



**NEW HOPE**  
GROUP

G.3 Surface Water





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## G.3.1 Water Quality Data



**Lagoon Creek Sampling**

Method Name	Analyte Name	Units	Description Sample Date	LCU1-SKM 8/3/2013 8:00	LCD1-SKM 8/3/2013 8:10	NACP-AE4-SKM 8/3/2013 10:00	NACP-DS1-SKM 8/3/2013 10:15
			Reporting Limit	Result	Result	Result	Result
Turbidity	Turbidity	NTU	0.5	8.6	55	19	10
pH in water	pH**	pH Units	0.1	7.0	7.5	7.6	7.4
Conductivity and TDS by Calculation - Water	Conductivity @ 25 C	µS/cm	5	240	310	240	280
Trace Metals (Dissolved) in Water by ICPMS	Arsenic, As	µg/L	1	2	1	2	2
Trace Metals (Dissolved) in Water by ICPMS	Barium, Ba	µg/L	1	39	28	69	61
Trace Metals (Dissolved) in Water by ICPMS	Beryllium, Be	µg/L	1 <1	<1	<1	<1	<1
Trace Metals (Dissolved) in Water by ICPMS	Chromium, Cr	µg/L	2 <2	<2	<2	<2	<2
Trace Metals (Dissolved) in Water by ICPMS	Cobalt, Co	µg/L	1 <1	<1	<1	<1	<1
Trace Metals (Dissolved) in Water by ICPMS	Copper, Cu	µg/L	1	2	3	4	3
Trace Metals (Dissolved) in Water by ICPMS	Manganese, Mn	µg/L	1	1 <1	1	22	1
Trace Metals (Dissolved) in Water by ICPMS	Nickel, Ni	µg/L	1	5	2	4	4
Trace Metals (Dissolved) in Water by ICPMS	Vanadium, V	µg/L	1	2	4	8	5
Trace Metals (Dissolved) in Water by ICPMS	Zinc, Zn	µg/L	2 <2	<2	<2	6 <2	<2
Trace Metals (Total) in Water by ICPMS	Total Arsenic	µg/L	1	2	2	2	3
Trace Metals (Total) in Water by ICPMS	Total Barium	µg/L	1	88	54	90	110
Trace Metals (Total) in Water by ICPMS	Total Beryllium	µg/L	1 <1	<1	<1	<1	<1
Trace Metals (Total) in Water by ICPMS	Total Cobalt	µg/L	1	4	<1	<1	<1
Trace Metals (Total) in Water by ICPMS	Total Chromium	µg/L	1 <1	<1	1 <1	<1	<1
Trace Metals (Total) in Water by ICPMS	Total Copper	µg/L	1	3	4	4	4
Trace Metals (Total) in Water by ICPMS	Total Nickel	µg/L	1	7	3	5	4
Trace Metals (Total) in Water by ICPMS	Total Manganese	µg/L	1	490	9	31	10
Trace Metals (Total) in Water by ICPMS	Total Vanadium	µg/L	1	4	7	11	8
Trace Metals (Total) in Water by ICPMS	Total Zinc	µg/L	1 <1	<1	<1	8 <1	<1
Mercury (dissolved) in Water	Mercury	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Mercury (total) in Water	Mercury	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Total Nitrogen by Persulphate Digestion DA	Total Nitrogen (Persulphate Digestion)	mg/L	0.02	1.4	0.84	1.2	0.97
Ammonia Nitrogen by Discrete Analyser	Ammonia Nitrogen, NH <sub>3</sub> as N	mg/L	0.006	0.29	0.031	0.051	0.033
Ammonia Nitrogen by Discrete Analyser	Ammonia, NH <sub>3</sub>	mg/L	0.005	0.35	0.037	0.061	0.040
Total Phosphorus by Persulphate Digestion DA	Total Phosphorus (Persulphate Digestion)	mg/L	0.02	0.15	0.12	0.31	0.26
Filterable Reactive Phosphorus (FRP)	Filterable Reactive Phosphorus	mg/L	0.006	0.052	0.059	0.18	0.17
Nitrate/Nitrite Nitrogen (NOx) by Discrete Analysis	Nitrate/Nitrite Nitrogen, NO <sub>x</sub> as N	mg/L	0.02	0.02	0.29	0.02	<0.02
Anions by Ion Chromatography in Water	Fluoride	mg/L	0.1 <0.1	<0.1	0.6	0.2	0.1
Anions by Ion Chromatography in Water	Chloride	mg/L	1	9	26	10	13
Anions by Ion Chromatography in Water	Sulphate, SO <sub>4</sub>	mg/L	1	1	20	4	5
Alkalinity	Bicarbonate Alkalinity as CaCO <sub>3</sub>	mg/L	5	95	84	98	110
Alkalinity	Bicarbonate Alkalinity as HCO <sub>3</sub>	mg/L	5	120	100	120	140
Alkalinity	Bicarbonate Alkalinity as HCO <sub>3</sub> (meq/L)	meq/L	0.06	1.9	1.7	2.0	2.3
Alkalinity	Carbonate Alkalinity as CaCO <sub>3</sub>	mg/L	5 <5	<5	<5	<5	<5
Alkalinity	Carbonate Alkalinity as CO <sub>3</sub>	mg/L	5 <5	<5	<5	<5	<5
Alkalinity	Carbonate Alkalinity as CO <sub>3</sub> (meq/L)	meq/L	0.03 <0.03	<0.03	<0.03	<0.03	<0.03
Alkalinity	Hydroxide Alkalinity as CaCO <sub>3</sub>	mg/L	5 <5	<5	<5	<5	<5
Alkalinity	Hydroxide Alkalinity as OH	mg/L	5 <5	<5	<5	<5	<5
Alkalinity	Hydroxide Alkalinity as OH (meq/L)	meq/L	0.06 <0.06	<0.06	<0.06	<0.06	<0.06

Alkalinity	Phenolphthalein Alkalinity as CaCO3	mg/L	5	<5	<5	<5	<5	<5	<5	<5
Alkalinity	Total Alkalinity as CaCO3	mg/L	5	95	84	98	110	110	110	110
Total and Volatile Suspended Solids (TSS / VSS)	Total Suspended Solids Dried at 105°C	mg/L	5	19	28	21	7	7	7	7
TRH (Total Recoverable Hydrocarbons) in Water	TRH C10-C14	µg/L	50	<50	<50	<50	<50	<50	<50	<50
TRH (Total Recoverable Hydrocarbons) in Water	TRH C15-C28	µg/L	200	<200	<200	<200	<200	<200	<200	<200
TRH (Total Recoverable Hydrocarbons) in Water	TRH C29-C36	µg/L	200	<200	<200	<200	<200	<200	<200	<200
TRH (Total Recoverable Hydrocarbons) in Water	TRH C6-C9	µg/L	40	<40	<40	<40	<40	<40	<40	<40
Volatile Petroleum Hydrocarbons in Water	d4-1,2-dichloroethane (Surrogate)	%	0	112	87	90	101	101	101	101
Volatile Petroleum Hydrocarbons in Water	d8-toluene (Surrogate)	%	0	153	109	110	118	118	118	118
Volatile Petroleum Hydrocarbons in Water	Dibromofluoromethane (Surrogate)	%	0	123	103	105	118	118	118	118
Volatile Petroleum Hydrocarbons in Water	Bromofluorobenzene (Surrogate)	%	0	128	90	89	92	92	92	92
OC Pesticides in Water	Alpha BHC	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Hexachlorobenzene (HCB)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Beta BHC	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Lindane (gamma BHC)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Delta BHC	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Heptachlor	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Aldrin	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Heptachlor epoxide	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Isodrin	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Gamma Chlordane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Alpha Chlordane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Alpha Endosulfan	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	p,p'-DDE	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Dieldrin	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Endrin	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Beta Endosulfan	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	p,p'-DDD	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Endosulfan sulphate	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	p,p'-DDT	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Endrin ketone	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Methoxychlor	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	Mirex	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
OC Pesticides in Water	d14-p-terphenyl (Surrogate)	%	0	50	90	80	70	70	70	70
OC Pesticides in Water	2-fluorobiphenyl (Surrogate)	%	0	50	80	70	70	70	70	70
OC Pesticides in Water	d5-nitrobenzene (Surrogate)	%	0	60	100	80	70	70	70	70
OP Pesticides in Water	Dichlorvos	µg/L	1	<1	<1	<1	<1	<1	<1	<1
OP Pesticides in Water	Dimethoate	µg/L	1	<1	<1	<1	<1	<1	<1	<1
OP Pesticides in Water	Diazinon (Dimpylate)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
OP Pesticides in Water	Fenitrothion	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
OP Pesticides in Water	Malathion	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
OP Pesticides in Water	Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
OP Pesticides in Water	Parathion-ethyl (Parathion)	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
OP Pesticides in Water	Bromophos Ethyl	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
OP Pesticides in Water	Methidathion	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
OP Pesticides in Water	Ethion	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

OP Pesticides in Water	Azinphos-methyl	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
OP Pesticides in Water	d14-p-terphenyl (Surrogate)	%	0	50	90	80	80	70	70
OP Pesticides in Water	d5-nitrobenzene (Surrogate)	%	0	50	80	70	70	70	70
OP Pesticides in Water	2-fluorobiphenyl (Surrogate)	%	0	60	100	80	80	70	70
Dissolved Oxygen by Membrane Electrode	Dissolved Oxygen**	mg/L	1	3.0	6.5	6.0	6.0	6.2	6.2
Metals in Water (Dissolved) by ICPOES	Calcium, Ca	mg/L	0.05	20	15	23	23	22	22
Metals in Water (Dissolved) by ICPOES	Magnesium, Mg	mg/L	0.05	5.9	8.4	7.7	7.7	8.0	8.0
Metals in Water (Dissolved) by ICPOES	Potassium, K	mg/L	0.05	10	6.0	12	12	11	11
Metals in Water (Dissolved) by ICPOES	Sodium, Na	mg/L	0.5	12	32	15	15	15	15

Environmental Authority - Field Monitoring Data

Monitoring Point	DATE (dd/mm/yyyy)	Electrical Conductivity (µS/cm)	pH (Unit)	Temperature (°C)	Turbidity (NTU)	Suspended Solids (mg/L)	Sulphate (mg/L)	Analysed in Lab (L) or Field (F)
LCU1	21/12/2009	160	7.2	20.7		130	160	L
LCU1	22/12/2009	210	7.4	22.5		21	3	L
LCU1	23/12/2009	290	7.6	23.1		30	ND	F
LCU1	3/03/2010	210	7.2	25.3		9	3	L
LCU1	9/03/2010	183	7.7	25.2		32	2	L
LCU1	24/08/2010	150	7.7	16.2		4	4	L
LCU1	6/09/2010	190	7.7	22.1		3	4	L
LCU1	24/09/2010	164	7.6	ND		63	2	L
LCU1	29/09/2010	187	7.8	ND		48	2	L
LCU1	18/10/2010	180	7.6	ND		<1	ND	L
LCU1	6/12/2010	198	7.4	21.2		14	4	L
LCU1	6/12/2010	200	7.3	24.9		11	2	L
LCU1	7/12/2010	220	7.2	22		10	1	L
LCU1	8/12/2010	590	7.9	27.7		3	<1	L
LCU1	9/12/2010	590	7.6	28.6		6	<1	L
LCU1	10/12/2010	230	8.4	30.5		2	<1	L
LCU1	13/12/2010	150	7.4	21.6		49	<1	L
LCU1	14/12/2010	200	7.7	24		7	<1	L
LCU1	15/12/2010	230	7.9	30		<1	<1	L
LCU1	16/12/2010	260	7.6	24.9		<1	<1	L
LCU1	17/12/2010	260	7.5	22.6		<1	<1	L
LCU1	19/12/2010	100	6.8	ND		59	<1	L
LCU1	20/12/2010	200	7.5	19.5		28	<1	L
LCU1	22/12/2010	210	7.3	21		<1	<1	L
LCU1	23/12/2010	280	7.2	19.8		11	<1	L
LCU1	24/12/2010	270	7.3	20.4		30	<1	L
LCU1	25/12/2010	210	7.5	ND		24	<1	L
LCU1	26/12/2010	270	7.4	ND		21	<1	L
LCU1	29/12/2010	180	7.5	21.7		<1	2	L
LCU1	30/12/2010	220	7	21.1		9	<1	L
LCU1	31/12/2010	320	7.2	22.4		3	32	L
LCU1	5/01/2011	290	7.3	ND		<1	<1	L
LCU1	6/01/2011	125	7.1	21.4		179	2	L
LCU1	8/01/2011	184	7.6	ND		17	2	L
LCU1	9/01/2011	191	7.5	ND		29	1	L
LCU1	10/01/2011	124	7.4	ND		19	1	L
LCU1	12/01/2011	184	7.4	24.3		7	2	L
LCU1	13/01/2011	222	7.3	27.4		4	15	L
LCU1	17/01/2011	300	7.5	26.9		5	<1	L
LCU1	18/01/2011	337	7.5	24.8		19	<1	L
LCU1	19/01/2011	368	7.4	23.8		13	<1	L
LCU1	20/01/2011	387	7.5	23.5		11	<1	L
LCU1	21/01/2011	402	7.7	23.3		11	<1	L
LCU1	22/01/2011	400	7.4	ND		<1	<1	L
LCU1	23/01/2011	400	7.1	ND		95	<1	L
LCU1	24/01/2011	410	7.8	21.6		<1	<1	L
LCU1	25/01/2011	ND	7.2	22.2		ND	ND	F
LCU1	27/01/2011	ND	7.2	23.2		ND	ND	F

LCU1	8/02/2011	ND	6.8	22.9		ND	ND	F
LCU1	9/02/2011	ND	7.57	22.1		ND	ND	F
LCU1	10/02/2011	ND	7.46	22.3		ND	ND	F
LCU1	11/02/2011	ND	6.57	21.7		ND	ND	F
LCU1	14/03/2011	420	8.2	ND		53	ND	L
LCU1	20/03/2011	190	7.3	ND		<1	3	L
LCU1	21/03/2011	190	7.3	ND		<1	190	L
LCU1	22/03/2011	190	7.3	ND		<1	2	L
LCU1	23/03/2011	220	7.6	ND		<1	2	L
LCU1	24/03/2011	240	7.5	ND		<1	2	L
LCU1	30/08/2011	110	7.2	15.5		22	6	L
LCU1	1/11/2011	170	7.6	21		18	4	L
LCU1	2/05/2012	97	7.6	20.6		21	<1	L
SCU1	21/12/2009	310	7.3	20.6		4	7	L
SCU1	3/03/2010	85	7.9	24.3		44	2	L
SCU1	7/06/2010	490	8.5	15.6		9	3	L
SCU1	24/08/2010	100	7.4	17.7		31	2	L
SCU1	27/10/2010	320	7.9	ND		12	<1	L
SCU1	2/12/2010	340	7.8	22.7		7	ND	L
SCU1	12/01/2011	225	7.5	26.5		33	3	L
SCU1	13/01/2011	361	7.9	29.8		6	35	L
SCU1	17/01/2011	648	7.9	30.8		6	2	L
SCU1	19/01/2011	711	7.6	31.8		116	ND	L
SCU1	20/01/2011	694	7.6	24		25	<1	L
SCU1	21/01/2011	776	7.8	24.9		19	<1	L
SCU1	24/01/2011	900	7.9	23.4		<1	<1	L
SCU1	30/05/2011	460	8.2	18.1		<1	3.7	L
SCU1	4/07/2011	470	8.1	17.6		46	4	L
SCU1	1/08/2011	480	8.2	11.5		47	4.2	L
SCU1	29/08/2011	520	8.7	17.4		46	4	L
SCU1	4/10/2011	490	8.4	14.9		69	10	L
SCU1	31/10/2011	180	7.6	20.9		62	4	L
SCU1	29/11/2011	410	8.6	28.6		110	5.3	L
SCU1	30/01/2012	420	8.1	25.7		51	5	L
SCU1	28/02/2012	350	8.2	22.1		120	5	L
SCU1	11/04/2012	460	8.4	16		140	3	L
SCU1	1/05/2012	410	9.2	17.5		140	3	L
SCU1	31/07/2012	270	7.5	17.7		49	9	L
SCU1	29/08/2012	300	7.8	15.7		23	10	L
LCD1	21/12/2009	220	7.5	21.2		39	220	L
LCD1	23/12/2009	360	7.6	24.1		7	ND	L
LCD1	13/03/2010	361	7.5	24.5		11	10	L
LCD1	14/03/2010	350	7.7	24.8		8	9	L
LCD1	16/03/2010	372	8.3	25.1		12	16	L
LCD1	17/03/2010	379	8.1	24.3		12	18	L
LCD1	19/03/2010	403	8.2	23.3		13	21	L
LCD1	22/03/2010	417	7.8	23.1		14	17	L
LCD1	24/03/2010	439	7.8	22.7		9	18	L
LCD1	12/10/2010	342	7.9	20.4		26	ND	L
LCD1	16/10/2010	320	7.8	ND		7	4	L
LCD1	16/10/2010	390	7.8	ND		60	21	L
LCD1	17/10/2010	300	7.7	ND		14	9	L

LCD1	18/10/2010	370	7.9	ND		<1	19	L
LCD1	18/10/2010	390	8.2	ND		3	22	L
LCD1	26/10/2010	3900	8.1	ND		<1	160	L
LCD1	6/12/2010	600	7.5	24.3		20	25	L
LCD1	7/12/2010	600	7.3	21.3		21	34	L
LCD1	8/12/2010	460	7.6	25.9		<1	29	L
LCD1	9/12/2010	490	8.2	27.4		1	33	L
LCD1	10/12/2010	470	7.9	28.9		29	34	L
LCD1	13/12/2010	520	8.3	23.7		2	48	L
LCD1	14/12/2010	340	7.7	23.7		5	21	L
LCD1	16/12/2010	550	7.8	23.9		<1	36	L
LCD1	17/12/2010	420	7.7	22.8		<1	16	L
LCD1	19/12/2010	540	7.6	ND		56	25	L
LCD1	20/12/2010	250	8.1	19.4		23	5	L
LCD1	21/12/2010	300	7.5	17.9		9	7	L
LCD1	22/12/2010	340	7.5	20.5		<1	12	L
LCD1	23/12/2010	380	7.5	20.4		<1	16	L
LCD1	24/12/2010	340	7.6	21.4		14	10	L
LCD1	25/12/2010	380	7.6	ND		25	14	L
LCD1	26/12/2010	390	7.6	ND		32	15	L
LCD1	29/12/2010	220	7.6	20.6		<1	3	L
LCD1	30/12/2010	250	7.6	21.1		2	31	L
LCD1	31/12/2010	290	7.7	22.7		8	54	L
LCD1	5/01/2011	360	7.5	ND		<1	13	L
LCD1	6/01/2011	272	7.8	21.5		335	19	L
LCD1	7/01/2011	228	7.4	21.7		40	8	L
LCD1	8/01/2011	260	7.5	ND		10	9	L
LCD1	9/01/2011	284	7.5	ND		12	14	L
LCD1	10/01/2011	176	7.4	ND		30	7	L
LCD1	12/01/2011	197	7.5	24.2		15	4	L
LCD1	13/01/2011	263	7.5	26.9		9	12	L
LCD1	17/01/2011	657	8.9	28.6		5	80	L
LCD1	18/01/2011	820	8.7	29.6		11	97	L
LCD1	19/01/2011	778	7.9	25.1		7	90	L
LCD1	20/01/2011	793	7.8	24.3		10	91	L
LCD1	21/01/2011	864	8.6	24.5		10	106	L
LCD1	22/01/2011	960	8.7	ND		<1	110	L
LCD1	23/01/2011	1000	8.6	ND		<1	120	L
LCD1	24/01/2011	1100	8.4	24.2		<1	140	L
LCD1	25/01/2011	ND	7.7	24.8		ND	ND	F
LCD1	27/01/2011	ND	7.8	25.3		ND	ND	F
LCD1	28/01/2011	1300	8	25.5		<1	160	L
LCD1	30/01/2011	1300	8.5	ND		<1	160	L
LCD1	31/01/2011	1300	8.2	23.3		<1	160	L
LCD1	1/02/2011	ND	7.7	23.8		ND	ND	F
LCD1	2/02/2011	ND	7.8	25.2		ND	ND	F
LCD1	8/02/2011	ND	8.5	25.5		ND	ND	F
LCD1	9/02/2011	1610	8.1	23.1		9	198	L
LCD1	10/02/2011	1640	8	22.8		31	ND	L
LCD1	11/02/2011	ND	7.93	22.9		ND	ND	F
LCD1	15/02/2011	ND	8.24	24.3		ND	ND	F
LCD1	16/02/2011	ND	8.64	25.2		ND	ND	F
LCD1	17/02/2011	ND	8.9	23.5		ND	ND	F
LCD1	24/02/2011	1600	8.1	ND		10	210	L



LCD1	1/03/2011	1600	8.1	ND		26	210	L
LCD1	5/03/2011	1600	8.2	ND		<1	170	L
LCD1	6/03/2011	1600	8.1	ND		8	180	L
LCD1	7/03/2011	1700	8	ND		10	180	L
LCD1	8/03/2011	1600	8.2	ND		<1	160	L
LCD1	9/03/2011	1600	8.1	ND		3	170	L
LCD1	10/03/2011	1600	8.2	ND		8	180	L
LCD1	11/03/2011	1600	8	ND		13	180	L
LCD1	12/03/2011	1700	8.4	ND		16	180	L
LCD1	13/03/2011	1700	8.3	ND		9	180	L
LCD1	20/03/2011	300	7.4	ND		11	17	L
LCD1	21/03/2011	340	7.4	ND		2	18	L
LCD1	22/03/2011	440	7.5	ND		7	29	L
LCD1	23/03/2011	400	7.9	ND		3	22	L
LCD1	24/03/2011	450	7.8	ND		11	26	L
LCD1	25/03/2011	390	7.7	ND		29	16	L
LCD2	6/12/2010	612	7.4	21.1		10	7	L
LCD2	6/12/2010	660	7.6	24.6		16	7	L
LCD2	7/12/2010	660	7.5	21.8		21	13	L
LCD2	9/12/2010	480	7.8	26.7		<1	28	L
LCD2	10/12/2010	480	8	29		<1	30	L
LCD2	13/12/2010	510	8.1	23.5		5	48	L
LCD2	14/12/2010	330	7.8	23.3		8	17	L
LCD2	16/12/2010	540	7.7	24.5		<1	33	L
LCD2	19/12/2010	580	7.4	ND		32	30	L
LCD2	20/12/2010	240	7.4	19.3		25	4	L
LCD2	22/12/2010	320	7.5	20.5		<1	10	L
LCD2	23/12/2010	380	7.5	20.3		<1	15	L
LCD2	24/12/2010	340	7.6	21.1		13	9	L
LCD2	25/12/2010	380	7.5	ND		12	13	L
LCD2	29/12/2010	220	7.5	20.6		<1	2	L
LCD2	30/12/2010	250	7.6	20.7		<1	7	L
LCD2	31/12/2010	290	7.7	22.8		4	4	L
LCD2	5/01/2011	350	7.5	23.7		<1	12	L
LCD2	6/01/2011	275	7.7	21.4		353	20	L
LCD2	7/01/2011	228	7.5	21.9		12	8	L
LCD2	8/01/2011	228	7.5	ND		17	7	L
LCD2	9/01/2011	304	7.5	ND		20	19	L
LCD2	10/01/2011	136	7.4	ND		30	1	L
LCD2	17/01/2011	664	8.9	28.4		10	80	L
LCD2	18/01/2011	805	8.7	29.6		7	96	L
LCD2	19/01/2011	786	7.8	25.1		13	90	L
LCD2	20/01/2011	805	7.7	23.9		6	91	L
LCD2	21/01/2011	867	8.4	24		5	105	L
LCD2	22/01/2011	950	8.5	ND		<1	110	L
LCD2	23/01/2011	1000	8.6	ND		<1	120	L
LCD2	24/01/2011	1100	8.3	24		<1	130	L
LCD2	27/01/2011	ND	7.8	25.4		ND	ND	F
LCD2	28/01/2011	1300	7.9	25.3		<1	160	L
LCD2	30/01/2011	1300	8.3	ND		<1	160	L
LCD2	31/01/2011	1300	7.9	22.9		<1	160	L
LCD2	1/02/2011	ND	7.6	23.7		ND	ND	F
LCD2	2/02/2011	ND	7.6	25.1		ND	ND	F

LCD2	8/02/2011	ND	8.44	25.4		ND	ND	F
LCD2	9/02/2011	ND	8.34	23.2		ND	ND	F
LCD2	10/02/2011	ND	7.64	22.7		ND	ND	F
LCD2	11/02/2011	ND	7.5	22.4		ND	ND	F
LCD2	15/02/2011	ND	7.53	23		ND	ND	F
LCD2	16/02/2011	ND	7.97	25		ND	ND	F
LCD2	17/02/2011	ND	7.65	22.3		ND	ND	F
LCD2	24/02/2011	1600	8.3	ND		3	200	L
LCD2	1/03/2011	1700	7.8	ND		<1	200	L
LCD2	5/03/2011	1500	8.1	ND		<1	160	L
LCD2	6/03/2011	1600	7.9	ND		<1	180	L
LCD2	7/03/2011	1700	7.8	ND		<1	180	L
LCD2	8/03/2011	1500	8	ND		<1	180	L
LCD2	9/03/2011	1600	7.8	ND		<1	180	L
LCD2	10/03/2011	1600	8	ND		<1	190	L
LCD2	11/03/2011	1700	7.6	ND		<1	170	L
LCD2	12/03/2011	1700	8.2	ND		<1	170	L
LCD2	13/03/2011	1700	8.3	ND		7	180	L
LCD2	21/03/2011	330	7.4	ND		2	16	L
LCD2	22/03/2011	440	7.4	ND		4	29	L
LCD2	23/03/2011	410	7.8	ND		7	23	L
LCD2	24/03/2011	450	7.7	ND		4	26	L
LCD2	25/03/2011	410	7.8	ND		12	19	L

In-Situ Inc. Troll 9000 Pro XP  
 Win-Situ® Version 4.57.5.0  
 Serial number: 45725  
 Firmware Version 2  
 Unit Troll 9000

Site	Date	Time	ET (sec)	Temperature Celsius	Pressure Meters H2O	Barometric Bars	Turbidity NTU	Battery Volts	ORP millivolts	pH	Clark DO milligrams	Clark DO S %Saturation	Conductivity microSiemens/cm
AE1	01/23/08	13:24:55	641	31.42	0	0.964	94.6	3.02	188	8.9	7.87	112.5837	596.71
	01/23/08	13:25:00	646	31.46	0.003	0.964	93.4	3.072	188	8.9	7.83	112.0424	597.39
	01/23/08	13:25:05	651	31.44	0.002	0.964	93.1	3.046	187	8.9	7.81	111.8204	597.39
	01/23/08	13:25:10	656	31.41	0.002	0.964	94.8	3.02	186	8.9	7.83	112.0272	596.49
	01/23/08	13:25:15	661	31.42	0.001	0.964	95.9	3.02	185	8.91	7.83	111.9582	595.58
	01/23/08	13:25:20	666	31.46	0.002	0.964	96.1	3.072	185	8.9	7.78	111.4461	596.49
	01/23/08	13:25:25	671	31.41	0	0.964	99.1	3.046	184	8.9	7.78	111.2465	595.81
	01/23/08	13:25:30	676	31.42	0.002	0.964	96.7	3.046	183	8.9	7.77	111.1524	596.27
	01/23/08	13:25:35	681	31.39	0.003	0.964	93.7	3.072	183	8.9	7.78	111.3098	595.14
	01/23/08	13:25:40	686	31.41	0	0.964	91.5	3.072	182	8.9	7.77	111.1104	596.27
AE2	01/23/08	15:38:59	66	26.35	0	0.968	33.3	3.072	172	8.92	7.31	95.1543	463.49
	01/23/08	15:39:04	71	26.37	0	0.968	35.7	3.072	172	8.91	7.29	94.9709	463.07
	01/23/08	15:39:09	76	26.35	-0.002	0.968	36.5	3.046	171	8.92	7.3	95.0081	463.07
	01/23/08	15:39:14	81	26.34	-0.002	0.968	33.9	3.046	171	8.92	7.31	95.1171	462.93
	01/23/08	15:39:19	86	26.33	-0.002	0.968	33.2	3.02	171	8.91	7.31	95.1931	462.65
	01/23/08	15:39:24	91	26.33	-0.002	0.968	34.9	3.072	171	8.92	7.33	95.3385	463.33
	01/23/08	15:39:29	96	26.33	0.001	0.968	30.3	3.072	171	8.91	7.34	95.4929	463.06
	01/23/08	15:39:34	101	26.36	0	0.968	29	3.046	171	8.92	7.34	95.5789	463.05
	01/23/08	17:28:57	212	25.99	0	0.964	3.1	3.072	244	8.03	7.09	94.3422	8089.83
	01/23/08	17:29:02	217	26.01	0.002	0.964	3.1	3.072	244	8.02	7.08	94.2649	8089.82
AE3	01/23/08	17:29:07	222	25.99	0	0.964	3.1	3.072	244	8.03	7.09	94.3538	8090.8
	01/23/08	17:29:12	227	26.02	0.002	0.964	3.1	3.072	244	8.02	7.08	94.2781	8088.82

01/23/08	17:29:17	232	25.99	0	0.964	3.1	3.02	244	8.02	7.09	94.4383	8087.82
01/23/08	17:29:22	237	25.98	0	0.964	3.2	3.072	244	8.02	7.11	94.6575	8089.79
01/23/08	17:29:27	242	26.01	0.002	0.964	3.2	3.02	244	8.03	7.11	94.7447	8086.82
01/23/08	17:29:32	247	25.98	0	0.964	3.3	3.046	244	8.03	7.15	95.1262	8090.77
01/23/08	17:29:37	252	25.97	0	0.964	3.2	2.994	243	8.03	7.17	95.4445	8090.76
01/23/08	17:29:42	257	25.97	0	0.964	3.1	3.072	243	8.03	7.19	95.6988	8090.76

**AE4**

01/24/08	14:26:37	96	26.83	0	0.963	19.5	3.02	334	8.52	5.08	67.0516	641.66
01/24/08	14:26:42	101	26.84	0	0.963	19.3	3.02	333	8.52	5.06	66.7864	641.92
01/24/08	14:26:47	106	26.87	0.002	0.963	19.6	2.941	333	8.51	5.03	66.454	642.17
01/24/08	14:26:52	111	26.88	0.003	0.963	20.4	3.02	332	8.52	5.01	66.1947	642.69
01/24/08	14:26:57	116	26.87	0	0.963	20.2	3.02	331	8.52	4.99	65.9794	641.63
01/24/08	14:27:02	121	26.91	0.003	0.963	19.8	3.02	331	8.52	4.96	65.6064	641.88
01/24/08	14:27:07	126	26.9	0.001	0.963	20	3.046	330	8.52	4.95	65.426	642.66
01/24/08	14:27:12	131	26.93	0.005	0.963	20.4	3.02	330	8.52	4.92	65.123	642.39
01/24/08	14:27:17	136	26.93	0.006	0.963	20.8	3.02	329	8.52	4.91	64.9163	642.64
01/24/08	14:27:22	141	26.91	0.005	0.963	21.3	2.968	328	8.53	4.9	64.7385	642.37
01/24/08	14:27:27	146	26.9	0.01	0.963	21.6	2.994	328	8.53	4.88	64.5629	641.84
01/24/08	14:27:32	151	26.92	0.011	0.963	22.5	3.046	327	8.54	4.87	64.45	642.09

**AE5**

01/24/08	15:20:51	61	30.94	0	0.964	17.3	3.02	155	8.69	6.59	93.4737	637.32
01/24/08	15:20:56	66	30.97	-0.002	0.964	17.3	2.994	154	8.69	6.56	93.181	637.06
01/24/08	15:21:01	71	30.96	0.001	0.964	17.4	2.994	154	8.69	6.55	93.0058	637.05
01/24/08	15:21:06	76	30.95	0	0.964	17.5	2.941	155	8.68	6.53	92.7626	636.79
01/24/08	15:21:11	81	30.94	0	0.964	17.5	3.02	154	8.69	6.52	92.5693	636.78
01/24/08	15:21:16	86	30.91	0	0.964	17	3.02	155	8.68	6.52	92.4531	637.04
01/24/08	15:21:21	91	30.93	-0.001	0.963	16.8	3.02	155	8.68	6.5	92.2236	636.77
01/24/08	15:21:26	96	30.94	0	0.963	16.5	2.994	154	8.69	6.48	91.9878	637.03
01/24/08	15:21:31	101	30.93	0.001	0.963	16.5	3.02	154	8.68	6.46	91.7276	637.02
01/24/08	15:21:36	106	30.94	0.001	0.963	17	3.02	154	8.69	6.43	91.3226	637.79
01/24/08	15:21:41	111	30.94	0.001	0.963	16.4	3.046	154	8.69	6.41	91.0107	637.01
01/24/08	15:21:46	116	30.91	0.001	0.963	16.6	3.02	154	8.69	6.41	90.8902	635.98
01/24/08	15:21:51	121	30.91	-0.001	0.963	16.6	3.046	154	8.69	6.4	90.7375	636.23



**NEW HOPE**  
GROUP

## G.3.2 Fitzroy River Basin Cumulative Assessment



## Appendix G.3.2 DERM Cumulative Risk Assessment

**Table G-1 Assessment categories for mine receiving waters EC sampled immediately downstream from discharge for Table 6 (DERM 2009)**

Risk category	EC level	Rationale for EC level (percentiles based on Queensland Water Quality Guideline figures)
very low	<720 $\mu$ S/cm	Ambient conditions for North Fitzroy (based on 75th percentile), approx 95th percentile of guideline for Central Fitzroy
low	<1250 $\mu$ S/cm	90th percentile (North Fitzroy) - limited effects on fish/macroinvertebrates, most crop irrigation possible (except beans & oranges), increased potential effect on drinking water
medium	<2500 $\mu$ S/cm	Reduction in some macro-invertebrate species, potential effect on some fish, greater number of crops effected, higher risk on drinking water
high	>2500 $\mu$ S/cm	Potential effects on all values - loss of aquatic ecosystem, less suitable for irrigation, highest risk to downstream water supplies

**Table G-2 Assessment categories for frequency and volume of mine discharges for Table 6 (DERM 2009)**

Risk category	Flow frequency and volume
very low	zero flow, release on only a few days, low volume, e.g. <100ML per year
low	In-frequent flow, couple of major releases, volume <1000ML per year
medium	frequent releases, associated with low stream flow, volumes <10,000ML per year
high	extended release for weeks, dry weather associated, volumes >10,000ML per year
very high	extended release for months, dry weather associated, volumes >10,000ML per year

**Table G-3 Cumulative risk assessment matrix for assessing mine discharges in the Fitzroy Catchment (DERM 2009)**

Frequency/ Volume (ML/yr)			Receiving Environment Electrical Conductivity ( $\mu$ S/cm)			
			Very low	low	Medium	High
			<720	<1250	<2500	>2500
Very low	Zero/small	<100	Very Low	Low	Low	Medium
Low	Few releases, infrequent	<1,000	Low	Low	Medium	Medium
Medium	Frequent	<10,000	Low	Medium	Medium	High
High	Continuous, some dry weather	<100,000	Medium	Medium	High	Very
Very high	Continuous, months	>100,000	Medium	High	Very High	Very High