

1 Introduction

Baseline monitoring at M3 and C3 was undertaken from 24 January 2007 to 30 January 2007 in accordance with the Groundwater Monitoring Working Plan endorsed by EPD on 31 October 2006 and the Updated Groundwater Monitoring Working Plan submitted to EPD on 31 January 2007.

The results from the baseline monitoring at M3 and C3 are supplementary data to the Groundwater Monitoring Working Plan.

2 Baseline Monitoring Methodology

2.1 Location of Sampling Works

Table 2-1 shows the respective recharge areas, monitoring wells and control wells for the recharge operation for different excavation zones.

Zone	Dewatering Period	Recharge Area/Well	Monitoring Well	Control Well
Zone A	Nov 06 to Mar 07	R2	M2a	C1/C3
Zone B+C	April 07 to Aug 07	R2	M3	C3
Zone D+E	Mar 07 to Aug 07	R1	M1/AGM5a (M4)	C3
Zone F	May 07 to Oct 07	R1	M1/AGM5a (M4)	C3
Zone G	Jun 07 to Nov 07	R1	M1/AGM5a (M4)	C3

Table 2-1 Recharge Areas and Monitoring Locations

2.1.1 Sampling Frequency

Groundwater samples from the wells M3 and C3 were collected daily for 7 consecutive days in accordance with the KSL EM&A manual.

2.1.2 Testing Parameters

Groundwater samples were tested for the parameters as listed in Table 5-3 of the Updated Groundwater Monitoring Working Plan.



3 Baseline Monitoring Results

3.1 Monitoring Results

Table 3-1 summarises average values of the baseline monitoring results at M3 and C3 throughout the sampling period. Detailed baseline monitoring results from M3 and C3 are shown in Table 3-2 and Table 3-3.

Parameters		Discharge Limit	C3	М3	
Tomporatura	Average	< 40°C	20.3	20.31	
Temperature	Range	× 40°C	19.7-22.2	19.8-21.8	
nΠ	Average	6-9	7.6	7.61	
pН	Range	0-9	7.6-7.6	7.6-7.7	
Groundwater Level	Average	-	-0.46	1.71	
Morouny	Average	1	0.51	N/A	
Mercury	Range	I	0.5-0.6	N/A	
Cadmium	Average	1	0.41	0.20	
Caumum	Range	ļ	0.2-1.0	0.20-0.20	
Copper	Average	100	11.14	N/A	
Coppei	Range	100	6.0-26.0	N/A	
Lead	Average	100	125.43	N/A	
Leau	Range	100	64-258	N/A	
Zinc	Average	100	50.0	N/A	
ZIIIC	Range		20-130	N/A	
Total Toxic Metals	Average	200	187.49	N/A	
Total Toxic Wetais	Range	200	90.7-415.6	N/A	
TPH C6 – C9	Average		20.0	20.0	
171100 - 09	Range	-	20.0-20.0	20.0-20.0	
TPH C10-C14	Average		62.29	69.71	
1111010-014	Range	-	49.0-71.0	60.0-81.0	
TPH C15 – C28	Average		360.43	346.57	
	Range	-	255.0-414.0	312.0-394.0	
TPH C29 – C36	Average		58.71	45.0	
11 11 029 - 030	Range		38.0-87.0	36.0-52.0	
TPH (Total)	Average		501.43	481.29	
TTTT (Total)	Range	-	362.0-570.0	432.0-541.0	

Notes:

- 1. All units are in $\mu g/L$ except for groundwater level. Groundwater level is in mPD.
- 2. No groundwater level limit is stipulated in TM.
- 3. TPH is prohibited substance according to TM.
- 4. N/A Testing of the parameters was not carried out. Referring to Section 5.1, the parameters are not of concern at the relevant locations.

Table 3-1 Summary of Baseline Groundwater Monitoring Results



Parameter	Unit	R.L	24-Jan-07	25-Jan-07	26-Jan-07	27-Jan-07	28-Jan-07	29-Jan-07	30-Jan-07	Average
Temperature	degree C	0.1	22.2	20.1	20.1	20.1	20.1	19.7	19.8	20.30
рН	рН	0.1	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.60
Grounwater Level	mPD	0.1	-0.6	-0.6	0.4	-0.6	-0.6	-0.6	-0.6	-0.46
Mercury (Dissolved)	μg/L	0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	0.50
Mercury (Total)	μg/L	0.5	<0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	<0.5	0.51
Cadmiun (Dissolved)	μg/L	0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	0.20
Cadmium (Total)	μg/L	0.2	1	0.4	0.3	0.2	0.3	0.3	0.4	0.41
Copper (Dissolved)	μg/L	1	<1	<1	<1	<1	<1	<1	<1	1.00
Copper (Total)	μg/L	1	26	13	9	6	7	6	11	11.14
Lead (Dissolved)	μg/L	1	11	7	13	6	6	8	14	9.29
Lead (Total)	μg/L	1	258	143	89	64	89	84	151	125.43
Zinc (Dissolved)	μg/L	10	<10	<10	<10	<10	<10	<10	10	10.00
Zinc (Total)	μg/L	10	130	60	30	20	30	30	50	50.00
C6-C9 Fraction	μg/L	20	<20	<20	<20	<20	<20	<20	<20	20.00
C10-C14 Fraction	μg/L	25	49	60	66	49	70	71	71	62.29
C15-C28 Fraction	μg/L	25	414	371	410	255	336	364	373	360.43
C29-C36 Fraction	μg/L	25	87	63	59	38	43	54	67	58.71
TPH (Total)	μg/L	95	570	514	555	362	469	509	531	501.43

Table 3-2 Baseline Groundwater Monitoring Results at C3

Parameter	Unit	R.L	24-Jan-07	25-Jan-07	26-Jan-07	27-Jan-07	28-Jan-07	29-Jan-07	30-Jan-07	Average
Temperature	degree C	0.1	21.8	20.4	20.3	19.8	19.8	20	20.1	20.31
pН	рН	0.1	7.7	7.6	7.6	7.6	7.6	7.6	7.6	7.61
Grounwater Level	mPD	0.1	2	2	1	2	2	1	2	1.71
Cadmiun (Dissolved)	μg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.20
Cadmium (Total)	μg/L	0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	< 0.2	<0.2	0.20
C6-C9 Fraction	μg/L	20	<20	<20	<20	<20	<20	<20	<20	20.00
C10-C14 Fraction	μg/L	25	62	73	67	60	81	81	64	69.71
C15-C28 Fraction	μg/L	25	336	362	352	312	394	351	319	346.57
C29-C36 Fraction	μg/L	25	52	51	46	40	46	44	36	45.00
TPH (Total)	μg/L	95	470	506	485	432	541	496	439	481.29

Table 3-3 Baseline Groundwater Monitoring Results at M3

Page 3

Kowloon Southern Link – KDB300 and KDB400 Tunnels, Jordan Road to Nam Cheong Station Overrun Baseline Groundwater Monitoring Results (M3 and C3)

Hyder Consulting Ltd COI Number 126012



3.2 Limit Levels

The limit level for the groundwater level and TPH at monitoring well M3 has been developed from the baseline monitoring results. Limit levels for M1, AGM5a and M2a were previously developed from the baseline results presented in the EPD endorsed Groundwater Monitoring Working Plan. The limit levels for the groundwater level and TPH at the monitoring wells are shown in Table 3-4.

Parameters	Limit Level								
	M1	AGM5a (M4)	M2a	М3					
Groundwater level	3.2	3.1	6.0	2.71					
TPH (C6-C9)	284.4	148.8	238.8	24					
TPH (C10-C14)	96	50.4	122.4	97.2					
TPH (C15-C28)	639.6	1095.6	381.6	472.8					
TPH (C29-C36)	63.6	48	62.4	62.4					

Notes:

- 1. Exceedance is considered valid only if there is no justification from the monitoring at the control well.
- 2. Limit level for groundwater level is 1m above baseline level.
- 3. Limit level for TPH is 120% of the maximum concentration of the baseline monitoring. As M2a is close to M2, baseline monitoring results of M2 is considered representative for establishing the limit level of M2a.
- 4. Limit levels for M1, AGM5a and M2a were presented in the EPD endorsed Groundwater Monitoring Working Plan.

Table 3-4 Limit Levels of Groundwater Level at Monitoring Wells

In case of any exceedance of Limit Levels, actions in accordance with the event and action plan as shown in Table 7-7 in the Updated Groundwater Monitoring Working Plan should be taken.