

Appendix N1 Cumulative Statistics on Exceedances

		Total No. recorded in this reporting month	Total No. recorded since project commencement
1-Hr TSP	Action	0	0
	Limit	0	0
24-Hr TSP	Action	0	2
	Limit	0	0
Noise	Action	0	0
	Limit	0	0
Water Quality	Action	31	33
	Limit	14	14
Impact Dolphin Monitoring	Action	0	9
	Limit	0	9

Appendix N2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This Reporting Month (August 2017)	0	0	0
Total No. received since project commencement	10	0	0

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 8 August 2017

16/F Berkshire House,
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Limit Level Exceedance

0215660_01August 2017_Bottom-depth DO_E_Station CS(Mf)5
0215660_01August 2017_Bottom-depth DO_E_Station CS(Mf)3(N)
0215660_01August 2017_Bottom-depth DO_F_Station CS(Mf)5

A total of three exceedances were recorded on 1 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07

TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

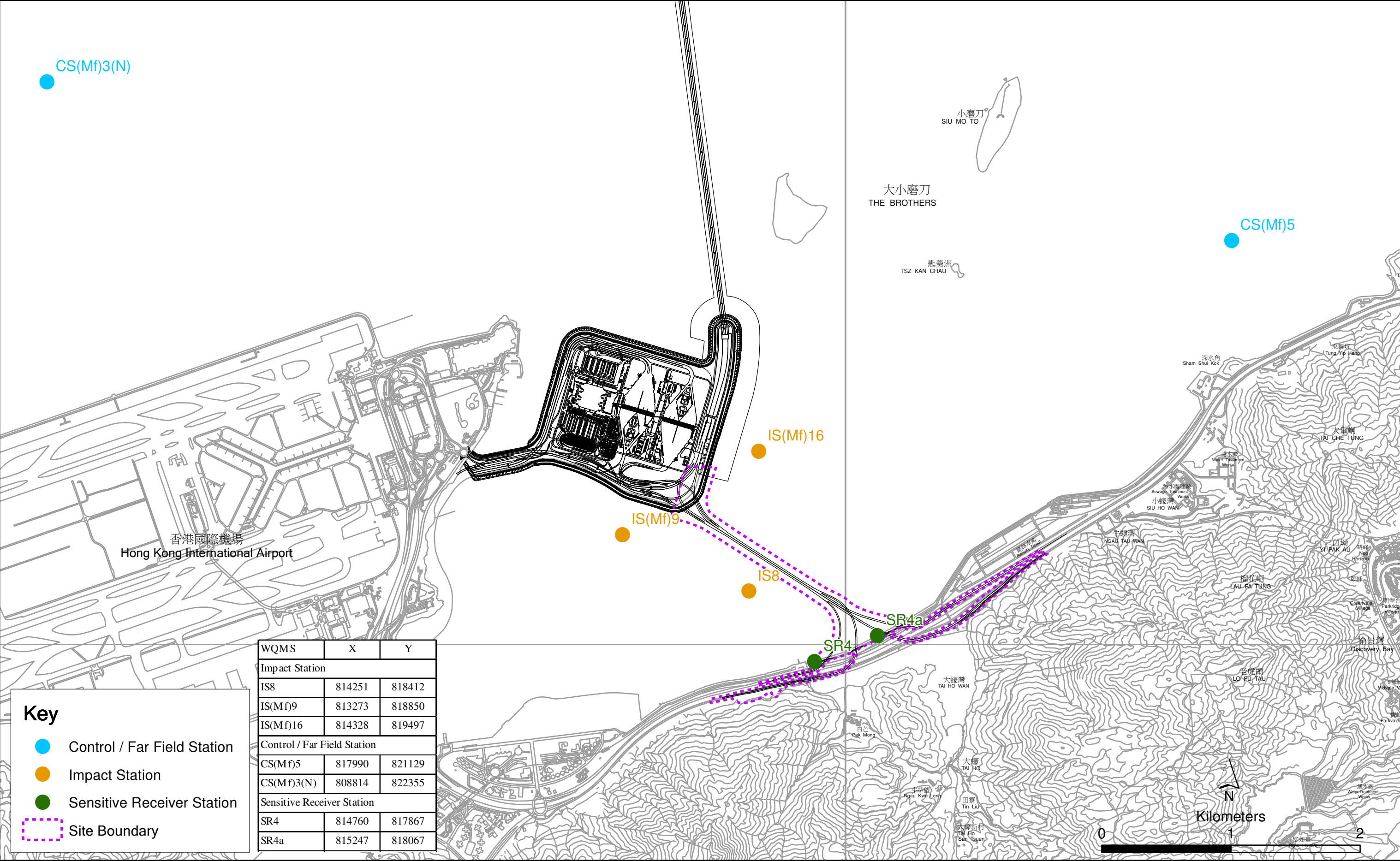
Notification of Exceedance

Log No.	<u>Limit Level Exceedance</u> 0215660_01August 2017_Bottom-depth DO_E_Station CS(Mf)5 0215660_01August 2017_Bottom-depth DO_F_Station CS(Mf)5 0215660_01August 2017_Bottom-depth DO_E_Station CS(Mf)3(N) [Total No. of Exceedances = 3]	
Date	1 August 2017 (Measured) 3 August 2017 (<i>In situ</i> results received by ERM) 10 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Bottom-depth Dissolved Oxygen (DO)	
Action Levels	Bottom-depth DO	4.7 mg/L
Limit Levels	Bottom-depth DO	3.6 mg/L
Measured Levels	Limit Level Exceedance was observed at CS(Mf)5 during mid-ebb tide (Bottom-depth DO= 3.1 mg/L). Limit Level Exceedance was observed at CS(Mf)3(N) during mid-ebb tide (Bottom-depth DO=4.3 mg/L). Limit Level Exceedance was observed at CS(Mf)5 during mid-flood tide (Bottom-depth DO=2.6 mg/L).	
Works Undertaken (at the time of monitoring event)	Major marine works undertaken under this Contract on 1 August 2017 included: Pipe piling work for the construction of underslung truss scheme	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedance of bottom-depth DO at CS(Mf)5 during mid-ebb and mid-flood tide and at CS(Mf)3(N) during mid-ebb tide are unlikely to be due to the Project, in view of the following: - Apart from the Control stations CS(Mf)5 and CS(Mf)3(N), levels of DO at all monitoring stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day. - CS(Mf)5 and CS(Mf)3(N) are distant (>3km and >5km respectively) from the marine works area under this Contract, thus the observed exceedance should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality.	
Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 1 August 2017 and locations of water quality monitoring stations are attached.	

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)5	6:54	Surface	1	29.5	7.9	16.8	6	5.7	1.7	2.9
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)5	6:54	Surface	2	29.3	7.9	16.5	5.9		2.2	2.4
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)5	6:54	Middle	1	29.1	7.9	21.2	5.4		1.7	2.7
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)5	6:54	Middle	2	29	7.9	21.5	5.4		2.3	3.3
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)5	6:54	Bottom	1	27.1	7.8	29.4	3	3.1	2.8	3.6
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)5	6:54	Bottom	2	27	7.9	29.3	3.1		3.2	3.7
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)3(N)	7:52	Surface	1	29.6	7.9	14.4	6.1	6.0	3.2	4.7
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)3(N)	7:52	Surface	2	29.5	7.9	14.1	6		3.5	4.3
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)3(N)	7:52	Middle	1	29.6	8	14.6	6		3.1	5
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)3(N)	7:52	Middle	2	29.5	7.9	14.3	6		2.8	4.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)3(N)	7:52	Bottom	1	28.7	7.8	21.8	4.2	4.3	3.4	4.6
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	CS(Mf)3(N)	7:52	Bottom	2	28.7	7.8	21.4	4.3		3.3	4.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)16	8:25	Surface	1	29.7	8	17.1	6.4	6.5	2.3	2.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)16	8:25	Surface	2	29.7	8	16.8	6.5		2.6	4.3
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)16	8:25	Middle	1	29.7	8	17.7	6.6		3.3	4.1
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)16	8:25	Middle	2	29.7	8	17.9	6.6		3.6	5.5
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)16	8:25	Bottom	1	29.7	8	20.3	7.2	7.2	8.2	6.4
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)16	8:25	Bottom	2	29.7	8.1	20.2	7.2		8.1	7.9
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	SR4a	8:37	Surface	1	29.6	7.9	18	5.9	5.9	4.5	5.3
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	SR4a	8:37	Surface	2	29.5	7.9	18	5.9		4.7	6.7
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	SR4a	8:37	Bottom	1	29.2	7.9	20.6	4.8	4.8	15.2	8
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	SR4a	8:37	Bottom	2	29.3	7.9	20.6	4.8		16	6.9
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	SR4	8:47	Surface	1	29.6	7.9	17.7	6.1	6.1	3	3.6
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	SR4	8:47	Surface	2	29.5	7.9	17.6	6.1		4.2	3.2
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	SR4	8:47	Bottom	1	29.7	8	18.6	6.2	6.2	4.8	4.5
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	SR4	8:47	Bottom	2	29.6	8	18.6	6.2		4.7	4.2
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS8	8:55	Surface	1	29.6	8	17.6	6.5	6.5	2.9	5.2
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS8	8:55	Surface	2	29.6	8	17.6	6.5		3.1	5.1
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS8	8:55	Bottom	1	29.8	8	18.4	7.3	7.3	5.2	4.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS8	8:55	Bottom	2	29.7	8	18.5	7.3		5.1	4.3
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)9	9:02	Surface	1	29.6	8	17.5	6.9	6.9	3.3	4.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)9	9:02	Surface	2	29.5	8	17.4	6.9		3.2	5.4
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)9	9:02	Bottom	1	29.6	8	17.7	6.9	7.0	4.1	5.9
TMCLKL	HY/2012/07	2017-08-01	Mid-Ebb	IS(Mf)9	9:02	Bottom	2	29.6	8	17.8	7		4.5	5.1

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS(Mf)9	13:32	Surface	1	30.1	8.4	17.2	10.8	10.8	3.3	2.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS(Mf)9	13:32	Surface	2	30.1	8.4	17.3	10.8		3.2	4.2
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS(Mf)9	13:32	Bottom	1	30.1	8.4	17.3	10.9	11.0	3.4	4
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS(Mf)9	13:32	Bottom	2	30.1	8.4	17.3	11.1		3.6	2.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS8	13:40	Surface	1	30.1	8.1	16.1	7.1	7.1	5	5.3
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS8	13:40	Surface	2	30.1	8.1	16.1	7		4.6	4.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS8	13:40	Bottom	1	29.8	8	17.7	7.1	7.1	6.7	5.7
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS8	13:40	Bottom	2	29.8	8	17.6	7.1		7	5.6
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	SR4	13:47	Surface	1	30	8.1	16.1	7.2	7.1	3.8	6.4
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	SR4	13:47	Surface	2	29.9	8.1	16.1	7		4.2	6.6
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	SR4	13:47	Bottom	1	30	8	16.9	7.1	7.2	8	6.6
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	SR4	13:47	Bottom	2	30	8	17	7.2		8.8	7.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	SR4a	13:55	Surface	1	29.9	8	16.3	6.8	6.8	7.2	4
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	SR4a	13:55	Surface	2	29.9	8	16.2	6.7		7.1	3.7
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	SR4a	13:55	Bottom	1	29.8	8	16.3	6.8	6.8	12.5	6
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	SR4a	13:55	Bottom	2	29.8	8	16.3	6.8		12.1	6.5
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS(Mf)16	14:27	Surface	1	30.2	8.2	16.6	8.3	8.3	3.4	8.9
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS(Mf)16	14:27	Surface	2	30.2	8.2	16.5	8.3		3.2	7
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS(Mf)16	14:27	Bottom	1	29.7	8.1	17.2	7	7.0	5	12.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	IS(Mf)16	14:27	Bottom	2	29.7	8.1	17.3	7		6	12.5
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)3(N)	15:02	Surface	1	30	7.9	14	6.5	6.3	4.8	5.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)3(N)	15:02	Surface	2	30	7.9	14	6.5		4.4	4.1
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)3(N)	15:02	Middle	1	29.7	7.9	14.5	6.1		4.7	6.1
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)3(N)	15:02	Middle	2	29.7	7.9	14.5	6.1		4.5	6.2
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)3(N)	15:02	Bottom	1	29.3	7.8	17.6	5	5.0	4.7	4.7
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)3(N)	15:02	Bottom	2	29.3	7.8	17.7	5		4.5	5.9
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)5	15:48	Surface	1	30.3	8.1	15.2	7.9	6.2	2.4	16.7
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)5	15:48	Surface	2	30.4	8	15.4	8		2.6	17.9
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)5	15:48	Middle	1	28.6	7.9	21.5	4.5		1.9	5.8
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)5	15:48	Middle	2	28.6	7.9	21.6	4.5		2.3	5
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)5	15:48	Bottom	1	26.3	7.8	32.3	2.6	2.6	5.5	6
TMCLKL	HY/2012/07	2017-08-01	Mid-Flood	CS(Mf)5	15:48	Bottom	2	26.3	7.8	32.2	2.6		6.3	6.8

Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level



Locations of Water Quality Monitoring Stations

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

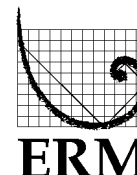
From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 9 August 2017

16/F Berkshire House,
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0215660_03August 2017_Surface and Middle-depth DO_E_Station CS(Mf)3(N)
0215660_03August 2017_Bottom-depth DO_E_Station IS(Mf)16
0215660_03August 2017_Bottom-depth DO_E_Station SR4a
0215660_03August 2017_Bottom-depth DO_F_Station CS(Mf)3(N)
0215660_03August 2017_Surface and Middle -depth DO_F_Station CS(Mf)5

Limit Level Exceedance

0215660_03August 2017_Surface and Middle-depth DO_E_Station CS(Mf)5
0215660_03August 2017_Bottom-depth DO_E_Station CS(Mf)3(N)
0215660_03August 2017_Bottom-depth DO_F_Station CS(Mf)5

A total of eight exceedances were recorded on 3 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07

TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

Notification of Exceedance

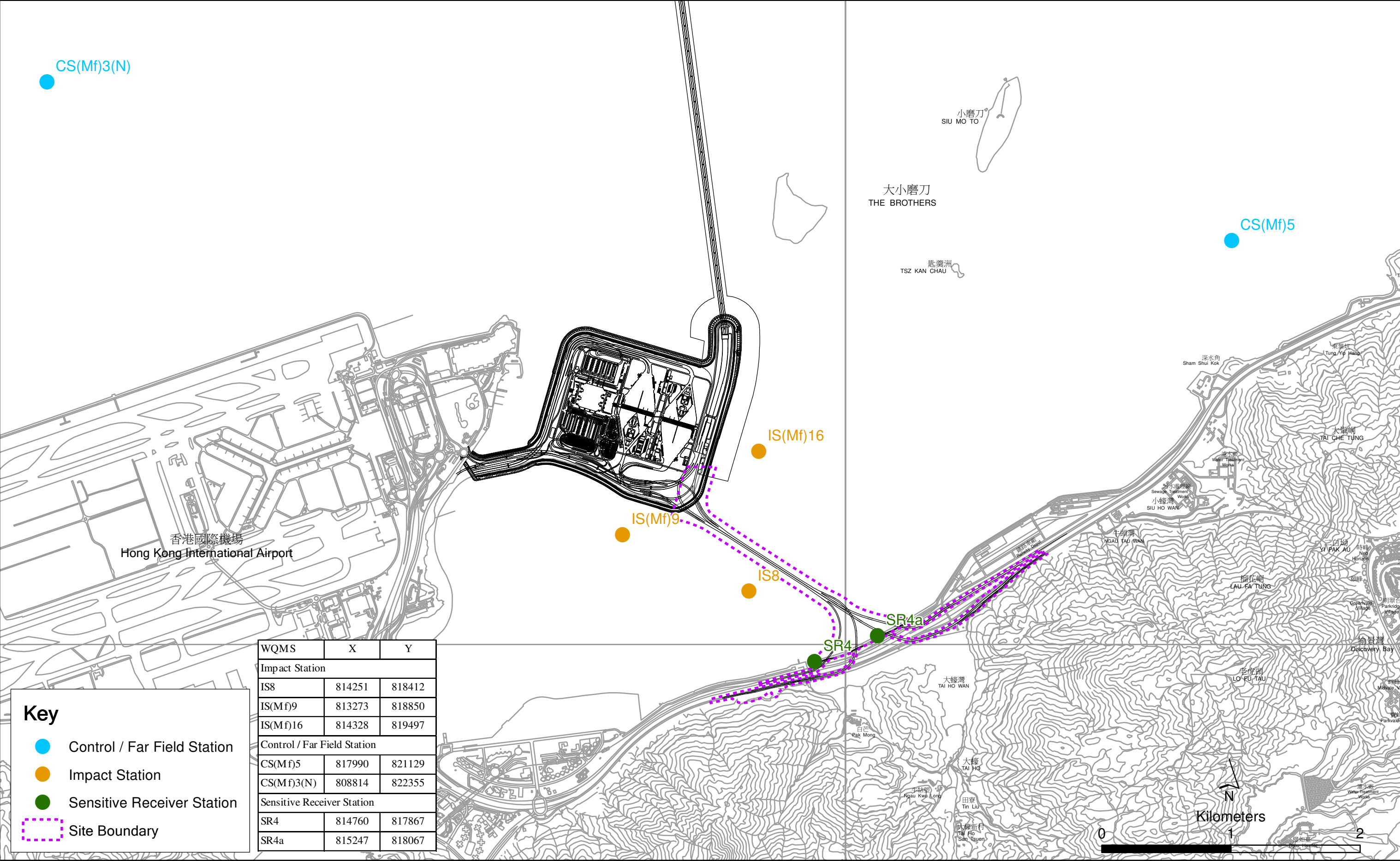
Log No.	<u>Action Level Exceedance</u> 0215660_03August 2017_Surface and Middle-depth DO_E_Station CS(Mf)3(N) 0215660_03August 2017_Bottom-depth DO_E_Station IS(Mf)16 0215660_03August 2017_Bottom-depth DO_E_Station SR4a 0215660_03August 2017_Bottom-depth DO_F_Station CS(Mf)3(N) 0215660_03August 2017_Surface and Middle -depth DO_F_Station CS(Mf)5 <u>Limit Level Exceedance</u> 0215660_03August 2017_Surface and Middle-depth DO_E_Station CS(Mf)5 0215660_03August 2017_Bottom-depth DO_E_Station CS(Mf)3(N) 0215660_03August 2017_Bottom-depth DO_F_Station CS(Mf)5 [Total No. of Exceedances = 8]	
Date	3 August 2017 (Measured) 7 August 2017 (<i>In situ</i> results received by ERM) 14 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Surface and Middle-depth DO, Bottom-depth Dissolved Oxygen (DO)	
Action Levels	Surface and Middle-depth DO	5.0 mg/L
	Bottom-depth DO	4.7 mg/L
Limit Levels	Surface and Middle-depth DO	4.2 mg/L
	Bottom-depth DO	3.6 mg/L
Measured Levels	Action Level Exceedance was observed at CS(Mf)3(N) during mid-ebb tide (Surface and Middle-depth DO = 4.7 mg/L). Action Level Exceedance was observed at IS(Mf)16 during mid-ebb tide (Bottom-depth DO = 4.5 mg/L). Action Level Exceedance was observed at SR4a during mid-ebb tide (Bottom-depth DO = 3.7 mg/L). Action Level Exceedance was observed at CS(Mf)3(N) during mid-flood tide (Bottom-depth DO = 3.7 mg/L). Action Level Exceedance was observed at CS(Mf)5 during mid-flood tide (Surface and Middle-depth DO = 4.9 mg/L). Limit Level Exceedance was observed at CS(Mf)5 during mid-ebb tide (Surface and Middle-depth DO = 3.7 mg/L). Limit Level Exceedance was observed at CS(Mf)3(N) during mid-ebb tide (Bottom-depth DO = 3.1 mg/L). Limit Level Exceedance was observed at CS(Mf)5 during mid-flood tide (Bottom-depth DO = 2.5 mg/L)	
Works Undertaken (at the time of monitoring event)	Major marine works undertaken under this Contract on 3 August 2017 included: Rock armour reinstatement and retrieval of pipe pile of working platform for the construction of underslung truss scheme	

Possible Reason for Action or Limit Level Exceedance(s)	The exceedance of surface and middle-depth DO and bottom-depth DO are unlikely to be due to the Project, in view of the following: • All monitored parameters, except DO, at all monitoring stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day. • CS(Mf)5 and CS(Mf)3(N) are distant (>3km and >5km respectively) from the marine works area under this Contract, thus the observed exceedance should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality. • Apart from IS(Mf)16 and SR4a, levels of DO at all other Impact stations and sensitive receiver monitoring stations were in compliance with the Action and Limit Levels during both mid-flood and mid-ebb tides on the same day. • Surface and Middle DO levels at IS(Mf)16 and SR4a at both mid-flood and mid-ebb tides were in compliance with the Action and Limit Levels, except bottom DO levels during mid-ebb tide. DO pattern at bottom level of both stations followed similar DO pattern as the upstream control station, CS(Mf)3(N), in which limit level exceedance was observed during mid-ebb tide. Consequently the observed DO exceedance is considered within the natural range and is not considered to be caused by the Project. • DO levels were generally lower at water quality monitoring stations due to two possible reasons of natural variation: 1. Natural ability for water to hold dissolved oxygen is reduced due to higher water body temperature in summer months. 2. The higher Salinity recorded at the bottom level of the deeper CS(Mf)5 and CS(Mf)3(N) monitoring stations was possibly caused by the stratification of seawater during summer when the freshwater discharged from the Pearl River tended to form a surface layer of lower salinity water, which is probably responsible for the lower Salinity recorded at the surface and middle levels compared to the higher Salinity recorded at the bottom level of the monitoring stations. The stratification of seawater in the water column, which is a presence of natural variation, is likely a contributing factor to the results of lower levels of Dissolved Oxygen at the bottom level as the DO exceedances recorded at the bottom level showed higher levels of Salinity than the middle and surface levels.
Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.
Remarks	The monitoring results on 3 August 2017 and locations of water quality monitoring stations are attached.

Project	Works	Date (yyyy-mm)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)5	9:07	Surface	1	29	7.9	16.1	2.6	3.7	2.3	5.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)5	9:07	Surface	2	29.1	8	16.1	2.6		2.3	5.5
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)5	9:07	Middle	1	28.2	7.9	23.8	4.7		1.3	5.3
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)5	9:07	Middle	2	28.2	7.9	23.8	4.7		1.2	6
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)5	9:07	Bottom	1	26.1	7.8	31.5	6.5	6.5	5.2	7.9
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)5	9:07	Bottom	2	26.2	7.8	31.5	6.4		5	7.7
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)3(N)	9:54	Surface	1	29	7.9	18.5	5.2	4.7	4	5.3
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)3(N)	9:54	Surface	2	29.1	7.9	18.5	5.2		4.2	5.3
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)3(N)	9:54	Middle	1	28.7	7.8	21.6	4.2		4.3	4
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)3(N)	9:54	Middle	2	28.7	7.8	21.6	4.2		4.4	5.1
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)3(N)	9:54	Bottom	1	27.9	7.8	26.6	3.1	3.1	7.9	8.4
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	CS(Mf)3(N)	9:54	Bottom	2	27.9	7.8	26.6	3.1		8	7.3
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)16	10:30	Surface	1	29.5	8.1	17	7.3	6.9	4.6	8.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)16	10:30	Surface	2	29.4	8.1	17	7.2		4.6	7.9
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)16	10:30	Middle	1	29.3	8.1	17.4	6.5		4.9	7.4
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)16	10:30	Middle	2	29.3	8.1	17.4	6.5		4.8	7.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)16	10:30	Bottom	1	28.8	7.9	21.4	4.5	4.5	7.4	10.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)16	10:30	Bottom	2	28.8	7.9	21.4	4.5		7.3	9.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	SR4a	10:42	Surface	1	29.4	7.9	18.3	5.4	5.4	10.1	15.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	SR4a	10:42	Surface	2	29.3	7.9	18.3	5.4		10.1	15.8
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	SR4a	10:42	Bottom	1	28.2	7.8	23.9	3.7	3.7	15.5	14.9
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	SR4a	10:42	Bottom	2	28.2	7.8	23.9	3.7		15.2	15
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	SR4	10:50	Surface	1	29.5	7.9	18.2	5.3	5.3	9	12
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	SR4	10:50	Surface	2	29.4	7.9	18.1	5.3		9	12.8
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	SR4	10:50	Bottom	1	29.2	7.9	18.7	5	5.1	11	15.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	SR4	10:50	Bottom	2	29.2	7.9	18.7	5.1		11.4	15.1
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS8	10:56	Surface	1	29.6	8.2	16.9	7.9	7.9	5	6.4
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS8	10:56	Surface	2	29.6	8.2	16.9	7.9		5.1	7.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS8	10:56	Bottom	1	29.6	8.2	16.9	8	8.0	5.3	9.9
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS8	10:56	Bottom	2	29.6	8.2	16.9	8		5.5	10.3
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)9	11:04	Surface	1	29.6	8.2	16.8	8.1	8.1	4.3	6.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)9	11:04	Surface	2	29.6	8.2	16.8	8.1		4.5	6.7
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)9	11:04	Bottom	1	29.4	8	18.4	5.1	5.1	11.9	6.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Ebb	IS(Mf)9	11:04	Bottom	2	29.4	8	18.4	5.1		12	7.7

Project	Works	Date (yyyy-mm)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS(Mf)9	16:00	Surface	1	29.7	8.2	18.1	7.7	7.7	7.6	2.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS(Mf)9	16:00	Surface	2	29.7	8.2	18.1	7.6		7.4	3
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS(Mf)9	16:00	Bottom	1	29.6	8.1	19	6.9	6.9	11	4
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS(Mf)9	16:00	Bottom	2	29.5	8.1	19	6.9		10.8	3.4
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS8	16:07	Surface	1	29.5	7.9	19.2	5.7	5.7	7.6	5.7
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS8	16:07	Surface	2	29.4	7.9	19.2	5.6		7.7	6.3
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS8	16:07	Bottom	1	29.1	7.9	20.5	5.2	5.2	15.1	7
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS8	16:07	Bottom	2	29.1	7.9	20.5	5.1		15.4	6.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	SR4	16:20	Surface	1	29.4	7.9	19.5	5.6	5.6	15	9.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	SR4	16:20	Surface	2	29.4	8	19.5	5.5		15.2	9.4
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	SR4	16:20	Bottom	1	29.2	7.9	20.3	5.2	5.2	23.1	20.9
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	SR4	16:20	Bottom	2	29.2	7.9	20.3	5.2		22.7	22.3
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	SR4a	16:31	Surface	1	29.6	8	19.4	5.9	5.9	8.5	5.4
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	SR4a	16:31	Surface	2	29.6	8	19.4	5.9		8.7	5.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	SR4a	16:31	Bottom	1	29.1	7.9	20.7	5.1	5.1	16	23.4
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	SR4a	16:31	Bottom	2	29.1	7.9	20.7	5		16.1	22.7
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS(Mf)16	16:45	Surface	1	29.5	8	18.3	6.4	6.4	7.2	9.9
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS(Mf)16	16:45	Surface	2	29.6	8	18.3	6.4		7.1	10.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS(Mf)16	16:45	Bottom	1	29	7.9	20.7	4.9	4.9	21.6	24.4
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	IS(Mf)16	16:45	Bottom	2	29	7.9	20.9	4.9		22.5	23.8
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)3(N)	17:19	Surface	1	29.6	7.9	14.8	6	5.1	6.4	14.7
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)3(N)	17:19	Surface	2	29.7	7.9	14.7	5.9		6.5	16.1
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)3(N)	17:19	Middle	1	29	7.8	18.8	4.3		9.8	20.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)3(N)	17:19	Middle	2	29	7.8	18.8	4.2		9.8	20.6
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)3(N)	17:19	Bottom	1	28.7	7.8	20.8	3.7	3.7	19.4	13.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)3(N)	17:19	Bottom	2	28.7	7.8	20.8	3.7		19	12
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)5	18:06	Surface	1	29.3	8	19.2	6.6	4.9	4.5	14.5
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)5	18:06	Surface	2	29.3	8	19.2	6.5		4.7	15
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)5	18:06	Middle	1	27	7.8	29.3	3.3		3.7	10.7
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)5	18:06	Middle	2	27	7.9	29.3	3.2		3.6	10.2
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)5	18:06	Bottom	1	25.9	7.8	32.5	2.5	2.5	7	12.9
TMCLKL	HY/2012/07	2017-08-03	Mid-Flood	CS(Mf)5	18:06	Bottom	2	25.9	7.8	32.5	2.5		7.2	13.1

Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level



Locations of Water Quality Monitoring Stations

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

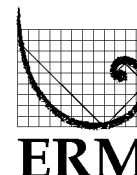
From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 18 August 2017

16/F Berkshire House,
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0215660_05 August 2017_Surface and Middle-depth DO_E_Station CS(Mf)5
0215660_05 August 2017_Surface and Middle-depth DO_E_Station IS(Mf)16
0215660_05 August 2017_Bottom-depth DO_E_Station IS(Mf)16
0215660_05 August 2017_Bottom-depth DO_E_Station IS(Mf)9

Limit Level Exceedance

0215660_05 August 2017_Bottom-depth DO_E_Station CS(Mf)5
0215660_05 August 2017_Surface and Middle-depth DO_E_Station CS(Mf)3(N)
0215660_05 August 2017_Bottom-depth DO_E_Station CS(Mf)3(N)
0215660_05 August 2017_Surface and Middle-depth DO_F_Station CS(Mf)5
0215660_05 August 2017_Bottom-depth DO_F_Station CS(Mf)5
0215660_05 August 2017_Bottom-depth DO_F_Station CS(Mf)3(N)

A total of ten exceedances were recorded on 5 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07

TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0215660_05 August 2017_Surface and Middle-depth DO_E_Station CS(Mf)5 0215660_05 August 2017_Surface and Middle-depth DO_E_Station IS(Mf)16 0215660_05 August 2017_Bottom-depth DO_E_Station IS(Mf)16 0215660_05 August 2017_Bottom-depth DO_E_Station IS(Mf)9 <u>Limit Level Exceedance</u> 0215660_05 August 2017_Bottom-depth DO_E_Station CS(Mf)5 0215660_05 August 2017_Surface and Middle-depth DO_E_Station CS(Mf)3(N) 0215660_05 August 2017_Bottom-depth DO_E_Station CS(Mf)3(N) 0215660_05 August 2017_Surface and Middle-depth DO_F_Station CS(Mf)5 0215660_05 August 2017_Bottom-depth DO_F_Station CS(Mf)5 0215660_05 August 2017_Bottom-depth DO_F_Station CS(Mf)3(N) [Total No. of Exceedances = 10]	
Date	5 August 2017 (Measured) 10 August 2017 (<i>In situ</i> results received by ERM) 15 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Surface and Middle-depth DO, Bottom-depth Dissolved Oxygen (DO)	
Action Levels	Surface and Middle-depth DO	5.0 mg/L
	Bottom-depth DO	4.7 mg/L
Limit Levels	Surface and Middle-depth DO	4.2 mg/L
	Bottom-depth DO	3.6 mg/L
Measured Levels	<u>Action Level Exceedance</u> - Mid-Ebb at CS(Mf)5 (Surface and Middle-depth) (DO = 4.5mg/L); - Mid-Ebb at IS(Mf)16 (Surface and Middle-depth) (DO = 4.2mg/L); - Mid-Ebb at IS(Mf)16 (Bottom-depth) (DO = 3.9mg/L); - Mid-Ebb at IS(Mf)9 (Bottom-depth) (DO = 4.3mg/L); <u>Limit Level Exceedance</u> - Mid-Ebb at CS(Mf)5 (Bottom-depth) (DO = 2.5mg/L); - Mid-Ebb at CS(Mf)3(N) (Surface and Middle-depth) (DO = 3.6mg/L); - Mid-Ebb at CS(Mf)3(N) (Bottom-depth) (DO = 3.2mg/L); - Mid-Flood at CS(Mf)5 (Surface and Middle-depth) (DO = 3.9mg/L); - Mid-Flood at CS(Mf)5 (Bottom-depth) (DO = 2.8mg/L); - Mid-Flood at CS(Mf)3(N) (Bottom-depth) (DO = 3.5mg/L).	
Works Undertaken (at the time of monitoring event)	No marine works was undertaken under this Contract on 5 August 2017.	

Possible Reason for Action or Limit Level Exceedance(s)	The exceedance of surface and middle-depth DO and bottom-depth DO are unlikely to be due to the Project, in view of the following: • No marine works was undertaken under this Contract on 5 August 2017. • All monitored parameters, except DO, at all monitoring stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day. • CS(Mf)5 and CS(Mf)3(N) are distant (>3km and >5km respectively) from the marine works area under this Contract, thus the observed exceedance should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality. • Apart from IS(Mf)16 and IS(Mf)9, levels of DO at all other Impact stations and sensitive receiver monitoring stations were in compliance with the Action and Limit Levels during both mid-flood and mid-ebb tides on the same day. • DO pattern at three depth levels at IS(Mf)16 and bottom levels at IS(Mf)9 at mid-ebb tides followed similar DO pattern as the upstream control station, CS(Mf)3(N), in which limit level exceedances were observed at three depth levels during mid-ebb tide. Consequently the observed DO exceedance is considered within the natural range and is not considered to be caused by the Project. • DO levels were generally lower at water quality monitoring stations due to two possible reasons of natural variation: 1. Natural ability for water to hold dissolved oxygen is reduced due to higher water temperature in summer months. 2. The higher Salinity recorded at the bottom level of the deeper CS(Mf)5 and CS(Mf)3(N) monitoring stations was possibly caused by the stratification of seawater during summer when the freshwater discharged from the Pearl River tended to form a surface layer of lower salinity water, which is probably responsible for the lower Salinity recorded at the surface and middle levels compared to the higher Salinity recorded at the bottom level of the monitoring stations. The stratification of seawater in the water column is likely a contributing factor to the results of lower levels of DO at the bottom level as the DO exceedances recorded at the bottom level showed higher levels of Salinity than the middle and surface levels.
Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.
Remarks	The monitoring results on 5 August 2017 and locations of water quality monitoring stations are attached.

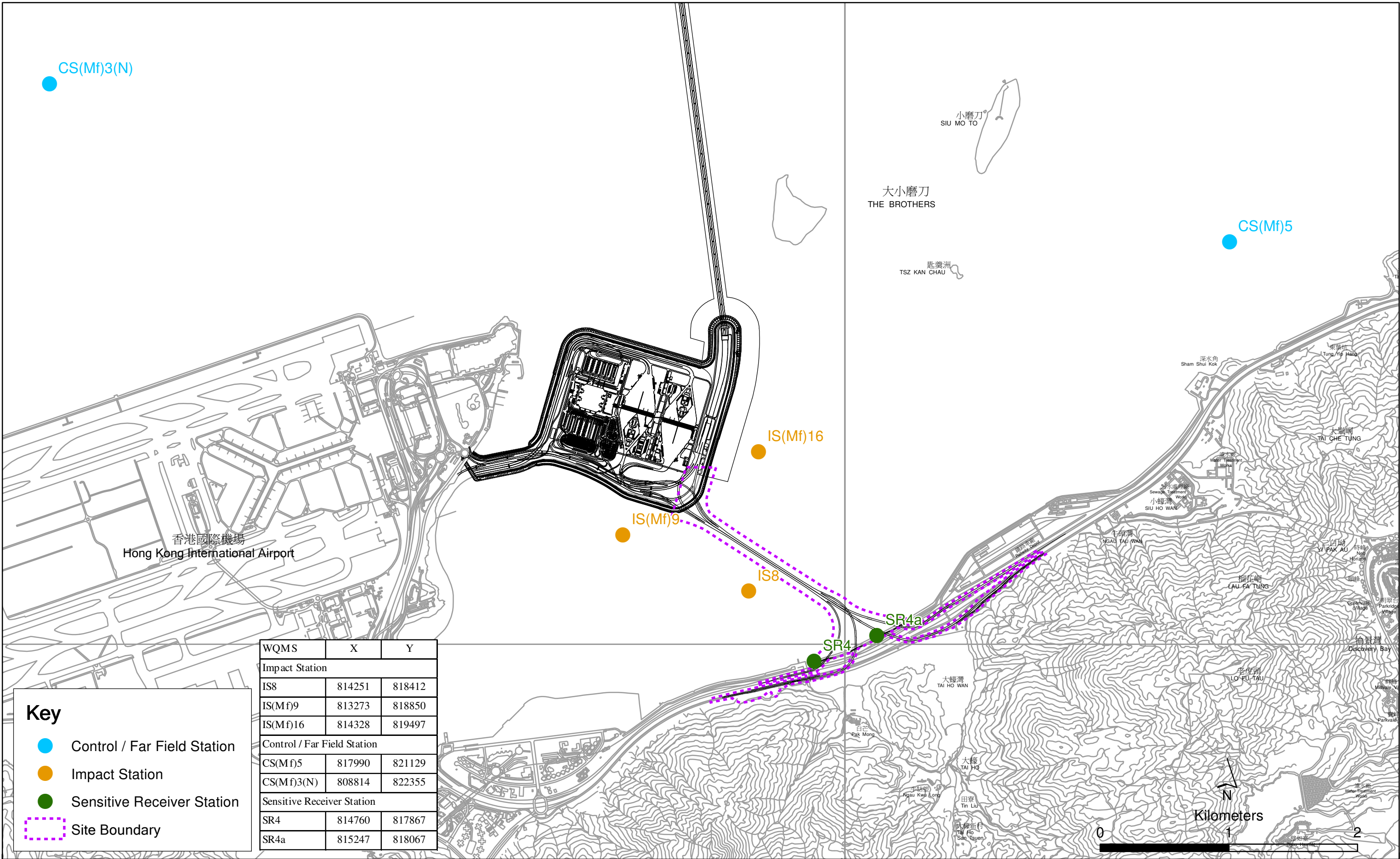
Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)5	10:59	Surface	1	28.8	7.9	19.9	5	4.5	4.0	4.2
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)5	10:59	Surface	2	29.0	7.9	19.8	5.2		3.6	4.5
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)5	10:59	Middle	1	27.0	7.9	27.0	3.8		2.1	3.9
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)5	10:59	Middle	2	27.1	7.8	27.0	3.9		1.9	3.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)5	10:59	Bottom	1	25.8	7.8	31.2	2.5	2.5	11.7	4.1
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)5	10:59	Bottom	2	25.9	7.8	31.2	2.5		11.0	5.9
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)3(N)	10:00	Surface	1	28.7	7.8	18.8	4.2	3.6	4.3	2.5
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)3(N)	10:00	Surface	2	28.8	7.8	18.7	4.3		4.1	3.7
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)3(N)	10:00	Middle	1	27.9	7.8	24.1	3.0		9.0	6.1
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)3(N)	10:00	Middle	2	28.0	7.8	24.1	3.0		8.3	6.5
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)3(N)	10:00	Bottom	1	27.9	7.8	25.2	3.2	3.2	14.2	12.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	CS(Mf)3(N)	10:00	Bottom	2	28.0	7.8	25.2	3.1		12.9	11.0
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)16	11:34	Surface	1	28.9	7.8	21.0	4.3	4.2	6.8	5.3
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)16	11:34	Surface	2	28.8	7.9	20.9	4.3		7.1	4.3
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)16	11:34	Middle	1	28.6	7.8	22.0	4.1		6.5	6.7
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)16	11:34	Middle	2	28.5	7.9	22.0	4.0		7.1	7.3
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)16	11:34	Bottom	1	28.1	7.9	23.6	3.8	3.9	6.1	8.0
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)16	11:34	Bottom	2	28.0	7.9	23.6	3.9		6.8	8.3
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	SR4a	11:48	Surface	1	29.1	7.8	20.0	4.6	4.6	18.1	13.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	SR4a	11:48	Surface	2	29.0	7.8	20.0	4.5		20.0	13.9
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	SR4a	11:48	Bottom	1	28.7	7.9	21.7	4.1	4.1	28.9	16.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	SR4a	11:48	Bottom	2	28.6	7.8	21.7	4.1		27.4	16.1
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	SR4	11:58	Surface	1	28.8	7.8	21.2	4.2	4.2	12.0	17.6
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	SR4	11:58	Surface	2	28.7	7.8	21.2	4.2		12.8	19.1
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	SR4	11:58	Bottom	1	28.3	7.8	23.2	3.8	3.8	14.9	26.6
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	SR4	11:58	Bottom	2	28.2	7.8	23.2	3.7		15.8	27.2
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS8	12:23	Surface	1	29.4	7.9	19.7	5.3	5.3	7.8	5.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS8	12:23	Surface	2	29.3	7.8	19.7	5.2		8.5	4.3
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS8	12:23	Bottom	1	28.8	7.9	22.3	3.1	3.2	14.0	12.6
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS8	12:23	Bottom	2	28.7	7.8	22.4	3.2		15.2	11.9
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)9	12:14	Surface	1	29.3	7.9	19.6	5.7	5.7	5.7	4.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)9	12:14	Surface	2	29.2	7.9	19.6	5.6		6.3	5.5
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)9	12:14	Bottom	1	29.0	7.9	20.7	4.3	4.3	10.8	8.3
TMCLKL	HY/2012/07	2017-08-05	Mid-Ebb	IS(Mf)9	12:14	Bottom	2	28.9	7.9	20.9	4.3		11.9	9.0

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)5	19:23	Surface	1	28.7	7.9	21.3	4.5	3.9	2.9	3.1
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)5	19:23	Surface	2	28.6	7.8	21.3	4.4		2.9	3.1
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)5	19:23	Middle	1	27.2	7.8	26.9	3.3		3.4	3.6
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)5	19:23	Middle	2	27.1	7.8	26.9	3.3		3.7	2.9
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)5	19:23	Bottom	1	26.2	7.8	30.2	2.8	2.8	8.5	3.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)5	19:23	Bottom	2	26.1	7.8	30.2	2.8		8.8	3.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)3(N)	18:33	Surface	1	30.7	7.9	12.5	5.7	5.0	5.6	5.1
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)3(N)	18:33	Surface	2	30.6	7.8	12.6	5.6		6.1	5.6
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)3(N)	18:33	Middle	1	29.3	7.8	17.2	4.3		8.7	4.7
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)3(N)	18:33	Middle	2	29.2	7.7	17.2	4.2		9.3	4.9
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)3(N)	18:33	Bottom	1	28.5	7.8	20.9	3.5	3.5	14.3	8.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	CS(Mf)3(N)	18:33	Bottom	2	28.4	7.7	20.9	3.5		14.7	7.2
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS(Mf)16	17:58	Surface	1	29.9	7.9	18.5	6.2	6.2	5.0	4.7
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS(Mf)16	17:58	Surface	2	29.8	7.9	18.5	6.1		5.2	4.6
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS(Mf)16	17:58	Bottom	1	29.2	7.9	20.3	5.1	5.1	7.5	6.8
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS(Mf)16	17:58	Bottom	2	29.1	7.9	20.4	5.1		8.0	7.8
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	SR4a	17:43	Surface	1	29.6	7.9	19.4	5.4	5.4	9.6	7.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	SR4a	17:43	Surface	2	29.5	7.9	19.4	5.4		10.3	6.3
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	SR4a	17:43	Bottom	1	28.9	7.9	21.5	4.4	4.5	14.7	11.8
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	SR4a	17:43	Bottom	2	28.8	7.8	21.6	4.5		16.4	10.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	SR4	17:34	Surface	1	29.6	7.9	19.6	5.3	5.3	13.5	9.4
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	SR4	17:34	Surface	2	29.5	7.9	19.6	5.2		14.5	10.5
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	SR4	17:34	Bottom	1	29.5	7.9	19.8	5.3	5.3	14.8	11.9
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	SR4	17:34	Bottom	2	29.4	7.9	19.8	5.2		15.8	10.0
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS8	17:22	Surface	1	29.6	7.9	19.4	5.6	5.6	9.7	8.6
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS8	17:22	Surface	2	29.7	7.9	19.4	5.6		8.9	8.3
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS8	17:22	Bottom	1	29.5	7.9	20.3	5.4	5.4	12.2	27.1
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS8	17:22	Bottom	2	29.6	7.9	20.3	5.4		11.2	28.6
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS(Mf)9	17:12	Middle	1	29.9	8.0	20.1	6.4	6.5	7.2	6.9
TMCLKL	HY/2012/07	2017-08-05	Mid-Flood	IS(Mf)9	17:12	Middle	2	30.0	8.0	20.1	6.5		6.5	6.9

Note:

Indicates Exceedance of Action Level

Indicates Exceedance of Limit Level



Locations of Water Quality Monitoring Stations

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

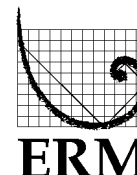
From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 15 August 2017

16/F Berkshire House,
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0215660_07 August 2017_Surface and Middle-depth DO_E_Station CS(Mf)5
0215660_07 August 2017_Bottom-depth DO_E_Station CS(Mf)5
0215660_07 August 2017_Bottom-depth DO_E_Station CS(Mf)3(N)
0215660_07 August 2017_Bottom-depth DO_E_Station IS(Mf)16
0215660_07 August 2017_Bottom-depth DO_E_Station SR4a
0215660_07 August 2017_Surface and Middle-depth DO_F_Station CS(Mf)5
0215660_07 August 2017_Bottom-depth DO_F_Station CS(Mf)3(N)

Limit Level Exceedance

0215660_07 August 2017_Bottom-depth DO_F_Station CS(Mf)5

A total of eight exceedances were recorded on 7 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07

TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0215660_07 August 2017_ Surface and Middle-depth DO_E_Station CS(Mf)5 0215660_07 August 2017_ Bottom-depth DO_E_Station CS(Mf)5 0215660_07 August 2017_ Bottom-depth DO_E_Station CS(Mf)3(N) 0215660_07 August 2017_ Bottom-depth DO_E_Station IS(Mf)16 0215660_07 August 2017_ Bottom-depth DO_E_Station SR4a 0215660_07 August 2017_ Surface and Middle-depth DO_F_Station CS(Mf)5 0215660_07 August 2017_ Bottom-depth DO_F_Station CS(Mf)3(N) <u>Limit Level Exceedance</u> 0215660_07 August 2017_ Bottom-depth DO_F_Station CS(Mf)5 [Total No. of Exceedances = 8]	
Date	7 August 2017 (Measured) 10 August 2017 (<i>In situ</i> results received by ERM) 16 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Surface and Middle-depth DO, Bottom-depth Dissolved Oxygen (DO)	
Action Levels	Surface and Middle-depth DO	5.0 mg/L
	Bottom-depth DO	4.7 mg/L
Limit Levels	Surface and Middle-depth DO	4.2 mg/L
	Bottom-depth DO	3.6 mg/L
Measured Levels	<u>Action Level Exceedance</u> 1. Mid-Ebb at CS(Mf)5 (Surface and Middle-depth) (DO = 4.7mg/L); 2. Mid-Ebb at CS(Mf)5 (Bottom-depth) (DO = 3.7mg/L); 3. Mid-Ebb at CS(Mf)3(N) (Bottom-depth) (DO = 3.7mg/L); 4. Mid-Ebb at IS(Mf)16 (Bottom-depth) (DO = 4.3mg/L); 5. Mid-Ebb at SR4a (Bottom-depth) (DO = 4.5mg/L); 6. Mid-Flood at CS(Mf)5 (Surface and Middle-depth) (DO = 4.2mg/L); 7. Mid-Flood at CS(Mf)3(N) (Bottom-depth) (DO = 4.0mg/L); <u>Limit Level Exceedance</u> 8. Mid-Flood at CS(Mf)5 (Bottom-depth) (DO = 3.4mg/L)	
Works Undertaken (at the time of monitoring event)	Major marine works undertaken under this Contract on 7 August 2017 included: • Rock armour reinstatement for the construction of underslung truss scheme	

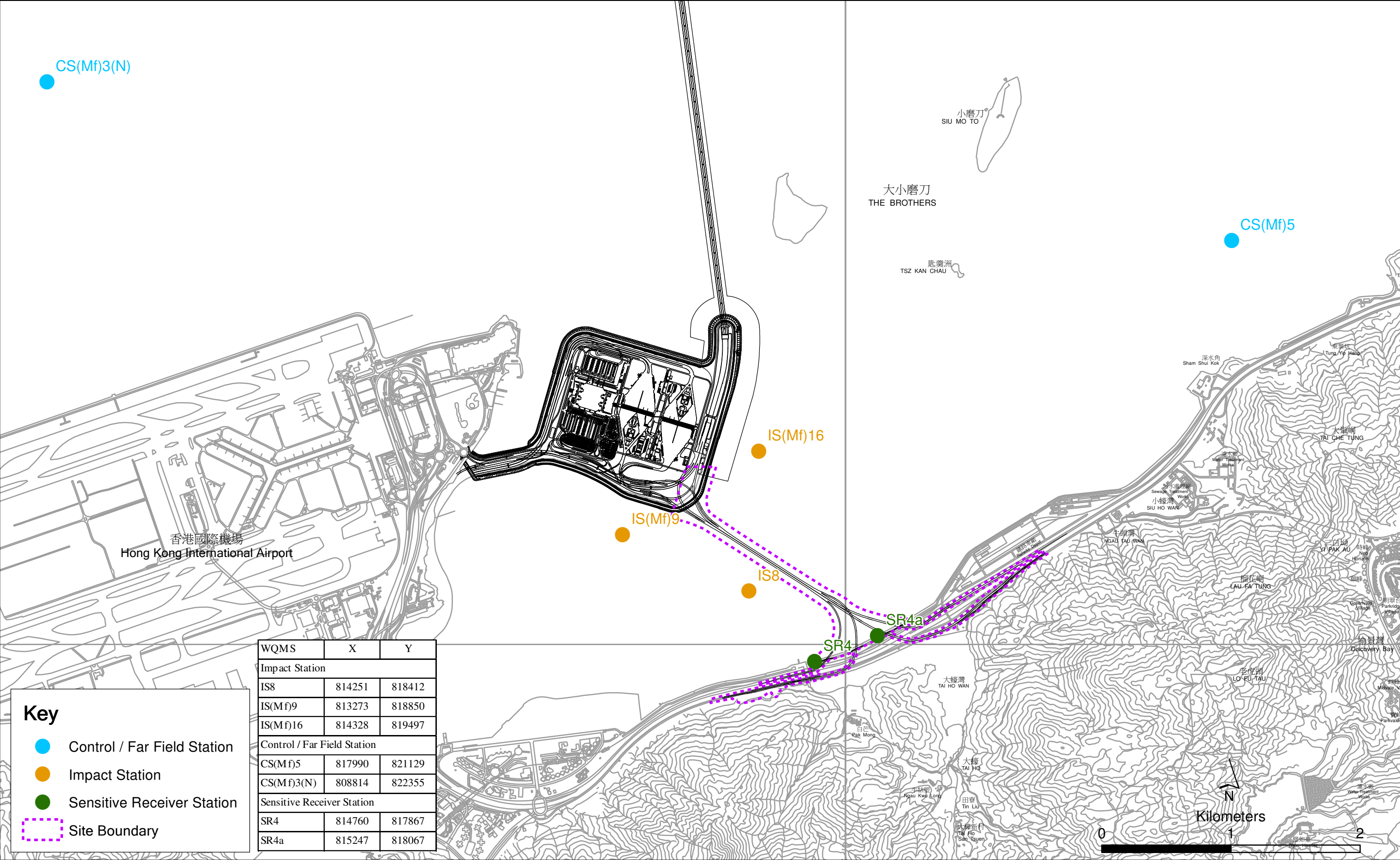
Possible Reason for Action or Limit Level Exceedance(s)	The exceedance of surface and middle-depth DO and bottom-depth DO are unlikely to be due to the Project, in view of the following: • All monitored parameters, except DO, at all monitoring stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day. • CS(Mf)5 and CS(Mf)3(N) are distant (>3km and >5km respectively) from the marine works area under this Contract, thus the observed exceedance should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality. • Apart from IS(Mf)16 and SR4a, levels of DO at all other Impact stations and sensitive receiver monitoring stations were in compliance with the Action and Limit Levels during both mid-flood and mid-ebb tides on the same day. • Surface and Middle DO levels at IS(Mf)16 and SR4a at both mid-flood and mid-ebb tides and bottom DO levels at both stations at mid-flood tide were in compliance with the Action and Limit Levels, except marginal exceedances at bottom DO levels during mid-ebb tide. DO pattern at bottom level of both stations followed similar DO pattern as the upstream control station, CS(Mf)3(N), in which action level exceedance was observed during mid-ebb tide. Consequently the observed DO exceedance is considered within the natural range and is not considered to be caused by the Project. • DO levels were generally lower at water quality monitoring stations due to two possible reasons of natural variation: 1. Natural ability for water to hold dissolved oxygen is reduced due to higher water body temperature in summer months. 2. The higher Salinity recorded at the bottom level of the deeper CS(Mf)5 and CS(Mf)3(N) monitoring stations was possibly caused by the stratification of seawater during summer when the freshwater discharged from the Pearl River tended to form a surface layer of lower salinity water, which is probably responsible for the lower Salinity recorded at the surface and middle levels compared to the higher Salinity recorded at the bottom level of the monitoring stations. The stratification of seawater in the water column is likely a contributing factor to the results of lower levels of DO at the bottom level as the DO exceedances recorded at the bottom level showed higher levels of Salinity than the middle and surface levels.
Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.
Remarks	The monitoring results on 7 August 2017 and locations of water quality monitoring stations are attached.

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)5	12:10	Surface	1	29.4	7.8	18.6	5	4.7	6.7	4.5
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)5	12:10	Surface	2	29.3	7.8	18.6	4.9		6.3	4.5
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)5	12:10	Middle	1	28.9	7.8	21.5	4.4		5.9	5.8
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)5	12:10	Middle	2	28.8	7.8	21.6	4.3		5.8	6.9
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)5	12:10	Bottom	1	27	7.7	27.2	3.7	3.7	12.8	9.9
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)5	12:10	Bottom	2	26.9	7.8	27	3.7		13.6	10.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)3(N)	13:22	Surface	1	30.7	8.1	15.8	5.8	5.1	5.5	4.8
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)3(N)	13:22	Surface	2	30.6	8.1	15.8	6		5.2	4.7
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)3(N)	13:22	Middle	1	29.2	8	19.5	4.4		5.3	5.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)3(N)	13:22	Middle	2	28.5	8	23.4	4.1		5.3	4.6
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)3(N)	13:22	Bottom	1	28.3	8	23.9	3.7	3.7	6.2	5.1
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	CS(Mf)3(N)	13:22	Bottom	2	28.2	8	24	3.7		5.9	4.8
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)16	12:55	Surface	1	30	7.9	19.9	6.3	5.7	7.6	6.8
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)16	12:55	Surface	2	29.9	7.9	19.9	6.3		7.0	6.9
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)16	12:55	Middle	1	29.4	7.8	21.2	5.1		8.8	6.9
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)16	12:55	Middle	2	29.3	7.9	21.2	5		8.4	8.2
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)16	12:55	Bottom	1	28.7	7.8	22.5	4.3	4.3	6.6	10.0
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)16	12:55	Bottom	2	28.6	7.8	22.5	4.3		5.9	9.2
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	SR4a	13:07	Surface	1	30.3	7.8	19.5	6.4	6.4	8.2	8.0
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	SR4a	13:07	Surface	2	30.2	7.9	19.5	6.3		7.9	9.0
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	SR4a	13:07	Bottom	1	28.8	7.8	22.4	4.4	4.5	13.4	9.7
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	SR4a	13:07	Bottom	2	28.7	7.8	22.4	4.5		14.1	10.6
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	SR4	13:14	Surface	1	30.1	7.9	19.5	5.8	5.8	8.2	9.7
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	SR4	13:14	Surface	2	30	7.9	19.5	5.7		7.5	10.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	SR4	13:14	Bottom	1	29.8	7.9	20.1	5.2	5.3	8.3	10.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	SR4	13:14	Bottom	2	29.7	7.9	20.1	5.3		8.4	9.8
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS8	13:26	Surface	1	30.3	7.9	19.5	6.4	6.3	7.3	5.9
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS8	13:26	Surface	2	30.1	7.9	19.6	6.1		7.0	4.9
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS8	13:26	Bottom	1	29.8	7.9	20.3	5.4	5.4	14.3	12.3
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS8	13:26	Bottom	2	29.6	7.9	20.3	5.4		14.1	11.8
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)9	13:37	Surface	1	30.7	8	18.8	8	8.0	4.7	3.1
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)9	13:37	Surface	2	30.6	8.1	18.9	7.9		3.9	3.6
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)9	13:37	Bottom	1	29.3	7.9	20.7	5.1	5.2	5.9	4.9
TMCLKL	HY/2012/07	2017-08-07	Mid-Ebb	IS(Mf)9	13:37	Bottom	2	29.2	7.9	21	5.2		5.2	5.4

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)5	20:18	Surface	1	28.5	7.8	22.3	4.4	4.2	4.1	4.7
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)5	20:18	Surface	2	28.6	7.8	22.3	4.5		4.7	3.6
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)5	20:18	Middle	1	27.8	7.8	24.9	3.9		3.7	4.6
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)5	20:18	Middle	2	27.9	7.8	24.9	3.9		4.4	4.5
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)5	20:18	Bottom	1	26.7	7.8	28.1	3.4	3.4	7.9	3.2
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)5	20:18	Bottom	2	26.8	7.8	28.1	3.4		8.2	4.7
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)3(N)	19:00	Surface	1	30.6	7.8	13.3	6.2	5.2	9.6	8.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)3(N)	19:00	Surface	2	30.8	7.8	13.1	5.7		10.8	9.3
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)3(N)	19:00	Middle	1	29	7.6	19	4.1		17.3	9.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)3(N)	19:00	Middle	2	30.1	7.7	16.7	4.6		17.7	10.2
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)3(N)	19:00	Bottom	1	29	7.6	19	4	4.0	24.2	9.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	CS(Mf)3(N)	19:00	Bottom	2	29.3	7.7	18.8	3.9		22.0	9.7
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS(Mf)16	19:44	Surface	1	29.9	7.9	19.1	5.9	6.0	6.4	3.5
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS(Mf)16	19:44	Surface	2	30	7.9	19	6		6.7	4.5
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS(Mf)16	19:44	Bottom	1	29.2	7.8	20.6	4.8	4.9	12.1	13.2
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS(Mf)16	19:44	Bottom	2	29.3	7.9	20.5	4.9		12.0	12.9
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	SR4a	19:30	Surface	1	30	7.9	18	6	6.1	8.6	8.2
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	SR4a	19:30	Surface	2	30.2	7.9	17.9	6.1		9.2	8.8
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	SR4a	19:30	Bottom	1	30.1	7.9	18.3	6.1	6.2	12.9	9.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	SR4a	19:30	Bottom	2	30.2	7.9	18.3	6.2		13.2	9.6
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	SR4	19:22	Surface	1	30	7.9	18.7	6.2	6.3	10.6	9.7
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	SR4	19:22	Surface	2	30.2	7.9	18.7	6.3		11.5	9.8
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	SR4	19:22	Bottom	1	30.1	7.9	18.7	6.2	6.3	11.4	12.3
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	SR4	19:22	Bottom	2	30.2	7.9	18.7	6.3		11.6	12.3
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS8	19:09	Surface	1	30.1	8	18.8	6.5	6.6	11.1	8.5
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS8	19:09	Surface	2	30.2	7.9	18.7	6.6		11.1	8.4
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS8	19:09	Bottom	1	30.2	8	19.3	6.7	6.8	21.0	10.2
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS8	19:09	Bottom	2	30.3	8	19.3	6.9		20.3	9.1
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS(Mf)9	18:56	Middle	1	30.3	8	19.3	7	7.1	13.1	11.0
TMCLKL	HY/2012/07	2017-08-07	Mid-Flood	IS(Mf)9	18:56	Middle	2	30.4	8	19.3	7.2		13.1	11.0

Note: Indicates Exceedance of Action Level

Indicates Exceedance of Limit Level



WQMS	X	Y
Impact Station		
IS8	814251	818412
IS(Mf)9	813273	818850
IS(Mf)16	814328	819497
Control / Far Field Station		
CS(Mf)5	817990	821129
CS(Mf)3(N)	808814	822355
Sensitive Receiver Station		
SR4	814760	817867
SR4a	815247	818067

Key

- Control / Far Field Station
- Impact Station
- Sensitive Receiver Station
- Site Boundary

Locations of Water Quality Monitoring Stations

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 16 August 2017

16/F Berkshire House,
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0215660_09 August 2017_ Bottom-depth DO_E_Station CS(Mf)5
0215660_09 August 2017_ Surface and Middle-depth DO_F_Station CS(Mf)5
0215660_09 August 2017_ Bottom-depth DO_F_Station CS(Mf)5

A total of three exceedances were recorded on 9 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07

TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0215660_09 August 2017_ Bottom-depth DO_E_Station CS(Mf)5 0215660_09 August 2017_ Surface and Middle-depth DO_F_Station CS(Mf)5 0215660_09 August 2017_ Bottom-depth DO_F_Station CS(Mf)5 [Total No. of Exceedances = 3]	
Date	9 August 2017 (Measured) 13 August 2017 (<i>In situ</i> results received by ERM) 18 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Surface and Middle-depth DO, Bottom-depth Dissolved Oxygen (DO)	
Action Levels	Surface and Middle-depth DO	5.0 mg/L
	Bottom-depth DO	4.7 mg/L
Limit Levels	Surface and Middle-depth DO	4.2 mg/L
	Bottom-depth DO	3.6 mg/L
Measured Levels	<u>Action Level Exceedance</u> - Mid-Ebb at CS(Mf)5 (Bottom-depth) (DO = 4.4mg/L); - Mid-Flood at CS(Mf)5 (Surface and Middle-depth) (DO = 4.9mg/L); - Mid-Flood at CS(Mf)5 (Bottom-depth) (DO = 4.3mg/L).	
Works Undertaken (at the time of monitoring event)	No marine works was undertaken under this Contract on 9 August 2017.	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances of surface and middle-depth DO during mid-flood tide and bottom-depth DO during both mid-flood and mid-ebb tides at CS(Mf)5 are unlikely to be due to the Project, in view of the following: - Apart from CS(Mf)5, levels of DO at all monitoring stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day. - CS(Mf)5 is distant (>3km) from the marine works area under this Contract, thus the observed exceedances should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality. - DO levels at CS(Mf)5 were generally lower due to two possible reasons of natural variation: - Natural ability for water to hold dissolved oxygen is reduced due to higher water body temperature in summer months. - Higher Salinity recorded at the bottom level and lower Salinity recorded at the surface and middle level of CS(Mf)5 were observed during both mid-flood and mid-ebb tides on 7 August 2017. Record of higher Salinity at the bottom level of CS(Mf)5 was likely caused by stratification of water column where freshwater discharged from the Pearl River tended to form a surface layer of lower salinity water, resulted in lower Salinity recorded at the surface and middle levels compared to the higher Salinity recorded at the bottom level of the monitoring station. Higher Salinity limits the solubility of oxygen in the seawater, which contribute to a lower DO at the bottom level at CS(Mf)5.	

Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.
Remarks	The monitoring results on 9 August 2017 and locations of water quality monitoring stations are attached.

Project	Works	Date (yyyy-mm)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)5	14:24	Surface	1	29.5	7.9	18.8	5.3	5.0	6.5	6.9
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)5	14:24	Surface	2	29.7	7.8	18.8	5.4		6.3	8.2
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)5	14:24	Middle	1	28.7	7.9	21.3	4.6		8.8	13.9
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)5	14:24	Middle	2	28.8	7.8	21.3	4.6		9.7	13.8
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)5	14:24	Bottom	1	28.1	7.9	24.3	4.4	4.4	11.3	13.9
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)5	14:24	Bottom	2	28.3	7.8	24.3	4.4		12.2	13.1
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)3(N)	12:39	Surface	1	29.3	7.7	19.1	5.5	5.2	6.7	5.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)3(N)	12:39	Surface	2	29.6	7.8	18.7	5.4		7.5	4.9
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)3(N)	12:39	Middle	1	29	7.7	20.6	4.9		18.0	6.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)3(N)	12:39	Middle	2	29.2	7.8	20.2	4.8		18.5	7.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)3(N)	12:39	Bottom	1	29	7.7	20.7	4.9	4.8	21.2	7.4
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	CS(Mf)3(N)	12:39	Bottom	2	29.2	7.8	20.3	4.7		21.8	8.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)16	13:55	Surface	1	29.2	7.9	20.8	5.3	5.1	10.1	11.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)16	13:55	Surface	2	29.4	7.8	20.8	5.4		9.9	12.5
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)16	13:55	Middle	1	28.9	7.9	21.4	4.7		8.6	13.1
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)16	13:55	Middle	2	29	7.8	21.4	4.8		8.2	14.6
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)16	13:55	Bottom	1	28.5	7.9	22.4	4.7	4.7	5.3	13.6
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)16	13:55	Bottom	2	28.6	7.8	22.5	4.7		5.4	13.5
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	SR4a	13:40	Surface	1	29.7	8.1	19.6	5.7	5.8	8.0	12.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	SR4a	13:40	Surface	2	29.8	7.9	19.6	5.8		7.8	11.2
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	SR4a	13:40	Bottom	1	29.1	8.1	21.1	5.1	5.1	16.4	16.9
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	SR4a	13:40	Bottom	2	29.2	7.8	21.1	5.1		15.9	18.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	SR4	13:12	Surface	1	29.7	8	19.1	5.7	5.7	8.3	10.8
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	SR4	13:12	Surface	2	29.8	7.9	19.1	5.7		8.0	10.7
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	SR4	13:12	Bottom	1	29.7	8	20	5.6	5.7	12.5	20.4
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	SR4	13:12	Bottom	2	29.8	7.9	20	5.7		12.0	19.5
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS8	12:57	Surface	1	29.8	8	19.5	6.4	6.4	5.4	6.7
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS8	12:57	Surface	2	29.9	7.9	19.5	6.4		5.9	5.2
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS8	12:57	Bottom	1	29.6	8	20	6	6.0	11.2	10.4
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS8	12:57	Bottom	2	29.7	7.9	20	6		11.2	9.5
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)9	12:50	Surface	1	29.6	8	19.5	6.6	6.7	5.2	6.4
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)9	12:50	Surface	2	29.8	7.9	19.5	6.7		5.7	5.8
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)9	12:50	Bottom	1	29.6	8	19.5	6.4	6.5	16.6	7.1
TMCLKL	HY/2012/07	2017-08-09	Mid-Ebb	IS(Mf)9	12:50	Bottom	2	29.7	7.9	19.5	6.5		16.2	7.6

Project	Works	Date (yyyy-mm)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)5	6:34	Surface	1	29.4	7.9	17.6	5	4.9	4.8	5.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)5	6:34	Surface	2	29.5	7.8	17.6	5		4.2	6.2
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)5	6:34	Middle	1	28.9	7.9	20.7	4.7		4.1	7.4
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)5	6:34	Middle	2	29	7.8	20.7	4.7		3.6	7.4
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)5	6:34	Bottom	1	28.3	7.9	24.2	4.3	4.3	4.8	7.5
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)5	6:34	Bottom	2	28.4	7.8	24.3	4.3		4.3	6.7
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)3(N)	7:21	Surface	1	29.7	7.8	16.3	5.5	5.3	8.2	6.6
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)3(N)	7:21	Surface	2	29.5	7.6	16.6	5.6		7.7	5.8
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)3(N)	7:21	Middle	1	29.6	7.8	18.1	4.9		12.5	7.7
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)3(N)	7:21	Middle	2	29.4	7.6	18.4	5		11.6	7.6
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)3(N)	7:21	Bottom	1	29.4	7.6	18.6	5	4.9	22.7	7
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	CS(Mf)3(N)	7:21	Bottom	2	29.6	7.8	18.3	4.8		23.2	7.6
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)16	7:09	Surface	1	29.2	8	19.7	5.1	5.1	3.8	2.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)16	7:09	Surface	2	29.3	7.8	19.7	5.1		3.1	3.1
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)16	7:09	Middle	1	29.2	8	19.8	5		4.4	4.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)16	7:09	Middle	2	29.3	7.8	19.7	5		3.3	4.5
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)16	7:09	Bottom	1	29.1	8	20.3	5	5.0	10.0	5.6
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)16	7:09	Bottom	2	29.2	7.8	20.3	5		9.2	6.4
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	SR4a	7:21	Surface	1	29.3	8	18.1	5.1	5.2	5.0	8.7
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	SR4a	7:21	Surface	2	29.5	7.8	18.1	5.2		4.4	9.3
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	SR4a	7:21	Bottom	1	29.3	8	18.6	5.1	5.2	8.2	11.2
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	SR4a	7:21	Bottom	2	29.4	7.8	18.7	5.2		7.4	10.6
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	SR4	7:27	Surface	1	29.3	8	18.7	5.2	5.2	6.7	10
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	SR4	7:27	Surface	2	29.4	7.8	18.7	5.2		6.6	10.5
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	SR4	7:27	Bottom	1	29.3	8	18.7	5.3	5.3	8.2	13.1
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	SR4	7:27	Bottom	2	29.4	7.8	18.7	5.3		7.9	12
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS8	7:48	Surface	1	29.3	8	19	5.1	5.2	5.7	5.8
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS8	7:48	Surface	2	29.4	7.8	19	5.2		5.4	6.4
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS8	7:48	Bottom	1	29.3	8	19.2	5.1	5.2	7.2	8
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS8	7:48	Bottom	2	29.4	7.8	19.2	5.2		7.6	8.2
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)9	7:56	Surface	1	29.3	8	19.3	5.2	5.2	5.3	6.6
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)9	7:56	Surface	2	29.4	7.8	19.3	5.2		5.0	7
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)9	7:56	Bottom	1	29.3	8	19.5	5.1	5.2	6.5	13
TMCLKL	HY/2012/07	2017-08-09	Mid-Flood	IS(Mf)9	7:56	Bottom	2	29.4	7.8	19.4	5.2		5.3	13

Note: Indicates Exceedance of Action Level

Indicates Exceedance of Limit Level

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

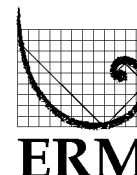
From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 22 August 2017

16/F Berkshire House,
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0215660_11 August 2017_ Surface and Middle-depth DO_E_Station CS(Mf)5
0215660_11 August 2017_ Bottom-depth DO_E_Station IS(Mf)16
0215660_11 August 2017_ Bottom-depth DO_E_Station SR4a
0215660_11 August 2017_ Bottom-depth DO_F_Station CS(Mf)5
0215660_11 August 2017_ Surface and Middle-depth DO_F_Station IS(Mf)16
0215660_11 August 2017_Depth-averaged SS_F_Station IS8

Limit Level Exceedance

0215660_11 August 2017_ Bottom-depth DO_E_Station CS(Mf)5

A total of seven exceedances were recorded on 11 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07

TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

Notification of Exceedance

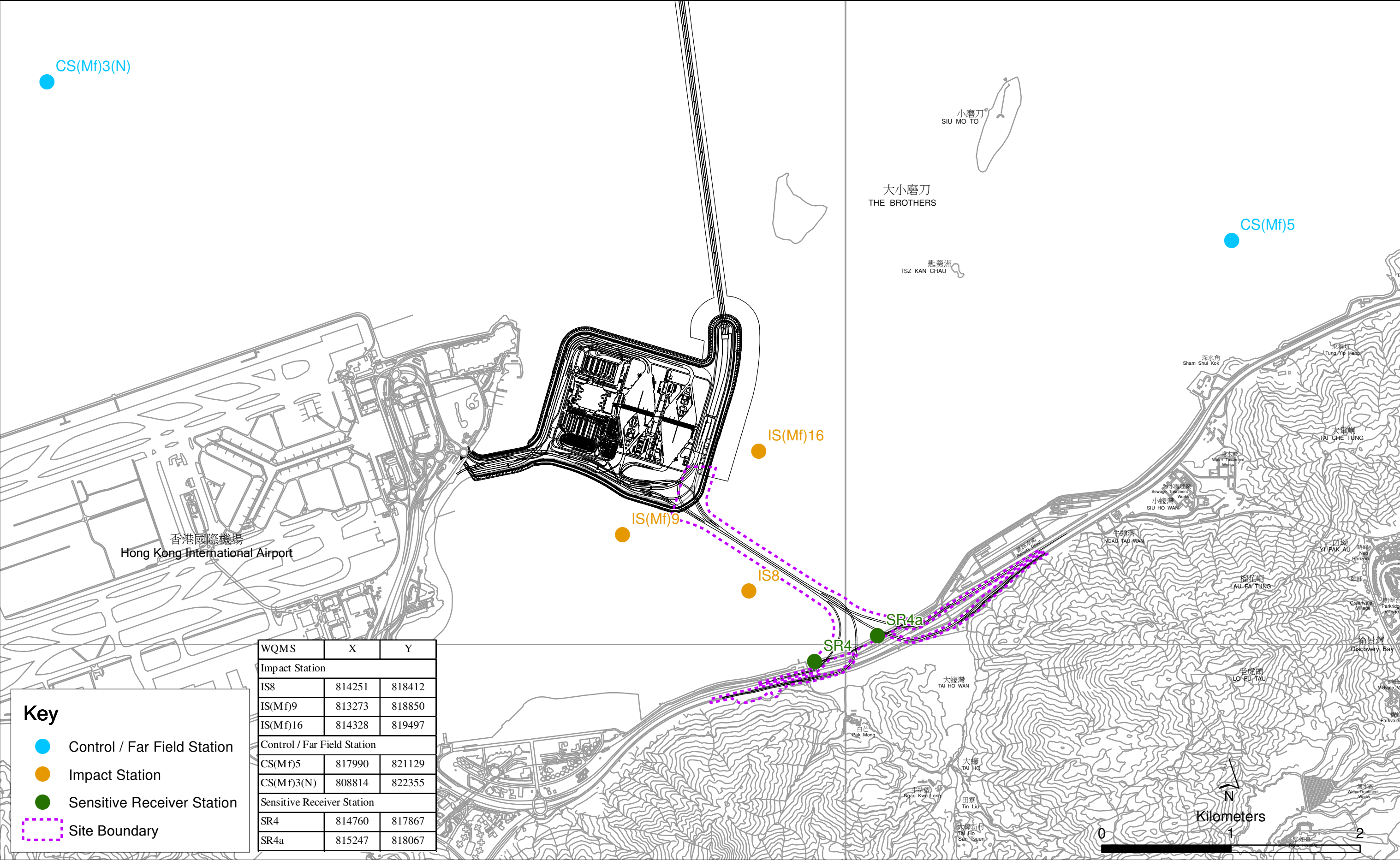
Log No.	<u>Action Level Exceedance</u> 0215660_11 August 2017_ Surface and Middle-depth DO_E_Station CS(Mf)5 0215660_11 August 2017_ Bottom-depth DO_E_Station IS(Mf)16 0215660_11 August 2017_ Bottom-depth DO_E_Station SR4a 0215660_11 August 2017_ Bottom-depth DO_F_Station CS(Mf)5 0215660_11 August 2017_ Surface and Middle-depth DO_F_Station IS(Mf)16 0215660_11 August 2017_ Depth-averaged SS_F_Station IS8 <u>Limit Level Exceedance</u> 0215660_11 August 2017_ Bottom-depth DO_E_Station CS(Mf)5 [Total No. of Exceedances = 7]	
Date	11 August 2017 (Measured) 13 August 2017 (<i>In situ</i> results received by ERM) 22 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Surface and Middle-depth Dissolved Oxygen (DO), Bottom-depth DO, Depth-averaged Suspended Solids (SS)	
Action Levels for DO	Surface and Middle-depth DO	5.0 mg/L
	Bottom-depth DO	4.7 mg/L
Limit Levels for DO	Surface and Middle-depth DO	4.2 mg/L
	Bottom-depth DO	3.6 mg/L
Action Levels for SS	SS	120% of upstream control station at the same tide of the same day and 95%-ile of baseline data (i.e., 23.5 mg/L).
Limit Levels for SS	SS	130% of upstream control station at the same tide of the same day and 99%-ile of baseline data. (i.e., 34.4 mg/L)
Measured Levels	<u>Action Level Exceedance</u> - Mid-Ebb at CS(Mf)5 (Surface and Middle-depth DO = 4.6 mg/L); - Mid-Ebb at IS(Mf)16 (Bottom-depth DO = 4.6 mg/L); - Mid-Ebb at SR4a (Bottom-depth DO = 4.1 mg/L); - Mid-Flood at CS(Mf)5 (Bottom-depth DO = 3.7 mg/L); - Mid-Flood at IS(Mf)16 (Surface and Middle-depth DO = 4.9 mg/L); - Mid-Flood at IS8 (depth-averaged SS = 28.4 mg/L); <u>Limit Level Exceedance</u> - Mid-Ebb at CS(Mf)5 (Bottom-depth DO = 3.5 mg/L).	
Works Undertaken (at the time of monitoring event)	No marine works was undertaken under this Contract on 11 August 2017.	

Possible Reason for Action or Limit Level Exceedance(s)	The exceedance of surface and middle-depth DO, bottom-depth DO and depth-averaged SS are unlikely to be due to the Project, in view of the following: • No marine works was undertaken under this Contract on 11 August 2017. • Depth-averaged Turbidity levels at all stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day. • Apart from IS8, depth-averaged SS levels at all other monitoring stations were in compliance with the Action and Limit Levels during both mid-flood and mid-ebb tides on the same day. Depth-averaged SS levels at IS8 at mid-ebb tides were similar to those at other stations apart from the exceedance observed at mid-flood tide. • CS(Mf)5 is distant (>3km) from the marine works area under this Contract, thus the observed exceedance should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality. • Apart from marginal exceedances at IS(Mf)16 and SR4a, levels of DO at all other Impact stations and sensitive receiver monitoring stations were in compliance with the Action and Limit Levels during both mid-flood and mid-ebb tides on the same day. • DO levels were generally lower at water quality monitoring stations due to two possible reasons of natural variation: 1. Natural ability for water to hold dissolved oxygen is reduced due to higher water temperature in summer months. 2. Higher Salinity recorded at the bottom level and lower Salinity recorded at the surface and middle level of CS(Mf)5 were observed during both mid-flood and mid-ebb tides on 11 August 2017. Record of higher Salinity at the bottom level of CS(Mf)5 was likely caused by stratification of water column where freshwater discharged from the Pearl River tended to form a surface layer of lower salinity water, resulted in lower Salinity recorded at the surface and middle levels compared to the higher Salinity recorded at the bottom level of the monitoring station. Higher Salinity limits the solubility of oxygen in the seawater, which contribute to a lower DO at the bottom level at CS(Mf)5.
Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.
Remarks	The monitoring results on 11 August 2017 and locations of water quality monitoring stations are attached.

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	Depth-averaged Turbidity (mg/L)	SS (mg/L)	Depth-averaged SS (mg/L)
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)5	15:33	Surface	1	29.4	7.8	19.3	5.3	4.6	7.9	13.4	9.6	10.3
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)5	15:33	Surface	2	29.5	7.8	19.3	5.4		7.9		9.6	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)5	15:33	Middle	1	27.7	7.9	24.1	3.7		9.6		8.4	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)5	15:33	Middle	2	27.8	7.8	24.1	3.8		9.7		8.7	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)5	15:33	Bottom	1	26.7	7.9	27.3	3.5	3.5	22.7		13.2	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)5	15:33	Bottom	2	26.8	7.8	27.3	3.5		22.7		12.1	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)3(N)	13:55	Surface	1	30.1	7.8	17.7	5.6	5.3	4.9	13.3	5.3	5.1
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)3(N)	13:55	Surface	2	29.9	7.7	18.0	5.8		5.3		4.5	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)3(N)	13:55	Middle	1	28.8	7.8	21.0	4.7		13.7		3.8	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)3(N)	13:55	Middle	2	28.6	7.7	21.3	4.9		14.0		4.5	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)3(N)	13:55	Bottom	1	28.6	7.9	21.9	4.6	4.7	20.7		6.5	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	CS(Mf)3(N)	13:55	Bottom	2	28.4	7.7	22.2	4.8		20.9		6.2	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)16	14:58	Surface	1	29.4	7.8	20.5	5.4	5.2	5.9	7.7	6.7	9.6
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)16	14:58	Surface	2	29.5	7.8	20.5	5.5		6.8		7.6	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)16	14:58	Middle	1	28.7	7.8	21.7	4.9		7.5		11.1	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)16	14:58	Middle	2	28.8	7.8	21.7	4.9		8.2		10.7	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)16	14:58	Bottom	1	28.5	7.8	22.1	4.6	4.6	9.0		11.5	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)16	14:58	Bottom	2	28.6	7.8	22.1	4.6		8.9		10.0	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	SR4a	14:40	Surface	1	29.3	7.8	20.0	5.1	5.2	7.7	12.6	8.5	10.6
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	SR4a	14:40	Surface	2	29.4	7.8	20.0	5.2		8.8		9.4	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	SR4a	14:40	Bottom	1	28.0	7.8	23.4	4.1	4.1	16.5		12.5	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	SR4a	14:40	Bottom	2	28.1	7.8	23.4	4.1		17.3		12.0	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	SR4	14:31	Surface	1	29.4	7.9	19.7	5.3	5.4	10.8	12.0	11.8	13.0
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	SR4	14:31	Surface	2	29.5	7.8	19.7	5.4		11.8		10.9	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	SR4	14:31	Bottom	1	29.2	7.9	20.4	5.3	5.4	12.2		15.0	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	SR4	14:31	Bottom	2	29.4	7.8	20.3	5.4		13.0		14.1	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS8	14:19	Surface	1	29.3	7.9	20.1	5.5	5.6	8.2	12.0	7.1	8.7
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS8	14:19	Surface	2	29.5	7.8	20.0	5.6		8.4		6.4	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS8	14:19	Bottom	1	29.0	7.9	20.5	5.0	5.1	15.8		11.1	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS8	14:19	Bottom	2	29.1	7.8	20.5	5.1		15.7		10.1	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)9	14:08	Surface	1	29.8	7.8	19.2	5.7	5.8	6.2	12.3	4.8	11.6
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)9	14:08	Surface	2	29.9	7.8	19.1	5.8		5.0		5.9	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)9	14:08	Bottom	1	29.2	7.8	20.4	5.2	5.2	18.7		17.0	
TMCLKL	HY/2012/07	2017-08-11	Mid-Ebb	IS(Mf)9	14:08	Bottom	2	29.3	7.8	20.4	5.2		19.1		18.8	

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	Depth-averaged Turbidity (mg/L)	SS (mg/L)	Depth-averaged SS (mg/L)
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)5	8:02	Surface	1	29.1	8.3	17.5	5.2	5.0	3.4	3.3	3.8	5.0
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)5	8:02	Surface	2	29.2	8.3	17.5	5.3		2.9		5.1	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)5	8:02	Middle	1	28.6	8.2	19.9	4.6		3.6		4.7	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)5	8:02	Middle	2	28.8	8.3	19.9	4.7	3.7	2.5		6.2	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)5	8:02	Bottom	1	27.2	8.1	25.9	3.7		4.4		4.7	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)5	8:02	Bottom	2	27.4	8.2	25.6	3.7	5.3	3.1	11.4	5.3	14.0
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)3(N)	9:11	Surface	1	29.5	7.8	15.4	5.5		6.7		6.4	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)3(N)	9:11	Surface	2	29.2	7.6	15.9	5.4		6.9		7.7	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)3(N)	9:11	Middle	1	29.4	7.8	17.2	5.1	5.1	9.7		9.8	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)3(N)	9:11	Middle	2	29.2	7.6	17.5	5.2		9.4		9.7	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)3(N)	9:11	Bottom	1	29.2	7.8	18.6	5.0		17.1		24.4	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	CS(Mf)3(N)	9:11	Bottom	2	28.9	7.7	18.9	5.2	4.9	18.4	6.0	26.0	6.3
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)16	8:37	Surface	1	28.9	7.9	19.2	4.9		6.1		5.2	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)16	8:37	Surface	2	29.0	8.0	19.2	5.0		5.6		4.5	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)16	8:37	Middle	1	28.8	7.9	20.2	4.7	4.8	4.9		6.8	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)16	8:37	Middle	2	28.9	8.0	20.1	4.8		3.6		5.6	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)16	8:37	Bottom	1	28.7	7.9	20.2	4.7		8.1	21.6	7.6	18.1
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)16	8:37	Bottom	2	28.9	8.0	20.2	4.8	5.4	7.8		8.2	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	SR4a	8:50	Surface	1	28.9	8.0	19.1	5.4		26.5		18.8	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	SR4a	8:50	Surface	2	29.0	8.0	19.1	5.4	4.8	26.3	21.6	18.7	18.1
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	SR4a	8:50	Bottom	1	28.8	7.9	19.5	4.7		16.3		17.3	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	SR4a	8:50	Bottom	2	28.9	7.9	19.4	4.8	5.1	17.2	5.9	17.7	6.9
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	SR4	9:04	Surface	1	29.0	7.9	18.5	5.1		5.5		6.9	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	SR4	9:04	Surface	2	29.1	8.0	18.5	5.1	5.2	5.2		7.0	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	SR4	9:04	Bottom	1	29.0	8.0	18.6	5.1		6.6	24.9	6.2	28.4
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	SR4	9:04	Bottom	2	29.1	8.0	18.6	5.2	5.0	6.2		7.6	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS8	9:18	Surface	1	28.9	7.9	18.8	4.9		23.1		22.9	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS8	9:18	Surface	2	29.1	8.0	18.8	5.0	4.8	24.0	24.9	24.4	28.4
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS8	9:18	Bottom	1	28.9	7.9	20.1	4.7		26.7		32.5	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS8	9:18	Bottom	2	29.0	7.9	20.1	4.8	5.3	25.6	4.7	33.9	6.4
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)9	9:33	Surface	1	29.1	7.9	19.1	5.3		3.6		4.2	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)9	9:33	Surface	2	29.2	8.0	19.1	5.3	5.2	2.7		4.0	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)9	9:33	Bottom	1	28.9	7.9	20.5	5.2		6.4	4.7	8.1	
TMCLKL	HY/2012/07	2017-08-11	Mid-Flood	IS(Mf)9	9:33	Bottom	2	29.0	8.0	20.4	5.2		5.9		9.4	

Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level



WQMS	X	Y
Impact Station		
IS8	814251	818412
IS(Mf)9	813273	818850
IS(Mf)16	814328	819497
Control / Far Field Station		
CS(Mf)5	817990	821129
CS(Mf)3(N)	808814	822355
Sensitive Receiver Station		
SR4	814760	817867
SR4a	815247	818067

Key

- Control / Far Field Station
- Impact Station
- Sensitive Receiver Station
- Site Boundary

Locations of Water Quality Monitoring Stations

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 18 August 2017

16/F Berkshire House,
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0215660_14 August 2017_Surface and Middle-depth DO_F_Station CS(Mf)5
0215660_14 August 2017_Bottom-depth DO_F_Station CS(Mf)5

A total of two exceedances were recorded on 14 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07

TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

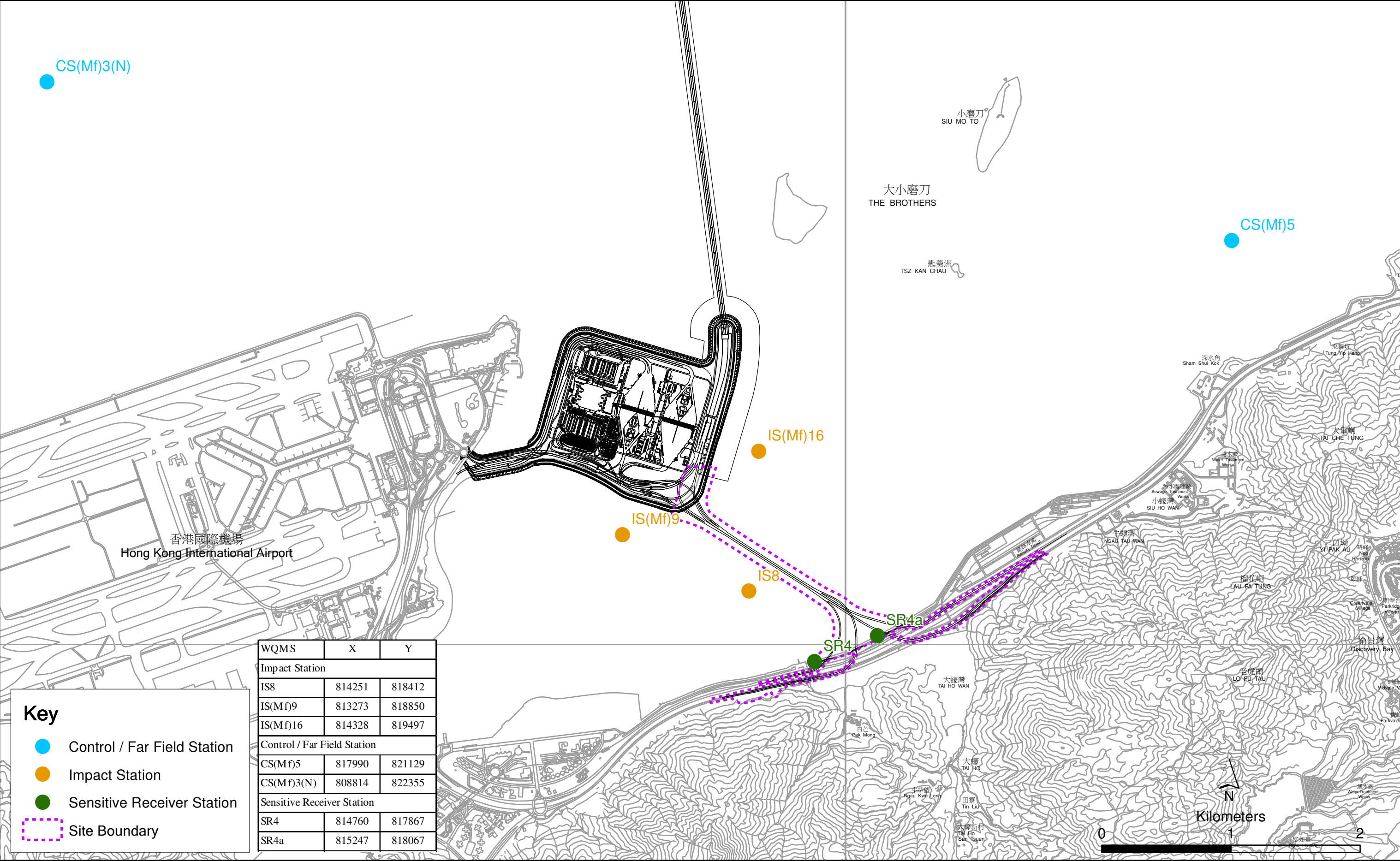
Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0215660_14 August 2017_Surface and Middle-depth DO_F_Station CS(Mf)5 0215660_14 August 2017_Bottom-depth DO_F_Station CS(Mf)5 [Total No. of Exceedances = 2]	
Date	14 August 2017 (Measured) 16 August 2017 (<i>In situ</i> results received by ERM) 24 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Surface and Middle-depth Dissolved Oxygen (DO), Bottom-depth Dissolved Oxygen	
Action Levels for DO	Surface and Middle-depth DO	5.0 mg/L
	Bottom-depth DO	4.7 mg/L
Limit Levels for DO	Surface and Middle-depth DO	4.2 mg/L
	Bottom-depth DO	3.6 mg/L
Measured Levels	<u>Action Level Exceedance</u> 1. Mid-Flood at CS(Mf)5 (Surface and Middle-depth DO = 4.9 mg/L); 2. Mid-Flood at CS(Mf)5 (Bottom-depth DO = 4.2 mg/L).	
Works Undertaken (at the time of monitoring event)	Major marine works undertaken under this Contract on 14 August 2017 included: Rock armour reinstatement for the construction of underslung truss scheme	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances of surface and middle-depth DO and bottom-depth DO at CS(Mf)5 are unlikely to be due to the Project, in view of the following: - CS(Mf)5 is distant (>3km) from the marine works area under this Contract, thus the observed exceedance should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality. - Apart from the Control station CS(Mf)5, levels of DO at all monitoring stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day.	
Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 14 August 2017 and locations of water quality monitoring stations are attached.	

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)5	17:19	Surface	1	29.6	7.8	18.3	5.8	5.7	4.4	5.8
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)5	17:19	Surface	2	29.7	8.0	18.3	5.8		4.6	5.8
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)5	17:19	Middle	1	29.4	8.0	19.7	5.5		4.7	5.9
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)5	17:19	Middle	2	29.5	8.1	19.7	5.5		4.9	4.1
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)5	17:19	Bottom	1	27.3	8.0	27.3	4.8	4.8	4.2	4.4
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)5	17:19	Bottom	2	27.4	8.1	27.4	4.7		4.5	4.7
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)3(N)	16:09	Surface	1	30.0	7.9	16.4	6.1	6.2	3.0	2.5
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)3(N)	16:09	Surface	2	29.8	7.7	17.8	6.3		2.4	3.3
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)3(N)	16:09	Middle	1	30.0	7.9	16.4	6.1		3.0	2.4
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)3(N)	16:09	Middle	2	29.8	7.7	17.8	6.2		2.4	3.1
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)3(N)	16:09	Bottom	1	29.2	7.8	18.8	4.8	4.9	7.3	2.2
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	CS(Mf)3(N)	16:09	Bottom	2	29.0	7.6	20.4	5.0		7.0	3.0
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)16	16:52	Surface	1	29.8	7.8	20.9	6.2	5.8	5.3	6.1
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)16	16:52	Surface	2	29.9	7.9	20.9	6.2		5.2	5.3
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)16	16:52	Middle	1	29.1	7.8	21.5	5.4		5.5	4.7
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)16	16:52	Middle	2	29.2	7.9	21.5	5.4		5.5	5.1
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)16	16:52	Bottom	1	28.5	7.8	22.8	5.2	5.2	3.0	5.8
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)16	16:52	Bottom	2	28.6	7.9	22.6	5.1		3.4	5.4
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	SR4a	16:41	Surface	1	29.7	7.8	20.2	6.1	6.1	8.6	8.2
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	SR4a	16:41	Surface	2	29.9	7.9	20.2	6.1		8.2	7.8
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	SR4a	16:41	Bottom	1	29.5	7.8	20.5	5.7	5.7	11.7	9.5
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	SR4a	16:41	Bottom	2	29.7	7.9	20.5	5.6		11.2	8.5
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	SR4	16:35	Surface	1	29.9	7.8	20.1	6.3	6.3	6.3	5.0
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	SR4	16:35	Surface	2	30.0	7.9	20.1	6.3		5.8	5.7
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	SR4	16:35	Bottom	1	29.6	7.8	21.2	5.8	5.8	8.9	5.4
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	SR4	16:35	Bottom	2	29.7	7.9	21.2	5.8		8.5	6.2
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS8	16:28	Surface	1	30.1	7.8	20.2	6.4	6.4	9.8	2.7
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS8	16:28	Surface	2	30.2	7.9	20.2	6.4		10.0	3.0
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS8	16:28	Bottom	1	29.7	7.8	20.8	5.7	5.7	13.0	3.3
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS8	16:28	Bottom	2	29.8	7.9	20.8	5.6		12.5	2.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)9	16:19	Surface	1	30.5	8.0	20.5	5.1	5.2	5.1	2.8
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)9	16:19	Surface	2	30.5	8.0	20.5	5.2		5.1	3.4
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)9	16:19	Bottom	1	30.3	7.9	20.6	7.0	6.9	5.2	5.1
TMCLKL	HY/2012/07	2017-08-14	Mid-Ebb	IS(Mf)9	16:19	Bottom	2	30.3	7.9	20.6	6.8		5.2	6.4

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)5	10:45	Surface	1	29.1	7.7	19.4	5.2	4.9	3.0	2.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)5	10:45	Surface	2	29.2	7.7	19.4	5.3		2.5	2.9
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)5	10:45	Middle	1	28.2	7.7	23.9	4.5		3.4	4.8
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)5	10:45	Middle	2	28.3	7.7	23.9	4.5		3.1	3.2
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)5	10:45	Bottom	1	27.7	7.7	25.8	4.2	4.2	4.5	5.4
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)5	10:45	Bottom	2	27.8	7.7	25.9	4.2		4.3	6.0
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)3(N)	12:28	Surface	1	30.3	7.8	12.9	6.0	5.8	5.7	4.9
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)3(N)	12:28	Surface	2	30.0	7.7	14.2	6.1		5.1	4.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)3(N)	12:28	Middle	1	29.4	8.0	17.2	5.6		7.6	4.2
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)3(N)	12:28	Middle	2	29.4	7.9	17.2	5.6		7.5	5.3
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)3(N)	12:28	Bottom	1	28.8	7.8	21.5	5.1	5.1	8.1	4.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	CS(Mf)3(N)	12:28	Bottom	2	28.8	7.7	21.6	5.1		8.5	4.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS(Mf)16	11:19	Surface	1	29.4	7.7	19.9	5.7	5.7	3.5	4.0
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS(Mf)16	11:19	Surface	2	29.6	7.7	19.9	5.7		3.4	4.0
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS(Mf)16	11:19	Bottom	1	29.1	7.7	20.9	5.3	5.3	9.8	6.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS(Mf)16	11:19	Bottom	2	29.3	7.7	20.9	5.3		10.3	6.2
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	SR4a	11:32	Surface	1	29.7	7.7	18.2	5.8	5.8	5.5	5.9
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	SR4a	11:32	Surface	2	29.8	7.7	18.2	5.8		5.4	6.8
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	SR4a	11:32	Bottom	1	29.6	7.7	18.4	5.8	5.8	7.8	7.3
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	SR4a	11:32	Bottom	2	29.7	7.7	18.4	5.8		7.2	6.7
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	SR4	11:39	Surface	1	29.6	7.7	18.8	5.8	5.8	6.1	3.1
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	SR4	11:39	Surface	2	29.7	7.7	18.8	5.8		6.0	3.7
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	SR4	11:39	Bottom	1	29.5	7.7	19.0	5.7	5.7	11.3	11.9
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	SR4	11:39	Bottom	2	29.6	7.7	19.0	5.7		11.8	10.3
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS8	11:54	Surface	1	29.7	7.7	19.0	5.8	5.8	5.7	5.9
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS8	11:54	Surface	2	29.8	7.7	19.0	5.8		5.6	4.8
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS8	11:54	Bottom	1	29.4	7.7	20.1	5.6	5.6	16.1	8.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS8	11:54	Bottom	2	29.5	7.7	20.1	5.6		16.7	7.5
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS(Mf)9	12:05	Surface	1	29.6	7.8	20.3	5.8	5.9	6.0	7.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS(Mf)9	12:05	Surface	2	29.8	7.8	20.3	5.9		5.6	6.2
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS(Mf)9	12:05	Bottom	1	29.3	7.8	21.5	5.6	5.6	9.3	7.6
TMCLKL	HY/2012/07	2017-08-14	Mid-Flood	IS(Mf)9	12:05	Bottom	2	29.4	7.8	21.5	5.5		9.3	6.0

Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level



Locations of Water Quality Monitoring Stations

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 18 August 2017

16/F Berkshire House,
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



ERM

Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0215660_16 August 2017_ Bottom-depth DO_E_Station CS(Mf)3(N)

0215660_16 August 2017_ Bottom-depth DO_F_Station CS(Mf)5

A total of two exceedances were recorded on 16 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07

TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0215660_16 August 2017_ Bottom-depth DO_E_Station CS(Mf)3(N) 0215660_16 August 2017_ Bottom-depth DO_F_Station CS(Mf)5 [Total No. of Exceedances = 2]	
Date	16 August 2017 (Measured) 18 August 2017 (<i>In situ</i> results received by ERM) 25 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Bottom-depth Dissolved Oxygen (DO)	
Action Levels for DO	Surface and Middle-depth DO	5.0 mg/L
	Bottom-depth DO	4.7 mg/L
Limit Levels for DO	Surface and Middle-depth DO	4.2 mg/L
	Bottom-depth DO	3.6 mg/L
Measured Levels	<u>Action Level Exceedance</u> 1. Mid-Ebb at CS(Mf)3(N) (Bottom-depth DO = 4.6 mg/L); 2. Mid-Flood at CS(Mf)5 (Bottom-depth DO = 4.0 mg/L).	
Works Undertaken (at the time of monitoring event)	Major marine works undertaken under this Contract on 16 August 2017 included: Rock armour reinstatement for the construction of underslung truss scheme	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances of bottom-depth DO at CS(Mf)3(N) and CS(Mf)5 are unlikely to be due to the Project, in view of the following: - CS(Mf)3(N) and CS(Mf)5 are distant (>5km and >3km respectively) from the marine works area under this Contract, thus the observed exceedance should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality. - Apart from the Control stations, CS(Mf)3(N) and CS(Mf)5, levels of DO at all monitoring stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day.	
Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 18 August 2017 and locations of water quality monitoring stations are attached.	

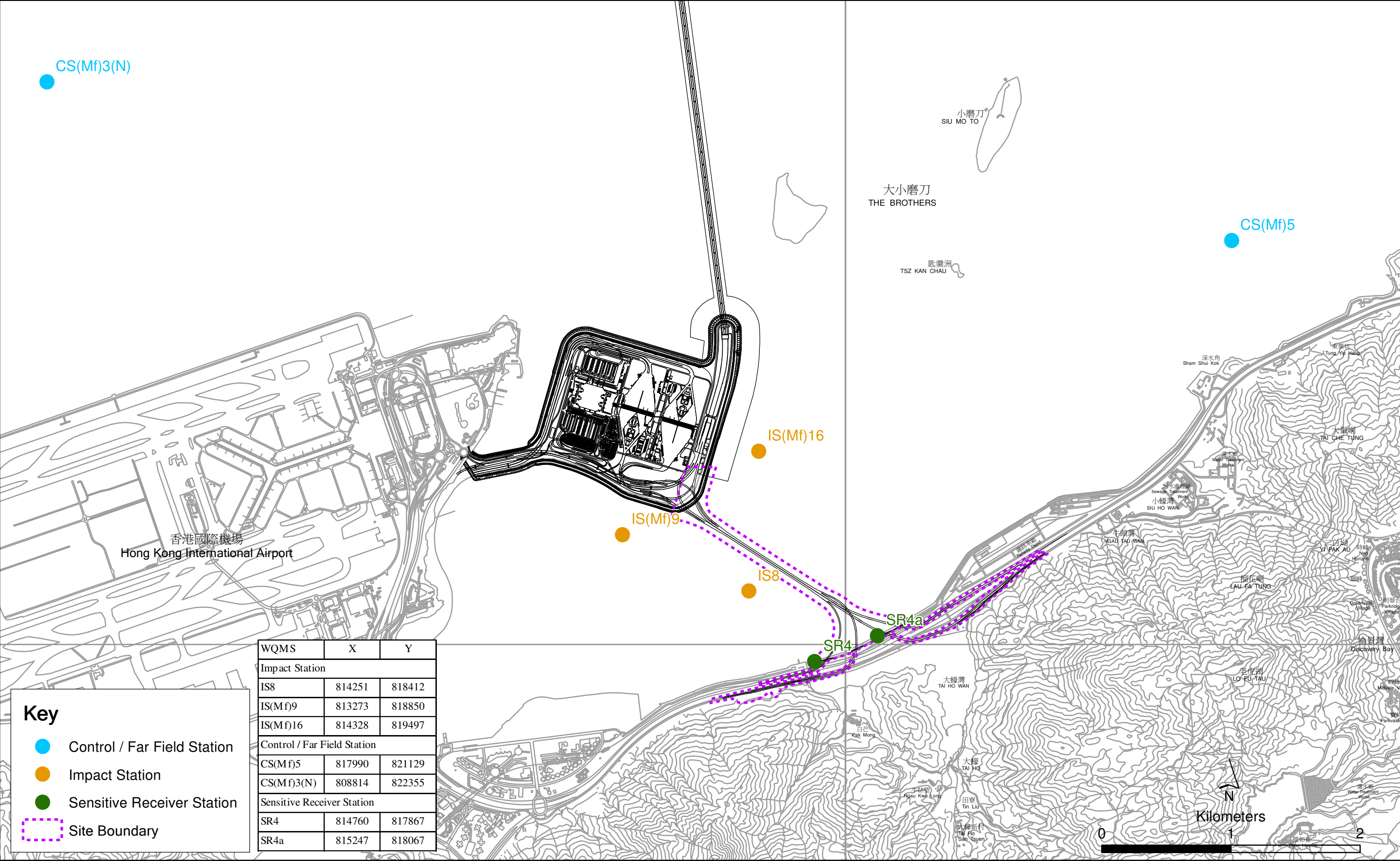
Project	Works	ate (yyyy-mm-d	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)5	07:10	Surface	1	29.1	7.8	18.4	5.9	5.9	2.0	1.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)5	07:10	Surface	2	29.1	7.8	18.4	5.9		2.2	1.2
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)5	07:10	Middle	1	29.1	7.8	19.4	5.8		2.0	2.2
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)5	07:10	Middle	2	29.0	7.8	19.4	5.8		2.2	2.4
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)5	07:10	Bottom	1	28.0	7.8	23.8	5.5	5.5	1.7	2.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)5	07:10	Bottom	2	28.0	7.8	24.6	5.5		1.7	2.6
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)3(N)	09:08	Surface	1	29.4	7.8	13.1	6.1	5.4	3.5	2.6
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)3(N)	09:08	Surface	2	29.6	7.7	13.2	5.9		3.5	3.0
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)3(N)	09:08	Middle	1	28.8	7.7	19.4	5.0		3.0	2.8
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)3(N)	09:08	Middle	2	29.0	7.6	19.9	4.7		3.6	2.8
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)3(N)	09:08	Bottom	1	28.1	7.7	22.3	4.7	4.6	3.2	4.7
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	CS(Mf)3(N)	09:08	Bottom	2	28.3	7.6	22.5	4.4		3.7	4.1
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)16	07:44	Surface	1	29.9	7.9	19.1	6.5	6.2	4.3	3.4
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)16	07:44	Surface	2	29.8	7.9	19.1	6.5		4.8	3.4
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)16	07:44	Middle	1	29.4	7.8	20.6	5.8		4.9	4.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)16	07:44	Middle	2	29.4	7.8	20.6	5.9		4.9	3.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)16	07:44	Bottom	1	28.9	7.8	21.8	5.2	5.3	3.3	4.1
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)16	07:44	Bottom	2	28.8	7.8	21.8	5.3		3.5	4.1
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	SR4a	07:54	Surface	1	29.5	7.9	19.1	6.0	6.0	3.6	3.0
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	SR4a	07:54	Surface	2	29.4	7.9	19.2	6.0		4.2	3.0
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	SR4a	07:54	Bottom	1	29.1	7.8	20.1	5.6	5.7	3.0	2.1
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	SR4a	07:54	Bottom	2	29.2	7.8	20.8	5.7		3.3	3.1
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	SR4	08:00	Surface	1	29.6	7.9	18.6	6.0	6.0	4.0	3.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	SR4	08:00	Surface	2	29.5	7.9	18.6	6.0		4.5	3.6
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	SR4	08:00	Bottom	1	29.5	7.8	20.6	5.6	5.6	8.6	3.0
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	SR4	08:00	Bottom	2	29.3	7.8	20.7	5.6		8.6	3.4
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS8	08:12	Surface	1	29.4	7.9	18.9	6.6	6.5	6.2	3.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS8	08:12	Surface	2	29.6	7.9	18.7	6.3		6.2	3.5
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS8	08:12	Bottom	1	29.1	7.8	21.6	5.5	5.5	9.6	3.2
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS8	08:12	Bottom	2	29.2	7.8	21.4	5.4		9.6	2.6
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)9	08:22	Surface	1	29.7	7.8	18.2	6.2	6.2	4.8	3.0
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)9	08:22	Surface	2	29.5	7.8	18.2	6.1		5.7	3.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)9	08:22	Bottom	1	29.7	7.8	21.0	5.1	5.1	13.3	3.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Ebb	IS(Mf)9	08:22	Bottom	2	29.5	7.8	21.1	5.1		13.5	2.2

Project	Works	ate (yyyy-mm-d	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)5	14:47	Surface	1	29.7	7.9	17.2	6.6	5.6	1.7	1.4
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)5	14:47	Surface	2	29.9	7.9	17.2	6.7		2.0	1.2
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)5	14:47	Middle	1	27.6	7.9	25.9	4.6		3.5	1.7
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)5	14:47	Middle	2	27.6	7.9	25.8	4.4		3.3	1.5
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)5	14:47	Bottom	1	25.1	7.8	33.9	4.0	4.0	9.1	5.6
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)5	14:47	Bottom	2	25.1	7.8	34.0	3.9		9.5	6.2
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)3(N)	13:16	Surface	1	30.5	7.9	8.4	6.6	6.2	5.1	4.8
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)3(N)	13:16	Surface	2	30.7	7.7	8.5	6.4		5.8	4.5
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)3(N)	13:16	Middle	1	30.0	7.8	13.5	6.0		3.8	4.1
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)3(N)	13:16	Middle	2	30.2	7.7	13.5	5.8		4.4	4.2
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)3(N)	13:16	Bottom	1	29.0	7.8	17.3	5.3	5.2	2.7	4.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	CS(Mf)3(N)	13:16	Bottom	2	29.2	7.6	17.3	5.1		3.6	4.4
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS(Mf)16	14:20	Surface	1	29.6	7.9	18.3	7.1	6.6	3.5	5.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS(Mf)16	14:20	Surface	2	29.7	7.9	18.3	7.0		2.5	4.0
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS(Mf)16	14:20	Middle	1	29.1	7.9	19.4	6.1		7.0	5.7
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS(Mf)16	14:20	Middle	2	29.1	7.9	19.4	6.1		6.4	4.4
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS(Mf)16	14:20	Bottom	1	28.4	7.8	23.0	5.4	5.4	12.9	5.4
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS(Mf)16	14:20	Bottom	2	28.5	7.8	23.0	5.3		12.5	4.5
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	SR4a	14:00	Surface	1	29.7	7.9	16.0	7.1	7.1	3.1	4.8
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	SR4a	14:00	Surface	2	29.9	7.9	16.0	7.1		2.5	3.6
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	SR4a	14:00	Bottom	1	29.1	7.8	19.7	6.1	6.1	16.5	6.0
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	SR4a	14:00	Bottom	2	29.3	7.8	19.7	6.0		17.4	4.7
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	SR4	13:55	Surface	1	29.7	7.9	15.8	7.2	7.3	2.9	2.9
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	SR4	13:55	Surface	2	29.9	7.9	15.9	7.3		2.2	3.1
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	SR4	13:55	Bottom	1	29.6	7.9	17.5	6.9	6.8	6.6	4.6
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	SR4	13:55	Bottom	2	29.7	7.9	17.6	6.7		6.6	5.3
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS8	13:45	Middle	1	29.7	7.9	16.6	7.2	7.2	2.5	1.8
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS8	13:45	Middle	2	29.8	7.9	16.6	7.2		1.9	1.8
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS(Mf)9	13:36	Middle	1	29.6	8.0	18.0	7.2	7.2	2.9	2.2
TMCLKL	HY/2012/07	2017-08-16	Mid-Flood	IS(Mf)9	13:36	Middle	2	29.8	8.0	18.0	7.2		2.5	3.0

Note:

Indicates Exceedance of Action Level

Indicates Exceedance of Limit Level



WQMS	X	Y
Impact Station		
IS8	814251	818412
IS(Mf)9	813273	818850
IS(Mf)16	814328	819497
Control / Far Field Station		
CS(Mf)5	817990	821129
CS(Mf)3(N)	808814	822355
Sensitive Receiver Station		
SR4	814760	817867
SR4a	815247	818067

Locations of Water Quality Monitoring Stations

Email
message

Environmental
Resources
Management

To Ramboll Environ – Hong Kong, Limited (ENPO)

From ERM- Hong Kong, Limited

Ref/Project number Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link – Southern
Connection Viaduct Section

Subject Notification of Exceedance for Marine Water
Quality Impact Monitoring

Date 24 August 2017

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25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jovy.tam@erm.com



Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0215660_18 August 2017_Bottom-depth DO_E_Station CS(Mf)3(N)
0215660_18 August 2017_Bottom-depth DO_F_Station CS(Mf)5

A total of two exceedances were recorded on 18 August 2017.

Regards,

Mr Jovy Tam
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/07
TUEN MUN – CHEK LAP KOK LINK –
SOUTHERN CONNECTION VIADUCT SECTION

Marine Water Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0215660_18 August 2017_ Bottom-depth DO_E_Station CS(Mf)3(N) 0215660_18 August 2017_ Bottom-depth DO_F_Station CS(Mf)5 [Total No. of Exceedances = 2]	
Date	18 August 2017 (Measured) 20 August 2017 (<i>In situ</i> results received by ERM) 28 August 2017 (Laboratory results received by ERM)	
Monitoring Station	CS(Mf)5, SR4a, SR4, IS8, IS(Mf)16, IS(Mf)9, CS(Mf)3(N)	
Parameter(s) with Exceedance(s)	Bottom-depth Dissolved Oxygen (DO)	
Action Levels for DO	Surface and Middle-depth DO	5.0 mg/L
	Bottom-depth DO	4.7 mg/L
Limit Levels for DO	Surface and Middle-depth DO	4.2 mg/L
	Bottom-depth DO	3.6 mg/L
Measured Levels	<u>Action Level Exceedance</u> 1. Mid-Ebb at CS(Mf)3(N) (Bottom-depth DO = 3.9 mg/L); 2. Mid-Flood at CS(Mf)5 (Bottom-depth DO = 4.5 mg/L).	
Works Undertaken (at the time of monitoring event)	Major marine works undertaken under this Contract on 18 August 2017 included: Rock armour reinstatement for the construction of underslung truss scheme	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances of bottom-depth DO at CS(Mf)3(N) and CS(Mf)5 are unlikely to be due to the Project, in view of the following: - CS(Mf)3(N) and CS(Mf)5 are distant (>5km and >3km respectively) from the marine works area under this Contract, thus the observed exceedance should not be affected by the marine works under this Contract and it is considered to be natural fluctuation in water quality. - Apart from the Control stations, CS(Mf)3(N) and CS(Mf)5, levels of DO at all monitoring stations were in compliance with the Action and Limit Levels during both mid-ebb and mid-flood tides on the same day.	
Actions Taken/ To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 18 August 2017 and locations of water quality monitoring stations are attached.	

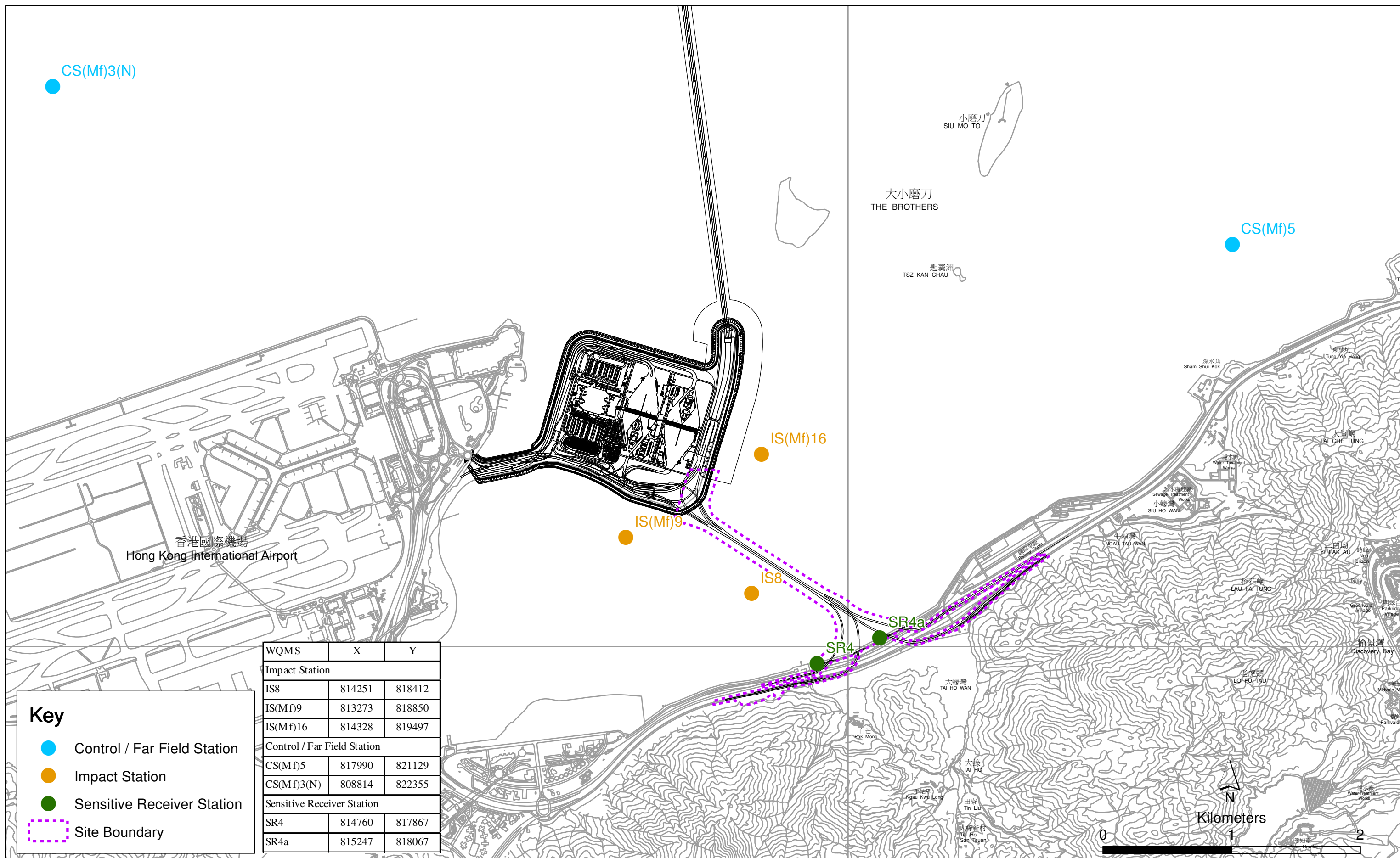
Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)5	09:20	Surface	1	28.0	8.1	17.2	7.4	6.6	6.9	3.6
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)5	09:20	Surface	2	29.4	8.0	17.2	7.4		6.7	2.4
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)5	09:20	Middle	1	28.0	7.9	23.6	5.7		7.8	2.4
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)5	09:20	Middle	2	28.1	8.0	23.6	5.7		7.4	3.5
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)5	09:20	Bottom	1	26.0	7.9	31.5	5.1	5.0	8.5	3.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)5	09:20	Bottom	2	25.9	7.9	31.9	4.9		8.0	4.0
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)3(N)	10:59	Surface	1	29.3	7.7	15.1	6.1	5.2	2.4	4.3
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)3(N)	10:59	Surface	2	29.5	7.8	15.0	6.0		2.6	3.4
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)3(N)	10:59	Middle	1	27.4	7.6	24.2	4.4		3.6	5.5
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)3(N)	10:59	Middle	2	27.6	7.7	24.2	4.2		4.1	6.0
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)3(N)	10:59	Bottom	1	26.9	7.6	25.8	4.0	3.9	5.2	5.2
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	CS(Mf)3(N)	10:59	Bottom	2	27.2	7.7	25.8	3.8		5.6	5.1
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)16	09:58	Surface	1	29.5	8.0	19.5	7.4	7.0	4.6	3.6
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)16	09:58	Surface	2	29.6	8.0	19.5	7.5		4.1	3.2
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)16	09:58	Middle	1	29.0	7.9	20.7	6.4		5.4	3.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)16	09:58	Middle	2	28.9	8.0	20.8	6.6		5.2	4.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)16	09:58	Bottom	1	28.1	7.9	25.2	5.5	5.5	6.1	5.3
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)16	09:58	Bottom	2	28.3	7.9	25.0	5.4		6.7	5.1
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	SR4a	10:10	Surface	1	29.2	8.0	19.4	6.9	6.9	4.3	5.1
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	SR4a	10:10	Surface	2	29.3	8.0	19.4	6.9		4.0	4.7
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	SR4a	10:10	Bottom	1	28.8	7.9	22.6	6.0	6.0	4.3	4.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	SR4a	10:10	Bottom	2	28.9	8.0	22.6	5.9		4.6	5.2
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	SR4	10:15	Surface	1	29.3	8.0	19.3	6.5	6.5	4.9	4.7
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	SR4	10:15	Surface	2	29.4	8.0	19.3	6.5		5.1	5.4
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	SR4	10:15	Bottom	1	28.6	7.9	22.4	5.5	5.5	8.8	14.2
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	SR4	10:15	Bottom	2	28.8	7.9	22.3	5.4		9.4	13.0
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS8	10:32	Surface	1	29.8	8.2	17.9	9.0	9.1	2.9	3.3
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS8	10:32	Surface	2	29.9	8.1	17.9	9.1		2.7	2.9
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS8	10:32	Bottom	1	28.8	7.9	21.9	5.9	5.9	10.8	4.9
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS8	10:32	Bottom	2	29.0	8.0	21.8	5.9		11.5	4.6
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)9	10:46	Surface	1	29.5	8.0	19.1	7.0	7.1	5.4	5.1
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)9	10:46	Surface	2	29.6	8.0	19.2	7.1		5.3	3.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)9	10:46	Bottom	1	28.9	7.9	22.1	6.0	6.0	8.4	8.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Ebb	IS(Mf)9	10:46	Bottom	2	29.1	8.0	22.1	6.0		8.3	8.1

Project	Works	Date (yyyy-mm-dd)	Tide	Station	Start Time	Level	Replicate	Temperature (°C)	pH	Salinity (ppt)	DO (mg/L)	Average DO (mg/L)	Turbidity (NTU)	SS (mg/L)
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)5	17:29	Surface	1	28.4	8.1	22.9	7.8	6.7	3.7	3.3
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)5	17:29	Surface	2	28.5	8.2	22.8	7.9		3.3	3.3
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)5	17:29	Middle	1	26.8	7.9	28.3	5.4		4.4	4.3
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)5	17:29	Middle	2	26.9	8.1	28.3	5.5		4.6	5.2
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)5	17:29	Bottom	1	25.2	7.9	33.3	4.6	4.5	9.5	6.4
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)5	17:29	Bottom	2	25.3	8.2	33.3	4.4		10.7	6.4
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)3(N)	16:01	Surface	1	30.5	7.7	11.3	6.9	6.6	5.4	5.2
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)3(N)	16:01	Surface	2	30.7	7.8	11.2	6.7		5.4	5.9
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)3(N)	16:01	Middle	1	30.1	7.7	12.8	6.4		4.7	6.6
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)3(N)	16:01	Middle	2	30.3	7.7	12.7	6.2		5.3	6.9
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)3(N)	16:01	Bottom	1	28.5	7.6	19.4	4.9	4.8	4.7	8.6
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	CS(Mf)3(N)	16:01	Bottom	2	28.7	7.6	19.5	4.7		5.2	8.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS(Mf)16	17:00	Surface	1	29.6	8.1	18.3	8.8	7.6	6.9	4.6
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS(Mf)16	17:00	Surface	2	29.8	8.2	18.1	9.0		7.3	5.7
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS(Mf)16	17:00	Middle	1	28.1	7.9	22.5	6.2		7.8	5.0
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS(Mf)16	17:00	Middle	2	28.2	8.1	22.5	6.2		7.3	4.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS(Mf)16	17:00	Bottom	1	27.7	7.9	24.9	5.5	5.5	11.1	9.6
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS(Mf)16	17:00	Bottom	2	27.8	8.1	24.9	5.4		11.0	11.1
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	SR4a	16:47	Surface	1	29.6	8.0	17.6	7.9	7.9	13.5	4.4
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	SR4a	16:47	Surface	2	29.7	8.2	17.7	7.8		14.8	4.2
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	SR4a	16:47	Bottom	1	29.4	8.0	18.0	7.4	7.4	11.7	5.1
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	SR4a	16:47	Bottom	2	29.6	8.2	18.0	7.3		12.0	4.8
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	SR4	16:42	Surface	1	30.1	8.1	16.6	8.8	8.8	8.7	7.7
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	SR4	16:42	Surface	2	30.2	8.3	16.6	8.8		9.0	8.7
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	SR4	16:42	Bottom	1	30.1	8.1	16.6	8.7	8.7	10.6	8.0
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	SR4	16:42	Bottom	2	30.2	8.3	16.6	8.7		10.4	9.4
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS8	16:32	Surface	1	29.9	8.1	17.1	8.8	8.8	9.0	11.5
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS8	16:32	Surface	2	30.0	8.2	17.2	8.7		9.3	11.3
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS8	16:32	Bottom	1	29.8	8.1	17.6	8.7	8.7	11.5	12.6
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS8	16:32	Bottom	2	30.0	8.2	17.6	8.7		11.4	11.9
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS(Mf)9	16:20	Middle	1	30.1	8.3	18.5	11.5	11.4	6.8	6.0
TMCLKL	HY/2012/07	2017-08-18	Mid-Flood	IS(Mf)9	16:20	Middle	2	30.2	8.4	18.6	11.3		6.6	5.9

Note:

Indicates Exceedance of Action Level

Indicates Exceedance of Limit Level



Locations of Water Quality Monitoring Stations

File: T:\GIS\CONTRACT\0215660\Mxd\0215660_WQMS.mxd
Date: 28/4/2017

Environmental Resources Management

