

18th April 2012

Auckland Council
Level 2
35 Graham Street
Auckland 1010.

Attention: Naveen Kumar

Re: Three Kings Quarry - Results of Precise Level Survey

Dear Naveen

As required by condition 12 of the consent to dewater Three Kings Quarry (Permit No 12977), please find enclosed the results of the recently completed precise level survey.

Please note that this is the annual survey of all precise level survey benchmarks as defined in condition 12 given that dewatering has not been undertaken for more than 2 years (dewatering last undertaken in 2002) and there has been a cessation of settlement (recorded in September 2005).

All precise level survey marks were within 5mm of the previous reading.

Seven replacement marks were installed:

- RM1558A on Empire Road (replaces SS1558) – a new LINZ mark set in the concrete footpath
- AP6830A on The Drive (replaces RM6830) – a new mark (masonry anchor in the concrete footpath)
- AP62A and AP88A, Mt Albert/Hillsborough Rd intersection (replaces AP62 and AP88 respectively) – new masonry anchors in the concrete footpath
- AP77A, on the corner of Mt Albert Road/Warren Ave (replaces AP77) – intersection reshaped with new traffic islands and footpaths, the new mark is a masonry anchor in the new footpath
- AP119B, on the corner of Hayr Rd/Haughey Ave (replaces AP119A) – the new mark is an existing masonry anchor in the pram crossing on the south side of Haughey Ave
- AP132B on the corner of Carr Road and Clinker Street (replaces AP132A). AP132A was put in new concrete last year but same piece of concrete footpath has been renewed again. AP132B is a new masonry anchor in the concrete footpath.

Differential settlement alarm values are continued to be recorded between:

- AP92 and AP93, and AP92 and AP80 on Mt Albert Road,
- AP62A and AP88A at the intersection of Mt Albert Road and Hillsborough Road,
- AP110 and AP111 on Hillsborough Road, and
- OCP68 and AP114, AP69 and AP114, AP70 and AP117, and AP38 and AP117 on Budock Road.

No new differential settlement alarms were recorded compared with the previous survey.

The differential settlement alarm recorded in the March 2011 survey between AP67 and AP112 at the intersection of Hillsborough Road and Budock Road was not recorded in the recent survey. The differential settlement between these two marks is now greater than 1 in 5000 (currently recorded as 1 in 8890)

Marks	Location	Mar-12 Differential Settlement	Distance between Marks	Adjusted Difference in Levels between Marks
AP92 and AP93	Mt Albert Road	1 in 1071	16.7m	15.6mm
AP92 and AP80	Mt Albert Road	1 in 1105	17.7m	16.05mm
AP62A and AP88A	Mt Albert and Hillsborough	1 in 4235	28.0m	6.6mm
AP110 and AP111	Hillsborough Road	1 in 3363	17.7m	5.3mm
OCP68 and AP114	Budock Road	1 in 2099	23.0m	10.95mm
AP69 and AP114	Budock Road	1 in 2310	26.4m	9.95mm
AP70 and AP117	Budock Road	1 in 3016	21.5m	7.1mm
AP38 and AP117	Budock Road	1 in 3052	22.9m	7.5mm

The actions required for Differential Settlement Alarms Values less than 1 in 5000 but greater than 1 in 2000 are to report these to the Auckland Council and Three Kings Quarry Manager, and to install additional survey marks at 50 metre centres between existing survey marks.

Please note that the spacing between these marks is already less than 50 metres.

The action required for Differential Settlement Alarm Values less than 1 in 2000 but greater than 1 in 1000 are to:

- Install additional survey marks at 25metre centres between existing marks,
- Report these settlements to the Three Kings Quarry Manager, affected property owners, South Epsom Planning, Three Kings United, Epsom Environmental Effects, and Mt Roskill and Eden-Albert Community Boards.
- Assess the potential impact of on-going settlements on building and services, and
- Undertake a review of the groundwater model and settlement predictions.

The Differential Settlement Alarms between AP80, AP92 and AP93 on Mt Albert Road adjacent to the St Andrews Reserve are not a result of dewatering Three Kings Quarry. The reasons are as follows:

- AP80 and AP93 have recorded settlements consistent with other marks in this area (as shown on the attached graph), AP92 has risen since it was first surveyed with a 4mm rise this survey compared with March 2011, and
- Differential settlements between all immediately surrounding marks are greater than 1 in 7,000.

While there are no visual signs of significant deterioration or disturbance to the footpath (all these marks are survey nails in the footpath), there is a slight upward bowing in the concrete footpath compared with the kerb at the location of AP92 (photograph attached).

A detailed analysis of precise level survey marks in the vicinity of AP80, AP92 and AP93 is presented in the following table. The locations of precise level survey marks are shown on the attached drawings. The adjusted change in levels is undertaken to adjust for any difference in the time that the precise level marks were installed.

<i>Precise Level Mark</i>	<i>Change in Level since First Survey (mm)</i>	<i>Adjusted Change in Level (mm)</i>	<i>Precise Level Marks</i>	<i>Differential Settlement</i>	
				Spacing (metres)	Differential Settlement
RM 6813	-27.33	-27.33			
AP 97	-8.0	-26.66	RM6813-AP97	25.0	1 in 37097
AP 96	-7.0	-26.05	AP97-AP96	25.5	1 in 41833
AP 8B	-17.0	-28.43	AP96-AP8B	25.0	1 in 10504
AP 79	-10.0	-22.93			
AP 94	-7.67	-25.30	AP79-AP94	21.8	1 in 9207
AP 8B	-17.0	-28.43	AP94-AP8B	23.2	1 in 7396
AP 93	-8.33	-26.93	AP8B-AP93	23.7	1 in 15838
AP 92	+6.67	-11.35	AP93-AP92	16.7	1 in 1071
AP 80	-13.33	-27.40	AP92-AP80	17.7	1 in 1105
AP 91	-9.33	-27.15	AP80-AP91	20.9	1 in 83748
AP90	-10.0	-28.25	AP91-AP90	21.8	1 in 19884
RM 7647	-26.67	-26.67	AP90-RM7647	21.0	1 in 13233

The results show that the change in level of AP92 is anomalous and not consistent with the change in levels in the surrounding precise level survey marks. Its relative rise in level is not considered to be a result of dewatering Three Kings Quarry.

As required by condition 12 of the Dewatering Consent, these results will be forwarded to Three Kings United.

Please contact the undersigned if any further information or clarification is required.

Yours faithfully
for **Winstone Aggregates**

Michael Harris
Engineering Geologist.

Cc Daniel Le Roux, Three Kings Quarry Manager.

Three Kings Precise Level Survey Results - March 2012

Station ID	Location	Averaged Level	Mar 12 Level	Mar 12 to Averaged Level	Mar 12 cf Mar 11
SS 3136	Mt Eden Rd	63.047	63.030	-17	-1
SS 3137	Mt Eden Rd	63.343	63.339	-4	-2
M 212A	Mt Albert Rd	86.127	86.110	-17	1
SM 4163	Mt Albert Rd	74.142	74.142	0	1
SM 4164	Mt Albert Rd	75.851	75.843	-8	-1
SM 4165	Mt Albert Rd	83.632	83.621	-11	0
SM 3882	Parau St	63.302	63.300	-2	0
RM 3898	McCullough Ave	76.078	76.063	-15	-1
RM 3899	McCullough Ave	77.811	77.800	-11	0
RM 3900	McCullough Ave	76.657	76.641	-16	1
RM 3901	Smallfield Ave	78.931	78.900	-31	-5
RM 3902	Smallfield Ave	80.177	80.162	-15	1
RM 3903	Smallfield Ave	82.524	82.513	-11	1
RM 3904	Smallfield Ave	82.708	82.696	-12	0
RM 3907	Fyvie Ave	80.321	80.314	-7	0
RM 3910	Scout Ave	83.414	83.402	-12	0
RM 3925	Bremner Ave	65.423	65.424	1	-2
RM 3926	Bremner Ave	59.088	59.090	2	-2
RM 3933	Milliken Rd	71.049	71.054	5	-2
RM 3934	Milliken Rd	66.303	66.307	4	-1
RM 3935	Simmonds Ave	91.755	91.742	-13	1
RM 3936	Simmonds Ave	90.869	90.850	-19	0
RM 7440	Hayr Rd	84.033	84.023	-10	1
RM 7457	Mt Albert Rd	85.707	85.690	-17	1
AP 1	Plaza, Mt Albert Rd	81.269	81.248	-21	0
AP 2	Plaza, Mt Albert Rd	76.290	76.273	-17	-1
AP 2A	Plaza, Mt Albert Rd	77.582	77.566	-16	-1
AP 3	Plaza, Mt Albert Rd	77.367	77.353	-14	0
AP 4	Plaza, Mt Albert Rd	83.366	83.344	-22	0
AP 13	Barrister Ave	79.867	79.859	-8	0
AP 20	Grahame Breed Dr	76.792	76.785	-7	1
SM 3123	Mt Eden Rd	75.676	75.657	-19	1
SM 3124	Landscape Rd	77.724	77.704	-20	1
SM 3125	Landscape Rd	69.440	69.428	-12	-1
SM 3126	Landscape Rd	63.015	63.008	-7	-1
SS 3127	Landscape Rd	59.724	59.721	-3	-1
SS 3132	Waitomo St	61.689	61.687	-2	-1
SM 3883	Parau St	64.371	64.366	-5	-1
RM 3884	Parau St	62.539	62.534	-5	-2
SM 3885	Duke St	61.857	61.846	-11	-2
RM 3886	Fearon Ave	55.236	55.234	-2	-2
RM 3887	Fearon Ave	51.548	51.537	-11	-3
OCP 3888	Parau St	62.513	62.503	-10	-1
RM 3889	Duke St	69.233	69.211	-22	0
RM 3891	Duke St	77.575	77.559	-16	0
RM 3892	Duke St	78.012	77.997	-15	0
RM 3893A	Duke St	79.110	79.110	0	0
RM 3894	Fulljames Ave	72.082	72.060	-22	-1
RM 3895	Hamon Ave	65.188	65.157	-31	-1

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Station ID	Location	Averaged Level	Mar 12 Level	Mar 12 to Averaged Level	Mar 12 cf Mar 11
AP 3895A	Hamon Ave	65.612	65.613	1	0
RM 3896	McCullough Ave	69.820	69.798	-22	-1
RM 3897	McCullough Ave	75.084	75.067	-17	-1
RM 3905	Fyvie Ave	75.813	75.804	-9	0
RM 3906	Fyvie Ave	77.447	77.433	-14	-1
RM 3908	Fyvie Ave	82.069	82.063	-6	-1
RM 3909	Scout Ave	80.056	80.043	-13	-1
RM 3911	Dally Tce	88.894	88.878	-16	-2
RM 3912	Fearon Ave	51.652	51.653	1	-2
RM 3913	Fearon Ave	49.238	49.243	5	-2
RM 3921	Duncumb St	50.034	50.037	3	-2
RM 3923	Connelly Ave	74.293	74.278	-15	0
RM 3924	Connelly Ave	73.034	73.018	-16	-1
SM 4354	Mt Eden Rd	80.155	80.130	-25	1
SM 6241	Duke St	70.012	69.985	-27	0
OCP 90B	Duke St	71.805	71.785	-20	-1
AP 10	Roskill Way	82.673	82.661	-12	2
AP 14	Churches Ave	91.334	91.320	-14	-1
AP 15	Dally Terrace	90.821	90.807	-14	-2
AP 17C	Hunters Park Dr	74.602	74.594	-8	0
AP 29A	Duke St	49.542	49.540	-2	-1
M 220	Mt Eden Rd	81.700	81.665	-35	1
M 221	Mt Eden Rd	83.449	83.434	-15	1
SS 1555	Selwyn Rd	99.584	99.581	-3	0
SS 1556	Selwyn Rd	102.373	102.370	-3	1
SS 1617	St Andrews Rd	81.442	81.443	1	2
SS 1618	St Leonards Rd	78.478	78.476	-2	-1
AP 1619A	St Leonards Rd	66.609	66.608	-1	-2
SS 1623	St Andrews Rd	107.522	107.515	-7	2
SS 3306	Mt Eden Rd	60.565	60.554	-11	-2
SS 3307	St Leonards Rd	59.661	59.652	-9	-2
SS 3308	St Leonards Rd	63.275	63.270	-5	-2
SS 3311	Rahiri Rd	95.306	95.293	-13	2
SS 3312	Rahiri Rd	95.929	95.917	-12	1
SS 3313	Landscape Rd	112.633	112.617	-16	3
SS 3315	Rewa Rd	80.938	80.915	-23	1
SS 3316	Rewa Rd	98.902	98.886	-16	4
RM 6807	St Andrews Rd	102.487	102.473	-14	1
RM 6812	St Andrews Rd	108.907	108.895	-12	3
SM 6826	Buckley Rd	74.710	74.705	-5	-3
RM 6827	Buckley Rd	83.332	83.332	0	-2
SM 6828	Buckley Rd	87.952	87.952	0	-2
SS 7701B	Landscape Rd	115.509	115.507	-2	3
SS 7702B	Landscape Rd	110.538	110.535	-3	2
RM 7703	Landscape Rd	100.149	100.132	-17	2
SM 7704	St Andrews Rd	97.816	97.809	-7	2
AP 7705A	St Andrews Rd	88.195	88.195	0	0
AP 9	St Andrews Rd	92.802	92.782	-20	1
AP 11	Mt Eden Rd	80.191	80.182	-9	1

Three Kings Precise Level Survey Results - March 2012

Station ID	Location	Averaged Level	Mar 12 Level	Mar 12 to Averaged Level	Mar 12 cf Mar 11
AP 16	Queens Way	83.646	83.637	-9	3
AP 18B	Mt Eden Rd	81.641	81.640	-1	1
M 205	Mt Albert Rd	59.305	59.302	-3	-2
AP 206A	Mt Albert Rd	59.997	59.993	-4	-3
M 210	Mt Albert Rd	83.050	83.029	-21	1
SM 1979	Hillsborough Rd	61.241	61.212	-29	-1
BP 1977B	Hillsborough Rd	71.993	71.984	-9	-1
SM 6809	St Andrews Rd	81.800	81.778	-22	1
SM 6810	St Andrews Rd	76.956	76.936	-20	1
RM 6811	St Andrews Rd	76.526	76.503	-23	1
RM 6813	St Andrews Rd	80.905	80.878	-27	1
RM 6816	Rowan Rd	78.908	78.884	-24	0
SM 6817	Rowan Rd	80.995	80.976	-19	0
RM 6818	Rowan Rd	81.966	81.945	-21	1
RM 6819	Buckley Rd	65.620	65.605	-15	-1
SM 6820	Buckley Rd	71.955	71.946	-9	0
SM 6821	Buckley Rd	71.114	71.107	-7	-1
SM 6822	Gorrie Ave	81.874	81.856	-18	1
SM 6823	Buckley Rd	70.593	70.585	-8	-1
RM 6824	Buckley Rd	71.084	71.079	-5	-1
RM 6825	Quentin Ave	81.386	81.372	-14	-2
SM 6835	Torrance St	70.784	70.784	0	-1
SM 6836	Torrance St	65.955	65.956	1	-1
RM 6838	Fernleigh Ave	70.304	70.297	-7	0
SM 6839	Fernleigh Ave	67.487	67.485	-2	0
SM 6840	Fernleigh Ave	63.278	63.278	0	-1
SM 6841	Peet Ave	65.698	65.694	-4	-1
AP 6843A	Kings Way	75.221	75.219	-2	1
RM 7647	Mt Albert Rd	67.601	67.574	-27	-1
ORM.I	Weaver Street	63.578	63.579	1	-1
AP 5	Mt Eden Rd	75.746	75.735	-11	1
AP 6	Queens Way	75.306	75.286	-20	2
AP 7A	St Andrews Rd	76.820	76.816	-4	0
AP 8B	Mt Albert Rd	75.740	75.723	-17	-1
AP 12	Warren Ave	94.357	94.339	-18	2
OAP 19	St Andrews Rd	77.508	77.482	-26	0
AP 21B	Mt Eden Rd	77.649	77.649	0	0
AP 22	Queens Way	78.352	78.346	-6	3
AP 23	Queens Way	74.402	74.391	-11	2
AP 30	Mt Eden Rd	77.329	77.319	-10	1
AP 31	Mt Eden Rd	76.857	76.852	-5	1
AP 32	Mt Eden Rd	76.203	76.193	-10	0
AP 33	Mt Eden Rd	75.121	75.111	-10	1
AP 34	Mt Eden Rd	74.937	74.925	-12	2
SM 5387	Erson Ave	56.747	56.747	0	-1
SM 5386	Symonds St	55.184	55.185	1	-1
M 638	Manukau Rd	54.690	54.689	-1	-2
CA 55	Manukau Rd	65.141	65.141	0	0
CA 53	Akarana Ave	70.594	70.594	0	0

Three Kings Precise Level Survey Results - March 2012

Station ID	Location	Averaged Level	Mar 12 Level	Mar 12 to Averaged Level	Mar 12 cf Mar 11
M 216	Mt Albert Rd	72.658	72.658	0	0
SS 1977	Hillsborough Rd	74.453	74.447	-6	-1
RM 3927	Bremner Ave	62.651	62.650	-1	-2
RM 3928	Bremner Ave	56.144	56.143	-1	-3
AP 139	Bremner Ave	56.225	56.222	-3	-2
RM 3931	Milliken Ave	62.500	62.500	0	0
RM 3932	Milliken Ave	71.719	71.718	-1	-2
SS 3004	Dominion Rd	51.812	51.810	-2	-1
SS 3131	Shackleton Rd	59.419	59.416	-3	-2
SS 3133	Shackleton Rd	59.554	59.549	-5	-2
SS 3134	Shackleton Rd	61.479	61.472	-7	-1
SS 3135	Shackleton Rd	61.684	61.680	-4	-1
SS 3151	Mt Eden Rd	67.987	67.987	0	-2
SS 1905	St Andrews Rd	88.810	88.809	-1	2
AP 7707A	St Andrews Rd	81.535	81.536	1	1
RM 1558A	Empire Rd	91.684	91.684		no previous
SS 1559	Empire Rd	96.024	96.023	-1	4
SS 1549	The Drive	85.871	85.870	-1	2
SS 1550	The Drive	84.432	84.431	-1	-2
AP 6830A	The Drive	81.766	81.766		no previous
SS 1551	The Drive	77.481	77.477	-4	-2
RM 6829	Selwyn Rd	79.864	79.856	-8	-1
RM 6832	Selwyn Rd	80.190	80.189	-1	-1
SM 5912	Pah Rd	74.285	74.285	0	0
AP 35	Mt Albert Rd	54.190	54.192	2	-2
AP 37	Hillsborough Rd	59.335	59.320	-15	-2
AP 38	Budock Rd	69.274	69.266	-7	-1
AP 39	Hillsborough Bowling	56.297	56.290	-7	-2
AP 40	Hillsborough Bowling	55.757	55.752	-5	0
IS 41	Hillsborough Bowling	56.336	56.329	-7	-1
AP 42	Dornwell Rd	76.373	76.360	-13	-1
AP 43	Dornwell Rd	66.002	65.991	-11	-2
AP 44	Dornwell Rd	58.493	58.480	-13	-3
AP 45	Frost Rd	64.920	64.909	-11	-2
AP 54	Frost Rd	57.855	57.840	-15	-3
AP 46	Dominion Rd	50.443	50.439	-4	-2
AP 47A	Landscape Rd	52.565	52.565	0	-1
AP 48A	Landscape Rd	57.065	57.063	-2	-2
AP 49B	Landscape Rd	70.340	70.338	-2	-1
AP 50B	Landscape Rd	71.659	71.658	-1	-1
AP 51B	Landscape Rd	74.120	74.119	-1	0
AP 55	Mt Eden Rd	68.263	68.262	-1	-2
AP 56	Mt Albert Rd	58.409	58.409	0	-2
AP 60	Rowan Rd	76.276	76.265	-11	0
AP 61	Rowan Rd	71.310	71.298	-12	2
AP 62A	Mt Albert Rd	62.894	62.894		no previous
AP 63A	Mt Albert Rd	61.370	61.366	-4	-2
AP 64	Hillsborough Rd	60.579	60.569	-10	-2
AP 65	Hillsborough Rd	59.546	59.533	-13	-2

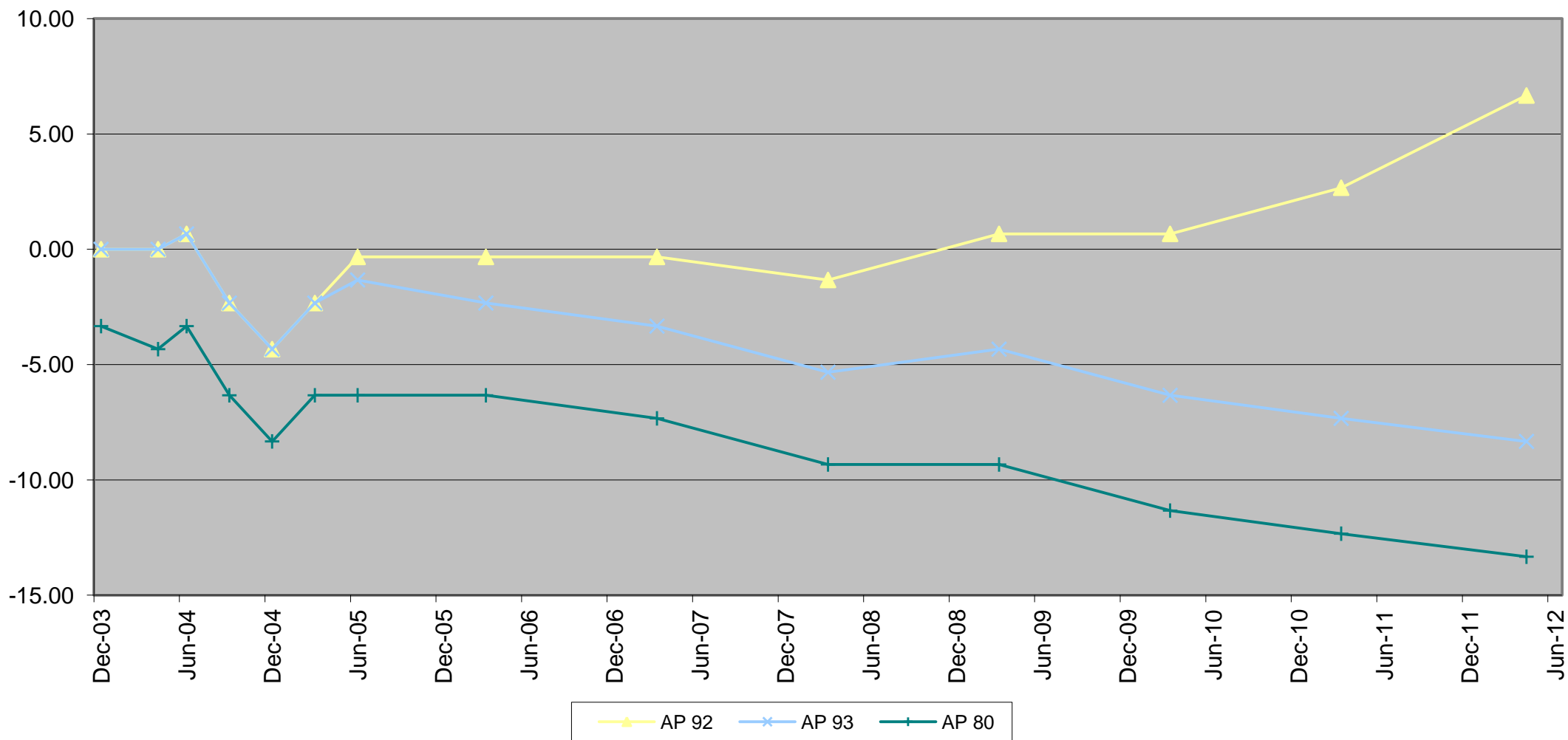
Three Kings Precise Level Survey Results - March 2012

Station ID	Location	Averaged Level	Mar 12 Level	Mar 12 to Averaged Level	Mar 12 cf Mar 11
OAP 66	Hillsborough Rd	59.987	59.978	-9	-1
AP 67	Hillsborough Rd	63.871	63.862	-9	-1
OCP 68	Budock Rd	66.304	66.297	-7	-2
AP 69	Budock Rd	65.977	65.970	-7	-2
AP 70	Budock Rd	71.208	71.202	-6	-2
OAP 71	Hillsborough Rd	67.651	67.644	-7	-2
AP 72	Hillsborough Rd	74.077	74.071	-6	-1
AP 73	Marie Ave	70.874	70.864	-10	0
AP 74	Marie Ave	80.330	80.320	-10	1
AP 75	Marie Ave	86.876	86.871	-5	2
AP 77A	Mt Albert Rd	83.034	83.034		no previous
AP 78	Mt Albert Rd	81.022	81.012	-10	1
AP 79	Mt Albert Rd	78.663	78.653	-10	0
AP 80	Mt Albert Rd	71.414	71.401	-13	-1
AP 81A	Mt Albert Rd	58.551	58.547	-4	-2
AP 82A	Mt Albert Rd	58.575	58.572	-3	-2
AP 83	Mt Albert Rd	58.863	58.858	-5	-2
AP 84	Mt Albert Rd	59.350	59.344	-6	-3
AP 85	Mt Albert Rd	60.619	60.611	-8	-3
AP 86	Mt Albert Rd	62.051	62.044	-7	-2
AP 87	Mt Albert Rd	62.733	62.726	-7	-2
AP 88A	Mt Albert Rd	64.679	64.679		no previous
AP 89	Mt Albert Rd	65.939	65.929	-10	-2
AP 90	Mt Albert Rd	68.687	68.677	-10	-1
AP 91	Mt Albert Rd	70.075	70.066	-9	-1
AP 92	Mt Albert Rd	72.613	72.620	7	4
AP 93	Mt Albert Rd	73.864	73.856	-8	-1
AP 94	Mt Albert Rd	77.101	77.093	-8	1
AP 95	Mt Albert Rd	79.957	79.948	-9	1
AP 96	St Andrews Rd	77.897	77.890	-7	2
AP 97	St Andrews Rd	80.321	80.313	-8	0
AP 98	Rowan Rd	68.501	68.493	-8	0
AP 99	Rowan Rd	69.478	69.470	-8	0
AP 100	Hillsborough Rd	62.966	62.955	-11	-2
AP 101	Hillsborough Rd	61.359	61.350	-9	-1
AP 102	Hillsborough Rd	60.006	59.997	-9	-2
AP 103	Hillsborough Rd	59.404	59.393	-11	-1
AP 104A	Hillsborough Rd	59.554	59.545	-9	-2
AP 105	Hillsborough Rd	59.711	59.702	-9	-2
AP 106	Hillsborough Rd	60.458	60.452	-6	-1
AP 107	Hillsborough Rd	60.881	60.874	-7	-1
AP 108	Hillsborough Rd	62.060	62.054	-6	-1
AP 109	Hillsborough Rd	62.806	62.799	-7	-2
AP 110	Hillsborough Rd	64.997	64.988	-9	-2
AP 111	Hillsborough Rd	66.322	66.316	-6	-2
AP 112	Budock Rd	63.699	63.693	-6	-2
AP 113	Budock Rd	65.546	65.543	-3	-1
AP 114	Budock Rd	65.879	65.884	5	-1
AP 115	Budock Rd	67.579	67.573	-6	-2

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Station ID	Location	Averaged Level	Mar 12 Level	Mar 12 to Averaged Level	Mar 12 cf Mar 11
AP 116	Budock Rd	69.485	69.481	-4	-2
AP 117	Budock Rd	70.833	70.842	9	4
OAP 118	Mt Albert Rd	59.895	59.887	-8	-2
AP 119B	Haughey Ave	71.930	71.930		no previous
AP 120	Haughey Ave	67.450	67.443	-7	-2
AP 121	Haughey Ave	66.666	66.659	-7	-1
AP 122	Haughey Ave	66.032	66.026	-6	-1
AP 123A	Haughey Ave	73.518	73.517	-1	-1
AP 125A	Hillsborough Rd	69.946	69.944	-2	-3
SS 1976	Hillsborough Rd	71.137	71.127	-10	-2
AP 126A	Carr Rd	65.244	65.240	-4	-5
AP 127A	Carr Rd	61.514	61.511	-3	-3
RM 7441	Carr Rd	58.499	58.492	-7	-3
AP 129A	Carr Rd	58.156	58.152	-4	-3
OAP 130	Dornwell Rd	60.670	60.664	-6	-3
OAP 131	Hayr Rd	63.120	63.115	-5	-3
AP142	Carr/Hayr Rds	58.438	58.436	-2	-3
AP 132B	Carr Rd	58.355	58.355		no previous
AP 133	Carr Rd	58.156	58.151	-5	-4
AP 134	Carr Rd	58.033	58.029	-4	-3
AP 135	Frost Rd	57.399	57.397	-2	-3
AP 136	Frost Rd	59.265	59.260	-5	-2

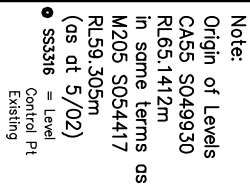
Differential Settlement Alarm Marks





ST-ANDREWS RESERVE





A horizontal scale bar with alternating black and white segments. The segments are labeled 0, 50, 100, 200, 300, 400, and 500 Meters.

