Reactive Phosphorus is 0.01mg/L. Results reported below LOR and with decimal value of the results

EK061P - The accredited LOR of Total Kjeldahl Nitrogen is 0.1mg/L. Results reported below 0.1mg/L and the decimal value of the results were for reference only.

nal value are for reference only. EK085 - The accredited LOR of Total Sulphide is 0.1mg/L. Results reported below LOR and with deci

EP020 - The accredited LOR of Oil and Grease is 2mg/L. Results reported below LOR and with decimal value are for reference only.

Water sample(s) digested by in-house method E-3005 prior to the determination of total metals. The in-house method is developed based on USEPA method 3005.

EP030 - The accredited LOR of Biochemical Oxygen Demand is 2mg/L. Results reported below LOR and with decimal value are for reference only. EA025 - The accredited LOR of Total Suspended Solids is 0.5mg/L. Results below this LOR are for reference only



Page Number : 3 of 9
Client : HIGHWAYS DEPARTMENT
Work Order HK2302189

Analytical Results								
Sub-Matrix: MARINE WATER			Sample ID	R11-R3	1	1	-	1
	٠	Samplir	Sampling date / time	13-Jan-2023		-		
Compound	CAS Number	LOR	Unit	HK2302189-003				
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	1	0.5	mg/L	5.1				
ED/EK: Inorganic Nonmetallic Parameters								
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.147				
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.470				-
EK061P: Total Kjeldahl Nitrogen as N	-	0.05	mg/L	0.38				
EK067P: Total Phosphorus as P	1	0.01	mg/L	0.14	-	-	-	
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.118				
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05				
EP: Aggregate Organics								
EP005: Total Organic Carbon	-	-	mg/L	<5				-
EP020: Oil & Grease	-	0.5	mg/L	<0.5	-	-		-
EP026: Chemical Oxygen Demand	-	2	mg/L	<20	-	-	-	
EP030: Biochemical Oxygen Demand	-	0.1	mg/L	0.8		-	-	
EG: Metals and Major Cations - Total								
EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1			-	
EG029: Chromium	7440-47-3	-	µg/L	^	-			-
EG029: Copper	7440-50-8	_	hg/L	1	-	-		-
EG029: Lead	7439-92-1	-	hg/L	\	-		-	-
EG029: Zinc	7440-66-6	10	hg/L	<10				
EG029: Aluminium	7429-90-5	10	hg/L	54	-			
EM: Microbiological Testing								
EM019: Escherichia coli	-	_	CFU/100mL	73				-
EM022: Faecal Coliforms		_	CFU/100mL	78	1	I	1	I

. 4 of 9 . HIGHWAYS DEPARTMENT HK2302189 Page Number Client Work Order

Sub-Matrix: RIVER WATER			Sample ID	R11-R1	R11-R2	R11-R2 (replicate)		
		Samplir	Sampling date / time	13-Jan-2023	13-Jan-2023	13-Jan-2023		
Compound	CAS Number	LOR	Unit	HK2302189-001	HK2302189-002	HK2302189-004		
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)		0.5	mg/L	33.0	41.4	24.2		
ED/EK: Inorganic Nonmetallic Parameters								
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.243	0.040	0.025		
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.264	0.234	0.231		
EK061P: Total Kjeldahl Nitrogen as N		0.05	mg/L	0.72	0.53	0:30		
EK067P: Total Phosphorus as P		0.01	mg/L	0.36	0.13	0.08		
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.030	0.030	0.025		
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05	<0.05	<0.05		
EG: Metals and Major Cations								
EG020: Cadmium	7440-43-9	0.1	hg/L	<0.1	0.1	0.2		
EG020: Chromium	7440-47-3	1.0	µg/L	<1.0	<1.0	<1.0		
EG020: Copper	7440-50-8	1.0	µg/L	2.2	3.3	3.6		
EG020: Lead	7439-92-1	1.0	µg/L	7.7	2.6	3.4		
EG020: Zinc	7440-66-6	10	µg/L	29	22	35		
EG020: Aluminium	7429-90-5	10	µg/L	941	416	519		
EP: Aggregate Organics								
EP005: Total Organic Carbon	1	_	mg/L	3	5	4	-	
EP020: Oil & Grease	-	0.5	mg/L	<0.5	<0.5	<0.5	-	-
EP026: Chemical Oxygen Demand	-	2	mg/L	25	10	10		
EP030: Biochemical Oxygen Demand	1	0.1	mg/L	1.8	1.3	1.0	-	-
EM: Microbiological Testing								
EM019: Escherichia coli	-	-	CFU/100mL	4100	150	140	-	1
EM022: Faecal Coliforms	-	-	CFU/100mL	4100	170	150	-	-





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Laboratory Duplicate (DUP) Report

Matrix: WATER					Labora	Laboratory Duplicate (DUP) Report	Report	
Laboratory	Sample ID	Method: Compound	CAS Number	NO7	Unit	Original Result	Duplicate	RPD (%)
sample ID							Result	
EA/ED: Physical and Agg	EA/ED: Physical and Aggregate Properties (QC Lot: 4816312)	312)						
HK2302188-001	Anonymous	EA025: Suspended Solids (SS)	1	0.5	mg/L	<0.5	<0.5	0.0
HK2302219-005	Anonymous	EA025: Suspended Solids (SS)	1	0.5	mg/L	2.8	3.2	14.1
ED/EK: Inorganic Nonme	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4816755)	55)						
HK2302188-001	Anonymons	EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.008	0.007	0.0
ED/EK: Inorganic Nonme	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4822120)	20)						
HK2302224-001	Anonymous	EK067P: Total Phosphorus as P		0.01	mg/L	<0.01	<0.01	0.0
ED/EK: Inorganic Nonme	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4842731)	31)						
HK2302188-002	Anonymons	EK055A: Ammonia as N	7664-41-7	0.005	mg/L	39.2	38.7	1.2
EG: Metals and Major Ca	EG: Metals and Major Cations (QC Lot: 4816416)							
HK2302188-002	Anonymous	EG020: Zinc	7440-66-6	_	µg/L	13	13	0.0
EP: Aggregate Organics (QC Lot: 4825270)	(QC Lot: 4825270)							
HK2301763-003	Anonymous	EP005: Total Organic Carbon	1	_	mg/L	<5	<5	0.0
EP: Aggregate Organics (QC Lot: 4825271)	(QC Lot: 4825271)							
HK2302278-006	Anonymous	EP005: Total Organic Carbon	1	_	mg/L	₹	∨	0.0
EP: Aggregate Organics (QC Lot: 4836026)	(QC Lot: 4836026)							
HK2302189-002	R11-R2	EP026: Chemical Oxygen Demand	I	2	mg/L	10	10	0.0
EG: Metals and Major Ca	EG: Metals and Major Cations - Total (QC Lot: 4816416)							
HK2302188-002	Anonymous	EG020: Cadmium	7440-43-9	0.1	µg/L	<0.1	<0.1	0.0
		EG020: Chromium	7440-47-3	0.1	µg/L	<1.0	<1.0	0.0
		EG020: Lead	7439-92-1	0.1	µg/L	<1.0	<1.0	0.0
		EG020: Copper	7440-50-8	0.2	µg/L	2.4	2.6	5.3
		EG020: Aluminium	7429-90-5	5	µg/L	16	16	0.0

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

		,	`								
Matrix: WATER			Method Blank (MB) Report	Report		Laboratory Control	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	tory Control Sp	ike Duplicate (L	CS) Report	
					Spike Concentration	Spike Recovery (%)	vөгу (%)	Rесоvел	Recovery Limits(%)	RPD (%)	(%)
Method: Compound	CAS Number LOR	H07	Unit	Result		<i>S</i> 27	SOO	мот	High	Value	Control
											Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4816312)	Lot: 4816312)										

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Matrix: WATER			Method Blank (MB) Report	Report		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	ike Duplicate (DCS) Report	
					Spike Concentration	Spike Recovery (%)	overy (%)	Recover	Recovery Limits(%)	RPD (%)	(%)
Method: Compound CAS Ni	CAS Number LOR	TOR	Unit	Result		<i>S</i> 27	SOO	мо7	High	Value	Control
											Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4816312) - Continued	2) - Cont	inued									
EA025: Suspended Solids (SS)	-	0.5	mg/L	<0.5	10 mg/L	92.0	!	85.1 117	117	-	

Matrix: WATER			Method Blank (MB) Report	Report		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	oike Duplicate (DCS) Report	
					Spike Concentration	Spike Recovery (%)	оvегу (%)	Recove	Recovery Limits(%)	RPL	RPD (%)
Method: Compound	CAS Number	TOR	Unit	Result		<i>S</i> 27	SZQ	тот	High	Value	Control
											Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4816312) - Continued	4816312) - Con	itinued									
EA025: Suspended Solids (SS)	-	0.5	mg/L	<0.5	10 mg/L	92.0		85.1	117	-	-
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4816755)	1816755)										
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.5 mg/L	2.66		85.0	115	-	-
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4819423)	1819423)										
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05		-	-	-		-	1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4822120)	1822120)									, ,	
EK067P: Total Phosphorus as P	1	0.01	mg/L	<0.01	0.5 mg/L	92.6		94.9	102	-	1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4842731)	1842731)										
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.05 mg/L	109	1	85.0	110	-	1
EG: Metals and Major Cations (QC Lot: 4816416)											
EG020: Zinc	7440-66-6	1	µg/L	۲	5 µg/L	100		88.7	115	-	
EP: Aggregate Organics (QC Lot: 4814851)											
EP030: Biochemical Oxygen Demand	1		mg/L	:	198 mg/L	108	į	81.0	115		I

					Spike Concentration	Spike Rec	Spike Recovery (%)	Recover	Rесоvery Limits(%)	RPL	RPD (%)
Method: Compound	CAS Number	HO7	Unit	Result		<i>S</i> 27	SOO	мот	High	Value	Control
											Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4816312) - Continued	16312) - Cor	ntinued									
EA025: Suspended Solids (SS)	-	0.5	mg/L	<0.5	10 mg/L	92.0		85.1	117		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4816755)	16755)										
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.5 mg/L	99.7		85.0	115	-	l
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4819423)	19423)										
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05	-	-		-		-	1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4822120)	22120)									31 3	
EK067P: Total Phosphorus as P	-	0.01	mg/L	<0.01	0.5 mg/L	92.6	!	94.9	102	-	1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4842731)	42731)										
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.05 mg/L	109	!	85.0	110	1	!
EG: Metals and Major Cations (QC Lot: 4816416)											
EG020: Zinc	7440-66-6	1	µg/L	^	5 µg/L	100		88.7	115	-	
EP: Aggregate Organics (QC Lot: 4814851)										11 13	
EP030: Biochemical Oxygen Demand	-		mg/L	-	198 mg/L	108	!	81.0	115	-	1
EP: Aggregate Organics (QC Lot: 4825270)											
EP005: Total Organic Carbon	-	_	mg/L	٨	5 mg/L	93.2		83.4	124	-	
				<u>۲</u>	100 mg/L	113	1	87.8	119	1	-
EP: Aggregate Organics (QC Lot: 4825271)											
EP005: Total Organic Carbon	-	_	mg/L	<u>^</u>	5 mg/L	93.4	-	83.4	124	!	J
				۲- ۲-	100 mg/L	98.4	1	87.8	119	1	
EP: Aggregate Organics (QC Lot: 4836026)	•										
EP026: Chemical Oxygen Demand			mg/L		20 mg/L	100	1	88.4	109		I
				1	200 mg/L	102	I	91.0	109	1	1
EP: Aggregate Organics (QC Lot: 4837291)		,									
EP020: Oil & Grease	-	1	mg/L	<0.1	20 mg/L	86.1		79.0	105	-	
EG: Metals and Major Cations - Total (QC Lot: 4816416)	3)										
EG020: Cadmium	7440-43-9	0.1	hg/L	<0.1	5 µg/L	97.8	!	85.0	115	1	-
EG020: Chromium	7440-47-3	0.1	µg/L	<0.1	5 µg/L	103	1	85.3	114	-	1
EG020: Copper	7440-50-8	0.2	hg/L	<0.2	5 µg/L	97.8		86.3	115	-	





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Page Number	Client	Work Order	

Matrix: WATER		Method Blank (MB) Report	Report		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	itory Control Sp	ike Duplicate (I	OCS) Report	
				Spike	Spike Recovery (%)	оиегу (%)	Recover	Recovery Limits(%)	RPD	RPD (%)
Method: Compound CAS Number	. 70K	Unit	Result		SJ7	SOO	мот	High	Value	Control
EG: Metals and Major Cations - Total (QC Lot: 4816416) - Continued	per									
EG020: Lead 7439-92-1	0.1	hg/L	<0.1	5 µg/L	98.4		85.0	115	1	1
EG020: Aluminium 7429-90-5	5	µg/L	^ 5	5 µg/L	98.9	ı	85.0	115	1	1
EG: Metals and Major Cations - Total (QC Lot: 4816417)										
EG029: Cadmium 7440-43-9	0.1	µg/L	<0.1	10 µg/L	99.7		85.0	115	-	
EG029: Chromium 7440-47-3	_	µg/L	^	10 µg/L	112		85.0	115	1	
EG029: Copper 7440-50-8	1	µg/L	^	10 µg/L	102		85.0	115	-	
EG029: Lead 7439-92-1	1	µg/L	^	10 µg/L	100		85.0	115	-	
EG029: Zinc 7440-66-6	10	µg/L	<10	10 µg/L	100		85.0	115	-	
EG029: Aluminium 7429-90-5	10	µg/L	<10	10 µg/L	106		85.0	115	1	



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

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

Matrix: WATER

				Spike	Spike Rec	Spike Recovery (%)	Recovery Limits (%)	imits (%)	RPD (%)	(%)
Laboratory	Sample ID	Method: Compound	CAS Number	Concentration	SW	<i>MSD</i>	тот	High	Value	Control
sample ID										Limit
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4816755)	755)								
HK2302188-001 Anonymous	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-	0.5 mg/L	0.96	-	75.0	125		-
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4822120)	120)								
HK2302224-001 Anonymous	Anonymous	EK067P: Total Phosphorus as P		0.5 mg/L	2.96		75.0	125		
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4842731)	731)								
HK2302188-001 Anonymous	Anonymous	EK055A: Ammonia as N	7664-41-7	0.05 mg/L	# Not	-	75.0	125		
					Determined					
EG: Metals and I	EG: Metals and Major Cations (QC Lot: 4816416)									
HK2302188-001 Anonymous	Anonymous	EG020: Zinc	7440-66-6	5 µg/L	83.2		75.0	125		
EP: Aggregate O	EP: Aggregate Organics (QC Lot: 4825270)									
HK2301763-003 Anonymous	Anonymous	EP005: Total Organic Carbon	-	25 mg/L	99.3		75.0	125	-	
EP: Aggregate O	EP: Aggregate Organics (QC Lot: 4825271)									
HK2302278-006 Anonymous	Anonymous	EP005: Total Organic Carbon		5 mg/L	9.66		75.0	125	-	
EP: Aggregate O	EP: Aggregate Organics (QC Lot: 4836026)									
HK2302189-001 R11-R1	R11-R1	EP026: Chemical Oxygen Demand		20 mg/L	99.5		75.0	125	-	
EG: Metals and I	EG: Metals and Major Cations - Total (QC Lot: 4816416)									
HK2302188-001 Anonymous	Anonymous	EG020: Cadmium	7440-43-9	5 µg/L	92.1		75.0	125	-	-
		EG020: Chromium	7440-47-3	5 µg/L	103		75.0	125	-	-
		EG020: Copper	7440-50-8	5 µg/L	91.1		75.0	125	I	-
		EG020: Lead	7439-92-1	5 µg/L	96.2	-	75.0	125	1	-
		EG020: Aluminium	7429-90-5	5 µg/L	87.6		75.0	125	-	-

125 120 125 125 125

75.0 75.0 75.0 75.0 75.0

103 101 99.9 98.0 95.7

10 µg/L 10 µg/L 10 µg/L 10 µg/L

7440-43-9 7440-47-3 7440-50-8 7439-92-1 7440-66-6

EG029: Cadmium
EG029: Chromium
EG029: Copper
EG029: Lead
EG029: Zinc

EG: Metals and Major Cations - Total (QC Lot: 4816417)
HK2302189-003 R11-R3



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Matrix: WATER					Matrix Spik	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report	Spike Duplica	ate (MSD) Re	port	
				Spike	Spike Rec	Spike Recovery (%)	Recovery Limits (%)	imits (%)	RPD (%)	(%)
Laboratory	Sample ID	Method: Compound CAS	CAS Number	Concentration	MS	MSD	тот	High	Value	Control
Sample ID										Limit
EG: Metals and	EG: Metals and Major Cations - Total (QC Lot: 4816417) - Continued	- Continued								
HK2302189-003 R11-R3	R11-R3	EG029: Aluminium	7429-90-5 10 µg/L	10 µg/L	# Not	-	75.0	125	-	ļ
					Determined					



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ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

: HIGHWAYS DEPARTMENT

CERTIFICATE OF ANALYSIS

: 1 of 9

Page

: ALS Technichem (HK) Pty Ltd

Contact Address	: EDWARD LEE Contact : RM 10-01 TO 10-03, PENINSULA TOWER 538 CASTLE PEAK ROAD, Address	Contact Address	: Richard Fung : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing	Work Order ng	: HK2302471
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Project	: ROUTE 11 (SECTION BETWEEN YUEN LONG AND NORTH LANTAU) AND OTHER MAJOR ROAD PROJECTS - GROUND	AND OTHER I	MAJOR ROAD PROJECTS - GROUND	Date Samples Received	: 16-Jan-2023
	INVESTIGATION				
Order number	: HY/2022/09/WQM/01	Quote	: HKE/1667/2022_V3	Issue Date	: 02-Feb-2023
		nimber			

: ---: WATER QUALITY MONITORING AT 3 LOCATIONS This the to

C-O-C number

.. .. 4 4

No. of samples analysed No. of samples received

This document has been signed by those names that appear on this report and are the authorised signatories. Signatories Position Authorised results for Fung Lim Chee, Richard Managing Director Inorganics, Kwai Tsing Fung Lim Chee, Richard Managing Director Metals_ENV, Kwai Tsing Managing Director Metals_ENV, Kwai Tsing Managing Director Metals_ENV, Kwai Tsing	his report may not be reproduced except with prior written approval from	ne testing laboratory.				
ed by those names that appear on this report and are the authorised signatories. **Position** **Authorised results for Authorised results for Inorganics, Kwai Tsing **Managing Director** **Managing Director** **Metals_ENV, Kwai Tsing **Laboratory Manager** **Microbiology_ENV, Kwai	This document has been sign	Signatories	Kickard fram.	Fung Lim Chee, Richard	Fung Lim Chee, Richard	Ng Sin Kou, May
aport and are the authorised signatories. Authorised results for Inorganics, Kwai Tsing Metals_ENV, Kwai Tsing Microbiology_ENV, Kwai	ed by those names that appear on this re	Position		Managing Director	Managing Director	Laboratory Manager
	eport and are the authorised signatories.	Authorised results for		Inorganics, Kwai Tsing	Metals_ENV, Kwai Tsing	Microbiology_ENV, Kwai

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General Comments

This report supersedes any previous report(s) with the same work order number. All pages of this report have been checked and approved for release. When sampling time information is atory for proed by the labo ent. In the not provided by the client, sampling dates are shown

maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Testing period is from 16-Jan-2023 to 02-Feb-2023.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database

Specific Comments for Work Order: HK2302471

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.

Result(s) of sample(s) is/are reported on as re

Microbiological sample(s) was/ were collected in 250mL sterile plastic bottles containing sodium thiosulfate. Sample(s) arrived at the laboratory at 15:30.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

EP005 - Due to matrix interference, sample #2 was diluted prior to Total Organic Carbon analysis, LOR has been adjusted accordingly. EK061P - Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitroger

EK061P - The accredited LOR of Total Kjeldahl Nitrogen is 0.1mg/L. Results reported below 0.1mg/L and the de

for

EK062P - The accredited LOR of Total Nitrogen is 0.1mg/L. Results reported below LOR and with decimal value are for reference only.
EK071K - The accredited LOR of Reactive Phosphorus is 0.01mg/L. Results reported below LOR and with decimal value of the results are for reference only.

EK085 - The accredited LOR of Total Sulphide is 0.1mg/L. Results reported below LOR and with decimal value are for reference only.

EP020 - The accredited LOR of Oil and Grease is 2mg/L. Results reported below LOR and with decimal value are for reference only. EP030 - The accredited LOR of Biochemical Oxygen Demand is 2mg/L. Results reported below LOR and with decimal value are for referer

Water sample(s) digested by in-house method E-3005 prior to the determination of total metals. The in-house method is developed based on USEPA method 3005. EA025 - The accredited LOR of Total Suspended Solids is 0.5mg/L. Results below this LOR are for reference only.



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Analytical Results									
Sub-Matrix: MARINE WATER			Sample ID	R11-R3	R11-R3 (replicate)		-		
		Samplin	Sampling date / time	16-Jan-2023	16-Jan-2023				
Compound	CAS Number	10R	Uniť	HK2302471-003	HK2302471-004				
EA/ED: Physical and Aggregate Properties	Ş								
EA025: Suspended Solids (SS)	-	0.5	mg/L	5.4	5.9	1	-	1	
ED/EK: Inorganic Nonmetallic Parameters									
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	0.171	0.163	1	-	1	
EK058A: Nitrate as N	14797-55-8	0.005	mg/L	0.378	0.380				
EK061P: Total Kjeldahl Nitrogen as N		0.05	mg/L	0.42	0.42				
EK067P: Total Phosphorus as P		0.01	mg/L	0.08	0.06				
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.059	0.045	-		-	
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05	<0.05		-	-	
EP: Aggregate Organics									
EP005: Total Organic Carbon		1	mg/L	11	12				
EP020: Oil & Grease		0.5	mg/L	<0.5	<0.5				
EP026: Chemical Oxygen Demand		2	mg/L	19	13				
EP030: Biochemical Oxygen Demand	-	0.1	mg/L	1.1	0.0			-	
EG: Metals and Major Cations - Total			ı						
EG029: Cadmium	7440-43-9	0.1	hg/L	<0.1	<0.1	-	-	-	
EG029: Chromium	7440-47-3	7	hg/L	^	۲			-	
EG029: Copper	7440-50-8	_	hg/L	1	-		-	-	
EG029: Lead	7439-92-1	_	hg/L	^	₽		-	-	
EG029: Zinc	7440-66-6	10	hg/L	<10	144				
EG029: Aluminium	7429-90-5	10	hg/L	102	89		-	-	
EM: Microbiological Testing									
EM019: Escherichia coli		_	CFU/100mL	34	36		-	-	
EM022: Faecal Coliforms	-	_	CFU/100mL	52	56	I	1	I	



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Laboratory Duplicate (DUP) Report

Matrix: WATER					Labora	Laboratory Duplicate (DUP) Report	Report		_
Laboratory	Sample ID	Method: Compound	CAS Number	10R	Unit	Original Result	Duplicate	RPD (%)	
sample ID							Kesull		-
EA/ED: Physical and Ag	EA/ED: Physical and Aggregate Properties (QC Lot: 4817885)	885)	•				-		
HK2302462-001	Anonymons	EA025: Suspended Solids (SS)		0.5	mg/L	6.2	6.5	4.7	_
HK2302468-001	Anonymous	EA025: Suspended Solids (SS)		0.5	mg/L	<1.0	<1.0	0.0	
ED/EK: Inorganic Nonme	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4818979)	79)							
HK2302462-001	Anonymons	EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.004	0.004	0.0	
ED/EK: Inorganic Nonme	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4822122)	22)							
HK2302588-001	Anonymous	EK067P: Total Phosphorus as P	-	0.01	mg/L	3.36	3.42	1.6	
ED/EK: Inorganic Nonme	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4842731)	31)							
HK2302188-002	Anonymous	EK055A: Ammonia as N	7664-41-7	0.005	mg/L	39.2	38.7	1.2	
EG: Metals and Major Ca	EG: Metals and Major Cations (QC Lot: 4819027)								
HK2302462-002	Anonymous	EG020: Zinc	7440-66-6	_	µg/L	1330	1040	24.8	
EP: Aggregate Organics (QC Lot: 4825271)	(QC Lot: 4825271)								
HK2302278-006	Anonymous	EP005: Total Organic Carbon	1	_	mg/L	<u>۸</u>	۲	0.0	
EP: Aggregate Organics (QC Lot: 4836026)	(QC Lot: 4836026)								
HK2302189-002	Anonymons	EP026: Chemical Oxygen Demand	1	2	mg/L	10	10	0.0	
EG: Metals and Major Ca	EG: Metals and Major Cations - Total (QC Lot: 4819027)								
HK2302462-002	Anonymons	EG020: Cadmium	7440-43-9	0.1	µg/L	<0.1	<0.1	0.0	_
		EG020: Chromium	7440-47-3	0.1	µg/L	<1.0	<1.0	0.0	_
		EG020: Lead	7439-92-1	0.1	µg/L	1.1	1.1	0.0	
		EG020: Copper	7440-50-8	0.2	µg/L	2.9	2.9	0.0	
		EG020: Aluminium	7429-90-5	5	µg/L	94	85	10.4	
EG: Metals and Major Ca	EG: Metals and Major Cations - Total (QC Lot: 4819028)								
HK2302471-004	R11-R3 (replicate)	EG029: Cadmium	7440-43-9	0.1	µg/L	<0.1	<0.1	0.0	
		EG029: Chromium	7440-47-3	1	µg/L	^	^	0.0	
		EG029: Copper	7440-50-8	-	µg/L	1	2	0.0	-
		EG029: Lead	7439-92-1	-	µg/L	∨	, ,	0.0	
		EG029: Zinc	7440-66-6	10	µg/L	144	142	1.7	
		EG029: Aluminium	7429-90-5	10	µg/L	88	84	6.1	

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



	ľ										
Matrix: WATER			Method Blank (MB) Report	leport	-	Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	ratory Control Sp	ike Duplicate (L	CS) Report	
					Spike Concentration	Spike Recovery (%)	оvегу (%)	Recover	Recovery Limits(%)	RPD	RPD (%)
Method: Compound C.	CAS Number	707	Unit	Result		<i>\$</i> 27	SOO	мо7	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4817885)	17885)										
EA025: Suspended Solids (SS)		0.5	mg/L	<0.5	10 mg/L	104		85.1	117	-	
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4818979)	18979)										
EK071K: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.5 mg/L	9.66	-	85.0	115	1	I
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4819423)	19423)										
EK085: Sulphide as S2-	18496-25-8	0.05	mg/L	<0.05				-	-	1	1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4822122)	22122)									3	
EK067P: Total Phosphorus as P		0.01	mg/L	<0.01	0.5 mg/L	7.76		94.9	102	-	1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4842731)	42731)										
EK055A: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.05 mg/L	109		85.0	110	-	1
EG: Metals and Major Cations (QC Lot: 4819027)											
EG020: Zinc	7440-66-6	-	hg/L	^	5 µg/L	101	1	88.7	115	-	1
EP: Aggregate Organics (QC Lot: 4817781)											
EP030: Biochemical Oxygen Demand	-	1	mg/L		198 mg/L	105	-	81.0	115	1	ı
EP: Aggregate Organics (QC Lot: 4825271)											
EP005: Total Organic Carbon		-	mg/L	<u>^</u>	5 mg/L	93.4	I	83.4	124		1
				₹	100 mg/L	98.4	1	87.8	119	1	1
EP: Aggregate Organics (QC Lot: 4836026)											
EP026: Chemical Oxygen Demand			mg/L	-	20 mg/L	100	1	88.4	109	-	I
				-	200 mg/L	102	1	91.0	109	1	
EP: Aggregate Organics (QC Lot: 4842605)	,										
EP020: Oil & Grease	1	-	mg/L	<0.1	20 mg/L	88.0	1	79.0	105	1	1
EG: Metals and Major Cations - Total (QC Lot: 4819027)	(2										
EG020: Cadmium	7440-43-9	0.1	µg/L	<0.1	5 µg/L	96.0		85.0	115	-	I
EG020: Chromium	7440-47-3	0.1	µg/L	<0.1	5 µg/L	98.2	-	85.3	114	1	-
EG020: Copper	7440-50-8	0.2	µg/L	<0.2	5 µg/L	104	-	86.3	115	-	-
EG020: Lead	7439-92-1	0.1	hg/L	<0.1	5 µg/L	7.76	-	85.0	115	1	1
EG020: Aluminium	7429-90-5	5	hg/L	<5	5 µg/L	95.1		85.0	115	1	1
EG: Metals and Major Cations - Total (QC Lot: 4819028)	9)										

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Client : HIGHWAYS DEPARTMENT
Work Order HK2302471

Matrix: WATER	L		Method Blank (MB) Report	Report		Laboratory Contro	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	atory Control Sp	oike Duplicate (DCS) Report	
					Spike	Spike Recovery (%)	оивгу (%)	Recovei	Recovery Limits(%)	RPL	RPD (%)
Method: Compound CAS Number		10R	Unit	Result		<i>S</i> 27	DCS	тот	High	Value	Control
											Limit
EG: Metals and Major Cations - Total (QC Lot: 4819028) - Continued	ontinued										
EG029: Cadmium 7440-43-9		0.1	µg/L	<0.1	10 µg/L	101		85.0	115	-	1
EG029: Chromium 7440-47-3	-47-3	1	µg/L	^	10 µg/L	97.4		85.0	115	-	1
EG029: Copper 7440-50-8	-20-8	1	µg/L	^	10 µg/L	98.0		85.0	115	-	1
EG029: Lead 7439-92-1	-92-1	_	hg/L	۲	10 µg/L	100		85.0	115	1	1
EG029: Zinc 7440-66-6		10	µg/L	<10	10 µg/L	96.1		85.0	115	-	1
EG029: Aluminium 7429-90-5		10	hg/L	<10	10 µg/L	8.66		85.0	115		-







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

Matrix: WATER			•		Matrix Spi	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report	x Spike Duplica	ate (MSD) Re	port	
				Spike	Spike Re	Spike Recovery (%)	Recovery Limits (%)	imits (%)	RPC	RPD (%)
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	ТОМ	High	Value	Control I imit
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot; 4818979)	379)								
HK2302462-001 Anonymous	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-	0.5 mg/L	98.0		75.0	125		
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4822122)	(22)	1							
HK2302588-001 Anonymous	Anonymous	EK067P: Total Phosphorus as P		5 mg/L	6.96		75.0	125		-
ED/EK: Inorganic	ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4842731)	731)								
HK2302188-001 Anonymous	Anonymous	EK055A: Ammonia as N	7664-41-7	0.05 mg/L	# Not Determined		75.0	125		I
EG: Metals and I	EG: Metals and Major Cations (QC Lot: 4819027)									
HK2302462-001 Anonymous	Anonymous	EG020: Zinc	7440-66-6	5 µg/L	89.2	-	75.0	125	-	-
EP: Aggregate C	EP: Aggregate Organics (QC Lot: 4825271)									
HK2302278-006 Anonymous	Anonymous	EP005: Total Organic Carbon	-	5 mg/L	9.66		75.0	125	1	-
EP: Aggregate C	EP: Aggregate Organics (QC Lot: 4836026)									
HK2302189-001 Anonymous	Anonymous	EP026: Chemical Oxygen Demand	-	20 mg/L	99.5		75.0	125	1	-
EG: Metals and	EG: Metals and Major Cations - Total (QC Lot: 4819027)									
HK2302462-001 Anonymous	Anonymous	EG020: Cadmium	7440-43-9	5 µg/L	99.0		75.0	125		
		EG020: Chromium	7440-47-3	5 µg/L	97.9		75.0	125		
		EG020: Copper	7440-50-8	5 µg/L	96.1		75.0	125	-	-
		EG020: Lead	7439-92-1	5 µg/L	94.7		75.0	125		
		EG020: Aluminium	7429-90-5	5 µg/L	# Not	1	75.0	125		1
					Determined					
EG: Metals and	EG: Metals and Major Cations - Total (QC Lot: 4819028)									
HK2302471-003 R11-R3	R11-R3	EG029: Cadmium	7440-43-9	10 µg/L	101		75.0	125	-	
		EG029: Chromium	7440-47-3	10 µg/L	102		75.0	120	-	
		EG029: Copper	7440-50-8	10 µg/L	100		75.0	125	-	-
		EG029: Lead	7439-92-1	10 µg/L	98.9		75.0	125		
		EG029: Zinc	7440-66-6	10 µg/L	90.6	-	75.0	125	-	
		EG029: Aluminium	7429-90-5	10 µg/L	# Not		75.0	125		-
					Determined					

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Matrix: WATER

	(%)	Control	Limit	
port	RPD (%)	Value		
ate (MSD) Re	Limits (%)	High		
Spike Duplica	Recovery Limits (%)	пот		
Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report	Spike Recovery (%)	MSD		
Matrix Spii	Spike Re	SM		
	Spike	Concentration		
		CAS Number		

Method: Compound

 Laboratory
 Sample ID
 Method: Comp

 sample ID
 EG: Metals and Major Cations - Total (QC Lot: 4819028) - Continued

