



THREE KINGS QUARRY

RESOURCE CONSENT 12977

ANNUAL MONITORING REPORT

May 2009

ANNUAL THREE KING QUARRY MONITORING REPORT

Introduction

The following report is made with regard to Section 9 of the Monitoring and Contingency Plan for Dewatering Three Kings Quarry dated September 2005.

This report contains a compilation of all monitoring data and documents any settlement alarm level events, reviews and remedial action undertaken for the period of 1 April 2008 to 31 March 2009.

Monitoring Summary

The monitoring of groundwater levels has been undertaken monthly for the year ending March 31 2009. Groundwater levels within the quarry have been held above RL34m since the lowering of the groundwater table ceased in October 2002.

BH5B was used as the quarry reference bore in August and September 2008. Monitoring of the quarry reference bore BH2A was recommenced in October 2008 when access to this bore was restored.

No new groundwater monitoring bores were installed in the 12 month period ending 31 March 2009.

The monitoring of precise level survey marks has continued with a survey of all precise level benchmarks undertaken in February/March 2009.

Precise level surveys are currently being undertaken at 12 month intervals as dewatering has not been undertaken for more than 2 years, and there has been a cessation of settlement (as defined in the permit to dewater Three Kings Quarry).

Replacement marks were installed for AP123 on Haughey Avenue and OAP127 on Carr Road. These marks were destroyed in the previous 12 months during footpath upgrading and from a damaged concrete kerb/footpath respectively.

Precise Level Survey Results

All precise level survey marks were within 5mm of the previous reading with the exception of marks SS7701B and SS7702B on Landscape Road which recorded -6mm and -7mm of their previous readings respectively. These marks however recorded rises of 7mm and 6mm respectively in the previous survey (March 2008) and the variations in height are due to survey accuracy.

Differential settlement alarm values have continued to be recorded between AP92 and AP93, and AP92 and AP80 on Mt Albert Road, AP110 and AP111 on Hillsborough Road, and between

OCP68 and AP114 on Budock Road. An additional differential settlement alarm was recorded between AP67 and AP112 on Hillsborough Road and Budock Road respectively.

Differential settlement alarm values are summarised in the following table.

Marks	Location	Mar-07 Differential Settlement	Mar-08 Differential Settlement	Mar-09 Differential Settlement	Distance between Marks	Adjusted Difference in Levels between Marks
AP92 and AP93	Mt Albert Road	1 in 4660	1 in 3642	1 in 2989	16.7m	5.58mm
AP92 and AP80	Mt Albert Road	1 in 5815	1 in 4379	1 in 2931	17.7m	6.05mm
AP110 and AP111	Hillsborough Road	1 in 2827	1 in 2827	1 in 4150	17.7m	4.27mm
OCP68 and AP114	Budock Road	1 in 3308	1 in 3308	1 in 2568	23.0m	8.95mm
AP67 and AP112	Hillsborough and Budock	1 in 7376	1 in 7376	1 in 4901	14.6	2.98mm

The action required for these Differential Settlement Alarms Values is to report these to the Auckland Regional Council and Three King Quarry Manager, and to install additional survey marks at 50 metre centres between existing survey marks. This was undertaken. Please note that the spacing between these marks is already less than 50 metres.

Seasonal Variation Calculations

As required by Section 6.7 of the Monitoring and Contingency Plan, seasonal variation calculations have been defined for bores 37, 38, 39 and 40. The calculated seasonal variation for the deep and shallow piezometers respectively in bores 37, 38, 39 and 40 are as follows:

Table 1: Deep Piezometers

	BH37a	BH38a	BH39a	BH40a
99% Confidence Limits	RL54.17m RL53.60m	RL54.73m RL53.80m	RL55.31m RL54.82m	RL62.07m RL61.23m
99.9% Confidence Limits	RL54.25m RL53.53m	RL54.85m RL53.67m	RL55.37m RL54.76m	RL62.19m RL61.12m

Table 2: Shallow Piezometers

	BH37b	BH38b	BH39b	BH40b
99% Confidence Limits	RL54.03m RL53.56m	RL53.80m RL53.33m	RL57.42m RL56.50m	RL63.86m RL63.31m
99.9% Confidence Limits	RL54.09m RL53.50m	RL53.87m RL53.26m	RL57.55m RL56.38m	RL63.94m RL63.23m

The groundwater levels in BH40a and BH40b have been in excess of seasonal variation (99% confidence limits) since December 2007. BH40 is the southern most of the Three Kings Quarry groundwater monitoring bores located on Hillsborough Road immediately adjacent to the SH20 works.

Three Kings groundwater monitoring bores located closer to the Three Kings Quarry (boreholes 36 and 39) have not recorded any movement of groundwater levels beyond normal seasonal variations.

The groundwater level in BH40a (deep piezometer) has fallen 1.20metres from an average level of approximately RL61.65m (to March 2007) to a low of RL60.45m recorded in 2008/09.

The groundwater level in BH40b (shallower piezometer) has fallen 0.95m from an average level of RL63.6m (to March 2007) to RL62.65m recorded in 2008/09.

Up until March 2008, Transits groundwater monitoring bores adjacent to the "Hillsborough Road cut" SH20 works fell a similar or greater amount although the monitoring record is not complete as the Three Kings Quarry groundwater monitoring record. Transits BH15 on the crest of the Hillsborough Road cut has recorded a fall in groundwater level of 1.9m since December 2006 (from RL64.44m to RL62.53m).

The Transit monitoring bores do not extend to the same depth as the Three Kings Quarry groundwater monitoring bores but all bores are located in East Coast Bays Formation (Waitemata).

Although the monitoring results are not conclusive (with the deeper groundwater level in BH40a being drawn down more than the shallower groundwater level – BH40b), as the groundwater monitoring bores closer to the Three Kings Quarry (bores 36 and 39) are not being drawn down, it is considered unlikely that the falling groundwater levels being recorded in BH40a and BH40b are the result of dewatering Three Kings Quarry.

REVIEWS

Groundwater

The results of the groundwater level monitoring are checked as the results are received. No reviews of groundwater levels were undertaken in the year ending March 31 2009.

Surface Levels

The results of precise level surfaces are checked as the results are received. The results of each precise level survey are forwarded to the Auckland Regional Council and Three Kings United.

A review of precise level survey data was undertaken by Tonkin and Taylor in 2005. This report reviewed settlement data to the March 2005 survey and included the findings of the Pattle Delemore annual groundwater report dated January 2005.

The Tonkin and Taylor report concluded that while surface settlement monitoring indicates that surface settlement is typically on-going about the quarry, it was at a much reduced rate.

The on-going settlement close to the quarry was concluded to be the result of secondary consolidation induced by changes in groundwater pressure associated with past quarry dewatering. At increased distances from the quarry, Tonkin and Taylor concluded that it is possible that the ongoing surface settlement includes some delayed consolidation as a result primarily of consolidation of soil strata not currently monitored by piezometers. In addition

Tonkin and Taylor concluded that any groundwater drawdown effects at distance from the quarry are small and surface settlement data at the fringe of drawdown are within expected settlement tolerances.

A further review of the precise level survey information was undertaken in August 2005 to determine if cessation of settlement had occurred. It was found that cessation of settlement (as defined by the consent to dewater Three Kings Quarry) had occurred and this was reported more fully to the Auckland Regional Council in September 2005. As such, and because more than two years has elapsed since dewatering has been undertaken, precise level surveys are now required to be undertaken at 12 month intervals.

No further reviews of surface levels were undertaken in the year ending March 31 2009.

REMEDIAL ACTION

No remedial action was required or undertaken for the 12 month period ending 31 March 2009.

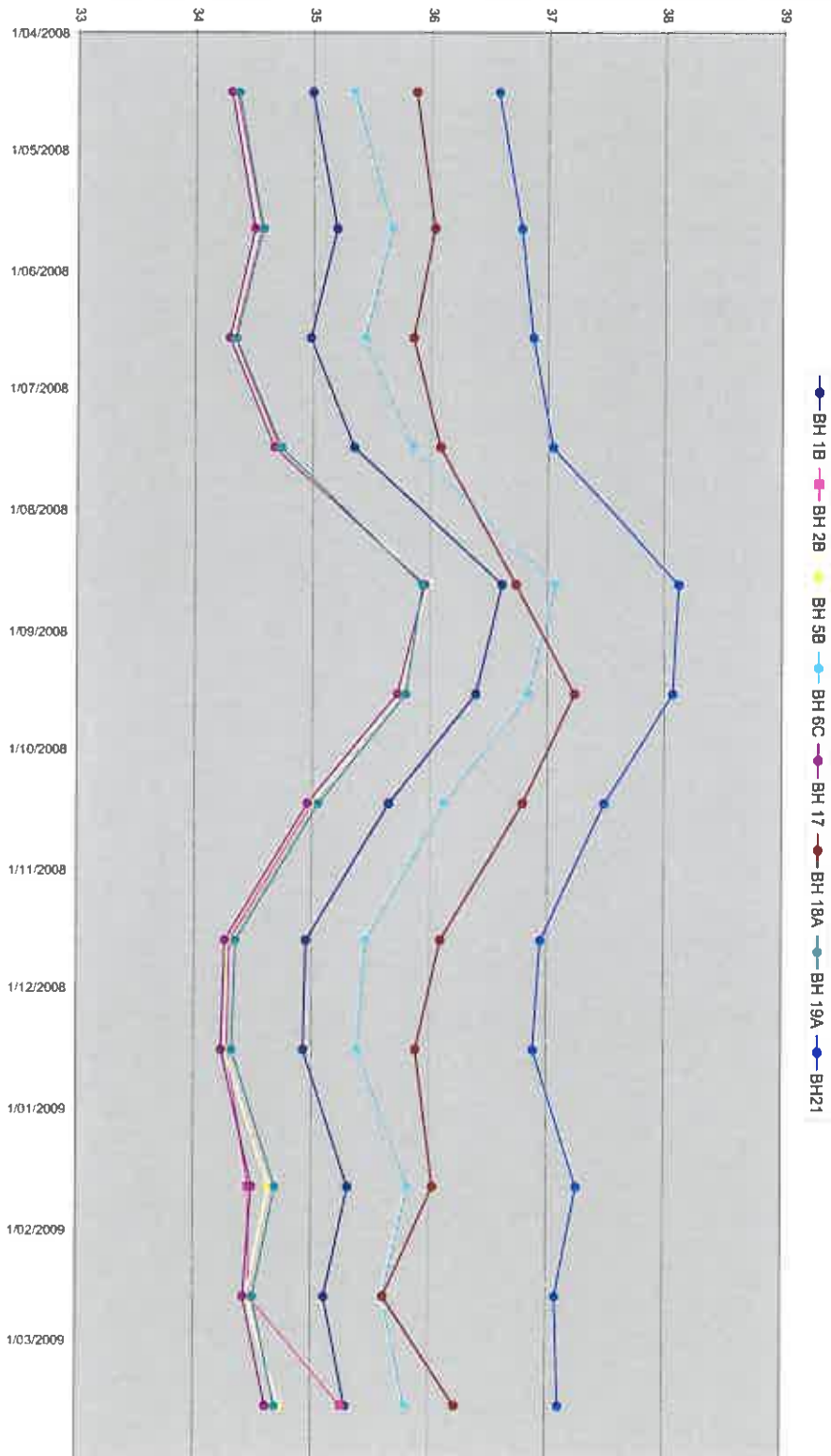
THREE KINGS GROUNDWATER LEVEL RECORD SHEET

Date	BH 18	BH 28	BH 5B	BH 6A	BH 6B	BH 6C	BH 7	BH 10a	BH 10b	BH 11b	BH 12a	BH 12b	BH 13a	BH 13c	BH 16	BH 17	BH 19A	BH 19B		
16-Apr-08	34.99	34.34	34.32	44.61	39.79	35.34	39.74	50.93	72.69	72.49	50.33	66.87	55.21	66.33	50.72	34.30	36.87	45.63	34.36	38.58
21-May-08	35.20	34.56	34.53	44.69	40.02	36.66	40.12	50.93	72.68	72.45	50.60	67.11	54.97	66.36	50.84	34.50	36.03	45.66	34.57	38.55
18-Jun-08	34.98	34.33	34.30	44.80	39.93	35.43	40.02	50.92	72.68	72.42	50.58	67.10	54.68	66.36	50.92	34.29	35.85	45.19	34.34	38.60
16-Jul-08	35.35	34.71	34.69	45.07	40.20	36.84	40.70	50.92	72.68	72.41	51.00	67.16	60.12	66.35	51.18	34.67	36.08	45.45	34.73	38.61
20-Aug-08	36.61	---	35.97	46.46	41.14	37.06	41.54	51.80	72.68	72.47	51.82	64.76	66.36	66.36	52.08	36.95	36.73	46.89	35.93	38.43
17-Sep-08	36.39	---	35.73	47.10	41.16	36.83	40.42	51.63	72.68	72.45	51.63	67.12	62.35	66.35	52.11	35.72	37.23	47.03	35.79	38.51
15-Oct-08	35.65	35.00	34.98	46.55	40.66	36.11	40.13	51.23	72.68	72.45	51.27	67.11	59.08	66.34	51.76	34.96	36.79	46.81	35.05	38.60
19-Nov-08	34.95	34.30	34.28	46.01	40.19	35.45	39.45	50.94	72.68	72.44	51.01	66.94	56.55	66.33	51.45	34.26	36.09	46.13	34.35	38.62
17-Dec-08	34.93	34.28	34.26	45.70	40.09	35.36	39.85	51.01	72.68	72.38	50.83	66.89	56.27	66.33	51.25	34.23	35.88	46.13	34.32	38.62
21-Jan-09	35.31	34.46	34.64	45.54	40.21	35.81	40.00	50.93	72.68	72.41	50.85	67.12	56.02	66.33	51.18	34.49	36.03	45.80	34.69	38.60
18-Feb-09	35.11	34.47	34.45	45.36	40.07	36.60	39.81	50.93	72.68	72.41	50.72	66.93	55.86	66.33	51.11	34.42	35.61	45.94	34.50	38.58
18-Mar-09	35.29	35.25	34.73	45.30	40.20	35.79	40.08	50.93	72.68	72.41	50.78	67.11	55.50	66.33	51.11	34.61	36.22	45.99	34.69	38.57

Date	BH 20	BH 20A	BH 21	BH 22	BH 22a	BH 23	BH 23a	BH 24	BH 24a	BH 25	BH 25a	BH 25b1	BH 25b2	BH 26	BH 26a	BH 27	BH 28a	BH 28b	BH 29	BH 30
16-Apr-08	54.36	49.99	36.57	41.29	63.89	51.29	51.06	55.61	61.82	37.13	47.75	47.63	50.85	58.97	54.15	49.59	50.93	52.23	8.89	54.81
21-May-08	54.68	50.60	36.77	41.29	64.26	51.45	51.04	55.69	61.74	37.22	48.60	48.17	51.17	58.98	54.23	49.55	50.89	52.26	8.82	54.98
18-Jun-08	54.72	50.51	36.87	41.28	64.28	51.46	51.01	55.76	61.66	37.21	46.33	47.33	50.92	59.00	54.18	49.55	50.29	51.77	8.90	54.61
18-Jul-08	54.97	51.45	37.04	41.28	65.97	51.65	51.02	55.90	61.62	37.29	49.09	47.50	50.97	59.03	54.32	49.57	50.43	51.88	8.64	54.90
20-Aug-08	55.49	52.93	38.12	41.28	65.97	51.65	51.02	56.30	61.58	38.28	49.98	49.03	51.86	59.08	54.41	49.59	51.03	52.81	8.31	55.21
17-Sep-08	55.59	52.44	38.07	41.28	65.61	51.71	51.06	56.47	61.55	38.00	49.93	48.76	51.65	59.09	54.35	49.59	50.96	52.67	8.28	55.20
15-Oct-08	55.52	51.81	37.48	41.28	65.13	51.74	51.10	56.43	61.52	37.81	49.52	48.80	50.80	59.11	54.28	49.59	50.90	52.43	8.32	55.14
19-Nov-08	55.41	51.29	36.94	41.28	64.86	51.72	51.13	56.31	61.48	37.42	47.85	48.97	51.79	59.11	54.24	49.59	51.04	52.79	8.43	55.22
17-Dec-08	55.10	50.88	36.88	41.29	64.64	51.70	51.15	56.22	61.45	37.26	48.31	48.52	51.88	59.11	54.22	49.59	51.28	52.83	8.50	55.15
21-Jan-09	54.95	50.94	37.25	41.29	64.62	51.63	51.16	56.10	61.41	37.27	47.51	48.65	51.92	59.14	54.23	49.59	51.33	52.84	8.52	55.21
18-Feb-09	54.71	50.65	37.07	41.29	64.41	51.57	51.15	56.02	61.37	37.23	47.13	48.47	51.77	59.15	54.17	49.57	51.22	52.75	8.57	55.18
18-Mar-09	54.81	50.80	37.10	41.28	64.46	51.59	51.29	55.99	61.35	37.35	47.94	47.08	51.22	59.16	54.34	49.57	51.15	52.39	8.52	54.97

Date	BH31a	BH31b	BH32	BH33	BH34	BH35a	BH35b	BH36a	BH36b	BH37a	BH37b	BH38a	BH38b	BH39a	BH39b	BH40a	BH40b
16-Apr-08	48.63	50.01	4.70	56.33	48.47	49.07	54.85	58.34	58.73	53.63	53.62	54.20	53.45	54.89	57.01	60.45	62.67
21-May-08	48.68	50.00	4.36	58.37	49.23	49.06	54.87	58.76	58.84	53.69	53.67	54.23	53.55	54.83	57.07	60.46	62.72
18-Jun-08	48.73	49.37	4.33	58.23	49.24	49.08	54.89	58.81	58.84	53.76	53.72	54.32	53.60	54.95	57.07	60.45	62.99
16-Jul-08	48.62	49.67	3.67	58.40	49.71	49.05	55.07	58.91	59.36	53.86	53.83	54.33	53.67	55.02	57.22	60.48	62.83
20-Aug-08	48.75	49.92	2.45	58.87	50.58	49.27	55.52	59.22	59.35	54.12	54.03	54.34	53.80	55.10	57.26	60.65	62.86
17-Sep-08	48.68	49.69	2.97	58.96	50.40	49.29	55.60	59.18	59.29	54.08	53.97	54.32	53.71	54.99	57.51	60.64	62.85
15-Oct-08	48.95	50.16	3.42	59.04	50.02	49.30	55.48	59.10	59.11	54.02	53.96	54.37	53.66	55.07	57.34	60.64	62.90
19-Nov-08	48.68	50.01	3.82	59.09	49.40	49.21	55.43	58.96	59.02	53.98	53.85	54.32	53.60	55.00	57.21	60.60	62.81
17-Dec-08	49.06	50.40	4.05	58.99	48.91	49.22	55.38	58.84	58.96	53.92	53.79	54.25	53.54	54.85	57.18	60.55	62.71
21-Jan-09	49.11	50.42	4.09	58.86	48.79	49.08	55.27	58.86	58.94	53.96	53.82	54.34	53.62	54.93	57.20	60.60	62.76
18-Feb-09	48.95	50.27	4.28	58.71	48.55	48.97	55.21	58.70	58.88	53.91	53.77	54.19	53.56	54.88	57.13	60.48	62.69
18-Mar-09	48.77	50.15	4.10	58.80	48.88	49.29	55.19	58.71	58.92	53.90	53.76	54.19	53.56	54.88	57.15	60.45	62.65

Groundwater Levels





DATE: 10/03/05		SCALE: 1:1000		DRAWN BY: AL	
PROJECT: WINSTON AGGREGATES LTD THREE KINGS QUARRY		SHEET: 6451-100		CHECKED BY: AS	
CLIENT: WINSTON AGGREGATES LTD		PROJECT NO: 100000		DATE: 10/03/05	
DRAWN BY: AL		SCALE: 1:1000		SHEET: 6451-100	
CHECKED BY: AS		DATE: 10/03/05		DRAWN BY: AL	
PROJECT: WINSTON AGGREGATES LTD THREE KINGS QUARRY		SHEET: 6451-100		DRAWN BY: AL	
CLIENT: WINSTON AGGREGATES LTD		PROJECT NO: 100000		DATE: 10/03/05	
DRAWN BY: AL		SCALE: 1:1000		SHEET: 6451-100	
CHECKED BY: AS		DATE: 10/03/05		DRAWN BY: AL	

BH17, BH27, BH37, BH40, BH18A, BH18B, BH18C, BH18D, BH18E, BH18F, BH18G, BH18H, BH18I, BH18J, BH18K, BH18L, BH18M, BH18N, BH18O, BH18P, BH18Q, BH18R, BH18S, BH18T, BH18U, BH18V, BH18W, BH18X, BH18Y, BH18Z, BH19A, BH19B, BH19C, BH19D, BH19E, BH19F, BH19G, BH19H, BH19I, BH19J, BH19K, BH19L, BH19M, BH19N, BH19O, BH19P, BH19Q, BH19R, BH19S, BH19T, BH19U, BH19V, BH19W, BH19X, BH19Y, BH19Z, BH20A, BH20B, BH20C, BH20D, BH20E, BH20F, BH20G, BH20H, BH20I, BH20J, BH20K, BH20L, BH20M, BH20N, BH20O, BH20P, BH20Q, BH20R, BH20S, BH20T, BH20U, BH20V, BH20W, BH20X, BH20Y, BH20Z, BH21A, BH21B, BH21C, BH21D, BH21E, BH21F, BH21G, BH21H, BH21I, BH21J, BH21K, BH21L, BH21M, BH21N, BH21O, BH21P, BH21Q, BH21R, BH21S, BH21T, BH21U, BH21V, BH21W, BH21X, BH21Y, BH21Z, BH22A, BH22B, BH22C, BH22D, BH22E, BH22F, BH22G, BH22H, BH22I, BH22J, BH22K, BH22L, BH22M, BH22N, BH22O, BH22P, BH22Q, BH22R, BH22S, BH22T, BH22U, BH22V, BH22W, BH22X, BH22Y, BH22Z, BH23A, BH23B, BH23C, BH23D, BH23E, BH23F, BH23G, BH23H, BH23I, BH23J, BH23K, BH23L, BH23M, BH23N, BH23O, BH23P, BH23Q, BH23R, BH23S, BH23T, BH23U, BH23V, BH23W, BH23X, BH23Y, BH23Z, BH24A, BH24B, BH24C, BH24D, BH24E, BH24F, BH24G, BH24H, BH24I, BH24J, BH24K, BH24L, BH24M, BH24N, BH24O, BH24P, BH24Q, BH24R, BH24S, BH24T, BH24U, BH24V, BH24W, BH24X, BH24Y, BH24Z, BH25A, BH25B, BH25C, BH25D, BH25E, BH25F, BH25G, BH25H, BH25I, BH25J, BH25K, BH25L, BH25M, BH25N, BH25O, BH25P, BH25Q, BH25R, BH25S, BH25T, BH25U, BH25V, BH25W, BH25X, BH25Y, BH25Z, BH26A, BH26B, BH26C, BH26D, BH26E, BH26F, BH26G, BH26H, BH26I, BH26J, BH26K, BH26L, BH26M, BH26N, BH26O, BH26P, BH26Q, BH26R, BH26S, BH26T, BH26U, BH26V, BH26W, BH26X, BH26Y, BH26Z, BH27A, BH27B, BH27C, BH27D, BH27E, BH27F, BH27G, BH27H, BH27I, BH27J, BH27K, BH27L, BH27M, BH27N, BH27O, BH27P, BH27Q, BH27R, BH27S, BH27T, BH27U, BH27V, BH27W, BH27X, BH27Y, BH27Z, BH28A, BH28B, BH28C, BH28D, BH28E, BH28F, BH28G, BH28H, BH28I, BH28J, BH28K, BH28L, BH28M, BH28N, BH28O, BH28P, BH28Q, BH28R, BH28S, BH28T, BH28U, BH28V, BH28W, BH28X, BH28Y, BH28Z, BH29A, BH29B, BH29C, BH29D, BH29E, BH29F, BH29G, BH29H, BH29I, BH29J, BH29K, BH29L, BH29M, BH29N, BH29O, BH29P, BH29Q, BH29R, BH29S, BH29T, BH29U, BH29V, BH29W, BH29X, BH29Y, BH29Z, BH30A, BH30B, BH30C, BH30D, BH30E, BH30F, BH30G, BH30H, BH30I, BH30J, BH30K, BH30L, BH30M, BH30N, BH30O, BH30P, BH30Q, BH30R, BH30S, BH30T, BH30U, BH30V, BH30W, BH30X, BH30Y, BH30Z, BH31A, BH31B, BH31C, BH31D, BH31E, BH31F, BH31G, BH31H, BH31I, BH31J, BH31K, BH31L, BH31M, BH31N, BH31O, BH31P, BH31Q, BH31R, BH31S, BH31T, BH31U, BH31V, BH31W, BH31X, BH31Y, BH31Z, BH32A, BH32B, BH32C, BH32D, BH32E, BH32F, BH32G, BH32H, BH32I, BH32J, BH32K, BH32L, BH32M, BH32N, BH32O, BH32P, BH32Q, BH32R, BH32S, BH32T, BH32U, BH32V, BH32W, BH32X, BH32Y, BH32Z, BH33A, BH33B, BH33C, BH33D, BH33E, BH33F, BH33G, BH33H, BH33I, BH33J, BH33K, BH33L, BH33M, BH33N, BH33O, BH33P, BH33Q, BH33R, BH33S, BH33T, BH33U, BH33V, BH33W, BH33X, BH33Y, BH33Z, BH34A, BH34B, BH34C, BH34D, BH34E, BH34F, BH34G, BH34H, BH34I, BH34J, BH34K, BH34L, BH34M, BH34N, BH34O, BH34P, BH34Q, BH34R, BH34S, BH34T, BH34U, BH34V, BH34W, BH34X, BH34Y, BH34Z, BH35A, BH35B, BH35C, BH35D, BH35E, BH35F, BH35G, BH35H, BH35I, BH35J, BH35K, BH35L, BH35M, BH35N, BH35O, BH35P, BH35Q, BH35R, BH35S, BH35T, BH35U, BH35V, BH35W, BH35X, BH35Y, BH35Z, BH36A, BH36B, BH36C, BH36D, BH36E, BH36F, BH36G, BH36H, BH36I, BH36J, BH36K, BH36L, BH36M, BH36N, BH36O, BH36P, BH36Q, BH36R, BH36S, BH36T, BH36U, BH36V, BH36W, BH36X, BH36Y, BH36Z, BH37A, BH37B, BH37C, BH37D, BH37E, BH37F, BH37G, BH37H, BH37I, BH37J, BH37K, BH37L, BH37M, BH37N, BH37O, BH37P, BH37Q, BH37R, BH37S, BH37T, BH37U, BH37V, BH37W, BH37X, BH37Y, BH37Z, BH38A, BH38B, BH38C, BH38D, BH38E, BH38F, BH38G, BH38H, BH38I, BH38J, BH38K, BH38L, BH38M, BH38N, BH38O, BH38P, BH38Q, BH38R, BH38S, BH38T, BH38U, BH38V, BH38W, BH38X, BH38Y, BH38Z, BH39A, BH39B, BH39C, BH39D, BH39E, BH39F, BH39G, BH39H, BH39I, BH39J, BH39K, BH39L, BH39M, BH39N, BH39O, BH39P, BH39Q, BH39R, BH39S, BH39T, BH39U, BH39V, BH39W, BH39X, BH39Y, BH39Z, BH40A, BH40B, BH40C, BH40D, BH40E, BH40F, BH40G, BH40H, BH40I, BH40J, BH40K, BH40L, BH40M, BH40N, BH40O, BH40P, BH40Q, BH40R, BH40S, BH40T, BH40U, BH40V, BH40W, BH40X, BH40Y, BH40Z.



Note:
 Origin of Levels
 CHS 5049930
 RL55.1412m
 In terms of Mean Sea Level
 CHS 504417
 RL59.305m

● SS318 = Precise Level Survey Benchmarks
 ● BH16 = Borehole Location

THREE KINGS SURVEY RECORD

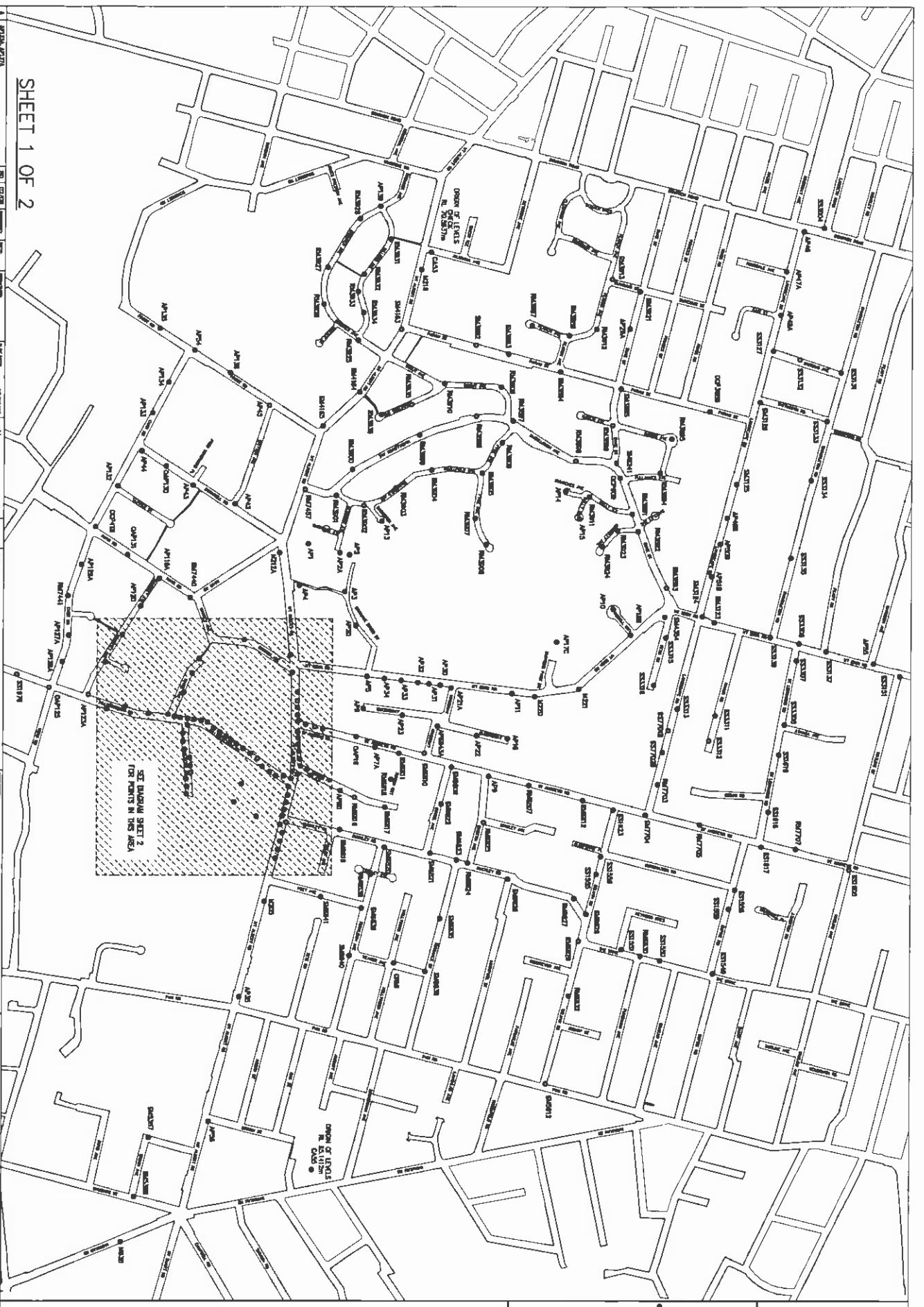
Station ID	Location	Coordinates		Averaged Level	Surveyed Levels (metres)		Change from Averaged Level (mm)		Mar 09 of Mar 08 (mm)
		mN	mE		Mar-08	Mar-09	Mar-08	Mar-09	
SS 3136	Mt Eden Rd	697910.68	299385.73	63.047	63.030	63.031	-17	-16	1
SS 3137	Mt Eden Rd	698072.60	299427.08	63.343	63.339	63.340	-4	-3	1
M 212A	Mt Albert Rd	696504.39	299153.17	86.127	86.112	86.111	-15	-16	-1
SM 4163	Mt Albert Rd	696843.03	298513.03	74.142	74.142	74.142	0	0	0
SM 4164	Mt Albert Rd	696728.57	298688.37	75.851	75.845	75.844	-6	-7	-1
SM 4165	Mt Albert Rd	696625.11	298783.31	83.632	83.624	83.623	-8	-9	-1
SM 3882	Parau St	697063.26	298555.52	63.302	63.300	63.301	-2	-1	1
RM 3898	McCullough Ave	697067.11	298760.28	76.078	76.065	76.065	-13	-13	0
RM 3899	McCullough Ave	696900.99	298813.23	77.811	77.802	77.800	-9	-11	-2
RM 3900	McCullough Ave	696713.60	298916.53	76.657	76.643	76.642	-14	-15	-1
RM 3901	Smallfield Ave	696669.58	298986.57	78.931	78.914	78.912	-17	-19	-2
RM 3902	Smallfield Ave	696747.40	299014.21	80.177	80.165	80.163	-12	-14	-2
RM 3903	Smallfield Ave	696834.73	298965.09	82.524	82.516	82.515	-8	-9	-1
RM 3904	Smallfield Ave	696939.98	298912.45	82.708	82.699	82.698	-9	-10	-1
RM 3907	Fyvie Ave	697063.27	299054.59	80.321	80.316	80.314	-5	-7	-2
RM 3910	Scout Ave	696974.91	298672.88	83.414	83.405	83.404	-9	-10	-1
RM 3925	Bremner Ave	696727.72	298541.52	65.423	65.425	65.426	2	3	1
RM 3926	Bremner Ave	696630.47	298448.99	59.088	59.092	59.093	4	5	1
RM 3933	Milliken Rd	696725.14	298412.65	71.049	71.055	71.054	6	5	-1
RM 3934	Milliken Rd	696742.66	298472.30	66.303	66.307	66.308	4	5	1
RM 3935	Simmonds Ave	696876.97	298725.70	91.755	91.746	91.744	-9	-11	-2
RM 3936	Simmonds Ave	696788.84	298756.78	90.869	90.857	90.855	-12	-14	-2
RM 7440	Hayr Rd	696258.10	299279.70	84.033	84.026	84.026	-7	-7	0
RM 7457	Mt Albert Rd	696575.40	298967.90	85.707	85.692	85.690	-15	-17	-2
AP 1	Plaza, Mt Albert Rd	696589.80	299127.20	81.269	81.251	81.250	-18	-19	-1
AP 2	Plaza, Mt Albert Rd	696706.40	299158.20	76.290	76.275	76.275	-15	-15	0
AP 2A	Plaza, Mt Albert Rd	696679.30	299152.50	77.582	77.570	77.569	-12	-13	-1
AP 3	Plaza, Mt Albert Rd	696693.00	299259.10	77.367	77.355	77.354	-12	-13	-1
AP 4	Plaza, Mt Albert Rd	696564.80	299244.90	83.366	83.347	83.346	-19	-20	-1
AP 13	Barrister Ave	696796.00	299064.30	79.867	79.860	79.860	-7	-7	0
AP 20	Grahame Breed Dr	696723.10	299358.50	76.792	76.784	76.784	-8	-8	0
SM 3123	Mt Eden Rd	697750.13	299344.75	75.676	75.658	75.657	-18	-19	-1
SM 3124	Landscape Rd	697715.79	299327.99	77.724	77.705	77.704	-19	-20	-1
SM 3125	Landscape Rd	697810.23	298959.44	69.440	69.429	69.429	-11	-11	0
SM 3126	Landscape Rd	697873.04	298716.42	63.015	63.009	63.009	-6	-6	0
SS 3127	Landscape Rd	697911.99	298565.74	59.724	59.721	59.721	-3	-3	0
SS 3132	Waitomo St	697987.80	298590.90	61.689	61.687	61.687	-2	-2	0
SM 3883	Parau St	697156.95	298581.04	64.371	64.367	64.368	-4	-3	1
RM 3884	Parau St	697301.96	298629.21	62.539	62.535	62.536	-4	-3	1
SM 3885	Duke St	697474.42	298680.34	61.857	61.848	61.849	-9	-8	1
RM 3886	Fearon Ave	697329.55	298529.49	55.236	55.235	55.237	-1	1	2
RM 3887	Fearon Ave	697221.32	298498.22	51.548	51.539	51.542	-9	-6	3
OCF 3888	Parau St	697732.59	298744.43	62.513	62.504	62.505	-9	-8	1
RM 3889	Duke St	697452.34	298785.50	69.233	69.213	69.213	-20	-20	0
RM 3891	Duke St	697515.89	299039.80	77.575	77.561	77.559	-14	-16	-2
RM 3892	Duke St	697529.22	299086.26	78.012	77.998	77.997	-14	-15	-1
RM 3893	Duke St	697610.67	299248.07	79.146	79.125	79.123	-21	-23	-2
RM 3894	Fulljames Ave	697586.82	298923.43	72.082	72.064	72.063	-18	-19	-1
RM 3895	Hamon Ave	697620.41	298829.46	65.188	65.170	65.165	-18	-23	-5
RM 3896	McCullough Ave	697345.49	298887.04	69.820	69.800	69.800	-20	-20	0
RM 3897	McCullough Ave	697170.56	298776.56	75.084	75.070	75.069	-14	-15	-1
RM 3905	Fyvie Ave	697080.60	298923.97	75.813	75.807	75.805	-6	-8	-2
RM 3906	Fyvie Ave	697134.57	298836.07	77.447	77.436	77.435	-11	-12	-1
RM 3908	Fyvie Ave	697093.64	299129.18	82.069	82.067	82.065	-2	-4	-2
RM 3909	Scout Ave	697136.38	298680.63	80.056	80.048	80.046	-8	-10	-2
RM 3911	Dally Tce	697387.46	298991.05	88.894	88.882	88.880	-12	-14	-2
RM 3912	Fearon Ave	697399.31	298512.83	51.652	51.653	51.656	1	4	3
RM 3913	Fearon Ave	697445.84	298362.01	49.238	49.244	49.246	6	8	2
RM 3921	Duncumb St	697530.84	298402.67	50.034	50.037	50.040	3	6	3
RM 3923	Connelly Ave	697465.89	299086.33	74.293	74.278	74.278	-15	-15	0
RM 3924	Connelly Ave	697424.55	299131.88	73.034	73.021	73.021	-13	-13	0
SM 4354	Mt Eden Rd	697606.00	299322.20	80.155	80.132	80.130	-23	-25	-2
SM 6241	Duke St	697468.58	298893.36	70.012	69.988	69.987	-24	-25	-1
OCF 90B	Duke St	697480.39	298934.30	71.805	71.788	71.787	-17	-18	-1
AP 10	Roskill Way	697458.10	299308.70	82.673	82.661	82.660	-12	-13	-1
AP 14	Churches Ave	697318.10	298969.20	91.334	91.324	91.321	-10	-13	-3
AP 15	Dally Terrace	697357.20	299055.90	90.821	90.813	90.810	-8	-11	-3
AP 17C	Hunters Park Dr	697293.89	299402.87	74.602	74.596	74.595	-6	-7	-1
AP 29A	Duke St	697501.58	298517.84	49.542	49.538	49.542	-4	1	4
M 220	Mt Eden Rd	697232.61	299557.19	81.700	81.666	81.664	-34	-36	-2
M 221	Mt Eden Rd	697359.09	299539.94	83.449	83.435	83.434	-14	-15	-1
SS 1555	Selwyn Rd	697413.60	300062.90	99.584	99.584	99.581	0	-3	-3

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		mN	mE		Mar-08	Mar-09	Mar-08	Mar-09	
SS 1556	Selwyn Rd	697425.87	300012.81	102.373	102.372	102.369	-1	-4	-3
SS 1617	St Andrews Rd	697887.68	299983.32	81.442	81.443	81.443	1	1	0
SS 1618	St Leonards Rd	697906.03	299884.48	78.478	78.474	78.476	-4	-2	2
SS 1619	St Leonards Rd	697935.70	299724.63	66.617	66.613	66.615	-4	-2	2
SS 1623	St Andrews Rd	697461.10	299874.96	107.522	107.518	107.514	-4	-8	-4
SS 3306	Mt Eden Rd	697993.20	299406.80	60.565	60.555	60.557	-10	-8	2
SS 3307	St Leonards Rd	697985.83	299454.69	59.661	59.653	59.655	-8	-6	2
SS 3308	St Leonards Rd	697952.15	299635.99	63.275	63.270	63.273	-5	-2	3
SS 3311	Rahiri Rd	697752.00	299610.94	95.306	95.294	95.294	-12	-12	0
SS 3312	Rahiri Rd	697733.64	299682.97	95.929	95.918	95.920	-11	-9	2
SS 3313	Landscape Rd	697648.30	299592.51	112.633	112.622	112.617	-11	-16	-5
SS 3315	Rewa Rd	697613.41	299396.64	80.938	80.916	80.914	-22	-24	-2
SS 3316	Rewa Rd	697579.48	299529.80	98.902	98.885	98.880	-17	-22	-5
RM 6807	St Andrews Rd	697216.70	299808.10	102.487	102.476	102.472	-11	-15	-4
RM 6812	St Andrews Rd	697370.60	299846.60	108.907	108.897	108.894	-10	-13	-3
SM 6826	Buckley Rd	697157.90	300077.50	74.710	74.707	74.709	-3	-1	2
RM 6827	Buckley Rd	697345.96	300128.04	83.332	83.333	83.335	1	3	2
SM 6828	Buckley Rd	697383.80	300177.40	87.952	87.953	87.954	1	2	1
SS 7701B	Landscape Rd	697619.71	299657.05	115.509	115.513	115.507	4	-2	-6
SS 7702B	Landscape Rd	697602.26	299725.78	110.538	110.541	110.534	3	-4	-7
RM 7703	Landscape Rd	697589.21	299808.37	100.149	100.137	100.134	-12	-15	-3
SM 7704	St Andrews Rd	697556.90	299894.50	97.816	97.812	97.810	-4	-6	-2
RM 7705	St Andrews Rd	697703.31	299921.80	88.086	88.084	88.085	-2	-1	1
AP 9	St Andrews Rd	697103.90	299782.20	92.802	92.785	92.782	-17	-20	-3
AP 11	Mt Eden Rd	697168.40	299548.70	80.191	80.184	80.182	-7	-9	-2
AP 16	Queens Way	697156.20	299676.20	83.646	83.633	83.630	-13	-16	-3
AP 18B	Mt Eden Rd	697509.31	299384.27	81.641	81.641	81.640	0	-1	-1
M 205	Mt Albert Rd	696471.16	300138.54	59.305	59.304	59.305	-1	0	1
AP 206A	Mt Albert Rd	696527.29	299919.36	59.997	59.996	59.998	-1	1	2
M 210	Mt Albert Rd	696536.06	299441.55	83.050	83.032	83.030	-18	-20	-2
SM 1979	Hillsborough Rd	696308.02	299637.25	61.241	61.214	61.216	-27	-25	2
BP 1977B	Hillsborough Rd	696141.75	299609.93	71.993	71.983	71.985	-10	-8	2
SM 6809	St Andrews Rd	697001.27	299757.44	81.800	81.781	81.778	-19	-22	-3
SM 6810	St Andrews Rd	696925.56	299720.86	76.956	76.939	76.935	-17	-21	-4
RM 6811	St Andrews Rd	696849.02	299715.44	76.526	76.506	76.503	-20	-23	-3
RM 6813	St Andrews Rd	696631.95	299652.97	80.905	80.882	80.880	-23	-25	-2
RM 6816	Rowan Rd	696721.88	299845.69	78.908	78.888	78.886	-20	-22	-2
SM 6817	Rowan Rd	696808.83	299876.79	80.995	80.980	80.977	-15	-18	-3
RM 6818	Rowan Rd	696826.70	299791.25	81.966	81.948	81.945	-18	-21	-3
RM 6819	Buckley Rd	696678.00	299942.25	65.620	65.608	65.610	-12	-10	2
SM 6820	Buckley Rd	696808.11	299988.79	71.955	71.948	71.950	-7	-5	2
SM 6821	Buckley Rd	696938.51	300004.30	71.114	71.109	71.111	-5	-3	2
SM 6822	Gorrie Ave	696973.90	299863.23	81.874	81.859	81.856	-15	-18	-3
SM 6823	Buckley Rd	697012.43	300021.72	70.593	70.587	70.589	-6	-4	2
RM 6824	Buckley Rd	697044.38	300030.36	71.084	71.080	71.083	-4	-1	3
RM 6825	Queenin Ave	697092.90	299916.80	81.386	81.374	81.376	-12	-10	2
SM 6835	Torrance St	696969.98	300185.70	70.784	70.785	70.788	1	4	3
SM 6836	Torrance St	696930.33	300343.26	65.955	65.957	65.959	2	4	2
RM 6838	Fernleigh Ave	696773.28	300065.80	70.304	70.299	70.301	-5	-3	2
SM 6839	Fernleigh Ave	696748.10	300163.47	67.487	67.486	67.489	-1	2	3
SM 6840	Fernleigh Ave	696714.69	300296.02	63.278	63.278	63.282	0	4	4
SM 6841	Peel Ave	696626.68	300131.57	65.698	65.695	65.698	-3	0	3
AP 6843A	Kings Way	696958.45	299642.05	75.223	75.222	75.219	-1	-4	-3
RM 7647	Mt Albert Rd	696565.00	299755.10	67.601	67.577	67.578	-24	-23	1
ORM.I	Weaver Street	696836.50	300316.20	63.578	63.580	63.583	2	5	3
AP 5	Mt Eden Rd	696757.00	299500.90	75.746	75.736	75.735	-10	-11	-1
AP 6	Queens Way	696746.90	299590.60	75.306	75.289	75.286	-17	-20	-3
AP 7A	St Andrews Rd	696778.94	299702.10	76.820	76.819	76.817	-1	-3	-2
AP 8B	Mt Albert Rd	696559.06	299633.48	75.740	75.727	75.727	-13	-13	0
AP 12	Warren Ave	696409.10	299402.20	94.357	94.342	94.341	-15	-16	-1
OAP 19	St Andrews Rd	696725.00	299676.40	77.508	77.485	77.483	-23	-25	-2
AP 21A	Mt Eden Rd	696997.90	299534.34	77.288	77.287	77.285	-1	-3	-2
AP 22	Queens Way	697069.30	299667.60	78.352	78.342	78.340	-10	-12	-2
AP 23	Queens Way	696858.57	299609.62	74.402	74.392	74.389	-10	-13	-3
AP 30	Mt Eden Rd	696966.19	299525.13	77.329	77.321	77.318	-8	-11	-3
AP 31	Mt Eden Rd	696934.22	299521.42	76.857	76.854	76.852	-3	-5	-2
AP 32	Mt Eden Rd	696902.63	299517.81	76.203	76.194	76.193	-9	-10	-1
AP 33	Mt Eden Rd	696855.06	299512.27	75.121	75.113	75.111	-8	-10	-2
AP 34	Mt Eden Rd	696807.28	299506.75	74.937	74.925	74.924	-12	-13	-1
SM 5387	Erson Ave	696146.21	300815.94	56.747	56.748	56.749	1	2	1
SM 5386	Symonds St	696104.12	300983.29	55.184	55.185	55.186	1	2	1
M 638	Manukau Rd	696081.51	301109.25	54.690	54.691	54.691	1	1	0
CA 55	Manukau Rd	696605.90	300894.30	65.141	65.141	65.141	0	0	0
CA 53	Akarana Ave	696935.90	298292.10	70.594	70.594	70.594	0	0	0

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		mN	mE		Mar-08	Mar-09	Mar-08	Mar-09	
M 216	Mt Albert Rd	696903.54	298347.91	72.658	72.658	72.658	0	0	0
SS 1977	Hillsborough Rd	696020.20	299595.82	74.453	74.448	74.448	-5	-5	0
RM 3927	Bremner Ave	696633.32	298338.77	62.651	62.652	62.653	1	2	1
RM 3928	Bremner Ave	696727.76	298195.81	56.144	56.146	56.146	2	2	0
AP 139	Bremner Ave	696788.02	298157.42	56.225	56.224	56.226	-1	1	2
RM 3931	Milliken Ave	696817.47	298257.51	62.500	62.501	62.501	1	1	0
RM 3932	Milliken Ave	696733.95	298363.24	71.719	71.720	71.719	1	0	-1
SS 3004	Dominion Rd	698058.80	298223.46	51.812	51.810	51.811	-2	-1	1
SS 3131	Shackleton Rd	698110.53	298631.80	59.419	59.417	59.417	-2	-2	0
SS 3133	Shackleton Rd	698071.30	298770.71	59.554	59.550	59.551	-4	-3	1
SS 3134	Shackleton Rd	698021.66	298946.50	61.479	61.473	61.473	-6	-6	0
SS 3135	Shackleton Rd	697966.25	299165.81	61.684	61.680	61.680	-4	-4	0
SS 3151	Mt Eden Rd	698285.87	299497.70	67.987	67.987	67.988	0	1	1
SS 1905	St Andrews Rd	698147.73	300049.39	88.810	88.807	88.807	-3	-3	0
RM 7707	St Andrews Rd	697973.66	299990.96	81.206	81.203	81.203	-3	-3	0
SS 1558	Empire Rd	697813.79	300111.39	92.169	92.166	92.165	-3	-4	-1
SS 1559	Empire Rd	697800.00	300165.50	96.024	96.022	96.020	-2	-4	-2
SS 1549	The Drive	697753.34	300348.67	85.871	85.870	85.869	-1	-2	-1
SS 1550	The Drive	697589.88	300306.71	84.432	84.432	84.433	0	1	1
RM 6830	The Drive	697538.21	300294.84	81.638	81.637	81.638	-1	0	1
SS 1551	The Drive	697492.54	300281.71	77.481	77.478	77.480	-3	-1	2
RM 6829	Setwyn Rd	697363.05	300258.05	79.864	79.858	79.859	-6	-5	1
RM 6832	Setwyn Rd	697337.40	300403.57	80.190	80.189	80.191	-1	1	2
SM 5912	Pah Rd	697278.09	300666.24	74.285	74.284	74.286	-1	1	2
AP 35	Mt Albert Rd	696402.12	300407.23	54.190	54.193	54.196	3	6	3
AP 37	Hillsborough Rd	696407.39	299705.88	59.335	59.324	59.325	-11	-10	1
AP 38	Budock Rd	696246.76	299834.65	69.274	69.268	69.269	-5	-4	1
AP 39	Hillsborough Bowling	696383.07	299856.28	56.297	56.292	56.294	-5	-3	2
AP 40	Hillsborough Bowling	696445.91	299895.62	55.757	55.752	55.755	-5	-2	3
IS 41	Hillsborough Bowling	696403.82	299804.75	56.336	56.330	56.332	-6	-4	2
AP 42	Domwell Rd	696378.41	299015.87	76.373	76.364	76.364	-9	-9	0
AP 43	Domwell Rd	696260.57	298956.76	66.002	65.994	65.995	-8	-7	1
AP 44	Domwell Rd	696110.00	298858.85	58.493	58.486	58.487	-7	-6	1
AP 45	Frost Rd	696471.85	298726.92	64.920	64.912	64.914	-8	-6	2
AP 54	Frost Rd	696264.66	298577.84	57.855	57.844	57.847	-11	-8	3
AP 46	Dominion Rd	697995.61	298226.64	50.443	50.441	50.443	-2	0	2
AP 47A	Landscape Rd	697951.78	298343.10	52.564	52.564	52.565	1	1	1
AP 48A	Landscape Rd	697937.88	298463.58	57.064	57.064	57.064	0	0	0
AP 49B	Landscape Rd	697788.49	299044.88	70.341	70.341	70.340	-1	-1	-1
AP 50B	Landscape Rd	697766.32	299132.16	71.660	71.660	71.659	-1	-1	-1
AP 51B	Landscape Rd	697745.03	299214.61	74.121	74.121	74.120	-1	-1	-1
AP 55	Mt Eden Rd	698209.04	299461.78	68.263	68.263	68.263	0	0	0
AP 56	Mt Albert Rd	696314.42	300774.76	58.409	58.410	58.412	1	3	2
AP 60	Rowan Rd	696681.05	299826.31	76.276	76.268	76.266	-8	-10	-2
AP 61	Rowan Rd	696616.53	299797.11	71.310	71.301	71.301	-9	-9	0
AP 62	Mt Albert Rd	696530.18	299814.00	63.068	63.060	63.061	-8	-7	1
AP 63A	Mt Albert Rd	696520.06	299875.15	61.370	61.369	61.370	-1	0	1
AP 64	Hillsborough Rd	696478.45	299774.30	60.579	60.572	60.574	-7	-5	2
AP 65	Hillsborough Rd	696446.58	299735.84	59.546	59.537	59.538	-9	-8	1
OAP 66	Hillsborough Rd	696359.44	299672.76	59.987	59.980	59.983	-7	-4	3
AP 67	Hillsborough Rd	696248.43	299622.21	63.871	63.864	63.865	-7	-6	1
OCP 68	Budock Rd	696235.97	299684.44	66.304	66.299	66.300	-5	-4	1
AP 69	Budock Rd	696249.57	299731.19	65.977	65.972	65.974	-5	-3	2
AP 70	Budock Rd	696244.13	299790.39	71.208	71.204	71.205	-4	-3	1
OAP 71	Hillsborough Rd	696195.17	299615.83	67.651	67.646	67.647	-5	-4	1
AP 72	Hillsborough Rd	696072.41	299594.01	74.077	74.072	74.073	-5	-4	1
AP 73	Marie Ave	696238.34	299544.47	70.874	70.867	70.868	-7	-6	1
AP 74	Marie Ave	696260.93	299489.18	80.330	80.323	80.322	-7	-8	-1
AP 75	Marie Ave	696280.07	299452.86	86.876	86.872	86.871	-4	-5	-1
AP 77	Mt Albert Rd	696539.58	299487.18	82.751	82.743	82.742	-8	-9	-1
AP 78	Mt Albert Rd	696559.36	299551.48	81.022	81.014	81.014	-8	-8	0
AP 79	Mt Albert Rd	696558.46	299588.52	78.663	78.656	78.656	-7	-7	0
AP 80	Mt Albert Rd	696561.89	299691.52	71.414	71.405	71.405	-9	-9	0
AP 81A	Mt Albert Rd	696501.72	300015.21	58.551	58.550	58.552	-1	1	2
AP 82A	Mt Albert Rd	696507.72	299991.38	58.575	58.574	58.576	-1	1	2
AP 83	Mt Albert Rd	696514.36	299966.95	58.863	58.861	58.862	-2	-1	1
AP 84	Mt Albert Rd	696520.40	299943.25	59.350	59.347	59.348	-3	-2	1
AP 85	Mt Albert Rd	696516.23	299894.40	60.619	60.615	60.615	-4	-4	0
AP 86	Mt Albert Rd	696524.80	299855.75	62.051	62.047	62.048	-4	-3	1
AP 87	Mt Albert Rd	696530.55	299833.50	62.733	62.729	62.729	-4	-4	0
AP 88	Mt Albert Rd	696541.65	299788.51	64.828	64.821	64.821	-7	-7	0
AP 89	Mt Albert Rd	696560.86	299777.80	65.939	65.932	65.934	-7	-5	2
AP 90	Mt Albert Rd	696562.93	299734.25	68.687	68.681	68.681	-6	-6	0
AP 91	Mt Albert Rd	696562.43	299712.45	70.075	70.070	70.070	-5	-5	0

Station ID	Location	Coordinates		Averaged Level	Surveyed Levels (metres)		Change from Averaged Level (mm)		Mar 09 of Mar 08 (mm)
		mN	mE		Mar-08	Mar-09	Mar-08	Mar-09	
AP 92	Mt Albert Rd	696560.50	299673.84	72.613	72.612	72.614	-1	1	2
AP 93	Mt Albert Rd	696559.89	299657.17	73.864	73.859	73.860	-5	-4	1
AP 94	Mt Albert Rd	696558.57	299610.31	77.101	77.096	77.096	-5	-5	0
AP 95	Mt Albert Rd	696559.21	299569.96	79.957	79.951	79.951	-6	-6	0
AP 96	St Andrews Rd	696582.87	299641.10	77.897	77.892	77.891	-5	-6	-1
AP 97	St Andrews Rd	696607.72	299646.90	80.321	80.316	80.315	-5	-6	-1
AP 98	Rowan Rd	696588.07	299763.68	68.501	68.497	68.497	-4	-4	0
AP 99	Rowan Rd	696594.23	299786.13	69.478	69.474	69.474	-4	-4	0
AP 100	Hillsborough Rd	696521.99	299784.89	62.966	62.960	62.961	-6	-5	1
AP 101	Hillsborough Rd	696494.72	299786.95	61.359	61.352	61.354	-7	-5	2
AP 102	Hillsborough Rd	696457.24	299761.13	60.006	60.000	60.001	-6	-5	1
AP 103	Hillsborough Rd	696427.81	299719.78	59.404	59.397	59.398	-7	-6	1
AP 104A	Hillsborough Rd	696385.14	299690.23	59.554	59.550	59.551	-4	-3	1
AP 105	Hillsborough Rd	696373.80	299682.70	59.711	59.706	59.707	-5	-4	1
AP 106	Hillsborough Rd	696341.88	299660.52	60.458	60.454	60.456	-4	-2	2
AP 107	Hillsborough Rd	696324.59	299648.55	60.881	60.876	60.878	-5	-3	2
AP 108	Hillsborough Rd	696290.76	299628.82	62.060	62.055	62.058	-5	-2	3
AP 109	Hillsborough Rd	696270.02	299627.79	62.806	62.802	62.803	-4	-3	1
AP 110	Hillsborough Rd	696230.60	299619.62	64.997	64.989	64.992	-8	-5	3
AP 111	Hillsborough Rd	696213.05	299617.07	66.322	66.318	66.319	-4	-3	1
AP 112	Budock Rd	696247.78	299636.80	63.699	63.695	63.697	-4	-2	2
AP 113	Budock Rd	696235.55	299662.37	65.546	65.544	65.546	-2	0	2
AP 114	Budock Rd	696238.48	299707.28	65.879	65.882	65.885	3	6	3
AP 115	Budock Rd	696251.17	299753.13	67.579	67.576	67.577	-3	-2	1
AP 116	Budock Rd	696251.91	299773.34	69.485	69.483	69.484	-2	-1	1
AP 117	Budock Rd	696245.16	299811.84	70.833	70.832	70.836	-1	3	4
OAP 118	Mt Albert Rd	696509.17	299918.39	59.895	59.890	59.891	-5	-4	1
AP 119A	Haughey Ave	696164.45	299223.61	72.896	72.895	72.894	-1	-2	-1
AP 120	Haughey Ave	696109.88	299304.27	67.450	67.447	67.449	-3	-1	2
AP 121	Haughey Ave	696056.80	299385.05	66.666	66.662	66.664	-4	-2	2
AP 122	Haughey Ave	696006.86	299462.68	66.032	66.028	66.029	-4	-3	1
AP 123	Haughey Ave	695958.87	299555.50	73.227	73.220		-7		
AP 123A	Haughey Ave	695959.41	299557.72	73.519		73.519		0	
OAP 125	Hillsborough Rd	695847.40	299535.51	69.958	69.953	69.954	-5	-4	1
SS 1976	Hillsborough Rd	695759.40	299503.94	71.137	71.129	71.128	-8	-9	-1
AP 126A	Carr Rd	695885.14	299465.27	65.244	65.244	65.244		0	0
OAP 127	Carr Rd	695905.57	299370.85	61.441	61.438		-3		
AP 127A	Carr Rd	695905.29	299374.82	61.515		61.515		0	
RM 7441	Carr Rd	695901.87	299261.38	58.499	58.496	58.497	-3	-2	1
AP 129A	Carr Rd	695938.31	299190.92	58.155	58.154	58.157	-1	2	3
OAP 130	Domwell Rd	696185.75	298907.65	60.670	60.668	60.669	-2	-1	1
OAP 131	Hayr Rd	696067.40	299157.71	63.120	63.119	63.120	-1	0	1
OCP 41B	Carr/Hayr Rds	695981.19	299080.36	58.362	58.357	58.358	-5	-4	1
AP 132	Carr Rd	696043.81	298963.55	58.403	58.401	58.401	-2	-2	0
AP 133	Carr Rd	696128.84	298776.82	58.156	58.155	58.157	-1	1	2
AP 134	Carr Rd	696177.86	298685.47	58.033	58.032	58.035	-1	2	3
AP 135	Frost Rd	696157.94	298506.10	57.399	57.399	57.403	0	4	4
AP 136	Frost Rd	696363.44	298640.34	59.265	59.263	59.266	-2	1	3

SHEET 1 OF 2



1. PROJECT NAME	NO. 12/10/10	DATE	12/10/10
2. CLIENT	WINSTONE AGGREGATES	SCALE	AS SHOWN
3. DRAWING NO.	6451_102	DATE	12/10/10
4. DRAWING TITLE	SURVEY MONITORING LEVEL CONTROL POINTS	DATE	12/10/10
5. DRAWING BY	AL	DATE	12/10/10
6. DRAWING CHECKED BY	AL	DATE	12/10/10

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

CONSULTING ENGINEERS SUPERVISOR PLANNERS

Level 1 Upper Level, 28 Lambton Quay, Auckland, New Zealand. Tel: 09 308 9000. Fax: 09 308 9009

HARRISON GRIFFITHS

WINSTONE AGGREGATES
THREE KINGS QUARRY

SURVEY MONITORING
LEVEL CONTROL POINTS

DATE	12/10/10	SCALE	AS SHOWN
DRAWN BY	AL	CHECKED BY	AL
PROJECT NO.	6451_102	DATE	12/10/10



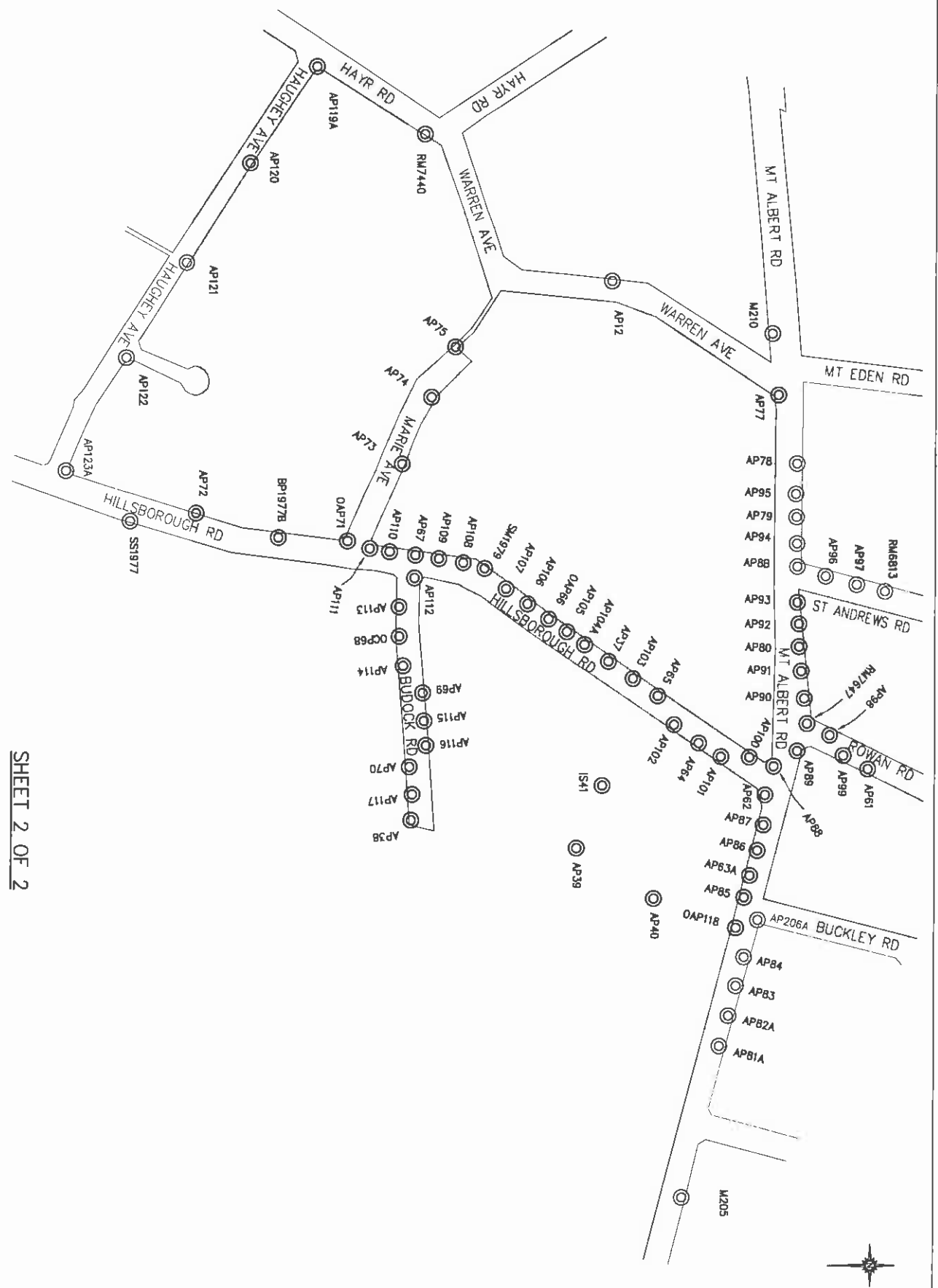
Note:
Origin of Levels
CASS 5049830
RL65.1412m
in name terms on
WZ05 5054417
RL59.305m
(as of 5/02)
© 2010
Control Point
Elevation



A

NO.	DESCRIPTION	DATE	BY	CHECKED BY	DATE	BY
1	ISSUED					
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 INSTITUTION OF CHARTERED SURVEYORS NEW ZEALAND	 HARRISON GRINBERG CONSULTING ENGINEERS SURVEYORS PLANNERS Level 8 Capital House, 26 Devonport Way, Auckland City Centre, Auckland	PROJECT: WINSTONIE AGGREGATES THREE KINGS QUARRY	TITLE: SURVEY MONITORING LEVEL CONTROL POINTS
SCALE: AS SHOWN	SHEET: 2 OF 2	DATE: 15/11/2008	BY: A



SHEET 2 OF 2