



**Three Kings Quarry and Controlled Fill
Permit Numbers 36221, 36222, 37770, R/LUC/2009/743**

**Landuse, Earthworks and Discharges associated with the
rehabilitation of Three Kings**

Annual Management Plan

June 2013

Annual Management Plan

Three Kings Quarry and Controlled Fill Permit Numbers 36221, 36222, 37770 and R/LUC/2009/743

Introduction

The following report is made with regard to Conditions 66 and 76 of the above permits. The conditions of these permits were issued as an amalgamated set of consent conditions.

Condition 66 reads,

All erosion and sediment control measures shall be constructed and maintained in accordance with those described in the application. These measures shall be documented by the Consent Holder in an Annual Management Plan (AMP).

Condition 76

Prior to the commencement of work, and annually thereafter, the AMP shall be submitted to the Council containing the following information:

- (a) Plans for fill and associated earthworks, including the proposed fill contour over the next 12 months.*
- (b) Details of maintenance activities in respect of erosion and sediment control measures undertaken in the previous 12 months, and maintenance activities proposed over the next 12 months.*
- (c) Summary of sampling results for suspended solids and turbidity, carried out during the previous 12 months.*
- (d) Details of any problems in respect of water management on the site during the previous 12 months, and proposals for addressing such problems.*
- (e) Where necessary calculations to confirm compliance (or otherwise) with TP90 over the next 12 months.*
- (f) Information that provides an early indication to the Manager when the height of the fill reaches a level 10m below the final fill levels identified in Harrison Grierson Plan 122314 Fig 002, so as to ensure that the provisions of Conditions 9, 10 and 77 are able to be met.*
- (g) Where site closure is proposed in the following 12 months, the Plan should also address the following matters:*
 - i. Proposals for stabilisation of the site;*
 - ii. Proposals for the ongoing treatment of any discharges from the site;*
 - iii. Provision of the final contour plan following the consultation set out in Condition 77;*
 - iv. A survey of the current fill levels from where the engineered filling is to begin; and*
 - v. Provision of a plan that quantifies the difference between the levels shown on Harrison Grierson plan 122314 FIG 002 and any additional filling sought to meet the considerations expressed in the consultation required by Condition 77.*

Each of the items list in Condition 76 are addressed below maintaining the same order as above.

(a) Plans for Fill and Associated Earthworks

Over the next twelve months quarrying will continue to occur largely in the southern section of the site with fill operations primarily in the northern portion of site. A site plan showing these locations is attached to this report.

The rate of quarrying depends on a number of factors. The state of the market (demand) is a significant variable outside Winstone's control. It dictates the level of sales and production activity. Similarly, the rate of importation of fill is again dictated by the market and factors that drive projects, their productivity and their chosen tip site.

No areas of quarrying will be quarried lower than RL34m. Areas of fill will generally progress from RL34m at a rate determined by the market conditions and to no more than the levels detailed in the consent (Harrison Grierson plan 122314 Fig 002 attached).

At this stage the volume of material to be imported over the next 12 months is estimated to be in the order of 150 000m³. The proposed fill contour of the two fill areas shown on the attached site plan is expected to be no more than RL60m over the next 12 months. The filling is currently programmed to be undertaken primarily in the section shown as Fill Area A with filling to commence in Fill Area B as volumes allow.

(b) Erosion and Sediment Control Measures and Maintenance

This site is not a typical earthworks operation where sediment laden discharges are directed to devices constructed in accordance with TP90 as all discharges from the earthworks at this stage is to ground.

During the initial stages of fill operations, runoff is directed to the pit floor.

As the pit floor is filled, infiltration of runoff will change from predominantly pit floor soakage to infiltration at the perimeter of the fill.

Groundwater water quality monitoring commenced in late 2011 with groundwater pumped from the site monitored quarterly for suspended solids and turbidity. The results of this monitoring are provided in the following section.

Maintenance of erosion and sediment control measures in the previous 12 months has consisted of the installation of an additional wheel wash at the base of the quarry haul road (July 2012). Also, ongoing maintenance of the site wheel washes, haul roads and tip heads has been undertaken.

It is not anticipated that any maintenance of erosion and sediment control measures other than the ongoing maintenance as described above will be required in the upcoming 12 months.

(c) Summary of Sampling

As required by condition 75, water samples have been taken quarterly from the site dewatering bore. These samples were analysed for suspended solids and turbidity.

The results from the samples undertaken during this reporting period are as follows:

Sample Date	Total Suspended Solids (mg/L)	Turbidity (NTU)
Trigger	30	30
27 Jun 2012	<3	0.12
27 Sept 2012	<3	<0.05
30 Jan 2013	<3	0.07
27 Mar 2013	<3	0.09

(d) Water Management

There have been no problems with respect of site water management during the previous 12 months.

Groundwater monitoring will continue with any triggers reported, investigated and addressed.

(e) TP90 Calculations

No TP90 structures are proposed to be constructed in the upcoming 12 months.

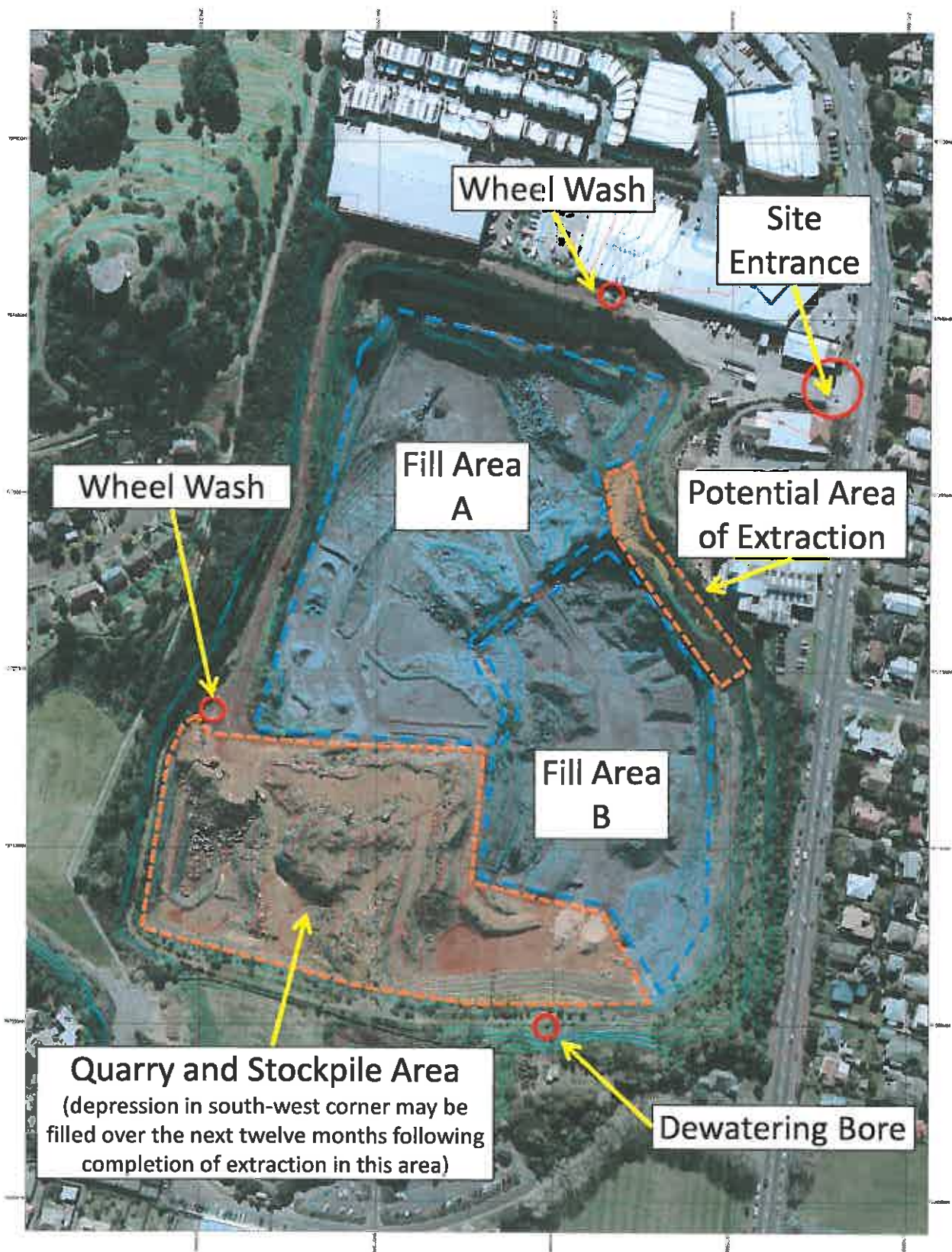
Due to the contour of the site and type of earthworks undertaken it is not unnecessary to undertake calculations to confirm compliance (or otherwise) with TP90.

(f) Indication of fill levels approaching final levels

In the period covered by this AMP, fill levels are not expected to approach 10m below the final fill levels as detailed in Harrison and Grierson Plan 122314 Fig 002. Should this change within the next 12 months, and an area approaches such a level, Council will be notified to ensure provisions of Conditions 9, 10 and 77 are able to be met.

(g) Site Closure

Site closure is not proposed in the upcoming 12 months.



Wheel Wash

Wheel Wash

Site Entrance

Fill Area A

Potential Area of Extraction

Fill Area B

Quarry and Stockpile Area
(depression in south-west corner may be filled over the next twelve months following completion of extraction in this area)

Dewatering Bore

AMP June 2013 – Site Plan

