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# Results from Downhole Temperature Profile Readings: SEL 26/2005.

Lemont, Macquarie, Nicholas and Tunbridge.

Prepared for KUTh Energy Ltd

August 2008      Final Report

Paul Donaldson



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## Executive summary

This report provides results obtained from precision temperature logging undertaken in July and August of 2008, of four of KUTh's heat flow holes within tenement SEL26/2005.

All four holes (Lemont, Macquarie, Nicholas and Tunbridge) are considered to have reached equilibration. The geothermal gradients are displayed in the enclosed figures, and the logged temperatures are listed in the appendix.

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## 1.0 Introduction

During July and August 2008, four of the completed geothermal exploration holes drilled by KUTh Energy were sampled for temperature.

Temperatures were logged using a thermistor, a type of resistor that relies on the change in resistance to measure temperature change. Each hole was sampled at 1 metre increments. Results are presented in the following report as graphs of geothermal gradients (Figures 1 - 4) and tables of temperature recorded per metre (Appendix 1).

The results presented for all four holes listed are the results from the second logging runs of these holes, and are considered to be equilibrated. It is therefore expected that the results presented here are an accurate representation of the actual thermal conditions of the holes

The results provided in this report are based on data collected from the field sampling. Detailed analysis of the thermal properties of the areas sampled will be provided in a separate report for all four holes listed incorporating the data obtained from the conductivity analysis. The temperature profile data aids in the selection and sampling of appropriate lithological intervals for conductivity analysis.

## 2.0 Results

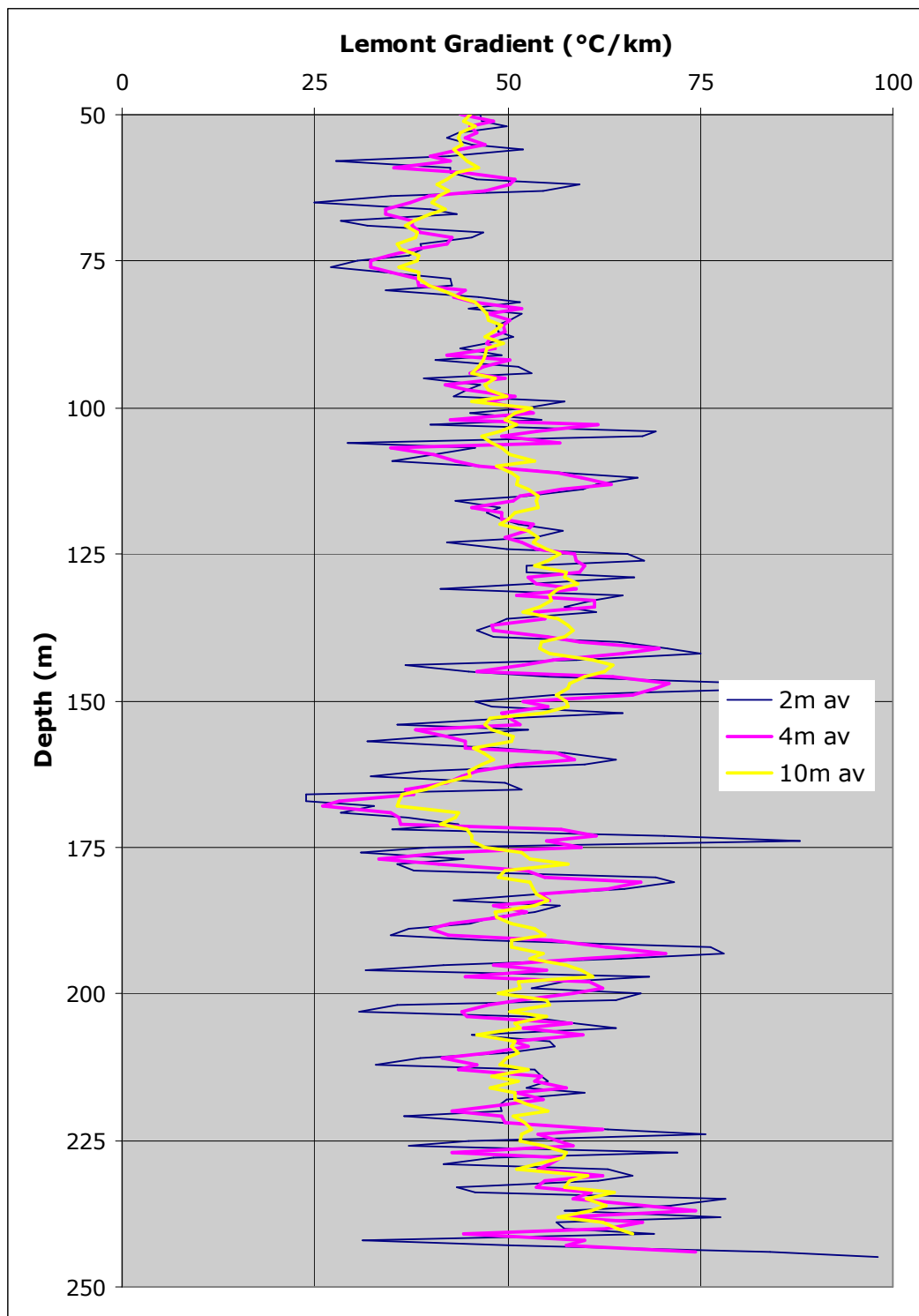
The results provide recorded temperatures for each metre of the successfully logged holes.

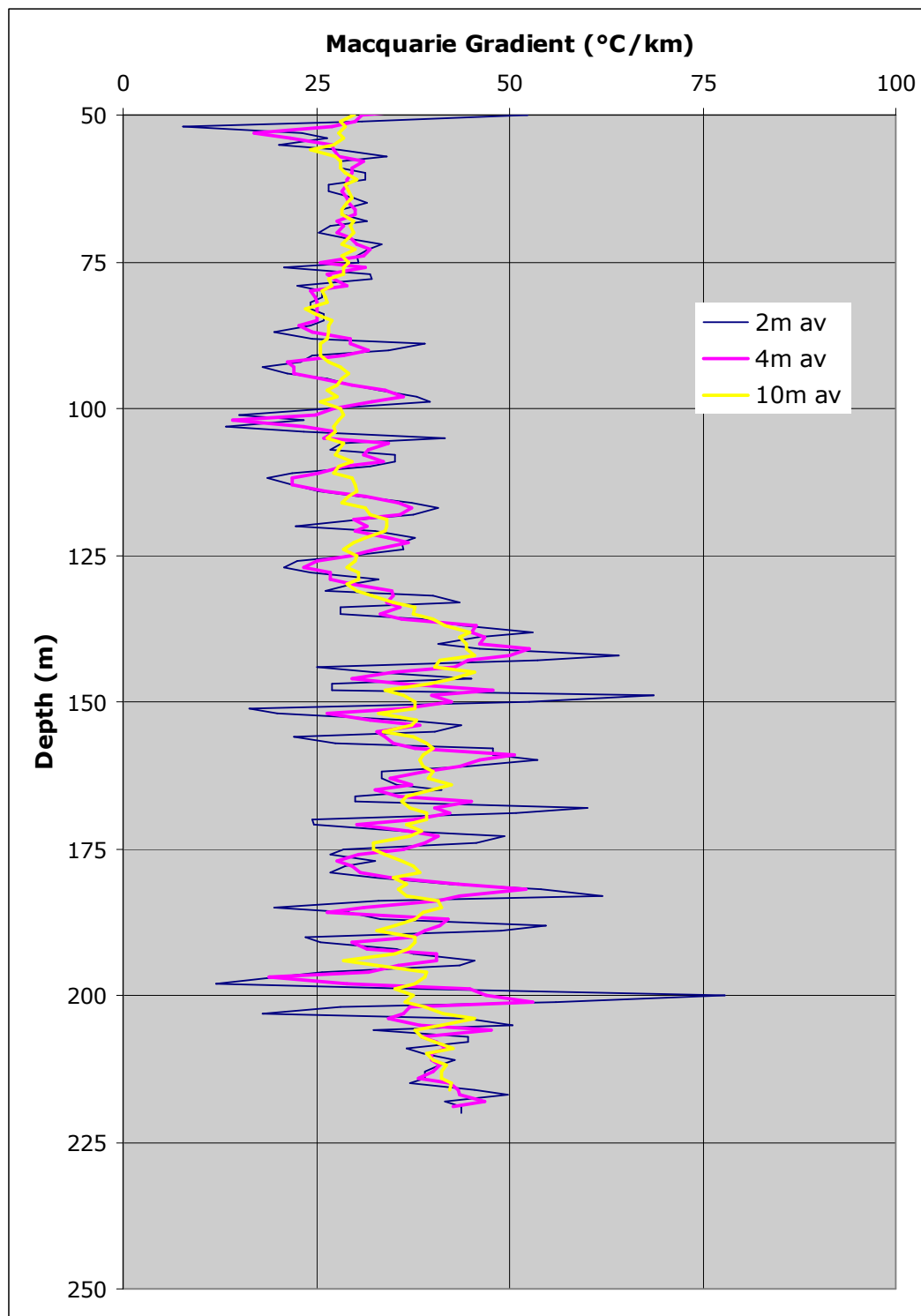
The gradient profiles for each of the logged holes can be seen as average temperature gradients over 2m, 4m and 10m in Figures 1 to 4. The variable nature of the gradient profile can be indicative of unconfined aquifer flows disturbing the thermal profile of the well.

The corresponding preliminary geothermal gradients for selected sections are displayed in Table 1.

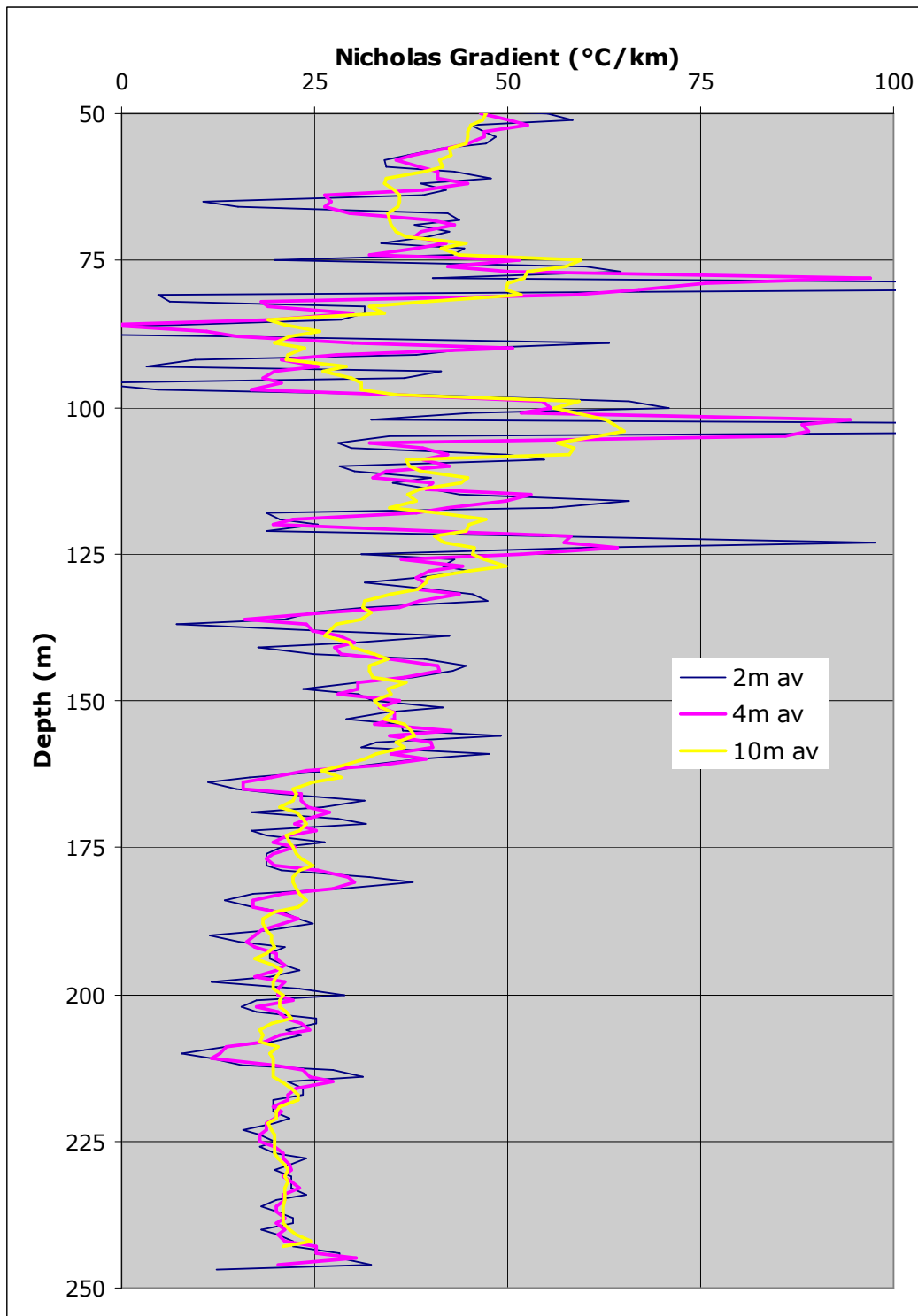
**Table 1. Geothermal gradient (°C/km) values for selected depth profiles**

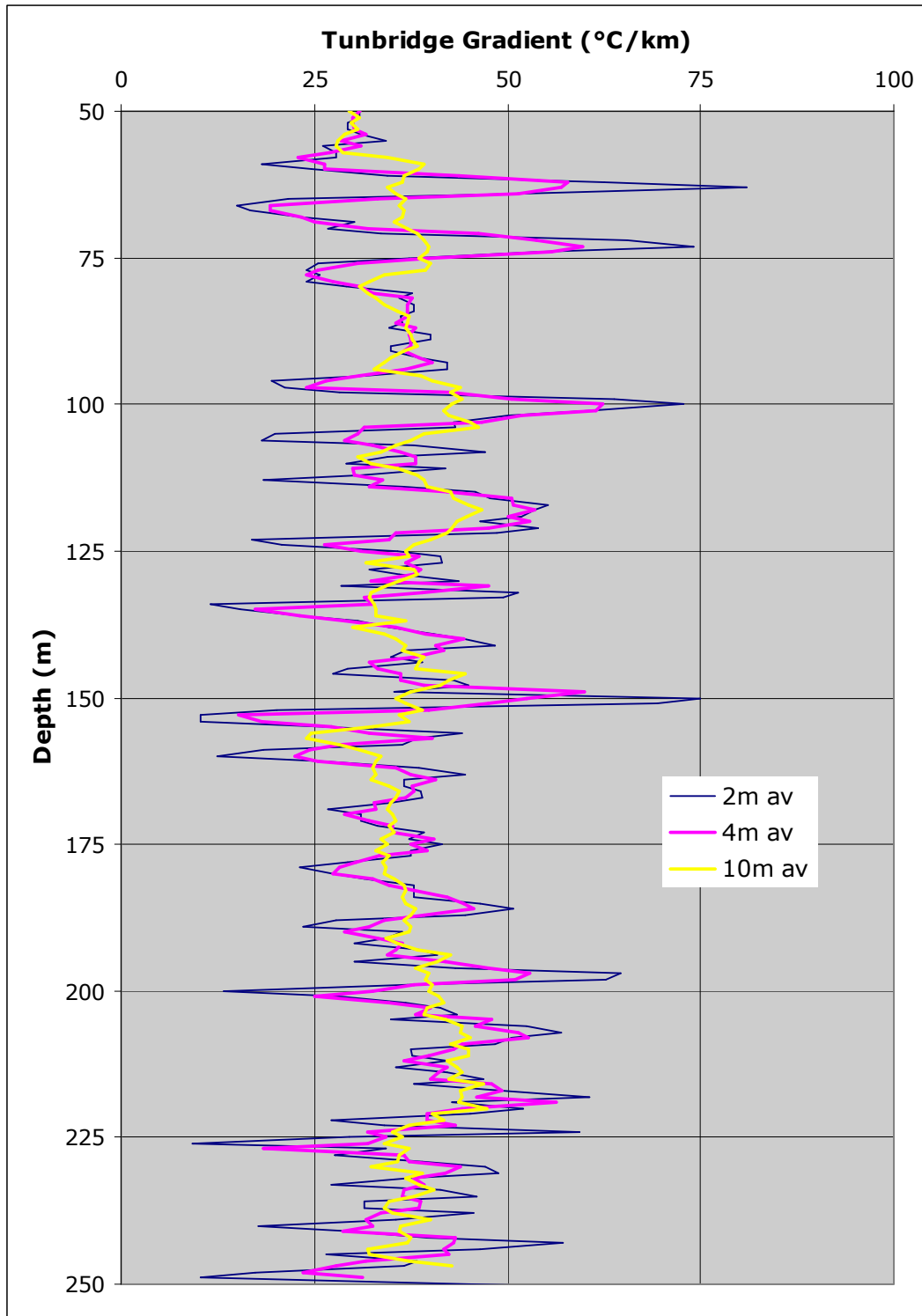
<b>Depth (m)</b>	<b>Lemont</b>	<b>Macquarie</b>	<b>Nicholas</b>	<b>Tunbridge</b>
<b>50-150</b>	49.049	37.514	39.752	36.929
<b>150 - BoH</b>	52.464	37.761	22.641	37.922

**Figure 1** Lemont Geothermal Gradient

**Figure 2** Macquarie Geothermal Gradient



**Figure 3** Nicholas Geothermal Gradient

**Figure 4** Tunbridge Geothermal Gradient

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## Appendix 1:

### Tables of recorded down hole temperature

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### Lemont Depth vs. Temperature results

Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)
1	6.5970	43	12.3304	85	14.0834	127	16.1992
2	7.0707	44	12.3620	86	14.1286	128	16.2458
3	8.1273	45	12.4000	87	14.1808	129	16.3042
4	8.5099	46	12.4476	88	14.2262	130	16.3785
5	9.3001	47	12.4984	89	14.2821	131	16.4099
6	9.4478	48	12.5367	90	14.3207	132	16.4610
7	9.4694	49	12.5750	91	14.3700	133	16.5398
8	9.6158	50	12.6199	92	14.4193	134	16.5833
9	9.7579	51	12.6680	93	14.4511	135	16.6547
10	11.0796	52	12.7131	94	14.5220	136	16.7064
11	11.4728	53	12.7679	95	14.5575	137	16.7543
12	11.4939	54	12.8003	96	14.6003	138	16.8023
13	11.5151	55	12.8521	97	14.6502	139	16.8465
14	11.5241	56	12.8911	98	14.6896	140	16.8987
15	11.5332	57	12.9563	99	14.7362	141	16.9753
16	11.5484	58	12.9759	100	14.8045	142	17.0401
17	11.5696	59	13.0119	101	14.8406	143	17.1255
18	11.5848	60	13.0611	102	14.8949	144	17.1581
19	11.6151	61	13.0972	103	14.9493	145	17.1990
20	11.6242	62	13.1532	104	14.9747	146	17.2481
21	11.6304	63	13.2160	105	15.0877	147	17.3097
22	11.6274	64	13.2624	106	15.1097	148	17.4128
23	11.6395	65	13.2857	107	15.1464	149	17.4832
24	11.6700	66	13.3123	108	15.2015	150	17.5248
25	11.6822	67	13.3656	109	15.2274	151	17.5748
26	11.7127	68	13.3990	110	15.2716	152	17.6208
27	11.7585	69	13.4224	111	15.3197	153	17.7046
28	11.7922	70	13.4627	112	15.3865	154	17.7214
29	11.8229	71	13.5164	113	15.4535	155	17.7762
30	11.8567	72	13.5535	114	15.5096	156	17.8269
31	11.8814	73	13.5940	115	15.5733	157	17.8565
32	11.9091	74	13.6312	116	15.6146	158	17.8905
33	11.9369	75	13.6684	117	15.6598	159	17.9542
34	11.9864	76	13.6922	118	15.7127	160	18.0053
35	12.0516	77	13.7228	119	15.7543	161	18.0823
36	12.0765	78	13.7603	120	15.8113	162	18.1252
37	12.1045	79	13.8081	121	15.8570	163	18.1596
38	12.1295	80	13.8457	122	15.9257	164	18.1898
39	12.1545	81	13.8765	123	15.9640	165	18.2588
40	12.1858	82	13.9384	124	16.0100	166	18.2935
41	12.2266	83	13.9797	125	16.0639	167	18.3066
42	12.2831	84	14.0280	126	16.1411	168	18.3413

Depth	Temp (Deg C)	Depth	Temp (Deg C)				
169	18.3718	209	20.4579				
170	18.3979	210	20.4928				
171	18.4459	211	20.5575				
172	18.4853	212	20.5703				
173	18.5160	213	20.6235				
174	18.6258	214	20.6774				
175	18.6920	215	20.7323				
176	18.7054	216	20.7880				
177	18.7541	217	20.8374				
178	18.7941	218	20.9082				
179	18.8253	219	20.9370				
180	18.8699	220	21.0062				
181	18.9639	221	21.0357				
182	19.0133	222	21.0792				
183	19.0944	223	21.1338				
184	19.1216	224	21.2052				
185	19.1804	225	21.2854				
186	19.2350	226	21.2951				
187	19.2874	227	21.3600				
188	19.3312	228	21.4393				
189	19.3775	229	21.4562				
190	19.4055	230	21.5226				
191	19.4474	231	21.5821				
192	19.5004	232	21.6552				
193	19.6002	233	21.7058				
194	19.6564	234	21.7420				
195	19.7295	235	21.7975				
196	19.7399	236	21.8984				
197	19.7927	237	21.9397				
198	19.8767	238	22.0131				
199	19.9073	239	22.0951				
200	19.9828	240	22.1258				
201	20.0420	241	22.2099				
202	20.1109	242	22.2640				
203	20.1134	243	22.2721				
204	20.1725	244	22.3654				
205	20.2185	245	22.4403				
206	20.2899	246	22.5613				
207	20.3467						
208	20.3805						

**Macquarie Depth vs. Temperature results.**

Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)
1	9.3300	43	11.6306	85	12.8363	127	14.0389
2	9.5185	44	11.6611	86	12.8655	128	14.0597
3	9.9763	45	11.6947	87	12.8850	129	14.0874
4	10.2955	46	11.7283	88	12.9045	130	14.1256
5	10.6002	47	11.7620	89	12.9338	131	14.1465
6	10.7387	48	11.7988	90	12.9828	132	14.1779
7	10.8199	49	11.8204	91	13.0024	133	14.2267
8	10.8840	50	11.8604	92	13.0318	134	14.2652
9	10.9133	51	11.9251	93	13.0482	135	14.2827
10	10.9075	52	11.9220	94	13.0679	136	14.3213
11	10.9047	53	11.9405	95	13.0909	137	14.3600
12	10.8989	54	11.9684	96	13.1206	138	14.4094
13	10.8932	55	11.9931	97	13.1502	139	14.4659
14	10.8933	56	12.0086	98	13.1865	140	14.5013
15	10.8962	57	12.0490	99	13.2262	141	14.5475
16	10.9022	58	12.0770	100	13.2660	142	14.5937
17	10.9139	59	12.1050	101	13.2793	143	14.6758
18	10.9228	60	12.1331	102	13.2959	144	14.7009
19	10.9316	61	12.1675	103	13.3259	145	14.7260
20	10.9463	62	12.1956	104	13.3226	146	14.7656
21	10.9581	63	12.2207	105	13.3726	147	14.8160
22	10.9816	64	12.2490	106	13.4060	148	14.8196
23	10.9934	65	12.2804	107	13.4295	149	14.8702
24	11.0082	66	12.3119	108	13.4596	150	14.9571
25	11.0259	67	12.3371	109	13.4999	151	14.9753
26	11.0436	68	12.3687	110	13.5302	152	14.9899
27	11.0643	69	12.4004	111	13.5639	153	15.0154
28	11.0879	70	12.4226	112	13.5741	154	15.0628
29	11.1027	71	12.4511	113	13.6011	155	15.1031
30	11.1264	72	12.4797	114	13.6180	156	15.1434
31	11.1531	73	12.5180	115	13.6519	157	15.1471
32	11.1798	74	12.5435	116	13.6790	158	15.1985
33	11.2007	75	12.5786	117	13.7266	159	15.2427
34	11.2275	76	12.6042	118	13.7607	160	15.2944
35	11.2543	77	12.6202	119	13.8016	161	15.3500
36	11.2842	78	12.6684	120	13.8221	162	15.3834
37	11.4278	79	12.6845	121	13.8461	163	15.4169
38	11.4610	80	12.7134	122	13.8872	164	15.4504
39	11.4912	81	12.7360	123	13.9216	165	15.4878
40	11.5335	82	12.7650	124	13.9595	166	15.5327
41	11.5668	83	12.7844	125	13.9939	167	15.5477
42	11.5881	84	12.8136	126	14.0181	168	15.5927

Depth	Temp (Deg C)	Depth	Temp (Deg C)				
169	15.6680	209	17.1385				
170	15.6944	210	17.1711				
171	15.7171	211	17.2161				
172	15.7436	212	17.2570				
173	15.7891	213	17.2981				
174	15.8424	214	17.3351				
175	15.8805	215	17.3763				
176	15.8996	216	17.4094				
177	15.9340	217	17.4674				
178	15.9646	218	17.5089				
179	15.9915	219	17.5505				
180	16.0184	220	17.5963				
181	16.0569	221	17.6381				
182	16.1031						
183	16.1650						
184	16.2270						
185	16.2309						
186	16.2660						
187	16.2894						
188	16.3323						
189	16.3988						
190	16.4302						
191	16.4460						
192	16.4814						
193	16.5169						
194	16.5564						
195	16.6078						
196	16.6435						
197	16.6595						
198	16.6834						
199	16.6834						
200	16.7591						
201	16.8392						
202	16.8713						
203	16.8955						
204	16.9076						
205	16.9842						
206	17.0085						
207	17.0490						
208	17.0977						

### Nicholas Depth vs. Temperature results.

Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)
1	4.5493	43	10.5321	85	12.3388	127	14.0471
2	6.0791	44	10.5808	86	12.3641	128	14.0852
3	7.0089	45	10.6209	87	12.3546	129	14.1373
4	7.3731	46	10.6698	88	12.2978	130	14.1617
5	7.7447	47	10.7218	89	12.3829	131	14.2001
6	7.9893	48	10.7623	90	12.4241	132	14.2420
7	7.9595	49	10.7941	91	12.4748	133	14.2910
8	8.2651	50	10.8319	92	12.5002	134	14.3367
9	8.6145	51	10.9047	93	12.4938	135	14.3543
10	8.7411	52	10.9485	94	12.5065	136	14.3861
11	8.7515	53	10.9953	95	12.5767	137	14.3967
12	8.7826	54	11.0423	96	12.5798	138	14.4003
13	8.8633	55	11.0924	97	12.5670	139	14.4497
14	8.9235	56	11.1366	98	12.5894	140	14.4851
15	9.0075	57	11.1751	99	12.6438	141	14.5100
16	9.1581	58	11.2106	100	12.7209	142	14.5207
17	9.2325	59	11.2433	101	12.7855	143	14.5598
18	9.2939	60	11.2789	102	12.8114	144	14.5990
19	9.3769	61	11.3296	103	12.8503	145	14.6490
20	9.4388	62	11.3745	104	13.0985	146	14.6848
21	9.5144	63	11.4074	105	13.1380	147	14.7242
22	9.5658	64	11.4585	106	13.1678	148	14.7458
23	9.6174	65	11.4855	107	13.1942	149	14.7710
24	9.6583	66	11.4795	108	13.2273	150	14.8071
25	9.7129	67	11.5156	109	13.2937	151	14.8359
26	9.7485	68	11.5639	110	13.3370	152	14.8902
27	9.7786	69	11.6033	111	13.3504	153	14.9047
28	9.8336	70	11.6397	112	13.3971	154	14.9482
29	9.8777	71	11.6883	113	13.4306	155	14.9773
30	9.9274	72	11.7188	114	13.4675	156	15.0210
31	9.9856	73	11.7554	115	13.5112	157	15.0757
32	10.0384	74	11.8074	116	13.5550	158	15.0867
33	10.0858	75	11.8411	117	13.6428	159	15.1380
34	10.1305	76	11.8472	118	13.6666	160	15.1821
35	10.1837	77	11.9612	119	13.6802	161	15.2152
36	10.2540	78	11.9767	120	13.7074	162	15.2447
37	10.2963	79	12.0417	121	13.7312	163	15.2706
38	10.3443	80	12.2352	122	13.7449	164	15.2780
39	10.3954	81	12.2634	123	13.8405	165	15.2928
40	10.4152	82	12.2445	124	13.9400	166	15.3077
41	10.4607	83	12.2759	125	13.9607	167	15.3336
42	10.4950	84	12.3074	126	14.0021	168	15.3707



Depth	Temp (Deg C)	Depth	Temp (Deg C)				
169	15.3856	209	16.2343				
170	15.4042	210	16.2421				
171	15.4415	211	16.2500				
172	15.4676	212	16.2656				
173	15.4751	213	16.2812				
174	15.5050	214	16.3203				
175	15.5275	215	16.3437				
176	15.5463	216	16.3633				
177	15.5650	217	16.3908				
178	15.5838	218	16.4104				
179	15.6026	219	16.4301				
180	15.6252	220	16.4498				
181	15.6667	221	16.4695				
182	15.7007	222	16.4932				
183	15.7234	223	16.5090				
184	15.7348	224	16.5248				
185	15.7500	225	16.5446				
186	15.7690	226	16.5644				
187	15.7917	227	16.5803				
188	15.8146	228	16.6041				
189	15.8412	229	16.6280				
190	15.8527	230	16.6479				
191	15.8642	231	16.6678				
192	15.8832	232	16.6917				
193	15.9062	233	16.7117				
194	15.9215	234	16.7356				
195	15.9445	235	16.7597				
196	15.9637	236	16.7757				
197	15.9905	237	16.7957				
198	16.0021	238	16.8158				
199	16.0136	239	16.8399				
200	16.0483	240	16.8601				
201	16.0714	241	16.8762				
202	16.0830	242	16.9004				
203	16.1024	243	16.9205				
204	16.1178	244	16.9448				
205	16.1527	245	16.9771				
206	16.1682	246	17.0014				
207	16.1954	247	17.0420				
208	16.2148	248	17.0258				

### Tunbridge Depth vs. Temperature results.

Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)
1	0.9224	43	12.5369	85	13.9627	127	15.6147
2	3.5345	44	12.5721	86	14.0007	128	15.6525
3	6.2756	45	12.6042	87	14.0353	129	15.6790
4	7.7089	46	12.6235	88	14.0700	130	15.7244
5	8.3676	47	12.6525	89	14.1152	131	15.7662
6	8.8334	48	12.6815	90	14.1501	132	15.7815
7	8.9748	49	12.7170	91	14.1850	133	15.8690
8	9.3438	50	12.7429	92	14.2200	134	15.8806
9	9.5189	51	12.7785	93	14.2620	135	15.8921
10	9.7095	52	12.8045	94	14.3042	136	15.9113
11	9.8138	53	12.8370	95	14.3464	137	15.9382
12	9.7947	54	12.8630	96	14.3676	138	15.9728
13	10.0605	55	12.8989	97	14.3853	139	16.0074
14	10.2934	56	12.9315	98	14.4101	140	16.0536
15	10.4694	57	12.9512	99	14.4420	141	16.0961
16	10.6817	58	12.9872	100	14.5377	142	16.1503
17	10.8411	59	13.0069	101	14.5876	143	16.1698
18	10.9814	60	13.0234	102	14.6590	144	16.2203
19	11.0491	61	13.0563	103	14.6877	145	16.2476
20	11.1791	62	13.0925	104	14.7452	146	16.2789
21	11.2475	63	13.1815	105	14.7740	147	16.3024
22	11.3161	64	13.2544	106	14.7849	148	16.3650
23	11.9509	65	13.2843	107	14.8103	149	16.3925
24	11.9386	66	13.2977	108	14.8609	150	16.4357
25	12.0782	67	13.3145	109	14.9044	151	16.5424
26	12.1157	68	13.3312	110	14.9298	152	16.5745
27	12.1345	69	13.3613	111	14.9626	153	16.5828
28	12.1596	70	13.3914	112	15.0136	154	16.5951
29	12.1847	71	13.4149	113	15.0247	155	16.6035
30	12.2005	72	13.4586	114	15.0503	156	16.6476
31	12.2257	73	13.5460	115	15.0979	157	16.6917
32	12.2477	74	13.6068	116	15.1420	158	16.7240
33	12.2698	75	13.6543	117	15.1935	159	16.7643
34	12.3046	76	13.6815	118	15.2525	160	16.7608
35	12.3267	77	13.7054	119	15.3006	161	16.7892
36	12.4693	78	13.7292	120	15.3563	162	16.8136
37	12.4884	79	13.7566	121	15.3935	163	16.8662
38	12.5204	80	13.7771	122	15.4644	164	16.9028
39	12.5428	81	13.8148	123	15.4906	165	16.9395
40	12.5397	82	13.8525	124	15.4982	166	16.9763
41	12.4921	83	13.8869	125	15.5320	167	17.0171
42	12.6167	84	13.9282	126	15.5696	168	17.0541

Depth	Temp (Deg C)	Depth	Temp (Deg C)	Depth	Temp (Deg C)		
169	17.0870	209	18.6064	249	20.1219		
170	17.1077	210	18.6505	250	20.1377		
171	17.1489	211	18.6814	251	20.2117		
172	17.1697	212	18.7257	252	20.3038		
173	17.2151	213	18.7656				
174	17.2483	214	18.7967				
175	17.2898	215	18.8502				
176	17.3313	216	18.8904				
177	17.3647	217	18.9262				
178	17.4064	218	18.9890				
179	17.4234	219	19.0474				
180	17.4529	220	19.0745				
181	17.4782	221	19.1513				
182	17.5160	222	19.1650				
183	17.5539	223	19.2059				
184	17.5918	224	19.2332				
185	17.6299	225	19.3243				
186	17.6847	226	19.2925				
187	17.7314	227	19.3427				
188	17.7739	228	19.3611				
189	17.7870	229	19.3978				
190	17.8212	230	19.4391				
191	17.8597	231	19.4921				
192	17.8898	232	19.5369				
193	17.9199	233	19.5660				
194	17.9671	234	19.5911				
195	18.0017	235	19.6486				
196	18.0277	236	19.6831				
197	18.0880	237	19.7116				
198	18.1571	238	19.7461				
199	18.2135	239	19.8027				
200	18.2312	240	19.8173				
201	18.2399	241	19.8385				
202	18.2875	242	19.8766				
203	18.3136	243	19.9175				
204	18.3700	244	19.9907				
205	18.4005	245	20.0106				
206	18.4398	246	20.0439				
207	18.5053	247	20.0871				
208	18.5536	248	20.1171				