



**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 2014

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 listed in Condition 76 are addressed below maintaining the same order as detailed in the condition.

(a) Plans for Fill and Associated Earthworks

Fill activities, along with the sale of stockpiled and imported aggregate products, will be the prominent focus operationally over the next twelve months. The attached site plans shows the areas where these activities are expected to occur.

The programme for filling will be the continuation of the stockpiling of incoming fill in Area A with minor amounts (material dependent) being placed within the southern sections of Areas B and C. This methodology will continue through this winter (2014). A methodology shift is planned for summer which will see the placement of fill primarily throughout Area B. The placement of fill in Area B will be from two sources: directly from trucks delivering fill and from Area A (as material stockpiled in Area A is shifted to Area B for placement).

The volume of material to be imported over the next twelve months is currently estimated to be in the order of 140 000m³. This value is based on the volumes imported over the previous twelve months and also takes into consideration budget targets for the next twelve months. However, the rate of importation of fill is dictated by the market and factors that drive projects, the productivity of these projects and their chosen tip site.

The current fill programme for the next twelve months will see the contours vary across the site. The majority of changes in contour is expected to occur in Area B (raising the contour level) and some reduction of the current contour across Area A. These changes will be a result of the stockpiled material in Area A being shifted and placed to increase the levels within Area B.

No areas of fill are expected to be within 10m of the final levels proposed in the attached Harrison Grierson plan 122314 FIG 002. This plan is referenced in the conditions of the consents authorising fill activities. However, Council will be notified should the availability of fill material see the programme accelerated and the contours of site raise to within 10m of these proposed final levels in the next twelve months. Furthermore, Council will be notified, in the case of an application being made and approved to reduce the final levels from those proposed in the Harrison Grierson plan and if the contours of site approach such levels in the next twelve months.

For completeness, it is noted that quarrying activities are planned to decrease over the next twelve months. During this period the focus will be on pulling up and processing of the useable product across the floor shown as Area B. This works is required prior to the commencement of fill throughout this area of site. Additional quarrying may be undertaken should areas of rock resource become accessible as filling progresses; specific areas in this regard have not yet been identified or targeted.

(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 in an area, runoff is directed to the pit floor. As the pit floor is filled, the discharge location of runoff changes from predominantly pit floor soakage to infiltration at the perimeter of the fill.

Groundwater quality monitoring commenced in late 2011. The groundwater pumped from the site is sampled quarterly and tested for suspended solids and turbidity. The results of each monitoring round are provided to Council on an ongoing bases within the Fill Quarterly Reports. The results from the past twelve months have been provided in the following section of this report.

Maintenance of erosion and sediment control measures in the previous twelve months includes ongoing maintenance of the site wheel washes, haul roads and tip heads.

It is not anticipated that any maintenance of erosion and sediment control measures other than the ongoing maintenance described above will be required in the upcoming twelve 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 undertaking during this reporting period are as follows:

| Sample Date | Total Suspended Solids (mg/L) | Turbidity (NTU) |
|--------------------|--------------------------------------|------------------------|
| Trigger | 30 | 30 |
| June 2013 | <3 | 0.13 |
| September 2013 | <3 | 0.14 |
| December 2013 | <3 | 0.19 |
| March 2014 | <3 | 0.205 |

(d) Water Management

There have been no problems with respect to site water management during the previous twelve months and none anticipated during the next twelve months.

(e) TP90 Calculations

No TP90 structures are proposed to be constructed in the upcoming twelve 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

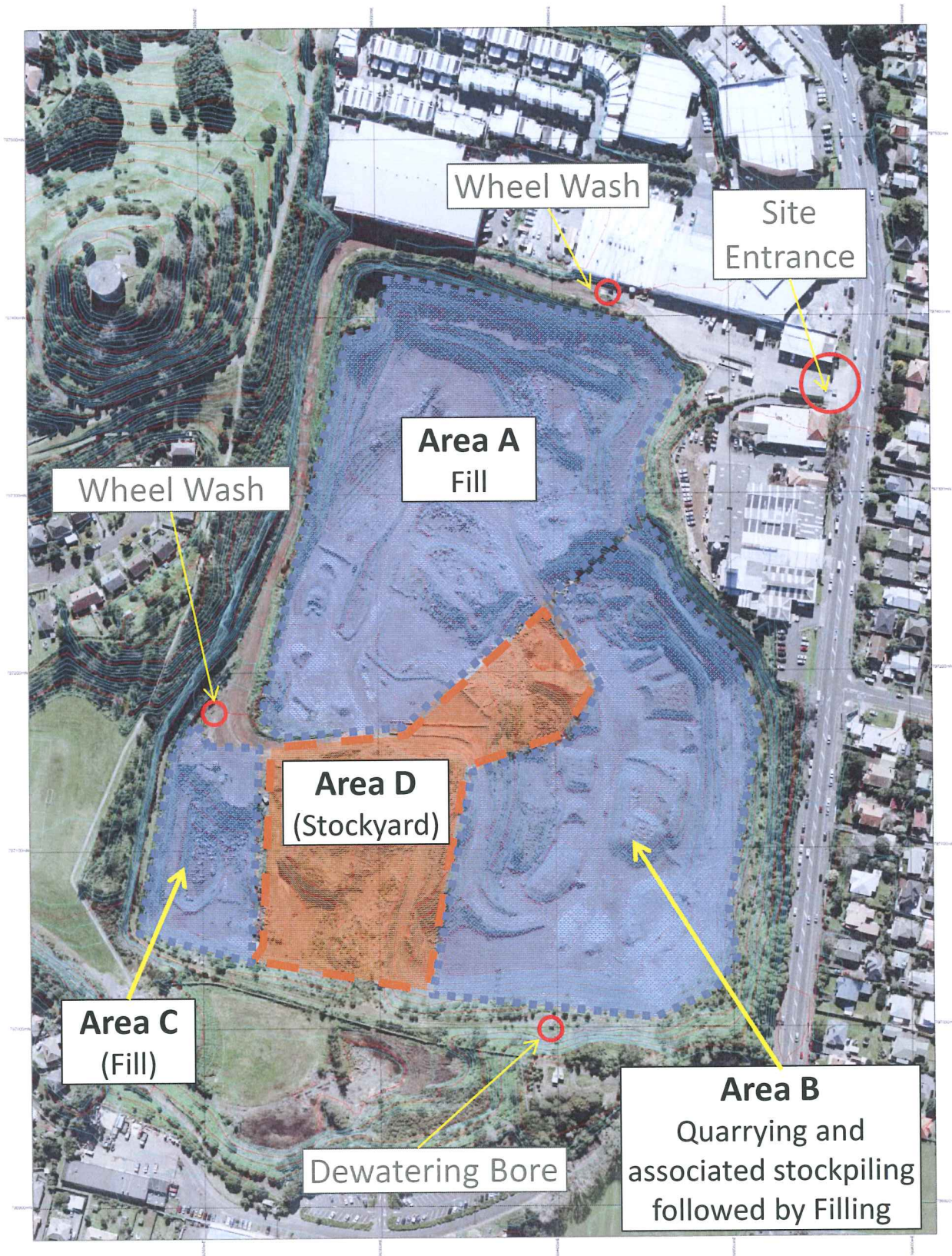
In the next twelve months, no areas of fill are expected to be within 10m of the final levels proposed in the attached Harrison Grierson plan 122314 FIG 002.

However, Council will be notified should the availability of fill material see the fill programme accelerated and the contours of site raise to within 10m of these proposed final levels.

Furthermore, Council will be notified, in the case of an application being made and approved to reduce the final levels from those proposed in the Harrison Grierson plan and if the contours of site approach such levels.

(g) Site Closure

Site closure is not proposed in the upcoming twelve months.



AMP June 2014 – Site Plan

AREAS AND BOUNDARIES SHOWN ARE
SUBJECT TO SURVEY.

KEY

EXISTING SITE BOUNDARY
EXISTING MINOR CONTOUR (10m)
EXISTING MAJOR CONTOUR (20m)
PROPOSED MINOR CONTOUR (10m)
PROPOSED MAJOR CONTOUR (20m)
PROPOSED SECOND SITE AREA



SCALE: 1 = 1000



**HARRISON
GRIERSON**
CONSULTING ENGINEERS SURVEYORS PLANNERS
1 Great South Road Auckland Ph 09 917 5000 Fax 09 917 5001

[illegible]

THREE KINGS QUARRY

**TITLE:**

FIGURE 2
PROPOSED LANDFORM FOR
CLEANFILL CONSENTS

| | | | | |
|--------|-------|------------|-------------|------------------|
| NUMBER | DATE: | SIGNATURE: | PILOT DATE: | 10.10.08 |
| IN | DATE: | SIGNATURE: | COPIES: | 127144292321.jpg |
| DEK: | DATE: | SIGNATURE: | PILOT DATE: | |
| DATE: | DATE: | SIGNATURE: | PILOT DATE: | |

| | |
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| | 1 |
|--|---|

| | | |
|---------------------|----------------------------------|-------------|
| REF: 1-122314-01 | SCALES: 1:1000 1:2000 (A3) | FOR CONSENT |
| | | A1 |

122314-FIG-002