

3rd March 2017

Auckland Council
Private Bag 92300
Auckland 1142

Attention: Naveen Kumar, Water Resources Section

Re: Quarterly Report for Three Kings Quarry, Permit 12977

Dear Naveen

As required by Condition 7 of the above resource consent, please find enclosed records of groundwater level measurements for the period of 1st December 2016 to 28th February 2017.

Should you have any queries please do not hesitate to contact me on 027 504 3624 or at angela.klein@gbcwinstone.co.nz.

Yours faithfully



Angela Klein
Environmental Fill Specialist



Three Kings Quarry – Permit No 12977

Groundwater Take To Dewater Three Kings Quarry

Quarterly Report

March 2017

QUARTERLY REPORT

Three Kings Quarry – Permit No 12977

This report is made with regard to Condition 7 of Permit No 12977 and contains records for the period of 1st December 2016 to 28th February 2017.

The results of groundwater level monitoring within boreholes surrounding the take point have been provided for the reporting period.

A plan showing the location of boreholes in which groundwater levels were measured has also been included in this report.

THREE KINGS GROUNDWATER LEVEL RECORD SHEET

Date	BH 5B	BH 6A		BH 6B		BH 6C		BH 7		BH 10a		BH 10b		BH 11b	
21-Dec-16	40.98	37.28	32.06	46.73	36.94	41.85	40.80	37.99	27.82	40.79	29.13	51.63	8.12	72.64	7.56
18-Jan-17	41.68	36.58	32.10	46.69	37.03	41.76	40.94	37.85	27.88	40.73	29.08	51.68	8.1	72.66	7.59
15-Feb-17	42.12	36.14	32.18	46.61	37.10	41.69	40.88	37.91	27.96	40.65	29.12	51.64	8.14	72.62	7.62

Date	BH 12a		BH 12b		BH 13a		BH13c		BH 16		BH 17		BH 18A		BH 18B	
21-Dec-16	20.41	51.82	5.16	66.97	13.6	58.57	7.24	66.17	48.22	51.92	40.38	37.50	46.20	38.30	37.88	46.62
18-Jan-17	20.49	51.74	5.2	66.93	13.62	58.55	7.28	66.13	48.31	51.83	40.42	37.46	46.14	38.36	37.9	46.60
15-Feb-17	20.61	51.62	5.28	66.85	13.7	58.47	7.3	66.11	48.34	51.80	40.46	37.42	46.26	38.24	37.99	46.51

Date	BH 19A		BH 19B		BH 20		BH 20a		BH 21		BH 22		BH 22a		BH 23	
21-Dec-16	42.4	37.65	41.48	38.57	1.42	55.24	4.36	52.38	34.31	38.00	24.06	51.18	9.60	65.54	5.23	51.97
18-Jan-17	42.46	37.59	41.56	38.49	1.46	55.20	4.44	52.30	34.30	38.01	24.10	51.14	9.64	65.50	5.23	51.97
15-Feb-17	42.51	37.54	41.50	38.55	1.56	55.10	4.48	52.26	34.42	37.89	24.06	51.18	9.72	65.42	5.26	51.94

Date	BH 23a	BH 24	BH 24a		BH 25		BH 25a		BH 26		BH 26a		BH 27			
21-Dec-16	5.77	51.57	6.22	56.58	2.63	60.13	20.82	38.63	10.18	49.26	1.66	57.78	5.03	54.38	0.00	49.60
18-Jan-17	5.81	51.53	6.30	56.50	2.70	60.06	20.80	38.65	10.14	49.30	1.60	57.84	5.06	54.35	0.00	49.60
15-Feb-17	5.85	51.49	6.42	56.38	2.74	60.02	20.86	38.59	10.22	49.22	1.68	57.76	5.10	54.31	0.00	49.60

Date	BH28a	BH29	BH30		BH33	BH34		BH35a		BH35b	BH36a			
21-Dec-16	7.77	52.42	7.49	59.11	55.53	0.12	60.15	49.65	17.64	48.62	11.71	54.55	7.22	59.31
18-Jan-17	8.06	52.71	7.50	59.10	55.56	0.14	60.13	49.57	17.68	48.58	11.75	54.51	7.25	59.28
15-Feb-17	7.92	52.57	7.59	59.01	55.65	0.11	60.16	49.53	17.60	48.66	11.73	54.53	7.2	59.33

Date	BH36b	BH37a	BH37b		BH38a	BH38b		BH39a		BH39b	BH40a				
21-Dec-16	6.90	59.63	3.59	53.95	54.01	4.02	54.46	4.80	53.67	7.16	54.83	4.82	57.31	10.44	60.88
18-Jan-17	6.92	59.61	3.62	53.92	54.09	4.06	54.42	4.85	53.62	7.19	54.80	4.85	57.28	10.48	60.84
15-Feb-17	6.96	59.57	3.70	53.84	54.04	4.10	54.38	4.92	53.55	7.22	54.77	4.93	57.20	10.5	60.82

Date	BH40b	
21-Dec-16	8.40	62.96
18-Jan-17	8.42	62.94
15-Feb-17	8.48	62.88

Locations of boreholes are marked on the attached plan.

Waterlevels within standpipe piezometers are expressed as depth below surface levels (first column) and as elevations above seal level (second column). Waterlevels within pneumatic piezometers are expressed as head of water above piezometer tip (first column) and as elevations above seal level (second column). All values expressed in meters.

BH32 was destroyed by Roading Contractors in June 2011.

The pneumatic piezometer in BH28b stopped producing reliable results and monitoring ceased in July 2012. Waterlevels continue to be monitored by the piezometers installed in BH28a.

The pneumatic piezometers BH25b1 and BH25b2 stopped producing reliable results and monitoring of these ceased in April 2013 and November 2013, respectively. Waterlevels continue to be monitored by the standpipe piezometer BH25.

The pneumatic piezometers 31a and 31b stopped producing reliable result and monitoring of these ceased in January 2014 and July 2012, respectively. Waterlevels continue to be monitored by the standpipe piezometer installed in BH33.

As a result of fill activities the last monitoring round for BH2b was January 2015 with the decommission of this borehole undertaken in early February 2015. Waterlevels within the quarry will continue to be monitored by BH5b. Council was notified of the proposed substitution of BH5b via email on 16 December 2014 with approval granted on 17 December 2014.



Note:
Origin of Levels
CASS S049930
RL65.142m
in some terms as
M205 S054417
RL59.305m

● SS3716 = Precise
Level Survey
Benchmarks

⊙ BH16 = Borehole
Location

PROJECT:										TITLE:										MAP FRAME:									
PROJECT NO:										PROJECT NAME:										PROJECT DATE:									
1130/006451										BOREHOLE LOCATION PLAN AS AT 10-3-05										11/03/05									
DRAWING NO:										DRAWING DATE:										DRAWING BY:									
6451-100										11/03/05										AJ									
SCALE:										SCALE:										REV:									
A1 1:5000										A2 1:1000										B									
DRAWN BY:										CHECKED BY:										APPROVED BY:									
DATE:										DATE:										DATE:									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO										NO										NO									
11/03/05										11/03/05										11/03/05									
BY:										BY:										BY:									
AJ										AJ										AJ									
AMENDMENT:										AMENDMENT:										AMENDMENT:									
NO																													