

Sample No.	31967-1	31967-2	31967-3	31967-4	LCEL	UCEL
Sample ID	LCW/VC1	LCW/VC1	LCW/VC1	LCW/VC1		
Sampling Location	843311.8 845239.6	843311.8 845239.6	843311.8 845239.6	843311.8 845239.6		
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9	2.9-3.9		
Sampling Date	26/8/2019	26/8/2019	26/8/2019	26/8/2019		
Cd, mg/kg	0.11	<0.05	<0.05	0.05	1.5	4
Cr, mg/kg	11.9	10.3	12.9	10.9	80	160
Cu, mg/kg	10.9	3.3	3.3	3.9	65	110
Hg, mg/kg	0.10	<0.05	<0.05	<0.05	0.5	1
Ni, mg/kg	5.6	4.9	6.7	5.3	40	40
Pb, mg/kg	45.4	19.6	21.7	25.0	75	110
Ag, mg/kg	0.2	<0.1	<0.1	<0.1	1	2
Zn, mg/kg	50.7	41.0	43.1	33.3	200	270
As, mg/kg	60.3	19.2	16.2	35.2	12	42
Acenaphthene, µg/kg	<8	<8	<8	<8	N/A	N/A
Acenaphthylene, µg/kg	<8	<8	<8	<8	N/A	N/A
Anthracene, µg/kg	<8	<8	<8	<8	N/A	N/A
Fluorene, µg/kg	<8	<8	<8	<8	N/A	N/A
Naphthalene, µg/kg	<10	<10	<10	<10	N/A	N/A
Phenanthrene, µg/kg	<8	<8	<8	<8	N/A	N/A
Low molecular weight PAHs, µg/kg	<50	<50	<50	<50	550	3160
Benzo(a)anthracene, µg/kg	<10	<10	<10	<10	N/A	N/A
Benzo(a)pyrene, µg/kg	<10	<10	<10	<10	N/A	N/A
Benzo(b)fluoranthene, µg/kg	<10	<10	<10	<10	N/A	N/A
Benzo(k)fluoranthene, µg/kg	<10	<10	<10	<10	N/A	N/A
Benzo(ghi)perylene, µg/kg	<10	<10	<10	<10	N/A	N/A
Chrysene, µg/kg	<10	<10	<10	<10	N/A	N/A
Dibenz(ah)anthracene, µg/kg	<10	<10	<10	<10	N/A	N/A
Fluoranthene, µg/kg	<10	<10	<10	<10	N/A	N/A
Indeno(1,2,3-cd)pyrene, µg/kg	<10	<10	<10	<10	N/A	N/A
Pyrene, µg/kg	<10	<10	<10	<10	N/A	N/A
High molecular weight PAHs, µg/kg	<100	<100	<100	<100	1700	9600
2,4'-Dichlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',5'-Trichlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,4,4'-Trichlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',3,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',5,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
3,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',4,5,5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,3,3',4,4'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
3,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',3,3',4,4',5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',3,4,4',5,5'-Heptachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
2,2',3,4',5,5',6'-Heptachlorobiphenyl, µg/kg	<1	<1	<1	<1	N/A	N/A
Total PCB, µg/kg	<18	<18	<18	<18	23	180
Tributyltin (TBT) in Interstitial water, µg/L	<0.01	<0.01	<0.01	<0.01	0.15	0.15

LCEL and UCEL link:

<https://www.devb.gov.hk/filemanager/technicalcirculares/en/upload/124/1/C-2002-34-0-1.pdf>

Sample No.	31975-1	31975-2	31975-3	LCEL	UCEL
Sample ID	LCW/VC2	LCW/VC2	LCW/VC2		
Sampling Location	843321.1 845196.5	843321.1 845196.5	843321.1 845196.5		
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9		
Sampling Date	27/8/2019	27/8/2019	27/8/2019		
Cd, mg/kg	<0.05	<0.05	<0.05	1.5	4
Cr, mg/kg	7.2	7.0	9.9	80	160
Cu, mg/kg	3.8	1.8	2.6	65	110
Hg, mg/kg	<0.05	<0.05	<0.05	0.5	1
Ni, mg/kg	3.4	3.5	4.5	40	40
Pb, mg/kg	23.8	12.2	16.8	75	110
Ag, mg/kg	0.1	<0.1	<0.1	1	2
Zn, mg/kg	33.6	28.3	33.3	200	270
As, mg/kg	38.2	18.3	29.1	12	42
Acenaphthene, µg/kg	<8	<8	<8	N/A	N/A
Acenaphthylene, µg/kg	<8	<8	<8	N/A	N/A
Anthracene, µg/kg	<8	<8	<8	N/A	N/A
Fluorene, µg/kg	<8	<8	<8	N/A	N/A
Naphthalene, µg/kg	<10	<10	<10	N/A	N/A
Phenanthrene, µg/kg	<8	<8	<8	N/A	N/A
Low molecular weight PAHs, µg/kg	<50	<50	<50	550	3160
Benzo(a)anthracene, µg/kg	<10	<10	<10	N/A	N/A
Benzo(a)pyrene, µg/kg	<10	<10	<10	N/A	N/A
Benzo(b)fluoranthene, µg/kg	<10	<10	<10	N/A	N/A
Benzo(k)fluoranthene, µg/kg	<10	<10	<10	N/A	N/A
Benzo(ghi)perylene, µg/kg	<10	<10	<10	N/A	N/A
Chrysene, µg/kg	<10	<10	<10	N/A	N/A
Dibenz(ah)anthracene, µg/kg	<10	<10	<10	N/A	N/A
Fluoranthene, µg/kg	<10	<10	<10	N/A	N/A
Indeno(1,2,3-cd)pyrene, µg/kg	<10	<10	<10	N/A	N/A
Pyrene, µg/kg	<10	<10	<10	N/A	N/A
High molecular weight PAHs, µg/kg	<100	<100	<100	1700	9600
2,4'-Dichlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',5'-Trichlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,4,4'-Trichlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',5,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
3,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',4,5,5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,3,3',4,4'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
3,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,3',4,4',5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,4,4',5,5'-Heptachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,4',5,5',6'-Heptachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
Total PCB, µg/kg	<18	<18	<18	23	180
Tributyltin (TBT) in Interstitial water, µg/L	<0.01	<0.01	<0.01	0.15	0.15

LCEL and UCEL link:

<https://www.devb.gov.hk/filemanager/technicalcirculares/en/upload/124/1/C-2002-34-0-1.pdf>

Sample No.	31979-1	LCEL	UCEL
Sample ID	LCW/VC2		
Sampling Location	843321.1 845196.5		
Sampling Depth	2.9-3.9		
Sampling Date	28/8/2019		
Cd, mg/kg	0.07	1.5	4
Cr, mg/kg	7.7	80	160
Cu, mg/kg	3.4	65	110
Hg, mg/kg	<0.05	0.5	1
Ni, mg/kg	2.5	40	40
Pb, mg/kg	20.2	75	110
Ag, mg/kg	<0.1	1	2
Zn, mg/kg	24.5	200	270
As, mg/kg	69.5	12	42
Acenaphthene, µg/kg	<8	N/A	N/A
Acenaphthylene, µg/kg	<8	N/A	N/A
Anthracene, µg/kg	<8	N/A	N/A
Fluorene, µg/kg	<8	N/A	N/A
Naphthalene, µg/kg	<10	N/A	N/A
Phenanthrene, µg/kg	<8	N/A	N/A
Low molecular weight PAHs, µg/kg	<50	550	3160
Benzo(a)anthracene, µg/kg	<10	N/A	N/A
Benzo(a)pyrene, µg/kg	<10	N/A	N/A
Benzo(b)fluoranthene, µg/kg	<10	N/A	N/A
Benzo(k)fluoranthene, µg/kg	<10	N/A	N/A
Benzo(ghi)perylene, µg/kg	<10	N/A	N/A
Chrysene, µg/kg	<10	N/A	N/A
Dibenz(ah)anthracene, µg/kg	<10	N/A	N/A
Fluoranthene, µg/kg	<10	N/A	N/A
Indeno(1,2,3-cd)pyrene, µg/kg	<10	N/A	N/A
Pyrene, µg/kg	<10	N/A	N/A
High molecular weight PAHs, µg/kg	<100	1700	9600
2,4'-Dichlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',5'-Trichlorobiphenyl, µg/kg	<1	N/A	N/A
2,4,4'-Trichlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',3,5'-Tetrachlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',5,5'-Tetrachlorobiphenyl, µg/kg	<1	N/A	N/A
2,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	N/A	N/A
3,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',4,5,5'-Pentachlorobiphenyl, µg/kg	<1	N/A	N/A
2,3,3',4,4'-Pentachlorobiphenyl, µg/kg	<1	N/A	N/A
2,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	N/A	N/A
3,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	N/A	N/A
3,3',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',3,3',4,4',5'-Heptachlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',3,4,4',5,5'-Heptachlorobiphenyl, µg/kg	<1	N/A	N/A
2,2',3,4',5,5',6'-Heptachlorobiphenyl, µg/kg	<1	N/A	N/A
Total PCB, µg/kg	<18	23	180
Tributyltin (TBT) in Interstitial water, µg/L	<0.01	0.15	0.15

LCEL and UCEL link:

<https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/124/1/C-2002-34-0-1.pdf>

Sample No.	32062-1	32062-2	32062-3	LCEL	UCEL
Sample ID	LCW/VC1	LCW/VC1 Duplicate	LCW/VC2		
Sampling Location	843311.8 843321.1	843311.8 843321.1	843321.1 845196.5		
Sampling Depth	Grab	Grab	Grab		
Sampling Date	7/9/2019	7/9/2019	7/9/2019		
Cd, mg/kg	0.09	0.10	0.10	1.5	4
Cr, mg/kg	9.9	9.2	9.8	80	160
Cu, mg/kg	11.8	11.1	10.4	65	110
Hg, mg/kg	0.05	0.05	0.06	0.5	1
Ni, mg/kg	5.1	4.7	4.4	40	40
Pb, mg/kg	36.8	34.6	38.3	75	110
Ag, mg/kg	0.4	0.4	0.4	1	2
Zn, mg/kg	55.5	50.5	49.6	200	270
As, mg/kg	45.4	40.7	51.7	12	42
Acenaphthene, µg/kg	<8	<8	<8	N/A	N/A
Acenaphthylene, µg/kg	<8	<8	<8	N/A	N/A
Anthracene, µg/kg	<8	<8	<8	N/A	N/A
Fluorene, µg/kg	<8	<8	<8	N/A	N/A
Naphthalene, µg/kg	<10	<10	<10	N/A	N/A
Phenanthrene, µg/kg	<8	<8	<8	N/A	N/A
Low molecular weight PAHs, µg/kg	<50	<50	<50	550	3160
Benzo(a)anthracene, µg/kg	<10	<10	<10	N/A	N/A
Benzo(a)pyrene, µg/kg	<10	<10	<10	N/A	N/A
Benzo(b)fluoranthene, µg/kg	<10	<10	<10	N/A	N/A
Benzo(k)fluoranthene, µg/kg	<10	<10	<10	N/A	N/A
Benzo(ghi)perylene, µg/kg	<10	<10	<10	N/A	N/A
Chrysene, µg/kg	<10	<10	<10	N/A	N/A
Dibenz(ah)anthracene, µg/kg	<10	<10	<10	N/A	N/A
Fluoranthene, µg/kg	<10	<10	<10	N/A	N/A
Indeno(1,2,3-cd)pyrene, µg/kg	<10	<10	<10	N/A	N/A
Pyrene, µg/kg	<10	<10	<10	N/A	N/A
High molecular weight PAHs, µg/kg	<100	<100	<100	1700	9600
2,4'-Dichlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',5'-Trichlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,4,4'-Trichlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',5,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
3,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',4,5,5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,3,3',4,4'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
3,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
3,3',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,3',4,4',5'-Heptachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
2,2',3,4,4',5,5',6'-Heptachlorobiphenyl, µg/kg	<1	<1	<1	N/A	N/A
Total PCB, µg/kg	<18	<18	<18	23	180
Tributyltin (TBT) in Interstitial water, µg/L	<0.01	<0.01	<0.01	0.15	0.15

LCEL and UCEL link:

<https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/124/1/C-2002-34-0-1.pdf>

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung


Report No.:	31967
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	1 of 2

Sample Description : 4 samples as received by customer said to be sediment
 Laboratory No. : 31967
 Project No. : E19028
 Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Cadmium (Cd)	In-house method SOP053 (ICP-AES) &	0.05 mg/kg
2	Chromium (Cr)	In-house method SOP093 (digestion) (ICP-MS)	0.1 mg/kg
3	Copper (Cu)		0.2 mg/kg
4	Mercury (Hg)		0.05 mg/kg
5	Nickel (Ni)		0.2 mg/kg
6	Lead (Pb)		0.1 mg/kg
7	Silver (Ag)		0.1 mg/kg
8	Zinc (Zn)		0.2 mg/kg
9	Arsenic (As)		0.1 mg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31967
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	2 of 2

Test Results:

Sample No.	31967-1	31967-2	31967-3
Sample ID	LCW/VC1	LCW/VC1	LCW/VC1
Sampling Location	843311.8 845239.6	843311.8 845239.6	843311.8 845239.6
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	26/8/2019	26/8/2019	26/8/2019
Cd, mg/kg	0.11	<0.05	<0.05
Cr, mg/kg	11.9	10.3	12.9
Cu, mg/kg	10.9	3.3	3.3
Hg, mg/kg	0.10	<0.05	<0.05
Ni, mg/kg	5.6	4.9	6.7
Pb, mg/kg	45.4	19.6	21.7
Ag, mg/kg	0.2	<0.1	<0.1
Zn, mg/kg	50.7	41.0	43.1
As, mg/kg	60.3	19.2	16.2

Sample No.	31967-4
Sample ID	LCW/VC1
Sampling Location	843311.8 845239.6
Sampling Depth	2.9-3.9
Sampling Date	26/8/2019
Cd, mg/kg	0.05
Cr, mg/kg	10.9
Cu, mg/kg	3.9
Hg, mg/kg	<0.05
Ni, mg/kg	5.3
Pb, mg/kg	25.0
Ag, mg/kg	<0.1
Zn, mg/kg	33.3
As, mg/kg	35.2

Remarks: 1) < = less than
 2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung


Report No.:	31967A
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	1 of 2

Sample Description : 4 samples as received by customer said to be sediment
 Laboratory No. : 31967A
 Project No. : E19028
 Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Acenaphtene	In-house method SOP090 (GC/MSD)	8 µg/kg
2	Acenaphthylene		8 µg/kg
3	Anthracene		8 µg/kg
4	Fluorene		8 µg/kg
5	Naphthalene		10 µg/kg
6	Phenanthrene		8 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31967A
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	2 of 2

Test Results:

Sample No.	31967-1	31967-2	31967-3
Sample ID	LCW/VC1	LCW/VC1	LCW/VC1
Sampling Location	843311.8 845239.6	843311.8 845239.6	843311.8 845239.6
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	26/8/2019	26/8/2019	26/8/2019
Acenaphtene, µg/kg	<8	<8	<8
Acenaphthylene, µg/kg	<8	<8	<8
Anthracene, µg/kg	<8	<8	<8
Fluorene, µg/kg	<8	<8	<8
Naphthalene, µg/kg	<10	<10	<10
Phenanthrene, µg/kg	<8	<8	<8

Sample No.	31967-4
Sample ID	LCW/VC1
Sampling Location	843311.8 845239.6
Sampling Depth	2.9-3.9
Sampling Date	26/8/2019
Acenaphtene, µg/kg	<8
Acenaphthylene, µg/kg	<8
Anthracene, µg/kg	<8
Fluorene, µg/kg	<8
Naphthalene, µg/kg	<10
Phenanthrene, µg/kg	<8

Remarks: 1) < = less than
 2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	31967B
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	1 of 2

Sample Description : 4 samples as received by customer said to be sediment
 Laboratory No. : 31967B
 Project No. : E19028
 Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Benzo(a)anthracene	In-house method SOP090 (GC/MSD)	10 µg/kg
2	Benzo(a)pyrene		10 µg/kg
3	Benzo(b)fluoranthene		10 µg/kg
4	Benzo(k)fluoranthene		10 µg/kg
5	Benzo(ghi)perylene		10 µg/kg
6	Chrysene		10 µg/kg
7	Dibenz(ah)anthracene		10 µg/kg
8	Fluoranthene		10 µg/kg
9	Indeno(1,2,3-cd)pyrene		10 µg/kg
10	Pyrene		10 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31967B
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	2 of 2

Test Results:

Sample No.	31967-1	31967-2	31967-3
Sample ID	LCW/VC1	LCW/VC1	LCW/VC1
Sampling Location	843311.8 845239.6	843311.8 845239.6	843311.8 845239.6
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	26/8/2019	26/8/2019	26/8/2019
Benzo(a)anthracene, µg/kg	<10	<10	<10
Benzo(a)pyrene, µg/kg	<10	<10	<10
Benzo(b)fluoranthene, µg/kg	<10	<10	<10
Benzo(k)fluoranthene, µg/kg	<10	<10	<10
Benzo(ghi)perylene, µg/kg	<10	<10	<10
Chrysene, µg/kg	<10	<10	<10
Dibenz(ah)anthracene, µg/kg	<10	<10	<10
Fluoranthene, µg/kg	<10	<10	<10
Indeno(1,2,3-cd)pyrene, µg/kg	<10	<10	<10
Pyrene, µg/kg	<10	<10	<10

Sample No.	31967-4
Sample ID	LCW/VC1
Sampling Location	843311.8 845239.6
Sampling Depth	2.9-3.9
Sampling Date	26/8/2019
Benzo(a)anthracene, µg/kg	<10
Benzo(a)pyrene, µg/kg	<10
Benzo(b)fluoranthene, µg/kg	<10
Benzo(k)fluoranthene, µg/kg	<10
Benzo(ghi)perylene, µg/kg	<10
Chrysene, µg/kg	<10
Dibenz(ah)anthracene, µg/kg	<10
Fluoranthene, µg/kg	<10
Indeno(1,2,3-cd)pyrene, µg/kg	<10
Pyrene, µg/kg	<10

Remarks: 1) <= less than
 2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	31967C
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	1 of 3

Sample Description : 4 samples as received by customer said to be sediment
 Laboratory No. : 31967C
 Project No. : E19028
 Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	2,4'-Dichlorobiphenyl	PCB8	1 µg/kg
2	2,2',5'-Trichlorobiphenyl	PCB18	1 µg/kg
3	2,4,4'-Trichlorobiphenyl	PCB28	1 µg/kg
4	2,2',3,5'-Tetrachlorobiphenyl	PCB44	1 µg/kg
5	2,2',5,5'-Tetrachlorobiphenyl	PCB52	1 µg/kg
6	2,3',4,4'-Tetrachlorobiphenyl	PCB66	1 µg/kg
7	3,3',4,4'-Tetrachlorobiphenyl	PCB 77	1 µg/kg
8	2,2',4,5,5'-Pentachlorobiphenyl	PCB101	1 µg/kg
9	2,3,3',4,4'-Pentachlorobiphenyl	PCB105	1 µg/kg
10	2,3',4,4',5'-Pentachlorobiphenyl	PCB118	1 µg/kg
11	3,3',4,4',5'-Pentachlorobiphenyl	PCB126	1 µg/kg
12	2,2',3,3',4,4'-Hexachlorobiphenyl	PCB128	1 µg/kg
13	2,2',3,4,4',5'-Hexachlorobiphenyl	PCB138	1 µg/kg
14	2,2',4,4',5,5'-Hexachlorobiphenyl	PCB153	1 µg/kg
15	3,3',4,4',5,5'-Hexachlorobiphenyl	PCB169	1 µg/kg
16	2,2',3,3',4,4',5'-Heptachlorobiphenyl	PCB170	1 µg/kg
17	2,2',3,4,4',5,5'-Heptachlorobiphenyl	PCB180	1 µg/kg
18	2,2',3,4',5,5',6'-Heptachlorobiphenyl	PCB187	1 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory:
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31967C
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	2 of 3

Test Results:

Sample No.	31967-1	31967-2	31967-3
Sample ID	LCW/VC1	LCW/VC1	LCW/VC1
Sampling Location	843311.8	843311.8	843311.8
	845239.6	845239.6	845239.6
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	26/8/2019	26/8/2019	26/8/2019
2,4'-Dichlorobiphenyl, µg/kg	<1	<1	<1
2,2',5'-Trichlorobiphenyl, µg/kg	<1	<1	<1
2,4,4'-Trichlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,2',5,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,2',4,5,5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,3,3',4,4'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,3',4,4',5'-Heptachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4,4',5,5'-Heptachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4',5,5',6'-Heptachlorobiphenyl, µg/kg	<1	<1	<1

Remarks: 1) < = less than
 2) Results reported as dry weight basis

TEST REPORT

Report No.:	31967C
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	3 of 3

Test Results:

Sample No.	31967-4
Sample ID	LCW/VC1
Sampling Location	843311.8 845239.6
Sampling Depth	2.9-3.9
Sampling Date	26/8/2019
2,4'-Dichlorobiphenyl, µg/kg	<1
2,2',5'-Trichlorobiphenyl, µg/kg	<1
2,4,4'-Trichlorobiphenyl, µg/kg	<1
2,2', 3,5'-Tetrachlorobiphenyl, µg/kg	<1
2,2', 5,5'-Tetrachlorobiphenyl, µg/kg	<1
2,3', 4,4'-Tetrachlorobiphenyl, µg/kg	<1
3,3', 4,4'-Tetrachlorobiphenyl, µg/kg	<1
2,2', 4,5,5'-Pentachlorobiphenyl, µg/kg	<1
2,3,3', 4,4'-Pentachlorobiphenyl, µg/kg	<1
2,3', 4,4',5-Pentachlorobiphenyl, µg/kg	<1
3,3', 4,4',5-Pentachlorobiphenyl, µg/kg	<1
2,2', 3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1
2,2', 3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1
2,2', 4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1
3,3', 4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1
2,2', 3,3',4,4',5-Heptachlorobiphenyl, µg/kg	<1
2,2', 3,4,4',5,5'-Heptachlorobiphenyl, µg/kg	<1
2,2', 3,4',5,5',6-Heptachlorobiphenyl, µg/kg	<1

Remarks: 1) <= less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	31967D
Date of Issue:	2019-08-30
Date Received:	2019-08-26
Date Tested:	2019-08-26
Date Completed:	2019-08-30
Page:	1 of 1

Sample Description : 4 samples as received by customer said to be sediment and were prepared for 4 interstitial water samples

Laboratory No. : 31967D

Project No. : E19028

Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:


Item	Parameters	Ref. Method	Limit of Reporting
1	Tributyltin (TBT)	In-house method SOP065 (GC/FPD)	0.010 µg/L

Test Results:

Sample No.	31967-1	31967-2	31967-3	31967-4
Sample ID	LCW/VC1	LCW/VC1	LCW/VC1	LCW/VC1
Sampling Location	843311.8 845239.6	843311.8 845239.6	843311.8 845239.6	843311.8 845239.6
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9	2.9-3.9
Sampling Date	26/8/2019	26/8/2019	26/8/2019	26/8/2019
Tributyltin, µg/L	<0.01	<0.01	<0.01	<0.01

Remarks: 1) <= less than

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung


Report No.:	31975
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	1 of 2

Sample Description : 3 samples as received by customer said to be sediment
Laboratory No. : 31975
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Cadmium (Cd)	In-house method SOP053 (ICP-AES) &	0.05 mg/kg
2	Chromium (Cr)	In-house method SOP093 (digestion) (ICP-MS)	0.1 mg/kg
3	Copper (Cu)		0.2 mg/kg
4	Mercury (Hg)		0.05 mg/kg
5	Nickel (Ni)		0.2 mg/kg
6	Lead (Pb)		0.1 mg/kg
7	Silver (Ag)		0.1 mg/kg
8	Zinc (Zn)		0.2 mg/kg
9	Arsenic (As)		0.1 mg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31975
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	2 of 2

Test Results:

Sample No.	31975-1	31975-2	31975-3
Sample ID	LCW/VC2	LCW/VC2	LCW/VC2
Sampling Location	843321.1 845196.5	843321.1 845196.5	843321.1 845196.5
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	27/8/2019	27/8/2019	27/8/2019
Cd, mg/kg	<0.05	<0.05	<0.05
Cr, mg/kg	7.2	7.0	9.9
Cu, mg/kg	3.8	1.8	2.6
Hg, mg/kg	<0.05	<0.05	<0.05
Ni, mg/kg	3.4	3.5	4.5
Pb, mg/kg	23.8	12.2	16.8
Ag, mg/kg	0.1	<0.1	<0.1
Zn, mg/kg	33.6	28.3	33.3
As, mg/kg	38.2	18.3	29.1

Remarks: 1) <= less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	31975A
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	1 of 2

Sample Description : 3 samples as received by customer said to be sediment
Laboratory No. : 31975A
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Acenaphthene	In-house method SOP090 (GC/MSD)	8 µg/kg
2	Acenaphthylene		8 µg/kg
3	Anthracene		8 µg/kg
4	Fluorene		8 µg/kg
5	Naphthalene		10 µg/kg
6	Phenanthrene		8 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31975A
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	2 of 2

Test Results:

Sample No.	31975-1	31975-2	31975-3
Sample ID	LCW/VC2	LCW/VC2	LCW/VC2
Sampling Location	843321.1 845196.5	843321.1 845196.5	843321.1 845196.5
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	27/8/2019	27/8/2019	27/8/2019
Acenaphthene, µg/kg	<8	<8	<8
Acenaphthylene, µg/kg	<8	<8	<8
Anthracene, µg/kg	<8	<8	<8
Fluorene, µg/kg	<8	<8	<8
Naphthalene, µg/kg	<10	<10	<10
Phenanthrene, µg/kg	<8	<8	<8

Remarks: 1) < = less than
 2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung


Report No.:	31975B
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	1 of 2

Sample Description : 3 samples as received by customer said to be sediment
Laboratory No. : 31975B
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Benzo(a)anthracene	In-house method SOP090 (GC/MSD)	10 µg/kg
2	Benzo(a)pyrene		10 µg/kg
3	Benzo(b)fluoranthene		10 µg/kg
4	Benzo(k)fluoranthene		10 µg/kg
5	Benzo(ghi)perylene		10 µg/kg
6	Chrysene		10 µg/kg
7	Dibenz(ah)anthracene		10 µg/kg
8	Fluoranthene		10 µg/kg
9	Indeno(1,2,3-cd)pyrene		10 µg/kg
10	Pyrene		10 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tsé Chun Bui, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31975B
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	2 of 2

Test Results:

Sample No.	31975-1	31975-2	31975-3
Sample ID	LCW/VC2	LCW/VC2	LCW/VC2
Sampling Location	843321.1 845196.5	843321.1 845196.5	843321.1 845196.5
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	27/8/2019	27/8/2019	27/8/2019
Benzo(a)anthracene, µg/kg	<10	<10	<10
Benzo(a)pyrene, µg/kg	<10	<10	<10
Benzo(b)fluoranthene, µg/kg	<10	<10	<10
Benzo(k)fluoranthene, µg/kg	<10	<10	<10
Benzo(ghi)perylene, µg/kg	<10	<10	<10
Chrysene, µg/kg	<10	<10	<10
Dibenz(ah)anthracene, µg/kg	<10	<10	<10
Fluoranthene, µg/kg	<10	<10	<10
Indeno(1,2,3-cd)pyrene, µg/kg	<10	<10	<10
Pyrene, µg/kg	<10	<10	<10

Remarks: 1) < = less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong
ATTN: Mr. Toby Lung


Report No.:	31975C
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	1 of 2

Sample Description : 3 samples as received by customer said to be sediment
Laboratory No. : 31975C
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	2,4'-Dichlorobiphenyl PCB8	In-house method SOP088 (GC/MSD)	1 µg/kg
2	2,2',5'-Trichlorobiphenyl PCB18		1 µg/kg
3	2,4,4'-Trichlorobiphenyl PCB28		1 µg/kg
4	2,2',3,5'-Tetrachlorobiphenyl PCB44		1 µg/kg
5	2,2',5,5'-Tetrachlorobiphenyl PCB52		1 µg/kg
6	2,3',4,4'-Tetrachlorobiphenyl PCB66		1 µg/kg
7	3,3',4,4'-Tetrachlorobiphenyl PCB77		1 µg/kg
8	2,2',4,5,5'-Pentachlorobiphenyl PCB101		1 µg/kg
9	2,3,3',4,4'-Pentachlorobiphenyl PCB105		1 µg/kg
10	2,3',4,4',5'-Pentachlorobiphenyl PCB118		1 µg/kg
11	3,3',4,4',5'-Pentachlorobiphenyl PCB126		1 µg/kg
12	2,2',3,3',4,4'-Hexachlorobiphenyl PCB128		1 µg/kg
13	2,2',3,4,4',5'-Hexachlorobiphenyl PCB138		1 µg/kg
14	2,2',4,4',5,5'-Hexachlorobiphenyl PCB153		1 µg/kg
15	3,3',4,4',5,5'-Hexachlorobiphenyl PCB169		1 µg/kg
16	2,2',3,3',4,4',5-Heptachlorobiphenyl PCB170		1 µg/kg
17	2,2',3,4,4',5,5'-Heptachlorobiphenyl PCB180		1 µg/kg
18	2,2',3,4',5,5',6-Heptachlorobiphenyl PCB187		1 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31975C
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	2 of 2

Test Results:

Sample No.	31975-1	31975-2	31975-3
Sample ID	LCW/VC2	LCW/VC2	LCW/VC2
Sampling Location	843321.1 845196.5	843321.1 845196.5	843321.1 845196.5
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	27/8/2019	27/8/2019	27/8/2019
2,4'-Dichlorobiphenyl, µg/kg	<1	<1	<1
2,2',5'-Trichlorobiphenyl, µg/kg	<1	<1	<1
2,4,4'-Trichlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,2',5,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,2',4,5,5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,3,3',4,4'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,3',4,4',5-Heptachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4,4',5,5'-Heptachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4',5,5',6-Heptachlorobiphenyl, µg/kg	<1	<1	<1

Remarks: 1) <= less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong

ATTN: Mr. Toby Lung

Report No.:	31975D
Date of Issue:	2019-09-02
Date Received:	2019-08-27
Date Tested:	2019-08-27
Date Completed:	2019-09-02
Page:	1 of 1

Sample Description : 3 samples as received by customer said to be sediment and were prepared for 3 interstitial water samples

Laboratory No. : 31975D

Project No. : E19028

Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Tributyltin (TBT)	In-house method SOP065 (GC/FPD)	0.010 µg/L

Test Results:

Sample No.	31975-1	31975-2	31975-3
Sample ID	LCW/VC2	LCW/VC2	LCW/VC2
Sampling Location	843321.1 845196.5	843321.1 845196.5	843321.1 845196.5
Sampling Depth	0.0-0.9	0.9-1.9	1.9-2.9
Sampling Date	27/8/2019	27/8/2019	27/8/2019
Tributyltin, µg/L	<0.01	<0.01	<0.01

Remarks: 1) <= less than

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong

ATTN: Mr. Toby Lung

Report No.:	31979
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	1 of 2

Sample Description : 1 sample as received by customer said to be sediment

Laboratory No. : 31979

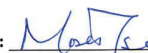
Project No. : E19028

Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Cadmium (Cd)	In-house method SOP053 (ICP-AES) &	0.05 mg/kg
2	Chromium (Cr)	In-house method SOP093 (digestion) (ICP-MS)	0.1 mg/kg
3	Copper (Cu)		0.2 mg/kg
4	Mercury (Hg)		0.05 mg/kg
5	Nickel (Ni)		0.2 mg/kg
6	Lead (Pb)		0.1 mg/kg
7	Silver (Ag)		0.1 mg/kg
8	Zinc (Zn)		0.2 mg/kg
9	Arsenic (As)		0.1 mg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31979
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	2 of 2

Test Results:

Sample No.	31979-1
Sample ID	LCW/VC2
Sampling Location	843321.1 845196.5
Sampling Depth	2.9-3.9
Sampling Date	28/8/2019
Cd, mg/kg	0.07
Cr, mg/kg	7.7
Cu, mg/kg	3.4
Hg, mg/kg	<0.05
Ni, mg/kg	2.5
Pb, mg/kg	20.2
Ag, mg/kg	<0.1
Zn, mg/kg	24.5
As, mg/kg	69.5

Remarks: 1) <= less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong

ATTN: Mr. Toby Lung

Report No.:	31979A
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	1 of 2

Sample Description : 1 sample as received by customer said to be sediment

Laboratory No. : 31979A


Project No. : E19028

Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Acenaphtene	In-house method SOP090 (GC/MSD)	8 µg/kg
2	Acenaphtylene		8 µg/kg
3	Anthracene		8 µg/kg
4	Fluorene		8 µg/kg
5	Naphthalene		10 µg/kg
6	Phenanthrene		8 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31979A
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	2 of 2

Test Results:

Sample No.	31979-1
Sample ID	LCW/V/C2
Sampling Location	843321.1 845196.5
Sampling Depth	2.9-3.9
Sampling Date	28/8/2019
Acenaphthene, µg/kg	<8
Acenaphthylene, µg/kg	<8
Anthracene, µg/kg	<8
Fluorene, µg/kg	<8
Naphthalene, µg/kg	<10
Phenanthrene, µg/kg	<8

Remarks: 1) <= less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	31979B
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	1 of 2

Sample Description : 1 sample as received by customer said to be sediment

Laboratory No. : 31979B


Project No. : E19028

Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Benzo(a)anthracene	In-house method SOP090 (GC/MSD)	10 µg/kg
2	Benzo(a)pyrene		10 µg/kg
3	Benzo(b)fluoranthene		10 µg/kg
4	Benzo(k)fluoranthene		10 µg/kg
5	Benzo(ghi)perylene		10 µg/kg
6	Chrysene		10 µg/kg
7	Dibenz(ah)anthracene		10 µg/kg
8	Fluoranthene		10 µg/kg
9	Indeno(1,2,3-cd)pyrene		10 µg/kg
10	Pyrene		10 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bui, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31979B
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	2 of 2

Test Results:

Sample No.	31979-1
Sample ID	LCW/VC2
Sampling Location	843321.1 845196.5
Sampling Depth	2.9-3.9
Sampling Date	28/8/2019
Benzo(a)anthracene, µg/kg	<10
Benzo(a)pyrene, µg/kg	<10
Benzo(b)fluoranthene, µg/kg	<10
Benzo(k)fluoranthene, µg/kg	<10
Benzo(ghi)perylene, µg/kg	<10
Chrysene, µg/kg	<10
Dibenz(ah)anthracene, µg/kg	<10
Fluoranthene, µg/kg	<10
Indeno(1,2,3-cd)pyrene, µg/kg	<10
Pyrene, µg/kg	<10

Remarks: 1) < = less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong
ATTN: Mr. Toby Lung

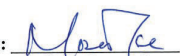
Report No.:	31979C
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	1 of 2

Sample Description : 1 sample as received by customer said to be sediment
Laboratory No. : 31979C
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	2,4'-Dichlorobiphenyl PCB8	In-house method SOP088 (GC/MSD)	1 µg/kg
2	2,2',5-Trichlorobiphenyl PCB18		1 µg/kg
3	2,4,4'-Trichlorobiphenyl PCB28		1 µg/kg
4	2,2',3,5'-Tetrachlorobiphenyl PCB44		1 µg/kg
5	2,2',5,5'-Tetrachlorobiphenyl PCB52		1 µg/kg
6	2,3',4,4'-Tetrachlorobiphenyl PCB66		1 µg/kg
7	3,3',4,4'-Tetrachlorobiphenyl PCB 77		1 µg/kg
8	2,2',4,5,5'-Pentachlorobiphenyl PCB101		1 µg/kg
9	2,3,3',4,4'-Pentachlorobiphenyl PCB105		1 µg/kg
10	2,3',4,4',5-Pentachlorobiphenyl PCB118		1 µg/kg
11	3,3',4,4',5-Pentachlorobiphenyl PCB126		1 µg/kg
12	2,2',3,3',4,4'-Hexachlorobiphenyl PCB128		1 µg/kg
13	2,2',3,4,4',5'-Hexachlorobiphenyl PCB138		1 µg/kg
14	2,2',4,4',5,5'-Hexachlorobiphenyl PCB153		1 µg/kg
15	3,3',4,4',5,5'-Hexachlorobiphenyl PCB169		1 µg/kg
16	2,2',3,3',4,4',5-Heptachlorobiphenyl PCB170		1 µg/kg
17	2,2',3,4,4',5,5'-Heptachlorobiphenyl PCB180		1 µg/kg
18	2,2',3,4',5,5',6-Heptachlorobiphenyl PCB187		1 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	31979C
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	2 of 2

Test Results:

Sample No.	31979-1
Sample ID	LCW/VC2
Sampling Location	843321.1 845196.5
Sampling Depth	2.9-3.9
Sampling Date	28/8/2019
2,4'-Dichlorobiphenyl, µg/kg	<1
2,2',5'-Trichlorobiphenyl, µg/kg	<1
2,4,4'-Trichlorobiphenyl, µg/kg	<1
2,2', 3,5'-Tetrachlorobiphenyl, µg/kg	<1
2,2', 5,5'-Tetrachlorobiphenyl, µg/kg	<1
2,3', 4,4'-Tetrachlorobiphenyl, µg/kg	<1
3,3', 4,4'-Tetrachlorobiphenyl, µg/kg	<1
2,2', 4,5,5'-Pentachlorobiphenyl, µg/kg	<1
2,3,3', 4,4'-Pentachlorobiphenyl, µg/kg	<1
2,3', 4,4',5-Pentachlorobiphenyl, µg/kg	<1
3,3', 4,4',5-Pentachlorobiphenyl, µg/kg	<1
2,2', 3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1
2,2', 3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1
2,2', 4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1
3,3', 4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1
2,2', 3,3',4,4',5-Heptachlorobiphenyl, µg/kg	<1
2,2', 3,4,4',5,5'-Heptachlorobiphenyl, µg/kg	<1
2,2', 3,4',5,5',6-Heptachlorobiphenyl, µg/kg	<1

Remarks: 1) <= less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	31979D
Date of Issue:	2019-09-03
Date Received:	2019-08-28
Date Tested:	2019-08-28
Date Completed:	2019-09-03
Page:	1 of 1

Sample Description : 1 sample as received by customer said to be sediment and were prepared for 1 interstitial water sample

Laboratory No. : 31979

Project No. : E19028

Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:


Item	Parameters	Ref. Method	Limit of Reporting
1	Tributyltin (TBT)	In-house method SOP065 (GC/FPD)	0.010 µg/L

Test Results:

Sample No.	LCW/VC2
Sample ID	843321.1 845196.5
Sampling Location	2.9-3.9
Sampling Depth	28/8/2019
Sampling Date	<0.01
Tributyltin, µg/L	LCW/VC2

Remarks: 1) <= less than

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bui, Moses
 Laboratory Manager

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	32062
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12
Page:	1 of 2

Sample Description : 3 samples as received by customer said to be sediment
 Laboratory No. : 32062
 Project No. : E19028
 Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Cadmium (Cd)	In-house method SOP053 (ICP-AES) &	0.05 mg/kg
2	Chromium (Cr)	In-house method SOP093 (digestion) (ICP-MS)	0.1 mg/kg
3	Copper (Cu)		0.2 mg/kg
4	Mercury (Hg)		0.05 mg/kg
5	Nickel (Ni)		0.2 mg/kg
6	Lead (Pb)		0.1 mg/kg
7	Silver (Ag)		0.1 mg/kg
8	Zinc (Zn)		0.2 mg/kg
9	Arsenic (As)		0.1 mg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory:
Tse Chun Bui, Moses
 Laboratory Manager

TEST REPORT

Report No.:	32062
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12
Page:	2 of 2

Test Results:

Sample No.	32062-1	32062-2	32062-3
Sample ID	LCW/VC1	LCW/VC1 Duplicate	LCW/VC2
Sampling Location	843311.8 843321.1	843311.8 843321.1	843321.1 845196.5
Sampling Depth	Grab	Grab	Grab
Sampling Date	7/9/2019	7/9/2019	7/9/2019
Cd, mg/kg	0.09	0.10	0.10
Cr, mg/kg	9.9	9.2	9.8
Cu, mg/kg	11.8	11.1	10.4
Hg, mg/kg	0.05	0.05	0.06
Ni, mg/kg	5.1	4.7	4.4
Pb, mg/kg	36.8	34.6	38.3
Ag, mg/kg	0.4	0.4	0.4
Zn, mg/kg	55.5	50.5	49.6
As, mg/kg	45.4	40.7	51.7

Remarks: 1) <= less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	32062A
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12
Page:	1 of 2

Sample Description : 3 samples as received by customer said to be sediment
 Laboratory No. : 32062A
 Project No. : E19028
 Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Acenaphthene	In-house method SOP090 (GC/MSD)	8 µg/kg
2	Acenaphthylene		8 µg/kg
3	Anthracene		8 µg/kg
4	Fluorene		8 µg/kg
5	Naphthalene		10 µg/kg
6	Phenanthrene		8 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	32062A
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12
Page:	2 of 2

Test Results:

Sample No.	32062-1	32062-2	32062-3
Sample ID	LCW/VC1	LCW/VC1 Duplicate	LCW/VC2
Sampling Location	843321.1	843321.1	845196.5
Sampling Depth	Grab	Grab	Grab
Sampling Date	7/9/2019	7/9/2019	7/9/2019
Acenaphthene, µg/kg	<8	<8	<8
Acenaphthylene, µg/kg	<8	<8	<8
Anthracene, µg/kg	<8	<8	<8
Fluorene, µg/kg	<8	<8	<8
Naphthalene, µg/kg	<10	<10	<10
Phenanthrene, µg/kg	<8	<8	<8

Remarks: 1) < = less than
 2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung

Report No.:	32062B
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12
Page:	1 of 2

Sample Description : 3 samples as received by customer said to be sediment
Laboratory No. : 32062B
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Benzo(a)anthracene	In-house method SOP090 (GC/MSD)	10 µg/kg
2	Benzo(a)pyrene		10 µg/kg
3	Benzo(b)fluoranthene		10 µg/kg
4	Benzo(k)fluoranthene		10 µg/kg
5	Benzo(ghi)perylene		10 µg/kg
6	Chrysene		10 µg/kg
7	Dibenz(ah)anthracene		10 µg/kg
8	Fluoranthene		10 µg/kg
9	Indeno(1,2,3-cd)pyrene		10 µg/kg
10	Pyrene		10 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	32062B
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12
Page:	2 of 2

Test Results:

Sample No.	32062-1	32062-2	32062-3
Sample ID	LCW/VC1	LCW/VC1 Duplicate	LCW/VC2
Sampling Location	843311.8 843321.1	843311.8 843321.1	843321.1 845196.5
Sampling Depth	Grab	Grab	Grab
Sampling Date	7/9/2019	7/9/2019	7/9/2019
Benzo(a)anthracene, µg/kg	<10	<10	<10
Benzo(a)pyrene, µg/kg	<10	<10	<10
Benzo(b)fluoranthene, µg/kg	<10	<10	<10
Benzo(k)fluoranthene, µg/kg	<10	<10	<10
Benzo(ghi)perylene, µg/kg	<10	<10	<10
Chrysene, µg/kg	<10	<10	<10
Dibenz(ah)anthracene, µg/kg	<10	<10	<10
Fluoranthene, µg/kg	<10	<10	<10
Indeno(1,2,3-cd)pyrene, µg/kg	<10	<10	<10
Pyrene, µg/kg	<10	<10	<10

Remarks: 1) < = less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
 Level 5 Festival Walk,
 80 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong
ATTN: Mr. Toby Lung


Report No.:	32062C
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12
Page:	1 of 2

Sample Description : 3 samples as received by customer said to be sediment
Laboratory No. : 32062C
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	2,4'-Dichlorobiphenyl PCB8	In-house method SOP088 (GC/MSD)	1 µg/kg
2	2,2',5'-Trichlorobiphenyl PCB18		1 µg/kg
3	2,4,4'-Trichlorobiphenyl PCB28		1 µg/kg
4	2,2',3,5'-Tetrachlorobiphenyl PCB44		1 µg/kg
5	2,2',5,5'-Tetrachlorobiphenyl PCB52		1 µg/kg
6	2,3',4,4'-Tetrachlorobiphenyl PCB66		1 µg/kg
7	3,3',4,4'-Tetrachlorobiphenyl PCB 77		1 µg/kg
8	2,2',4,5,5'-Pentachlorobiphenyl PCB101		1 µg/kg
9	2,3,3',4,4'-Pentachlorobiphenyl PCB105		1 µg/kg
10	2,3',4,4',5'-Pentachlorobiphenyl PCB118		1 µg/kg
11	3,3',4,4',5'-Pentachlorobiphenyl PCB126		1 µg/kg
12	2,2',3,3',4,4'-Hexachlorobiphenyl PCB128		1 µg/kg
13	2,2',3,4,4',5'-Hexachlorobiphenyl PCB138		1 µg/kg
14	2,2',4,4',5,5'-Hexachlorobiphenyl PCB153		1 µg/kg
15	3,3',4,4',5,5'-Hexachlorobiphenyl PCB169		1 µg/kg
16	2,2',3,3',4,4',5'-Heptachlorobiphenyl PCB170		1 µg/kg
17	2,2',3,4,4',5,5'-Heptachlorobiphenyl PCB180		1 µg/kg
18	2,2',3,4',5,5',6-Heptachlorobiphenyl PCB187		1 µg/kg

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
 Laboratory Manager

TEST REPORT

Report No.:	32062C
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12
Page:	2 of 2

Test Results:

Sample No.	32062-1	32062-2	32062-3
Sample ID	LCW/VC1	LCW/VC1 Duplicate	LCW/VC2
Sampling Location	843311.8	843311.8	843321.1
	843321.1	843321.1	845196.5
Sampling Depth	Grab	Grab	Grab
Sampling Date	7/9/2019	7/9/2019	7/9/2019
2,4'-Dichlorobiphenyl, µg/kg	<1	<1	<1
2,2',5'-Trichlorobiphenyl, µg/kg	<1	<1	<1
2,4,4'-Trichlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,2',5,5'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4'-Tetrachlorobiphenyl, µg/kg	<1	<1	<1
2,2',4,5,5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,3,3',4,4'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4',5'-Pentachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,3',4,4'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4,4',5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
3,3',4,4',5,5'-Hexachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,3',4,4',5-Heptachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4,4',5,5'-Heptachlorobiphenyl, µg/kg	<1	<1	<1
2,2',3,4',5,5',6-Heptachlorobiphenyl, µg/kg	<1	<1	<1

Remarks: 1) <= less than

2) Results reported as dry weight basis

*****END OF REPORT*****

TEST REPORT**APPLICANT:** Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong**ATTN:** Mr. Toby Lung

Report No.:	32062D
Date of Issue:	2019-09-12
Date Received:	2019-09-07
Date Tested:	2019-09-07
Date Completed:	2019-09-12

Page: 1 of 1

Sample Description : 3 samples as received by customer said to be sediment and were prepared for 3 interstitial water samples

Laboratory No. : 32062D

Project No. : E19028

Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at Lai Chi Wo & Tung Ping Chau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Tributyltin (TBT)	In-house method SOP065 (GC/FPD)	0.010 µg/L

Test Results:

Sample No.	32062-1	32062-2	32062-3
Sample ID	LCW/VC1	LCW/VC1 Duplicate	LCW/VC2
Sampling Location	843311.8 843321.1	843311.8 843321.1	843321.1 845196.5
Sampling Depth	Grab	Grab	Grab
Sampling Date	7/9/2019	7/9/2019	7/9/2019
Tributyltin, µg/L	<0.01	<0.01	<0.01

Remarks: 1) <= less than

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Approved Signatory: 
Tse Chun Bun, Moses
Laboratory Manager

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26
	2019-08-27,
	2019-08-28
	2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08

ATTN: Mr. Toby Lung

Page: 1 of 9

Sample Description : 4 samples as received by customer said to be sediment
Laboratory No. : 32117
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at LaiChiWo & TungPingChau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	20-day Burrowing Polychaete Toxicity Test - <i>Neanthes arenaceodeniata</i>	PSEP 1995 (Test Method) ETWB TCW No. 34/2002 (Assessment criteria)	N/A

Remarks: 1) Uncertainty is calculated as 2 S.D.
2) N/A = Not Applicable

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**



EVA WONG
Chief Biologist

TEST REPORT

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26
	2019-08-27,
	2019-08-28
	2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08

Page: 2 of 9

1. Sample Information

1.1 Sample Information, Receiving and Storage Conditions

Sample Description:	4 samples as received by customer said to be sediment
Sample No. & Sample ID:	32117-1) CS1 32117-2) CS2 32117-3) Reference Sediment from Port Shelter 32117-4) Control Sample
Temperature of sample(s) at receipt:	2-6°C
Sampling container:	Heavy duty plastic bags
Quantity of each sample at receipt:	6L
Sample storage condition after receipt:	Store in dark at 4 ± 2°C until testing

1.2 Summary of Sampling Date and Sample Receive Date

Sample ID	Sample No.	Sampling Date	Sample Received Date
CS1	32117-1	2019-08-26	2019-08-26
CS2	32117-2	2019-08-27&2019-08-28	2019-08-27&2019-08-28
Reference Sediment from Port Shelter	32117-3	2019-09-20	2019-09-20
Control Sample	32117-4	2019-09-20	2019-09-20

1.3 Test Sediment Physical and Chemical Measurements

Sample ID	Sample No.	TOC (mg/kg)	Grain size distribution (<63µm, %)	water content (%)	Interstitial total ammonia (mg/L)	Interstitial sulphide (mg/L)	Interstitial salinity (ppt)
CS1	32117-1	6,100	66.1	31	3.0	<0.1	32
CS2	32117-2	15,000	47.2	24	1.8	<0.1	31
Reference Sediment from Port Shelter	32117-3	16,000	59.9	47	2.9	<0.1	32
Control Sample	32117-4	30,000	93.8	64	2.6	<0.1	29

Remark: 1) < = less than

TEST REPORT

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26
	2019-08-27,
	2019-08-28
	2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08
Page:	3 of 9

2. Test Method

This 20-day toxicity test on sediment with *Neanthes arenaceodentata* was conducted using the PSEP method (1995) "Recommended Guidelines for Conducting Laboratory Bioassays on Puget Sound Sediments". *Neanthes arenaceodentata* was exposed to the test sediment overlaid with seawater for a 20-day test period. The endpoints were survival, total biomass, average individual biomass and average individual growth rate. Individual polychaete growth rate followed DMMP/SMS 1996, *Neanthes* 20-day Growth Bioassay – Further Clarification on Negative Control Growth Standard, Initial Size and Feeding Protocol. And control limit of overlying water followed Kerdall, D. and Barton, J. (2004), Ammonia and Sulfide Guidance Relative to *Neanthes* Growth Bioassay, DMMP Clarification Paper.

2.1 Summary of 20-Day Burrowing Polychaete Sediment Toxicity Test Particulars

Type of Test	1/3 Water Change Every 3 Days
Test Start and End Date (Time)	Start: 2019-10-11 12:00 End: 2019-10-31 12:00
Duration	20 days
Species	<i>Neanthes arenaceodentata</i>
Test Organism Source	Purchased from Aquatic Toxicology Support from USA, mortality during shipping was 0%
Size/Age	2-3 weeks post emergence
Test Organism Receive Date	2019-10-08
Organism Acclimation	Polychaetes were acclimated in glass container (3L in vol.) at 20±1°C with 28 ± 2 ppt aerated water of 16L:8D photoperiod Temperature and salinity adjusted to testing condition at <3°C and <5 ppt per day respectively Overlying seawater renewed Water quality (temperature, pH, salinity and dissolved oxygen) measured daily Feeding 8mg powdered TetraMarin/ polychaete every second day Mortality recorded daily, mortality is 0% upon receive and 0% during acclimation
Organism Mortality during Acclimation (%)	0%
Mean Initial Dry Weight	0.701 mg/worm
Control Seawater	Quality Assured Seawater Purchase from Kwun Tong Wholesale Fish Market Adjusted to 28 ± 2 ppt, filter through a 0.45µm filter
Reference Sediment	32117-3(Reference sediment) was collected from Port Shelter on 2019-09-20. Kept in dark at 4 ± 2°C till testing.
Negative Control Sediment	Sediment collected from Ngau Mei Hoi on 2019-09-20. Kept in dark at 4 ± 2°C till testing.
Test Sample	Kept in dark at 4 ± 2°C till testing. Test started within 8 weeks.
Test Temperature	20±1°C

TEST REPORT

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26
	2019-08-27,
	2019-08-28
	2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08
Page:	4 of 9

2.2 Summary of 20-Day Burrowing Polychaete Sediment Toxicity Test Particulars (cont.)

Test salinity	28 ± 2 ppt
Light Cycle	Continuous
Light quality	Wide spectrum fluorescent lights
Illuminance	500-1000 lux
Aeration	Provided using oil free air pump Control seawater before start of test: aerated overnight During test: around 100 Bubbles/min, maintaining ≥ 60% dissolved oxygen saturation
Test Chamber	1000 mL Glass Jars, 10cm inner diameter, position randomized
Volume of Sediment	175 mL
Volume of Overlying Water	775 mL
No. of Replicates	6 (5 for testing, 1 for water quality measurement)
No. of Organisms/Replicate	5
Feed Duration and Amount	40mg powdered TetraMarin/ test chamber: every 2 days
Overlying water quality monitoring	Temperature monitored daily, pH and dissolved oxygen measured every third day before water renewal, total ammonia and sulphide measured at day 0 and day 20
Endpoints	Survival, total biomass, average individual biomass, average individual growth rate
Statistical analysis	Comparisons were made according to ETWB (Appendix B; Table 2). Data reported as percentages were transformed using an arcsine square root transformation prior to statistical analysis. All data were tested for normality using the Shapiro-Wilk test and equality of variance using Levene's test. Determinations of statistical significance were based on one-tailed Student's t-tests with an alpha of 0.05. For samples failing to meet assumptions of normality, a Mann-Whitney test was conducted to determine significance. For those samples failing to meet the assumptions of normality and equality of variance, a t-test on rankits was used. Calculate using CETIS (version 1.9.3.0)
Test acceptability criterion	≤ 10% mortality during acclimation ≥90% mean survival; and ≥0.38mg/ individual/ day individual growth rate in control sediment
Test Deviation	None

TEST REPORT

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08
Page:	5 of 9

2.3 Summary of Polychaete Reference Toxicant Particulars

Type of Test	Water only test, static
Test Start and End Date (Time)	Start: 2019-10-11 12:00 End: 2019-10-15 12:00
Duration	96h
Reference Toxicant	Cadmium
Light Cycle	0L:24D
Test Chamber	1000 mL Glass Jars, 10cm inner diameter, position randomized
Volume of Overlying Water	900 mL
No. of Replicates	2
No. of Organisms/Replicate	10
Overlying Water Quality Monitoring	Temperature, pH, dissolved oxygen and salinity measured test initiation and termination
Endpoints	Survival
Statistical Analysis	96h LC50 for cadmium determined by CETIS (version 1.9.3.0)
Test Acceptability Criterion	≤ 10% mortality during acclimation ≥ 90% mean survival in control seawater
Other Test Conditions	Same as sediment toxicity test

TEST REPORT

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08
Page:	6 of 9

3. Test Results

3.1 Test Results Summary

Sample ID	Sample No.	Replicate	Survival (%)			Total Biomass (mg)			Average Individual Dry Weight (mg)			Individual Growth Rate (mg/day)		
			Result	Mean	S.D.	Result	Mean	S.D.	Result	Mean	S.D.	Result	Mean	S.D.
CS1	32117-1	1	100			54.500			10.900			0.510		
		2	100			58.500			11.700			0.550		
		3	100	100	0	74.100	60.120	8.352	14.820	12.024	1.670	0.706	0.566	0.084
		4	100			60.400			12.080			0.569		
		5	100			53.100			10.620			0.496		
CS2	32117-2	1	100			67.200			13.440			0.637		
		2	100			60.900			12.180			0.574		
		3	100	100	0	59.300	57.720	8.769	11.860	11.544	1.754	0.558	0.542	0.088
		4	100			43.400			8.680			0.399		
		5	100			57.800			11.560			0.543		
Reference Sediment from Port Shelter	32117-3	1	100			48.000			9.600			0.445		
		2	100			63.500			12.700			0.600		
		3	100	100	0	60.100	63.300	10.543	12.020	12.660	2.109	0.566	0.598	0.105
		4	100			68.400			13.680			0.649		
		5	100			76.500			15.300			0.730		
Control Sample	32117-4	1	100			71.200			14.240			0.677		
		2	100			61.600			12.320			0.581		
		3	100	100	0	64.600	59.600	9.242	12.920	11.920	1.848	0.611	0.561	0.092
		4	100			48.700			9.740			0.452		
		5	100			51.900			10.380			0.484		

TEST REPORT

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08

Page: 7 of 9

3.2 Test Result Summary and Interpretation of Polychaete Sediment Toxicity Test

Sample ID	Sample No.	Individual Dry Weight (mg)					Pass /Fail ¹
		Replicate results	Mean	SD	Mean to Reference Sediment (%)	Significant Different (p<0.05) from Reference Sediment	
CS1	32117-1	10.900	12.024	1.670	95.0	No	Pass
		11.700					
		14.820					
		12.080					
		10.620					
CS2	32117-2	13.440	11.544	1.754	91.2	No	Pass
		12.180					
		11.860					
		8.680					
		11.560					
Reference Sediment from Port Shelter	32117-3	9.600	12.660	2.109	--	--	--
		12.700					
		12.020					
		13.680					
		15.300					
Control Sample	32117-4	14.240	11.920	1.848	--	--	--
		12.320					
		12.920					
		9.740					
		10.380					

Remark: 1) Criteria for failure is significant different in mean dry weight and mean dry weight less than 90% of reference sediment (ETWB TCW No. 34/2002). Technical Circular (Works) No. 34/2002 Management of Dredged/Excavated Sediment, Environment, Transport and Works Bureau

TEST REPORT

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08

Page: 8 of 9

4. QC Records

4.1 Polychaete Sediment and Reference Toxicant: Test Validity Criteria (Test Organism Performance)

Parameters		Results	Control Limit
20 Day Sediment Toxicity Test	Mortality during acclimation (%)	0	≤ 10%
	Initial Biomass (mg)	0.701	0.5-1 mg
	Negative Control Survival (%)	100	Average ≥ 80%
	Negative Control Growth rate (mg/day)	0.561	≥ 0.38mg/day
Reference Toxicant Test	Mortality during acclimation (%)	0	≤ 10%
	Initial Biomass (mg)	0.701	0.5-1.0 mg
	Negative Control Survival (%)	100	Average ≥ 90%
	96-h LC50 (mg/L)	11.4	9.6-13.4mg/L
	Geomean of Historic LC50 (mg/L) (n = 20)	11.4	N/A
95% Confidence Interval (mg/L)		10.1-12.4	N/A

Remark: 1) < = less than, > = more than, N/A = Not Applicable

TEST REPORT

Report No.:	32117
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-11
Date Completed:	2019-11-08

Page: 9 of 9

4.2 Polychaete Sediment Test Validity Criteria (Overlying Water Quality)

Sample ID	Sample No.	Salinity (ppt)		Dissolved Oxygen(mg/L)		pH		Temperature (°C)		Total Ammonia (mg/L)		Sulphide (mg/L)	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Day 0	Day 20	Day 0	Day 20
CS1	32117-1	29	28	7.0	6.7	8.3	8.0	21	20	0.22	0.22	<0.1	<0.1
CS2	32117-2	28	28	7.0	6.7	8.3	8.0			0.13	0.19	<0.1	<0.1
Reference Sediment from Port Shelter	32117-3	29	28	7.1	6.8	8.3	8.0			0.27	0.09	<0.1	<0.1
Control Sample	32117-4	28	28	6.9	6.7	8.4	8.1			0.14	0.09	<0.1	<0.1
Control Limit	26-30 ppt		≥4.5 mg/L (Equivalent to 60% Saturation at 20°C)		N/A		19.0-21.0		N/A		N/A		
Threshold of Concern	N/A		N/A		N/A		N/A		No effects: ≤10 Minor effects: >20 Major effects: >40		No effects: ≤3.4 Minor effects: ≥5.5 Major effects: ≥15		

Remark: 1) < = less than, > = more than, N/A = Not Applicable

4.3 Polychaete Sediment Test Interstitial Water Monitoring

Sample ID	Sample No.	Salinity (ppt)		pH		Total Ammonia (mg/L)		Sulphide (mg/L)		
		Day 0	Day 20	Day 0	Day 20	Day 0	Day 20	Day 0	Day 20	
CS1	32117-1	28	29	7.4	7.6	0.75	0.22	<0.1	<0.1	
CS2	32117-2	28	28	7.5	7.7	0.83	0.26	<0.1	<0.1	
Reference Sediment from Port Shelter	32117-3	28	29	7.6	7.7	3.8	0.11	<0.1	<0.1	
Control Sample	32117-4	28	28	7.4	7.7	0.12	0.08	<0.1	<0.1	
Control Limit	N/A		N/A		N/A		N/A		N/A	

Remark: 1) < = less than, > = more than, N/A = Not Applicable

*****END OF REPORT*****

This report may not be reproduced, except in full, without prior written approval from WELLAB LIMITED and the results relate only to the items calibrated or tested. ONLY the laboratory's certified true copy is valid.

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30

Page: 1 of 10

ATTN: Mr. Toby Lung

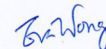
Sample Description : 4 samples as received by customer said to be sediment
Laboratory No. : 32117
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at LaiChiWo & TungPingChau

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	10-day Burrowing Amphipod Toxicity Test - <i>Leptocheirus plumuosus</i>	EPA/600/R-94/025 1994 (Test Method) ETWB TCW No. 34/2002 (Assessment Criteria)	N/A

Remarks: 1) Uncertainty is calculated as 2SD.
2) N/A = Not Applicable

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**


EVA WONG
Chief Biologist

This report may not be reproduced, except in full, without prior written approval from WELLAB LIMITED and the results relate only to the items calibrated or tested. ONLY the laboratory's certified true copy is valid.

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	2 of 10

1. Sample Information

1.1 Sample Information, Receiving and Storage Conditions

Sample Description:	4 samples as received by customer said to be sediment
Sample No. & Sample ID:	32117-1) CS1 32117-2) CS2 32117-3) Reference Sediment from Port Shelter 32117-4) Control Sample
Temperature of sample(s) at receipt:	2-6°C
Sampling container:	Heavy duty plastic bags
Quantity of each sample at receipt:	6L
Sample storage condition after receipt:	Store in dark at 4 ± 2°C until testing

1.2 Summary of Sampling Date and Sample Receive Date

Sample ID	Sample No.	Sampling Date	Sample Received Date
CS1	32117-1	2019-08-26	2019-08-26
CS2	32117-2	2019-08-27&2019-08-28	2019-08-27&2019-08-28
Reference Sediment from Port Shelter	32117-3	2019-09-20	2019-09-20
Control Sample	32117-4	2019-09-20	2019-09-20

1.3 Test Sediment Physical and Chemical Measurements

Sample ID	Sample No.	TOC (mg/kg)	Grain size distribution (<63µm, %)	water content (%)	Interstitial total ammonia (mg/L)	Interstitial sulphide (mg/L)	Interstitial salinity (ppt)
CS1	32117-1	6,100	66.1	31	3.0	<0.1	32
CS2	32117-2	15,000	47.2	24	1.8	<0.1	31
Reference Sediment from Port Shelter	32117-3	16,000	59.9	47	2.9	<0.1	32
Control Sample	32117-4	30,000	93.8	64	2.6	<0.1	29

Remark: 1) <= less than

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	3 of 10

2. Test Method

This 10-day toxicity test with *Leptocheirus plumulosus* was conducted using the EPA/600/R-94/025 1994. "Method for assessing the toxicity of sediment – associated contaminants with estuarine and marine amphipods". *Leptocheirus plumulosus* was exposed to the test sediment overlaid with seawater for a 10-day test period. The endpoints were survival.

2.1 Summary of 10-Day Burrowing Amphipod Sediment Toxicity Test Particulars

Type of Test	Sediment toxicity test, static, non renewal
Test start and end date and time	Start: 2019-10-14 12:00 End: 2019-10-24 12:00
Duration	10 days
Species	<i>Leptocheirus plumulosus</i>
Source	Purchased from Aquatic BioSystems from USA, Mortality During Shipping was 0.2 %
Size/Age	2-4mm, Juvenile, no mature males and females
Test Organism Receive date	2019-10-11
Organism Acclimation	Amphipod were acclimated in glass container (3L in vol.) at 25±1°C with 20 ± 1 ppt aerated water of 16L:8D photoperiod Temperature and salinity adjusted to testing condition at <3°C and <5 ppt per day respectively Overlying seawater renewed, feeding powdered TetraMarin every second day Water quality (temperature, pH, salinity and dissolved oxygen) measured daily Mortality recorded daily, mortality is 0.2% upon receive and prior to testing Maximum of 0.1% of the amphipod emerged prior to testing. Culture was sieved through mesh size sequence:0.71mm, 0.5mm and 0.25mm on the day of test initiation, amphipod retained on 0.5mm screen were used.
Control Seawater	Quality Assured Seawater purchased from Kwun Tong Wholesale Fish Market. Adjusted to 20 ± 1 ppt. Filtered through a 0.45µm filter.
Reference Sediment	32117-3 (Reference sediment) was collected from Port shelter on 2019-09-20. Kept in dark at 4 ± 2°C till testing.
Negative Control Sediment	Sediment collected from Ngau Mei Hoi on 2019-09-20. Kept in dark at 4 ± 2°C till testing.
Test, Control and Reference Sample	Kept in dark at 4 ± 2°C till testing. Test started within 8 weeks.
Test Temperature	25±1°C

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	4 of 10

2.2 Summary of 10-Day Burrowing amphipod Sediment Toxicity Test Particulars (cont.)

Test Salinity	20 ±1 ppt
Light Cycle	Continuous
Light Quality	Wide spectrum fluorescent lights
Illuminance	500-1000 lux
Aeration	Provided using oil free air pump Control seawater before start of test: aerated overnight During test: around 100 Bubbles/min, maintaining ≥ 60% dissolved oxygen saturation
Test Chamber	1000 mL Glass Jars, 10cm inner diameter, position randomized
Volume of Sediment	175 mL
Volume of Overlying Water	800 mL
No. of Replicates	6 (5 for testing, 1 for water quality measurement)
No. of Organisms/Replicate	20
Feed Regime	None
Overlying Water Quality Monitoring	Temperature monitored daily, pH and dissolved oxygen measured every third day before water renewal, total ammonia and sulphide measured at day 0 and day 10
Endpoints	Emergence, Survival and reburial
Statistical Analysis	Comparisons were made according to ETWB (Appendix B; Table 2). Data reported as percentages were transformed using an arcsine square root transformation prior to statistical analysis. All data were tested for normality using the Shapiro-Wilk test and equality of variance using Levene's test. Determinations of statistical significance were based on one-tailed Student's t-tests with an alpha of 0.05. For samples failing to meet assumptions of normality, a Mann-Whitney test was conducted to determine significance. For those samples failing to meet the assumptions of normality and equality of variance, a t-test on rankits was used. Calculate using CETIS (version 1.9.3.0)
Test Acceptability Criterion	≤ 5% mortality during acclimation 48h period prior to testing ≥90% mean survival in control sediment
Test Deviation	None

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	5 of 10

2.3 Summary of Amphipod Reference Toxicant Particulars

Type of Test	Water only test, static
Test Start and End Date	Start: 2019-10-14 12:00 End: 2019-10-18 12:00
Duration	96h
Reference Toxicant	Cadmium
Light Cycle	0L:24D
Test Chamber	1000 mL Glass Jars, 10cm inner diameter, position randomized
Volume of Overlying Water	900 mL
No. of Replicates	2
No. of Organisms/Replicate	10
Overlying Water Quality Monitoring	Temperature, pH, dissolved oxygen and salinity measured test initiation and termination
Endpoints	Survival
Statistical Analysis	96h LC50 for cadmium determined by CETIS (version 1.9.3.0)
Test Acceptability Criterion	≤ 5% mortality during acclimation 48h period prior to testing ≥90% mean survival in control seawater
Other Test Conditions	Same as sediment toxicity test

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	6 of 10

3. Test Results

3.1 Amphipod Daily Emergence Record

Sample ID	Sample No.	Replicate	Test Exposure Time (Day)											
			0	1	2	3	4	5	6	7	8	9	10	
CS1	32117-1	1	0	1	8	7	10	2	7	7	8	9	0	
		2	0	5	2	7	3	9	6	5	9	3	6	
		3	0	7	10	7	5	8	5	4	3	6	7	
		4	0	4	9	10	1	1	2	8	1	3	3	
		5	0	0	8	7	1	0	3	5	0	2	0	
CS2	32117-2	1	0	4	4	7	8	3	3	5	10	1	3	
		2	0	6	10	9	3	3	6	3	3	5	5	
		3	0	3	7	5	8	10	4	8	7	5	4	
		4	0	9	4	5	2	0	2	2	3	0	4	
		5	0	10	2	7	4	5	9	3	2	6	5	
Reference Sediment from Port Shelter	32117-3	1	0	0	3	4	8	4	9	7	3	6	7	
		2	0	5	7	0	3	1	10	7	2	9	4	
		3	0	2	8	0	7	8	0	9	2	9	4	
		4	0	8	2	8	10	3	2	4	4	2	1	
		5	0	7	10	3	2	6	8	3	8	6	5	
Control Sample	32117-4	1	0	3	6	8	7	3	7	1	1	6	8	
		2	0	1	2	3	1	9	1	5	2	7	3	
		3	0	6	6	0	3	7	0	3	6	1	2	
		4	0	3	8	5	4	6	4	5	2	2	2	
		5	0	8	0	2	1	1	8	9	4	8	8	

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	7 of 10

3.2 Test Results Summary

Sample ID	Sample No.	Replicate	Total No. of Living Amphipod			Survival (%)			Mortality (%)			Survival & Reburial (%)		
			Result	Mean	S.D.	Result	Mean	S.D.	Result	Mean	S.D.	Result	Mean	S.D.
CS1	32117-1	1	18	17.8	1.3	90.0	89.0	6.5	10.0	11.0	6.5	90.0	89.0	6.5
		2	16			80.0			20.0			80.0		
		3	17			85.0			15.0			85.0		
		4	19			95.0			5.0			95.0		
		5	19			95.0			5.0			95.0		
CS2	32117-2	1	20	19.4	0.9	100.0	97.0	4.5	0.0	3.0	4.5	100.0	97.0	4.5
		2	19			95.0			5.0			95.0		
		3	18			90.0			10.0			90.0		
		4	20			100.0			0.0			100.0		
		5	20			100.0			0.0			100.0		
Reference Sediment from Port Shelter	32117-3	1	19	18.6	1.1	95.0	93.0	5.7	5.0	7.0	5.7	95.0	93.0	5.7
		2	18			90.0			10.0			90.0		
		3	17			85.0			15.0			85.0		
		4	19			95.0			5.0			95.0		
		5	20			100.0			0.0			100.0		
Control Sample	32117-4	1	17	18.8	1.3	85.0	94.0	6.5	15.0	6.0	6.5	85.0	94.0	6.5
		2	20			100.0			0.0			100.0		
		3	20			100.0			0.0			100.0		
		4	19			95.0			5.0			95.0		
		5	18			90.0			10.0			90.0		

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	8 of 10

3.3 Test Result Summary and Interpretation of Amphipod Sediment Toxicity Test

Sample ID	Sample No.	Survival (%)					Significant Different (p<0.05) from Reference Sediment	Pass /Fail ¹
		Replicate results	Mean	SD	Mean to Reference Sediment (%)			
CS1	32117-1	90.0	89.0	6.5	95.7	No	Pass	
		80.0						
		85.0						
		95.0						
		95.0						
CS2	32117-2	100.0	97.0	4.5	104.3	No	Pass	
		95.0						
		90.0						
		100.0						
		100.0						
Reference Sediment from Port Shelter	32117-3	95.0	93.0	5.7	--	--	--	
		90.0						
		85.0						
		95.0						
		100.0						
Control Sample	32117-4	85.0	94.0	6.5	--	--	--	
		100.0						
		100.0						
		95.0						
		90.0						

Remark: 1) Criteria for failure is significant difference in mean survival and mean survival less than 80% of reference sediment (ETWB TC/34/2002). Technical Circular (Works) No. 34/2002 Management of Dredged/Excavated Sediment, Environment, Transport and Works Bureau

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	9 of 10

1. QC Records

4.1 Amphipod Sediment and Reference Toxicant Test Results and Validity Criteria

	Parameters	Results	Control Limit
10 Day Sediment Toxicity Test	Mortality upon arrival	0.2%	≤ 20%
	Mortality during acclimation prior to testing	0.2%	≤ 5%
	Emerge during acclimation prior to testing	0.1%	≤ 5%
	Negative control survival	94	Average ≥ 90%
Reference Toxicant Test	Mortality during acclimation prior to testing	0.2%	≤ 5%
	Negative control survival	94	Average ≥ 90%
	96-h LC50 (mg/L)	0.5	0.44-0.59mg/L
	Geomean of Historic LC50 (mg/L) (n = 21)	0.5	N/A
	95% Confidence Interval	0.46-0.54	N/A

Remark: 1) <= less than, >= more than, N/A = Not Applicable

TEST REPORT

Report No.:	32117A
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-14
Date Completed:	2019-10-30
Page:	10 of 10

4.2 Amphipod Sediment Test Validity Criteria (Overlying Water Quality)

Sample ID	Sample No.	Salinity (ppt)		Dissolved Oxygen (mg/L)		pH		Temperature (°C)		Total Ammonia (mg/L)		Sulphide (mg/L)	
		Max.	Min	Max.	Min	Max.	Min	Max.	Min	Day 0	Day 10	Day 0	Day 10
CS1	32117-1	20	19	6.9	6.6	8.2	7.6	26	25	0.07	0.12	<0.1	<0.1
CS2	32117-2	20	19	6.9	6.5	8.2	7.7			0.06	0.10	<0.1	<0.1
Reference Sediment from Port Shelter	32117-3	20	19	6.9	6.5	8.0	7.6			2.1	0.06	<0.1	<0.1
Control Sample	32117-4	20	19	6.9	6.5	8.3	7.9			0.40	0.06	<0.1	<0.1
Control Limit		19-21 ppt		≥4.4 mg/L (Equivalent to 60% Saturation at 25°C)		N/A		24.0-26.0		N/A		N/A	

Remark: 1) <= less than, >= more than, N/A = Not Applicable

4.3 Amphipod Sediment Test Interstitial Water Monitoring

Sample ID	Sample No.	Salinity (ppt)		pH		Total Ammonia (mg/L)		Sulphide (mg/L)	
		Day 0	Day 10	Day 0	Day 10	Day 0	Day 10	Day 0	Day 10
CS1	32117-1	20	21	7.5	7.6	1.2	0.32	<0.1	<0.1
CS2	32117-2	20	21	7.4	7.6	0.32	0.19	<0.1	<0.1
Reference Sediment from Port Shelter	32117-3	20	21	7.3	7.7	0.97	0.11	<0.1	<0.1
Control Sample	32117-4	19	20	7.6	7.7	0.10	0.09	<0.1	<0.1
Control Limit		N/A		N/A		N/A		N/A	

Remark: 1) <= less than, >= more than, N/A = Not Applicable

*****END OF REPORT*****

TEST REPORT

APPLICANT: Arup
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	1 of 11

ATTN: Mr. Toby Lung

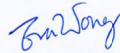
Sample Description : 4 samples as received by customer said to be sediment
Laboratory No. : 32117
Project No. : E19028
Project Name : E19028 - Arup CEDD_PIU-01_2019 Study Pier Improvement at LaiChiWo & TungPingChau

Test Requested & Methodology:

Item	Parameter	Ref. Method	Limit of Reporting
1	48h Larvae (Bivalve) Toxicity Test - <i>Crassostrea gigas</i>	PSEP 1995 (Test Method) ETWB TCW No. 34/2002 (Assessment Criteria)	N/A

Remarks: 1) Uncertainty is calculated as 2S.D.
2) N/A = Not Applicable

PREPARED AND CHECKED BY:
For and On Behalf of WELLAB Ltd.


EVA WONG
Chief Biologist

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	2 of 11

1. Sample Information

1.1 Sample Information, Receiving and Storage Conditions

Sample Description:	4 samples as received by customer said to be sediment
Sample No. & Sample ID:	32117-1) CS1 32117-2) CS2 32117-3) Reference Sediment from Port Shelter 32117-4) Control Sample
Temperature of sample(s) at receipt:	2-6°C
Sampling container:	Heavy duty plastic bags
Quantity of each sample at receipt:	6L
Sample storage condition after receipt:	Store in dark at 4 ± 2°C until testing

1.2 Summary of Sampling Date and Sample Receive Date

Sample ID	Sample No.	Sampling Date	Sample Received Date
CS1	32117-1	2019-08-26	2019-08-26
CS2	32117-2	2019-08-27&2019-08-28	2019-08-27&2019-08-28
Reference Sediment from Port Shelter	32117-3	2019-09-20	2019-09-20
Control Sample	32117-4	2019-09-20	2019-09-20

1.3 Test Sediment Physical and Chemical Measurements

Sample ID	Sample No.	TOC (mg/kg)	Grain size distribution (<63µm, %)	water content (%)	Interstitial total ammonia (mg/L)	Interstitial sulphide (mg/L)	Intersitial salinity (ppt)
CS1	32117-1	6,100	66.1	31	3.0	<0.1	32
CS2	32117-2	15,000	47.2	24	1.8	<0.1	31
Reference Sediment from Port Shelter	32117-3	16,000	59.9	47	2.9	<0.1	32
Control Sample	32117-4	30,000	93.8	64	2.6	<0.1	29

Remark: 1) <= less than

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	3 of 11

2. Test Method

This bivalve larvae test with *Crassostrea gigas* was conducted using the PSEP method (1995) "Recommended Guidelines for Conducting Laboratory Bioassays on Puget Sound Sediments". Bivalve adults were induced to spawn and gametes are fertilized. After fertilization the embryos were immediately exposed to the test sediment overlaid with seawater and allowed to develop for 48-60 hours. The normality survival of larvae was determined as endpoint.

2.1 Summary of Bivalve Larvae Test Particulars

Type of Test	Static and Non-renewal
Test Start and End Date (Time)	Start : 2019-10-18 18:00 End: 2019-10-20 18:00
Duration	48h
Species	<i>Crassostrea gigas</i>
Source	Purchased from Guernsey Sea Farms from UK, Mortality During Shipping was 0%
Test Organism Acclimation	Organism were used on the 5 th day of arrival Mortality recorded daily, mortality of broodstock is 0% upon receive and 0% before use for test
Size/Age	<2h post fertilization
Control Seawater	Quality Assured Seawater purchased from Kwun Tong Wholesale Fish Market. Adjusted to 28 ± 1 ppt. Filtered through a 0.45µm filter.
Reference Sediment	Sediment Sample collected from Ngau Mei Hoi on 2019-09-20. Sample No. is 32117-3. Kept in dark at 4 ± 2°C till testing.
Test Sample	Kept in dark at 4 ± 2°C till testing. Test started within 8 weeks.
Test Temperature	20±1°C
Test Salinity	28 ± 1 ppt
Light Cycle	14h Light : 10h Dark Cycle
Light Quality	Wide spectrum fluorescent lights
Illuminance	500-1000 lux
Aeration	Provided using oil free air pump Control seawater before start of test: aerated overnight During test: around 100 Bubbles/min, maintaining ≥ 60% dissolved oxygen saturation
Test Chamber	1000mL Glass Jars
Volume of Sediment	18±0.5g

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	4 of 11

2.2 Summary of 48h Bivalve Sediment Toxicity Test Particulars (cont'd.)

Volume of Overlying Water	900mL
No. of Replicates	6 (5 for testing, 1 for water quality measurement)
Negative Control	Control seawater without sediment
Spawning	Artificial fertilization of striped gametes
Fertilization Rate	98.7%
Initial Fertilized Egg stocking/ Test Chamber	28998
Vol. of Fertilized Egg Suspension Added	2mL
Test Bivalve Age	2 or 4 Cell Stage Embryos, <2h Post Fertilization
Feed Regime	None
Overlying Water Quality Monitoring	Temperature, pH, salinity and dissolved oxygen were recorded daily
Endpoints	Survival, normality, normality survival
Statistical Analysis	Comparisons were made according to ETWB (Appendix B; Table 2). Data reported as percentages were transformed using an arcsine square root transformation prior to statistical analysis. All data were tested for normality using the Shapiro-Wilk test and equality of variance using Levene's test. Determinations of statistical significance were based on one-tailed Student's t-tests with an alpha of 0.05. For samples failing to meet assumptions of normality, a Mann-Whitney test was conducted to determine significance. For those samples failing to meet the assumptions of normality and equality of variance, a t-test on rankits was used. Calculate using CETIS (version 1.9.3.0)
Test Acceptability Criterion	≤ 10% mortality of broodstock before use for testing ≥ 70% mean normal survival in seawater control

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	5 of 11

2.3 Summary of Bivalve Reference Toxicant Particulars

Type of Test	Water only test, static
Test Start and End Date (Time)	Start : 2019-10-18 18:00 End: 2019-10-20 18:00
Duration	48h
Reference Toxicant	Cadmium
No. of Replicates	6 (5 for testing, 1 for water quality measurement)
Endpoints	Normality survival
Statistical Analysis	96h EC50 for cadmium determined by CETIS (version 1.9.3.0)
Test Acceptability Criterion	≤ 10% mortality of broodstock before use for testing ≥ 70% mean survival normality in control seawater
Other Test Conditions	Same as sediment toxicity test

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	6 of 11

3. Test Results

3.1 Test Records (No. of Surviving Larvae)

Sample ID	Sample No.	Replicate	No. of Surviving Normal Larvae			No. of Total Surviving Larvae		
			Count	Mean ¹⁾	S.D. ²⁾	Count	Mean ¹⁾	S.D. ²⁾
Seawater Control	--	1	27,180	27,684	363	28,170	28,566	296
		2	27,990			28,710		
		3	27,630			28,350		
		4	28,080			28,890		
		5	27,540			28,710		
CS1	32117-1	1	23,760	23,778	796	24,660	25,074	811
		2	24,120			25,560		
		3	22,500			23,850		
		4	24,660			25,830		
		5	23,850			25,470		
CS2	32117-2	1	24,570	26,028	830	26,010	27,612	932
		2	26,100			27,810		
		3	26,910			28,350		
		4	26,460			28,170		
		5	26,100			27,720		
Reference Sediment from Port Shelter	32117-3	1	26,100	25,380	706	27,000	26,442	595
		2	25,380			26,370		
		3	25,560			26,550		
		4	24,210			25,470		
		5	25,650			26,820		
Control Sample	32117-4	1	24,750	24,786	991	25,560	25,686	1072
		2	26,190			27,270		
		3	24,930			25,920		
		4	23,400			24,300		
		5	24,660			25,380		

Remarks: 1) Average of the 5 replicate results of the same test sample
2) Standard deviation of the 5 replicate results of the same test sample

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08

Page: 7 of 11

3.2 Test Results - % of Normality, Survival and Normality Survival

Sample ID	Sample No.	Replicate	Normality (%)			Survival (%)			Normality Survival (%)		
			Result ¹⁾	Mean ⁴⁾	S.D. ⁵⁾	Result ²⁾	Mean ⁴⁾	S.D. ⁵⁾	Result ³⁾	Mean ⁴⁾	S.D. ⁵⁾
Seawater Control	--	1	N/A	N/A	N/A	N/A	N/A	N/A	93.7	95.5	1.3
		2	N/A			N/A			96.5		
		3	N/A			N/A			95.3		
		4	N/A			N/A			96.8		
		5	N/A			N/A			95.0		
CS1	32117-1	1	96.4	94.8	1.1	86.3	87.8	2.8	81.9	82.0	2.7
		2	94.4			89.5			83.2		
		3	94.3			83.5			77.6		
		4	95.5			90.4			85.0		
		5	93.6			89.2			82.2		
CS2	32117-2	1	94.5	94.3	0.4	91.1	96.7	3.3	84.7	89.8	3.0
		2	93.9			97.4			90.0		
		3	94.9			99.2			92.8		
		4	93.9			98.6			91.2		
		5	94.2			97.0			90.0		

Remarks: 1) Normality (%) = $\frac{\text{No. of Surviving Normal Larvae (Each Replicate of Test Sample)}}{\text{No. of Total Surviving Larvae (Each Replicate of Test Sample)}} \times 100\%$

2) Survival (%) = $\frac{\text{Total Surviving Larvae No. (Each Replicate of Test Sample)}}{\text{Mean of Total Surviving Larvae (Negative Control Sample)}} \times 100\%$

3) Survival (%) = $\frac{\text{Normality} \times \text{No. of Surviving Normal Larvae (Each Replicate of Test Sample)}}{\text{No. of Embryos Inoculated per Test Chamber}} \times 100\%$
[No. of Embryos Inoculated per Test Chamber: 28998 Embryos]

4) Average of the 5 replicate results (%) of the same test sample
5) Standard deviation of the 5 replicate results (%) of the same test sample

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	8 of 11

3.2 Test Results - % of Normality, Survival and Normality Survival

Sample ID	Sample No.	Replicate	Normality (%)			Survival (%)			Normality Survival (%)		
			Result ¹⁾	Mean ⁴⁾	S.D. ⁵⁾	Result ²⁾	Mean ⁴⁾	S.D. ⁵⁾	Result ³⁾	Mean ⁴⁾	S.D. ⁵⁾
Reference Sediment from Port	32117-3	1	96.7	96.0	0.6	94.5	92.6	2.1	90.0	87.5	2.4
		2	96.2			92.3			87.5		
		3	96.3			92.9			88.1		
		4	95.1			89.2			83.5		
		5	95.6			93.9			88.5		
Control Sample	32117-4	1	96.8	96.5	0.5	89.5	89.9	3.8	85.4	85.5	3.4
		2	96.0			95.5			90.3		
		3	96.2			90.7			86.0		
		4	96.3			85.1			80.7		
		5	97.2			88.8			85.0		

- Remarks: 1) Normality (%) = $\frac{\text{No. of Surviving Normal Larvae (Each Replicate of Test Sample)}}{\text{No. of Total Surviving Larvae (Each Replicate of Test Sample)}} \times 100\%$
- 2) Survival (%) = $\frac{\text{Total Surviving Larvae No. (Each Replicate of Test Sample)}}{\text{Mean of Total Surviving Larvae (Negative Control Sample)}} \times 100\%$
- 3) Survival (%) = $\frac{\text{Normality} \times \text{No. of Surviving Normal Larvae (Each Replicate of Test Sample)}}{\text{No. of Embryos Inoculated per Test Chamber}} \times 100\%$
[No. of Embryos Inoculated per Test Chamber: 28998 Embryos]
- 4) Average of the 5 replicate results (%) of the same test sample
- 5) Standard deviation of the 5 replicate results (%) of the same test sample

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	9 of 11

3.3 Test Result Summary and Assessment of Bivalve Sediment Toxicity Test

Sample ID	Sample No.	Normality Survival (%)					
		Replicate results	Mean	SD	Mean to Reference Sediment (%)	Significant Different (p<0.05) from Reference Sediment	Pass /Fail ¹⁾
CS1	32117-1	81.9	82.0	2.7	93.7	Yes	Pass
		83.2					
		77.6					
		85.0					
		82.2					
CS2	32117-2	84.7	89.8	3.0	102.6	No	Pass
		90.0					
		92.8					
		91.2					
		90.0					
Reference Sediment from Port	32117-3	90.0	87.5	2.4	--	--	--
		87.5					
		88.1					
		83.5					
		88.5					
Control Sample	32117-4	85.4	85.5	3.4	--	--	--
		90.3					
		86.0					
		80.7					
		85.0					

Remark: 1) Criteria for failure is significant different in mean normality survival and mean normality survival less than 80% of reference sediment (ETWB TC/34/2002). Technical Circular (Works) No. 34/2002 Management of Dredged/Excavated Sediment, Environment, Transport and Works Bureau

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	10 of 11

4. QC Records

4.1 Bivalve Sediment and Reference Toxicant Test Validity Criteria (Test Organism Performance)

	Parameters	Results	Control Limit
48h Sediment Toxicity Test	Mortality of broodstock before use for testing (%)	0	≤ 10%
	Negative (Seawater) Control Normal Larvae Survival (%)	95.5	≥ 70% mean normality survival
Reference Toxicant Test	Mortality of broodstock before use for testing (%)	0	≤ 10%
	Seawater Control Normality Survival (%)	95.5	≥ 70% mean normality survival
	96-h EC50 (mg/L)	0.49	0.35-0.53 mg/L
	Geomean of historic EC50 (mg/L) (n = 20)	0.43	N/A
	95% Confidence Interval (mg/L)	0.47-0.51	N/A

Remark: 1) <= less than, >= more than, N/A = Not Applicable

TEST REPORT

Report No.:	32117B
Date of Issue:	2019-11-08
Date Received:	2019-08-26 2019-08-27, 2019-08-28 2019-09-20
Date Tested:	2019-10-18
Date Completed:	2019-11-08
Page:	11 of 11

4.2 Bivalve Sediment Test Validity Criteria (Overlying Water Quality)

Sample ID	Sample No.	Salinity (ppt)		Dissolved Oxygen (mg/L)		pH		Temperature (°C)		Total Ammonia (mg/L)		Sulphide (mg/L)	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Initial	Termination	Initial	Termination
Seawater Control	--	28	28	6.8	6.6	8.1	8.0	21	20	0.06	0.09	<0.1	<0.1
CS1	32117-1	28	28	6.9	6.7	8.2	8.1			0.08	0.08	<0.1	<0.1
CS2	32117-2	28	28	6.9	6.6	8.1	8.0			0.08	0.12	<0.1	<0.1
Reference Sediment from Port Shelter	32117-3	28	28	6.9	6.7	8.3	8.2			0.13	0.06	<0.1	<0.1
Control Sample	32117-4	28	28	7.0	6.7	8.2	8.0			0.21	0.06	<0.1	<0.1
Control Limit		27-29 ppt		≥ 4.6 mg/L (Equivalent to 60% Saturation at 20°C)		N/A		19.0-21.0		N/A		N/A	

Remark: 1) <= less than, >= more than, N/A = Not Applicable

*****END OF REPORT*****