

Three Kings Quarry

2011 Biennial - Air Report

This report has been prepared in accordance with Condition 29 of the Three Kings Quarry Air Discharge Permit (Permit Number 21875).

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1.0 Introduction

This air report is required by Condition 29 of the Air Discharge Permit 21875 which authorises the discharge of contaminants to air at Three Kings Quarry. Condition 29 states:

That, by 1 November 2003 and every 2 years thereafter the Consent Holder shall provide a suitable report, including scale plans, to the Manager detailing:

- (a) The volume and type of rock and areas where extraction has occurred over the previous two years;*
- (b) Areas where rehabilitation has occurred over the previous two years, including the areas fully quarried out and replanted and those areas where hydroseeding or grassing was undertaken;*
- (c) Location of stockpiles, including volumes and aggregate types;*
- (d) A summary of the weekly water usage, including water cart usage;*
- (e) Projections for the coming two years for items (a) to (d) of this condition; and*
- (f) Any dust trials or additional dust control measures undertaken for the past two years or proposed for the next two years.*

The last air report of this kind was provided to the former Auckland Regional Council in 2009.

This report covers the period of November 2009 to October 2011. In addition, projections for the coming two years, being November 2011 to October 2013, have been made (subject to consent).

2.0 Extraction

Figure 1 shows the areas of extraction between November 2009 and October 2011.

Approximately 133,000m³ of material was extracted and processed during this period. Of this volume the majority of material extracted was scoria with basalt in the minority.

As extraction continues there has been an increase in the proportion of basalt to scoria (though scoria remains the predominant material). The presence of these layers and irregular masses of harder basalt rock has required the implementation of drilling and blasting to remove the harder material.

Blasting is undertaken by a specialist company in accordance with the blasting procedure detailed in the Three Kings Quarry Management Plan and the conditions of the District Plan section 8.8.2.7. In regards to the period this report covers, blasting commenced in July 2011 and has continued approximately biweekly since. It is anticipated that blasting at this rate will continue until December 2012.



Figure 1. Area of Extraction

3.0 Stockpiles

The site currently holds stocks of scoria, basalt and greywacke aggregates. Figure 2 shows the locations of the stockpiles as of October 2011.

The approximate volumes of materials stockpiled on site as of October 2011 are as follows.

Non scoria product:

GAP 10	235m ³
GAP 20	90m ³
GAP 40	750m ³
GAP 65	140m ³
Gabion	100m ³
SCALP40	100m ³
Hardfill	200m ³
Total =	1615m ³

Scoria product:

SAP 7	8000m ³
SAP 25	3500m ³
SAP 50	600m ³
SGC 25/7	1200m ³
SGC 80/20	900m ³
Total =	14200m ³

Similar stockpile material types and volumes are predicted to be maintained over the upcoming two year period. However from early 2012 the area in which quarrying, processing and stockpiling of material is undertaken will be reduced and limited to mainly the south-east corner of site. This is due to the commencement fill operations as per the resource consents issued in 2011 (refer section 8.0 below for further information).

4.0 Dust Control

An upgrade of the sprinkler system was undertaken in 2010. The sprinklers are located around the perimeter of site. Those set up along the main haul road from the quarry have a 360 degree rotating spray head. The sprinkler system continues to be fed by reusing water that is removed from the quarry as a result of the requirement to dewater the site.

Any operational areas are addressed by the 12m³ watercart which is permanently located at the site.

Following a trial into the use of a dust suppression additive in 2009, that showed little improvement over the use of untreated water, additional test have not been undertaken. However, the installation of the new sprinkler system with the required support from the watercart has proven key to minimising the generation of air quality issues related to the site. The current procedures will continue and any issues addressed as required over the upcoming two year period.



Figure 2. Stockpile Locations at October 2011.

5.0 Weekly Water Usage

Table 1 below details the weekly water usage over the reporting period. Water usage over the upcoming two year period is expected to be similar to the following data.

Table 1. Weekly Water Usage.

Week Of:	Sprinklers (m ³)	Watercart (m ³)	Total Weekly Usage (m ³)
26/10/2011	3819	96	3915
19/10/2011	2823	48	2871
12/10/2011	1617	48	1665
5/10/2011	2618	72	2690
28/09/2011	2790	48	2838
21/09/2011	2660	0	2660
14/09/2011	2541	12	2553
7/09/2011	1541	36	1577
31/08/2011	2752	36	2788
24/08/2011	2260	12	2272
17/08/2011	24	0	24
10/08/2011	1119	24	1143
3/08/2011	402	12	414
27/07/2011	2020	0	2020
20/07/2011	2024	0	2024
13/07/2011	1534	0	1534
6/07/2011	1541	0	1541
29/06/2011	1604	0	1604
22/06/2011	1590	24	1614
15/06/2011	1608	12	1620
8/06/2011	1450	0	1450
1/06/2011	1602	0	1602
25/05/2011	1578	12	1590
18/05/2011	1121	0	1121
11/05/2011	1128	12	1140
4/05/2011	1981	0	1981
27/04/2011	2327	12	2339
20/04/2011	2213	96	2309
13/04/2011	2199	108	2307
6/04/2011	2230	108	2338
30/03/2011	2032	276	2308
23/03/2011	2019	336	2355
16/03/2011	1972	264	2236
9/03/2011	2320	132	2452
2/03/2011	2113	456	2569
23/02/2011	2325	180	2505
16/02/2011	1865	336	2201

9/02/2011	1631	252	1883
2/02/2011	1277	252	1529
26/01/2011	1279	252	1531
19/01/2011	2402	108	2510
12/01/2011	2204	312	2516
5/01/2011	2300	48	2348
29/12/2010	2358	36	2394
22/12/2010	2364	48	2412
15/12/2010	2725	240	2965
8/12/2010	2525	216	2741
1/12/2010	2475	312	2787
24/11/2010	2556	216	2772
17/11/2010	2867	168	3035
10/11/2010	2819	252	3071
3/11/2010	2725	324	3049
27/10/2010	2151	168	2319
20/10/2010	2048	132	2180
13/10/2010	1720	144	1864
6/10/2010	1757	108	1865
29/09/2010	1756	12	1768
22/09/2010	1334	12	1346
15/09/2010	1548	36	1584
8/09/2010	1405	24	1429
1/09/2010	2016	24	2040
25/08/2010	2417	0	2417
18/08/2010	2411	12	2423
11/08/2010	2531	0	2531
4/08/2010	2703	0	2703
28/07/2010	2673	12	2685
21/07/2010	2673	12	2685
14/07/2010	2685	0	2685
7/07/2010	2681	0	2681
30/06/2010	2491	12	2503
23/06/2010	44	24	68
16/06/2010	20	24	44
9/06/2010	2108	0	2108
2/06/2010	783	24	807
26/05/2010	0	0	0
19/05/2010	38	84	122
12/05/2010	93	120	213
5/05/2010	180	144	324
28/04/2010	193	24	217
21/04/2010	1143	132	1275
14/04/2010	909	204	1113

7/04/2010	1317	48	1365
31/03/2010	819	168	987
24/03/2010	3436	180	3616
17/03/2010	7978	300	8278
10/03/2010	8011	264	8275
3/03/2010	7994	288	8282
24/02/2010	5572	264	5836
17/02/2010	7994	228	8222
10/02/2010	7942	288	8230
3/02/2010	5577	228	5805
27/01/2010	7599	216	7815
20/01/2010	7314	384	7698
13/01/2010	1210	216	1426
6/01/2010	364	48	412
30/12/2009	0	0	0
23/12/2009	3149	204	3353
16/12/2009	6669	240	6909
9/12/2009	6468	204	6672
2/12/2009	5756	192	5948
25/11/2009	5459	144	5603
18/11/2009	4714	192	4906
11/11/2009	5116	108	5224
4/11/2009	3542	156	3698

6.0 Rehabilitation

Figure 3 shows the area where Winstone undertook rehabilitation works on the site frontage. This work was done in 2011 which included weed removal and the planting of native species.

The quarry batters, along the Mt Eden Road frontage, around the office and weighbridge and along the main quarry haul road are areas that are currently vegetated. Ongoing maintenance to keep growth controlled and minimise weed populations is undertaken across these areas. All other open areas are currently being worked.

No specific rehabilitation is scheduled expect for ongoing maintenance. It is not expected that there will be exposed areas (other than the currently grassed batters) that will remain inactive for extended periods.



Figure 3. Rehabilitation Areas.

7.0 Monitoring

Figure 4 shows the location of the assorted monitoring units located onsite. There are currently seven monitoring units in operation.

There are two CCTV cameras onsite. These units are streamlined to allow viewing of the footage via the internet and have provided an improved view of the entire site. This has proven to be an asset in identifying problem areas in regards to air quality, allowing a proactive response. Also, the ability to review footage has assisted in the interruption of air quality monitoring results allowing the implementation of modification to site procedures (as required) in a timely matter.

The site continues to maintain two TSP monitoring units and one BAM monitor. An additional BAM unit is to be installed in early 2012 prior to any fill activities occurring onsite.

A new Meteorological Station was installed in 2009 as an upgrade to the previous unit.

A daily log of all monitoring results is maintained on site. This log includes information about equipment malfunctions; visible dust emissions, watercart use and all relevant details relating to particulate monitoring. In addition, the onsite water meter continues to be recorded weekly.

As required by consent condition an air quality report continues to be prepared and submitted to Council quarterly.

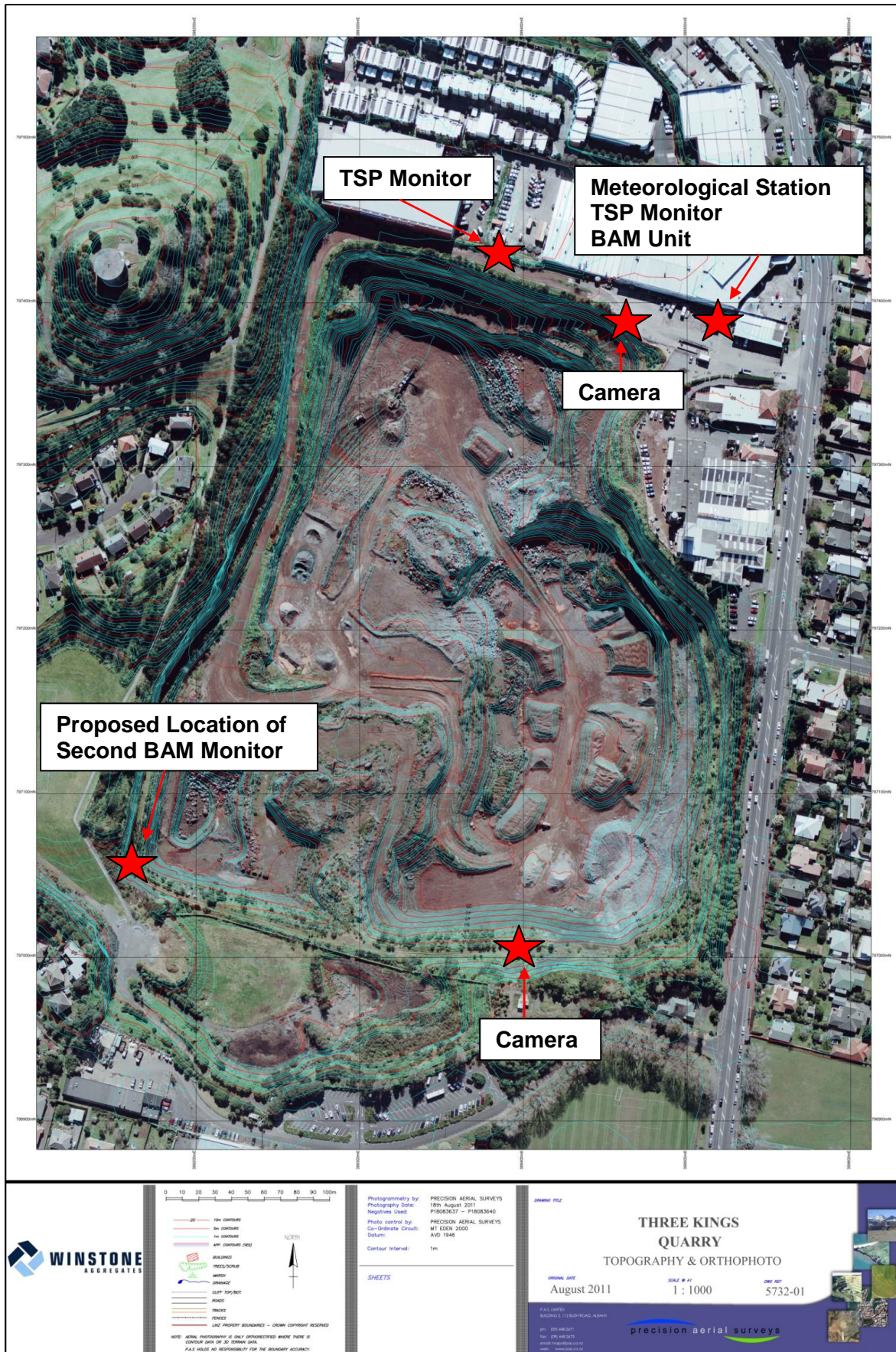


Figure 4. Monitoring Sites.

8.0 Future Site Operations

Existing resource consents authorise further excavation of the quarry down to sea-level (RL0m). However, Winstone intends to cease excavation at about RL34m with fill operations to commence in early 2012. Resource Consent for the filling of the site was granted by the Environment Court in July 2011.

Once fill operations commence in 2012, both quarry and fill activities will initially run concurrently. Quarrying will continue in the southern section of the site with filling starting in the northern area. Figure 5 shows the site layout while the quarry and filling operations run in parallel.

The location of plant associated with both activities will vary throughout the upcoming two year period. The location will be influenced by various factors. However the location of plant is generally restricted to areas where the noise, visual and dust effects of the operation are minimised.

It is anticipated that both quarry and fill activities will continue through the upcoming two year period (subject to consent). Approximately 130,000m³ is project to be extracted over this period. However, this is very much dictated by market demand. As such, quarrying activities may reduce sooner with filling becoming the dominate operation over this period.

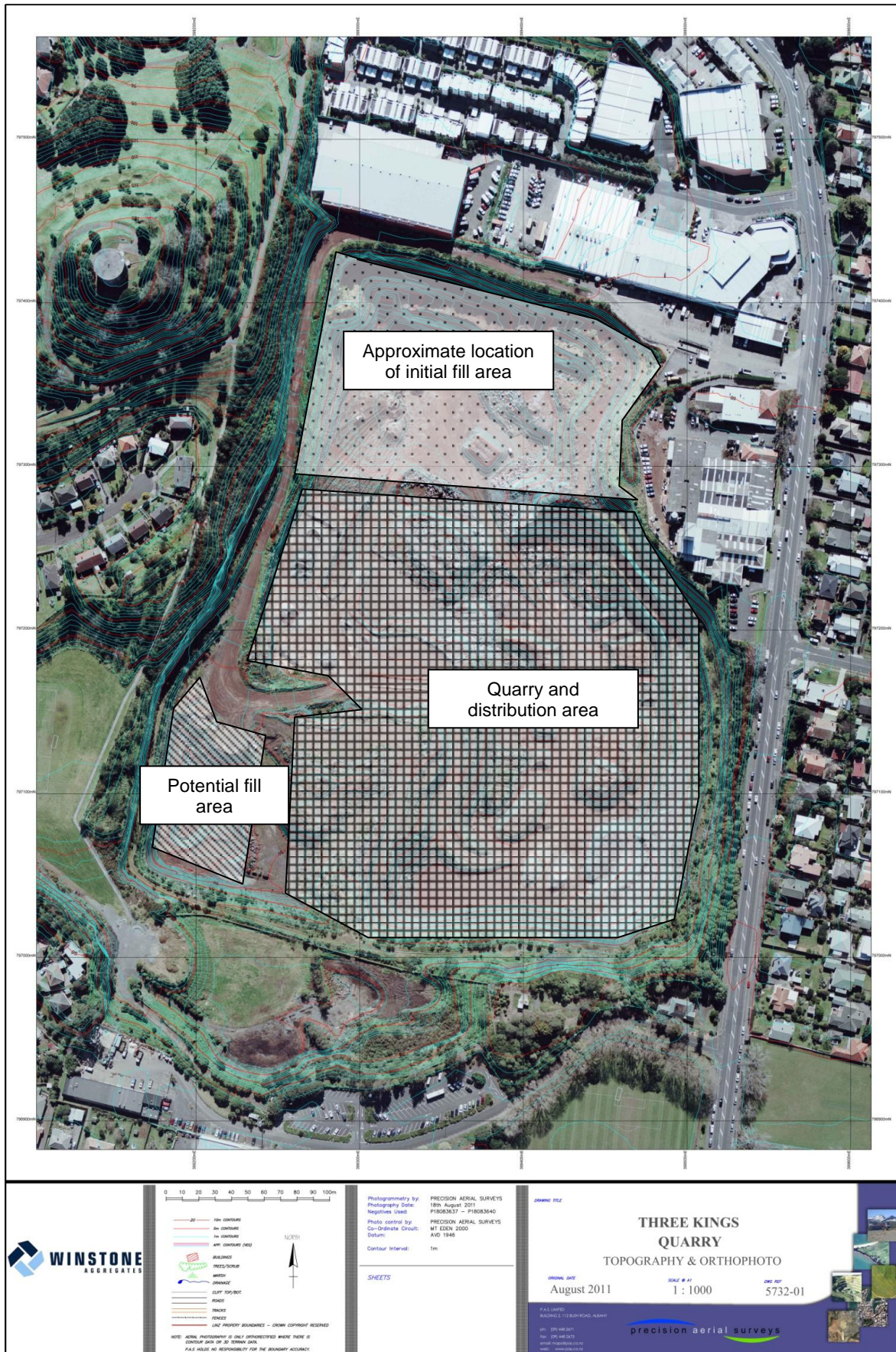


Figure 5. Future Site Layout.